International Journal of Instruction *July 2023 ● Vol.16, No.3*
e-ISSN: 1308-1470 ● www.e-iji.net *p-ISSN: 1694-609X*
pp. 639-654

Article submission code: 20220905040019
Received: 05/09/2022 Revision: 23/01/2023
Accepted: 17/02/2023 OnlineFirst: 04/05/2023

Effect of Metacognitive-Based Digital Graphic Organizer on Learners' Oral Presentation Skill and Self-Regulation of Learning Awareness

Roderick Julian Robillos
Faculty of Education, Khon Kaen University, Thailand, *rodero@kku.ac.th*

The main objective of the study was to investigate the effect of digital graphic organizer via the use of LoiLoNote School Application (LS app) within a metacognitive approach on university students' oral presentation (OP) performance and awareness of their self-regulation of learning. It was a mixed-method study involving 27 college students enrolled in one of the universities in Khon Kaen, Thailand. The participants completed both the OP performance and a questionnaire on self-regulation of learning scale before and after the intervention was implemented. The results revealed a significant difference between the students' pre- and post OP performances in terms of the four components such as clarity, content, delivery, and fluency and coherence. Furthermore, the components on "clarity" and "content" were the most improved components while "fluency and coherence" and "delivery" were the least improved ones. Whilst four SRL components revealed a significant relationship with students' OP performance (planning, self-monitoring, evaluation, and self-efficacy), the other two components (reflection and effort) did not. Qualitative results, on the other hand, showed that students felt that using a metacognitive-based digital GO aided them to facilitate their OP tasks effectively and helped them to be more aware of their self-regulation towards learning. Suggestions for future research agenda with regard to metacognitive-based digital GO are also proposed and practical implications are suggested.

Keywords: digital graphic organizer, LoiLoNote school application, metacognitive approach, oral presentation skill, self-regulation of learning awareness

INTRODUCTION

The overarching goal of the current study was to examine the effect of using digital graphic organizer (henceforth, digital GO) within a metacognitive approach on students' OP performance and their self-regulation of learning awareness. Oral presentation (OP, as hereafter refers to) has been a common classroom activity for learners in Higher Education across the globe (Tsang, 2020). Robillos (2022) described OP as one of the effective communicative activities that are commonly used by EFL instructors to promote presentation skills. OP also plays an important role on students' acquisition of

Citation: Robillos, R. J. (2023). Effect of metacognitive-based digital graphic organizer on learners' oral presentation skill and self-regulation of learning awareness. *International Journal of Instruction*, *16*(3), 639-654. https://doi.org/10.29333/iji.2023.16334a

knowledge and is always a way of assessing students' performances in the classroom. Živković (2014) posit that one vital part of language curriculum in Higher Education is instructing students how to prepare, organize and deliver successful OP for academic and professional purposes. She further emphasized that when a quality of presentation is improved, the quality of thought is likewise improved.

In the context of Thai education, however, OP has always been a challenging task for Thai EFL students to execute because many of them are hesitant to deliver their assigned topic in front of their peers and teacher/s in the classroom. Apart from that, they are also facing difficulties with regard to the development of their speech content, the organizational mechanisms, fluency of ideas, as well as their confidence in delivering their topic. These difficulties are actually overloading the learners' cognitive load (Malmir & Khosravi, 2018; Robillos & Thongpai, 2022). Sweller (1994) recommended reducing this extraneous cognitive load during the learning process in order to acquire new information. One helpful way of aiding students to reduce "cognitive overload" is by using GOs such as maps and/ or diagrams (Davies et al., 2021; Harrel & Wetzel, 2013; Robillos, 2021).

The concept of GO was originated from Ausubel's (1978) meaningful theory of cognitive learning. In this theory, new information is dynamically co-opted with the help of thinking systems by joining to existing data (Malone & Dekkers, 1984). When students use GOS they can be aided to form their ideas and information pictorially and/or graphically. A number of studies have shown the promising positive results of using GOs in processing meaningful learning and enhancing various types of thinking skills such as: critical thinking (Davies, 2011; Robillos, 2022; Davies, et al., 2021); cognitive thinking (Slavin, 2011). Thus, various kinds of maps and/or diagrams should be provided to students to enable them to write down their ideas and views. Not quite recently, many researchers and scholars of SLA have started to pay attention on meaningful and thoughtful learning (Kurokami & Kojima, 2018; Robillos, 2022). It has become very vital for learners to think critically, logically, more meaningfully, and to share, discuss, and present their ideas

GOs, which are also called visual maps, help overcoming the information load and allow the information and resources to be collected in one place. In fact, in the preparation and creation of GOs, each group member prepares his/her ideas, then includes them in a common group GO, and explains each of their ideas. It is possible that similar ideas would come up; these ideas are then grouped or placed close together in order to have idea exchange and integration. However, it is difficult for each member in a group to develop the shared idea in detail, because there is only one common group GO (Kurokami & Kojima, 2018). With the introduction of technology, digital GOs may make it easier to maintain initial GOs for each member and re-arrange the organizers to enable in-depth development of integrated ideas by each group member (Kimura, Kurokami, & Horita, 2017; Kurokami & Kojima, 2018; Robillos, 2022). Students can also easily display the structure of information which might support them in generating and developing the topic.

In this digital era, it has become essential for students to aid themselves with digital applications that are capable of facilitating cognitive endeavours. Consequently, the Basic Education Core Curriculum (BE 2551) of the Kingdom of Thailand has started to recognize the significance of digital GO and integrate particularly in the English as a Foreign Language (EFL) classrooms. In fact, even from an early period, GOs have recognized the digital form. For example, in the late 1980s, Inspiration software, Inc., has introduced a digital tool called "Inspiration" for visual brainstorming through bubble map and concept map. The development of a computer-aided mapping (Davies, et al., 2021; Davies, 2014) designed for argument mapping as well as fostering critical thinking. Various kinds of applications are available to generate, construct, and share GOs (Kimura et al., 2017; Kurokami & Kojima, 2018). However, most of these applications concentrate on particular patterns of thinking and combine them to specific types of GOs. In real-world classrooms, students use multiple GOs depending on how to think. This only manifests that there is an increasing necessity for a more flexible use of digital mapping tools and applications that can shift GOs and one of which is the use of LS app (Kurokami & Kojima, 2018; Robillos, 2022).

LS app is an all-in-one interactive lesson platform that easily helps teachers to facilitate and implement the lessons they envision. Teachers can be able to include all the necessary materials for a class into one platform, outline the flow of the class, get an overall view of students' progress throughout the time, and create their lesson plans in LS app. While still new in its implementation, LS app is being used ever more as a helpful digital tool in English as a Foreign Language classroom. LS app enables interaction between students and teachers and heightens students' awareness towards self-regulation of learning. The LS app aids teachers to use technology to classroom activities that are communicative and learner-centred. Teachers can distribute, give task activities, and collect students' accomplishments on or offline. Once the work has been submitted, the teachers can display to the class those submissions, give constructive comments, and even do comparisons. The screen from the teacher's device can be shown to everyone via an external display, or broadcast to all the students' devices.

Furthermore, students can use the tunnel feature to share their ideas with their peers. The teachers can also share files containing directions to follow and formats to pattern at. LS app takes the students to think on their own; establish their ideas; brainstorm and collaboratively share their ideas with peers to be able to generate new information and problem-solutions; and present their thoughts in a clear, logical manner which consequently enhances their critical thinking skills, communication and technological skills, social skills, and self-regulation. LS app motivates students to generate their own concepts and information which aids them to yield a better speaking achievement that is organized and logical.

Burgeoning studies have reported positive results with regard to the use of LS app (Kurokami & Kojima, 2018; Robillos, 2022). For example: Kurokami & Kojima (2018) exploited LS app to aid students in idea generation and foster critical thinking. In their study, they described that in order to strengthen the application's abilities, digital GOs were built in to LS app. Study results found that the use of LS app successfully enhanced the students since most of them felt that the new feature was extremely useful

in generating ideas, collaborative-wise, and encouraging students to think critically and logically. The benefits and effectiveness of the application was assessed by surveying the research participants in a class, thus, carried out quantitatively.

Robillos (2022), on the other hand, examined the influence of LoiLoNote application in order to aid EFL students to create their maps for their speaking presentation activities. The study likewise used the application in order to track their critical thinking dispositions. The study used a purposively-selected 30 college students and carried out the treatment for 8 sessions. The pre- and post- speaking tests and questionnaire with regard to their critical thinking dispositions called critical thinking dispositions inventory or CCTDI, were used to collect data. The study findings revealed that the use of application improved the students speaking performance and enhanced their dispositions towards critical thinking in terms of the 7 subscales such as open-mindedness, CT self-confidence, truth-seeking, systematicity, analyticity, maturity, and inquisitiveness. Albeit the study reported positive results on students' speaking skill and their critical thinking dispositions, it was noticed that the training procedures did not incorporate a pedagogical approach (*i.e.*, metacognitive approach) to carry out the technological application. This pedagogical approach might be a potential factor to aid students to undergo planning, monitoring, and evaluating their learning (Bozorgian, 2014; Panggabean & Triassanti, 2020) and do not only think that a technological application is just an application design for fun and games, instead, implement it within a pedagogical approach for a more effective and successful learning outcome.

SLA scholars and academicians have recognized that students' awareness of their thinking, cognitive functions, and strategy use can have significant effects on their learning tasks and processes (Darmawanet al., 2020; Vandergrift & Tafaghodtari, 2010). Gaining metacognitive abilities can empower learners' learning (Bozorgian, 2014). Learners who metacognitively plan, monitor, and evaluate on their own learning enable them to make better and conscious decisions to improve their learning. Metacognition as an educational construct is one of the primary units of self-regulation because self-regulated learners engage themselves to the active processes of planning, monitoring, evaluating and reflecting their own learning (Robillos, 2021; Bozorgian, 2014). Metacognitive strategies aid students use their thinking about their cognitive activities (O'Malley & Chamot, 1990; Robillos & Bustos, 2022). Panggabean and Trissanti (2020) claimed that when learners learn how to plan and monitor their task and assess their accomplishment, they can be able to take on more duties for his/her learning. This is vital for an individual learner and can be considered as one main ingredient towards self-regulation (Panggabean & Trissanti, 2020).

Self-Regulated Learning (or SRL) highlights the individuals' capability to set goals for their learning (Zimmerman, 2001). SRL is a mediator between personal and contextual influences and actual learning performance. Schunk & Zimmerman (2012) claimed that individuals who know how to self-regulate can cognitively, motivationally, behaviorally, and contextually monitor and control their learning. This view is backed-up by Pintrich (2000) claiming that SRL is an active process enabling learners to set their learning goals, monitor their learning processes, self- regulate and evaluate their own cognition, and reflect their own learning. As Zimmerman (2008) asserted, learners who self-

regulate can systematically use metacognitive, motivational tactics and can be able to create and control a situation rather than just responding to the activity after it has happened.

Many studies have reported the effectiveness of using digital GOs for EFL learning (Davies, et al., 2021; Kimura et al., 2017; Kurokami & Kojima, 2018; Robillos, 2022). However, research studies focusing on OP performance and self-regulation of learning awareness using digital GO is still scarce and underexplored. In addition, research studies on implementing digital GO within metacogntive approach has been far largely underinvestigated. Albeit many studies have indicated that implementing digital GOs has a positive effect on leaners' performance, most of the studies adopted quantitaive approaches to measure students' speaking performances. Furhermore, the digital GOs used have not implemented within a pedagogical approach which is a potential factor to effective learning. Therefore, it is necessary for more studies to use both a quantitative and qualitative approach to shed light on the effectiveness of using a digital GO through LoiLonote School application within a metacognitive approach on students' OP performance as well as awareness of their self-regulation of learning. Specifically, the following questions are sought to be answered:

1. How have the use of digital GOs within metacognitive approach (henceforth, intervention) affected the students' OP performance?
2. How has the intervention affected the students' self-regulation of learning awareness?
3. How have the participants described their experience(s) after the implementation of the intervention?

METHOD

Method and Participants

The present study employed a sequential mixed-method type of research using both quantitative and qualitative approaches (Creswell & Plano-Clarch, 2011). Quantitative data were gathered through different tests and questionnaire while qualitative data were gathered through semi-structured interviews using an open-ended questionnaire.

Furthermore, the present study was conducted to an intact group of 27 second year college students with 4 males and 23 females at one of the provincial universities in Khon Kaen, Thailand. The participants were taking up a subject on TESOL methods with a chief aim of exposing them to the many ways / methods of teaching English language skill where the use of digital GO within a metacognitive approach in OP task is one of them, apart from improving their oral presentation skill and enhancing their awareness towards self-regulation of learning. The selected participants were clarified of the purpose/s of the research as well as agreed to the informed consent research procedures.

Instruments

There were three instruments used to gather data in the present study: 1) the students' OP performance, in order to measure their oral presentation performance before and after the implementation of the intervention, 2) Toering's (2011) Self-Regulation of Learning Scale (SRLS), in order to measure students' self-regulation as a characteristic

in multiple learning domains, 3) interviews, in order to obtain additional information with regard to the students use of digital GO within a metacognitive approach and track their progress with regard to their self-regulation of learning awareness.

Pre- and Post- OP Performances. The students' pre- OP performance was given a week before the intervention started whereas, the post-OP performance was implemented a week after the intervention was implemented. For the evaluation of the students' OP performances, four OP criteria were utilized as the OP scoring rubric. These four OP criteria were: clarity, content, delivery, and fluency and coherence (adapted from Brewer & Ebert-May, 1998), but slightly modified by the researcher himself, checked by the 3 English experts for its cognitive and cultural level of appropriateness. Scoring marks of 1 - 2 marks for students who obtained a low-scoring response and 3-4 marks for students who yielded a higher-scoring responses were assigned.

A Self-Regulation of Learning Scale or SRLS. This 46-item questionnaire adopted from Toering (2011) was administered before and after the intervention was implemented. The SRLS questionnaire was sub-categorized into 6 self-regulation (SR) categories such as planning, self-monitoring, evaluation, reflection, effort, and self-efficacy. This questionnaire is aimed at measuring the students' SR as a characteristic in multiple learning domains. It involved the following: planning (9 items), self-monitoring (8 items), effort (10 items), and self-efficacy (10 items) were originally scored on a 4-point (1= never to 4= always) 5-Likert scale; but in the current study, the scale was revised into a 5-likert scale with reliability values of 0.78, 0.73, 0.78, and 0.69 respectively to be able to aligned it with the subscales of evaluation (8 items) and reflection (5 items). In accordance with the original scales, evaluation ranged from (1) never to (5) always, and reflection ranged from (1) strongly agree to (5) strongly disagree. Before data analysis, reflection scores were reversed to make them correspond to the scores on the other five subscales. To ensure the reliability of the questionnaire, a pilot study was conducted on 30 third year college students who were not included in the target group. The computed reliability result was 0.79 Cronbach Alpha.

Interviews are conducted to provide additional information with regard to how often and when the students use digital GO within a metacognitive approach as a strategy in improving and facilitating their OP tasks as well as awareness of their self-regulation of learning, a week after they were provided with the programme. They were given informed consent forms and were clarified regarding the conduct of the interview. Each interviewee was conducted using at least 30 minutes.

The Intervention

A total of 10 sessions was used in the implementation of the programme: The first session was used for the pre-test OP performance and for the administration of the SRL questionnaire. The 2nd to 9th sessions were used for the treatment whilst the session 10 was for the post- OP performance and for the administration of the SRL questionnaire. The following number of sessions, stages involved in metacognitive approach, and learning activities were shown in Table 1.

Table 1
The intervention

Session/s	Metacognitive Stages	Activities
2nd Session	Introductory Part	-elucidated the use and importance of GO. -Introduced LS app as a digital app they would be using in creating their GOs. Discussed the "how to use" GO in facilitating their OP tasks.
3rd - 5th Sessions	Planning Stage	-Planning activities such as brainstorming, schemata-development were provided to the students in order to help link their prior information towards the new OP topic. -OP topics were given to the students and each student started to create his/her GO using LS app. Thereafter, students were grouped into four with five members and collaborate to share their individual GOs -After sharing, the group members have to come up with one group's GO. The newly created GO would then be uploaded in the "cloud space" using LS apps upload feature ready to be shared in front of the class for others to give some feedbacks and comments.
	Monitoring Stage	-After the group's GO was presented, the members have to meet again to modify their GO and to come up with a newly created GO responding to the feedback and suggestions given by both of their peers and teacher. -After obtaining ideas and insights from peers and group members, each student would create his own draft, switched it to their peers for additional comments and to further shape their ideas by solving some issues concerning clarity, content, and cohesion / coherence. -The teacher could also give advice to groups and individuals who encountered problems in their work.
	Evaluation Stage	-Individual's oral presentation performance in front of the class using his/her created GO done through LS app. -Indirect corrective feedback is also provided by the teacher to monitor students' task's progress. -Students self-evaluated and self-reflected their performance using presentation performance checklist provided on them and have the chance to discuss to their peers how successful or unsuccessful they were, and they may share some possible strategies of doing so to deal with problems that they may encounter in the future.
6th - 9th sessions	2 more rounds of OP performances using the intervention	-These last 2 sessions were other rounds of OP task processes and performances; different topics would be developed and presented using digital GO. This was to give students more exposures before they have the post OP performance which would happen during last session.

Data Analysis

With regard to quantitative data analysis, the Descriptive Statistics such as mean, frequency, percentage were calculated and presented in a tabular form. Inferential statistics such as t-test statistical analysis (used to find out the difference between students' pre- and post- OP performance and self-regulation of learning awareness) and Pearson –r (used to find out the relationship between the use of digital GO to those of participants' OP performance and self-regulation of learning awareness).

Regarding qualitative data analysis, the interview responses obtained from the interviewees during the conduct of semi-structured interviews were subjected to frequency counts and were analyzed and coded through topical coding to label texts,

then, interpreted, and modified to identify themes that emerged (Creswell & Plano, 2011).

FINDINGS

RQ#1. How have the use of digital GOs within metacognitive approach (henceforth, intervention) affected the students' OP performance?

Descriptive Statistics for the students' OP performance before and after the intervention was implemented

Table 2 presents the test of difference between the participants' OP performance in terms of four components, before and after the intervention. These components were clarity, content, fluency and coherence, and delivery. As indicated by the students' post-OP performance, the components on "content" with $\bar{x}$=3.67, SD=.521 and "clarity" with $\bar{x}$=3.57, SD=.431 were the most improved components whilst the components on "fluency and coherence" with $\bar{x}$=3.22, SD=.512 and "delivery" with $\bar{x}$=3.23, SD=.301, on the other hand, indicated the least improved ones. Overall, the four aforementioned components significantly differ before and after using digital GO within metacognitive approach as showed by a pre- OP overall Mean result of 10.91 and post- OP overall Mean result of 13.69.

Table 2
Descriptive statistics for the students' OP performance before and after the intervention was implemented

OP Components	Before the Intervention		After the Intervention		Standard Error Mean	
	Mean	SD	Mean	SD	Pre-test	Post Test
Clarity	2.78	.591	3.57	.431	.112	.093
Content	2.93	.313	3.67	.521	.049	.089
Fluency & Coherence	2.69	.621	3.22	.512	.115	.078
Delivery	2.51	.409	3.23	.301	.069	.051
Overall	10.91	1.19	13.69	.98	.197	.173

RQ #2. How have the use of digital GOs within metacognitive approach affected the students' self-regulation of learning awareness?

Descriptive Statistics for the students' self-regulation of learning awareness before and after the intervention

The following test of difference on the participants' self-regulation of learning awareness before and after the strategy intervention was employed is presented in table 3. As noticed, the mean scores during pre- OP performance ($\bar{x}$=12.32; SD=1.76) and post- OP performance ($\bar{x}$=19.69; SD=2.51) showed that when compared statistically, the differences between the two results were significant with a t-value of -17.34 and gaining a computed p-value of 0.000 which is less than 0.05 level of significance. This only manifest that the uses of digital GO within metacognitive approach indicated that the intervention significantly impacted learners' awareness of their self-regulation of learning, *i.e.,* as their OP performance was improved, their self – regulation of learning awareness was as well enhanced.

Table 3
Descriptive statistics for the students' self-regulation of learning awareness before and after the intervention was provided

Components of Self-regulation of Learning Awareness	Before the Intervention		After the Intervention		*t*-computed value	*p*-value
	Mean	SD	Mean	SD		
Planning	12.33	2.12	18.83	2.80	-14.32	0.000
Self-Monitoring	11.17	2.19	17.81	2.23	-13.29	0.000
Evaluation	12.82	1.84	22.93	2.37	-15.68	0.000
Reflection	11.34	1.56	18.64	2.71	-13.34	0.000
Effort	12.61	1.87	18.36	2.86	-12.87	0.000
Self-Efficacy	12.68	1.49	19.82	2.48	-13.90	0.000
Overall	12.32	1.76	19.69	2.51	-17.34	0.000

Test of relationship between participants' OP performance and their self-regulation of learning awareness after the intervention was implemented.

The relationship between the participants' OP performance and their self-regulation of learning awareness as represented by SRLS after the intervention was displayed in table 4. As shown, 4 out of 6 components revealed significant relationships with their OP performance. The components on planning, self-monitoring, evaluation, and self-efficacy which yielded t-computed values of 2.21, 2.17, 2.18, and 2.11 respectively and were found higher than the *t*-critical value of 2.05. However, the components on "reflection with mean score of 2.02" and "effort with mean score of 2.03" were found less than the *t*-critical value of 2.05 indicating that the relationship between the students' OP performance and the SRL components showed not significance. In overall, a significant relationship was also revealed between the two aforementioned variables since the t-computed value of 2.09 was found higher than the t-critical value of 2.05.

Table 4
Test of relationship between students' OP performance and self-regulation of learning awareness after the intervention was implemented

Components of Self-regulation of learning awareness	Pearson r-value	t-computed value	t-critical value
Planning	0.34	2.21	2.05
Self-Monitoring	0.24	2.17	2.05
Evaluation	0.21	2.18	2.05
Reflection	0.19	2.02	2.05
Effort	0.27	2.03	2.05
Self-Efficacy	0.21	2.11	2.05
Overall	0.21	2.09	2.05

RQ#3. How have the participants described their experience(s) after the implementation of the intervention?

In the semi-structured interviews conducted, three main categories were used as a point of reference, then once all the responses were transcribed and analyzed, different codes were created to identify the students' responses relative to each category. The summary of categories and sub-codes after the interviews was displayed in table 5.

Table 5
Summary of categories and sub-codes that emerged after the semi-structured interviews were conducted to the participants

Categories	Sub-codes	Example of participant's responses from the interviews
Advantages of using digital GO	-effective use of English language. -better visual representation of their ideas -Clearer and more logical content	-"collaboration exposed me to use English language effectively in real situations. -"Using digital GO aided me to chunk complex ideas into smaller ones and made my output more coherent." -"The LS app allowed me to incorporate videos, audios, to my map which I made my presentation clearer and logical."
Theme 2	Sub-themes	
Students' perception towards the use of digital GO within metacognitive approach	-Metacognitive planning technique -metacognitive monitoring -Metacognitive evaluation technique	-"Brainstorming helped me generate related words and vocabularies I could use in my presentation." -"LS app allowed me to monitor my accomplishments by double checking the ideas in my OP content." -"Accepting one's suggestion needs decision-making but I think those suggestions would somehow be used to make my work better."
Theme 3	Sub-themes	
Enhanced awareness towards self-regulation of learning.	-enabled them to work on their own -self-monitoring -self-evaluating -more matured	-**"**Using digital GO aided me to track my progress and this motivated me more to finish doing my work." -"I became more thoughtful on the choices I was making by balancing ideas I received from my peers"

DISCUSSION

Study findings revealed that using digital GO within metacognitive approach in enhancing the students' OP performance was successful and effective since it yielded a statistically significant result with regard to their OP performance. The intervention likewise aided the students to improve their OP performance in terms of its components namely: clarity, content, fluency and coherence, and delivery, as well as learning how to use the LS app in creating their GO. These gains might be attributed to the fact that using digital GO helped the students to the helpful and orderly processes of organizing their thoughts and ideas to come up with an effective content and concept for their OP performance. This improvement was clearly manifested on their OP performance where they tend to clearly elaborate their ideas and thoughts and produced a more logical and effective presentation by using their GOs which they collaboratively created. In addition, the digital GO aided them to smoothly present their topic because they could obviously see such ideas from their GO during the presentation. The result is in the same vein with the studies conducted by Kurokami & Kojima (2018) and Robillos (2022). The former successfully enhanced the students' ideas by using the app's new feature which extremely aided them to generate ideas and encouraged them to think critically and logically. The latter, on the other hand, aided the students to effectively create their maps they could utilize during their speaking presentation activities.

The students in the present study were told to present their ideas with regard to the topic in front of their peers and by just knowing this thing, they became more nervous and feel more anxious. This feeling of anxiety was increasing because they still needed to generate ideas and organize their thoughts to come up with a content of their presentation. Furthermore, the students needed to consider whether their ideas were coherent and cohesive, well-organized, as well as the style and delivery of presenting the

topic. These things were mentally overloading them during the process and needed to be reduced to facilitate the acquisition of new information (Harrel & Wetzel, 2013; Robillos & Thongpai, 2022; Sweller, 1994). The distinctive attributes of LS app brought the students through various processes which enabled them to present their thoughts in more logical and clearer results. These distinctive attributes also encouraged students to create their own style of presenting their concepts aiding them to be more organized and more logical in performing their OP.

The results from the study also found that the students' likelihood of unsuccessful production of ideas they used during the task processes decreased considerably. Since the participants used a digital GO to present their concept through maps where they could easily insert texts, videos, photos, recorded audios, or graphs, which they could be able to also share to their classmates, thus, helped them to obtain more insights and information. During the collaboration activity, the students had the chance to share their information to their friends and classmates. This gave them a more relaxed feeling and encouraged them to willingly share their ideas, and when their answers were similar with their peers they feel a sense of confirmation which boosts their confidence. In addition, using LS app allowed the students to work on their own; however, the present study implemented the intervention within metacognitive approach involving three stages such as planning, monitoring and evaluation. With those stages, the students were guided to collaborate and interact together as they plan, monitor their performance and evaluate their work for future tasks. The results are in congruence with Panggabean & Trissanti (2020) reporting that when learners learn how to plan and how to monitor and assess their task and accomplishment, they could take on more duties for their learning which is vital for an individual learner and can be considered as one main ingredient towards self-regulation This notion is supported by Robillos & Thongpai (2022) claiming that learners who metacognitively plan, monitor, and evaluate on their own learning enable them to make better and conscious decisions to improve their learning

Additionally, the study findings showed that using LS app enhanced the students' interests for accomplishing OP tasks, managing their own learning, and involving themselves to active and constructive procedures. It was revealed further that those who worked in groups during the intervention affected significantly their OP performance as manifested in the interviews conducted. Results of the study are in consistent with previous studies reporting that the learning outcomes following collaborative tasks increased creativity and complexity of learners' production (Pierson, 2015) heighten peer connection and participation (Lowenthal & Moore, 2020), foster communication engagement (Barlett, 2018; Edwards & Lane, 2021; Petersen et al., 2020), and increased confidence and awareness of using technological applications (Robillos, 2023). Barlett (2018) posits that when students communicate and interact better with each other, they can establish a stronger sense of classroom community, which can help them persist and be more effective in their courses.

With regard to students' self-regulation of learning awareness, four out of six components revealed a significant relationship with the their OP task performance. This might be anticipated to them because prior to the implementation of the intervention, a traditional EFL classroom was being practiced where the students were not given a time

and opportunity to share their difficulties and accomplishments to their peers which is considered a potential activity to improve not only their oral presentation processes but also boost their confidence and interests which in turn might help them to be self-regulated to learning. Zimmerman (2008) claimed that the vital phases to enhance SRL start from collaboration, monitoring, and self-evaluation.

The results in the interview questions provided more comprehensive insights into how learners' OP task performances were facilitated as well as enhancing their self-regulation of learning awareness using LS app within metacognitive approach. There were three themes emerged:

The first theme was on the students' use of LS app in facilitating their OP task activities. The app exposed them to practice using English language more effectively. In fact, the app required them to collaborate and share their created maps with their classmates and that it encouraged them to use the English language to share their ideas and views which consequently aided them to use the language effectively. One student (S2) conveyed: "working in groups is very helpful for me because it exposed me to share my ideas and train myself to use English language in real situations. The collaboration with their peers helped them to understand more ideas related to their content and concept which they could use during their OP task activity. Furthermore, when the students were asked about the use of the app, they felt that they could produce a better visual representation of their thoughts which aid them to improve their OP performance. As one student (S12) narrated: "I could easily add information by inserting videos or record an audio and immediately insert it to my map. Deleting unrelated ideas is not also a hassle thing". When the participants created their concepts and ideas using digital GO, it enabled them to comprehend the content clearer and more logical. Since the LS app helps them to easily rearrange their ideas as well as the information they obtained from their peers' GOs and that it helped them to grasp deeper and more meaningful concept/s. As one student (S11) stated: "Using LS app aided me to chunk complex ideas into smaller ones which helped me link one idea to another and that made my output more coherent." Apart from texts, the LS app allows students to incorporate related videos, audios, and pictures to enhance the concept of their content. As one student (S17) narrated: "I could be able to insert videos, audios, or photos, in my map which I considered necessary to make my presentation more meaningful and more substantial."

The second theme talked about students' perception in using LS app within metacognitive approach. One metacognitive planning technique that was used in the intervention was to activate the students' prior knowledge before they proceed to do such OP tasks. This planning technique enabled them to make connections to the new topic. One student (S3) stated that "the brainstorming technique that we used as a planning activity activated my prior information which I could link to the new topic which helped me generate related words and vocabularies I could use in my presentation." Furthermore, when LS app was used by the students during OP task making, they were assisted to achieve an effective OP task composition because they did not have to come up with quick fixed answer, but they could revise or edit their work whenever they wanted to, before coming up with one final map to be used in their OP presentation. One student (S15) made the best use of the app by trying to self-monitor

her ideas by going back twice or thrice around. As she stated: "LS app allows me to go back and forth even how many times I wanted to, just to double check my ideas. Double checking helped me monitor what I accomplished and what to do more to complete the task."

During the creation of maps until revision stage, using digital GO helped them to not only map their ideas but also allowed them to share their ideas to their classmates and their teacher to make the information more complete and more effective. As one student (S13) revealed: "I became more watchful in using my grammar due to the helpful suggestions of my friends and classmates and to the helpful comments and suggestions of my teacher apart from the editing checklists that evaluated whether my task was already completed or not". Edited

The last theme (Theme 3) that emerged involved the students' enhanced awareness their self-regulation of learning. The participants were exposed to use the different metacognitive stages such as planning, monitoring and evaluation in facilitating their OP tasks activities. This eventually made them know how to manage such OP difficulties when they studied on their own: As one student (S2) expressed: "After I was provided with the intervention, I learnt to self-regulate my task and had a better OP performance. Actually, if challenges would be encountered again, I think I could be able to manage it myself.". Students in the present study have tried to self-monitor their ideas and information they had in their map by going back twice or thrice around. As one student (S15) expressed: "The app allowed us to go back even how many times we wanted to check our map. This helped me monitor by double checking every single part of my concept and that to see if it was already complete".

With regard to self-evaluation, the participants expressed that the effective use of digital GO aided them to evaluate their own accomplishments whether successful or not, made them more eager to continue doing their best to attain their goal. As one student (S17) stated: "Using LS app aided me tracked my progress and this inspired me to finish doing my work." In addition, the participants became more matured as they manifest better decision-making in mapping their ideas throughout the process. They also became more enthusiastic to objectively asked questions even if the findings did not support one's preconceived opinions. As students (S11) and (S19) conveyed respectively: "I became more thoughtful on the choices I was making by balancing the ideas from my peers." and "Sometimes it's hard to accept one's decision but I those suggestions would somehow be used to make my work better."

CONCLUSION

The present study is a classroom-based study that explored the impact of harnessing digital GO within metacognitive approach on students' OP performance and awareness of their self-regulation of learning. Study findings indicate that implementing digital GO within a metacognitive approach benefited both the EFL learners and teachers. Results of the study provide practical evidence that students' OP performance in terms of four components such as clarity, content, fluency and coherence, and delivery was significantly improved. The component on "content" was found the most improved whilst the component on "fluency and coherence" was found the least improved one.

Furthermore, the students' self-regulation of learning awareness is likewise enhanced. They tend to become more self-regulated in terms of planning, self-monitoring, evaluation, and self-efficacy except of the two SRL components namely "reflection" and "effort".

The present study was not intended to fit fully quantitative expectations since it did not use two-group experimental design (*i.e.,* control and experimental groups), so there was no control over external factors or variables such as exposing themselves talking to native English speakers or out-of-class English speaking tutorials which could possibly affected learners' OP performance. Furthermore, studies concerning oral presentation activities using digital GO within metacognitive approach should also be implemented in the elementary and secondary educational institutions to be able to gain more understanding on students' self-regulation in OP task activities that enable them to go through in an encouraging learning involvement.

The results of the present study, therefore, suggest that utilizing digital GO within metacognitive approach in the EFL classroom can be advantageous to students since they can learn how to present their topic orally using a digital GO which can boost their communication with their peers, enhance their self-regulation of learning, and empower their confidence especially if they deal with OP challenges.

Finally, this study provides a beneficial pedagogical approach to improve oral presentation lessons and activities suggesting teachers to consider using a digital GO within a systematic and tactical approach, *i.e.,* metacognitive approach, to OP task/s in the EFL classroom. It is believed that when learners are guided what to do when faced with challenges and are taught how to deal with those challenges will likely be more successful in completing the task and more likely to willingly accept commitments themselves.

REFERENCES

Ausubel, D.P., Noval, J.D., & Hanesian, H. (1978). *Educational psychology: A cognitive view*. New York: Holt, Rinehart and Winston.

Bartlett, M. (2018). *Using Flipgrid to increase students' connectedness in an online class.* eLearn Magazine. https://elearnmag.acm.org/archive.cfm?aid=3236703

Bozorgian, H. (2014) Less-skilled learners benefit more from metacognitive instruction to develop listening comprehension. *International Journal of Research Studies in Language Learning*, *4*(1), 3-12 https://doi.org/10.5861/ijrsll.2014.748

Creswell, J. W., & Plano-Clarch, V.L. (2011). *Designing and conducting mixed method research.* (2nd ed.), Sage Publications, Inc.

Davies, M. (2011). Concept mapping, mind mapping and argument mapping: what are the differences, and do they matter? *Higher Education, 62,* 279-301.

Davies, W. M. (2014). Computer-aided argument mapping as a tool for teaching critical thinking. *International Journal of Learning and Media*, *4*(3-4).DOI: 10.1162/IJLM_a_00106

Davies, M., Barnett, A., & van Gelder, T. (2021). Using computer-assisted argument mapping to teach reasoning to students. In J. Anthony Blair (ed.), *Studies in Critical Thinking (2nd Edition).* Windsor, ON, Canada: Windsor Studies in Argumentation. pp. 115-152

Edwards, R.C., & Lane, P.N. (2021). Facilitating student interaction: The role of Flipgrid in blended language learning. *Computer Assisted Language Learning Electronic Journal, 22*(2), 26-39. https://doi.org/10.1177/0091552111416227

Harrel, M., & Wetzel, D. (2013). Improving first-year writing using argument diagramming. In M. Knauff, M. Pauen, N. Sebanz, and I. Wchsmuth, *Proceedings of the 35th Annual Conference of the Cognitive Science Society* (pp. 2488-2493). Austin, TX: Cognitive Science Society.

Kimura, A., Kurokami, H., & Horita, T. (2017). Comparison of Analogue and Digital in Producing and Organizing Information Index (published in Japanese). *Proceedings of the 5th Annual Conference of Japan Society of Digital Textbook*, 13-14. Retrieved 2017 July 4 from https://www.jstage.jst.go.jp/article/jsdtp/5/0/5_13/_article/- char/ja.

Kurokami, H. & Kojima, A. (2018). Development and effectiveness of digital graphic organizers. *International Journal for Educational Media and Technology*. *12*(1), 57-64.

Lowenthal, P.R., & Moore., R.L. (2020). Exploring student perceptions of Flipgrid in online courses. *Online Learning*, *24*(4), 28-41. https://doi.org/10.24059/olj.v24i4.2335

Malmir, A., & Khosravi, F. (2018). The effect of argument mapping instruction on L2 writing achievement across writing tasks and writing components: A case of Iranian EFL learners. *Applied Research on English Language*, *7*(4), 515-540.

Malone, J., & Dekkers, J. (1984). The concept map as an aid to instruction in science and mathematics. *School science and mathematics*, *84*(3), 220-231.

O'Malley, J.M., & Chamot, A.U. (1990). *Learning strategies in second language acquisition*. Cambridge, UK: Cambridge University Press.

Panggabean, C.I.T. & Triassanti, R. (2020). The implementation of metacognitive strategy training to enhance the EFL students' oral presentation skill," *English Education Journal of English Teaching and Research*, 5(1), 32-40

Petersen, J.B., Townsend, S.D.C., & Onaka, N. (2020) Utilizing flipgrid application on student smartphones in a small-scale ESL study. *English Language Teaching, 13*(5), 164-176. https://doi.org/10.5539/elt.v13n5p164

Pierson, S.J. (2015). Bridges to Swaziland: Using task-based learning and computer-mediated instruction to improve English language teaching and learning. *The Journal of Teaching English with Technology, 15*(2), 105-119. https://www.tewtjournal.org

Pintrich, P. (2000). The role of goal orientation in self-regulated learning. In M. Boekarts, P.R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 451-502). San Diego: Academic Press.

Robillos, R.J. (2021). Learners' writing skill and self-regulation of learning awareness using computer-assisted argument mapping (CAAM). *The Journal of Teaching English with Technology, 21*(4), 76-93.

Robillos, R. J. (2022). Impact of loilooNote digital mapping on university students' oral presentation skills and critical thinking dispositions. *International Journal of Instruction, 15*(2), 501- 518. https://doi.org/10.29333/iji.2022.15228a

Robillos, R. J., & Thongpai, J. (2022). Computer-aided argument mapping within metacognitive approach: Its Impact on students' argumentative writing performance and self-regulated learning. *LEARN Journal: Language Education and Acquisition Research Network, 15*(2), 160-186.

Robillos, R. J., & Bustos, I. G. (2022). Learners' listening skill and metacognitive awareness through metacognitive strategy instruction with pedagogical cycle. *International Journal of Instruction, 15*(3), 393-412. https://doi.org/10.29333/iji.2022.15322a

Robillos, R. J. (2023). Improving students' speaking performance and communication engagement through technology-mediated pedagogical approach. *International Journal of Instruction, 16*(1), 551-572.

Schunk, D. H. & Zimmerman, B. J. (2012). Motivation and self-regulated learning: Theory, research, and applications. Oxford, UK: Routledge.

Slavin, R. E. (2011). Educational Psychology: Theory and Practice. NY: Pearson.

Sweller, J. (1994). Cognitive load theory, learning difficulty, and instructional design. *Learning and Instruction, 4,* 295-312

Toering, T. T. (2011). *Self-regulation of learning and the performance level of youth soccer players.* Groningen: UMCG. s.n.

Tsang, A. (2020). Enhancing learners' awareness of oral presentation (delivery) skills in the context of self-regulated learning. *Active Learning in Higher Education, 21*(1) 39–50, https://doi.org/10.1177/1469787417731214

Vandergrift, L., & Tafaghodtari, H.M. (2010). Teaching L2 students how to listen does make a difference: An empirical study. *Language Learning: A Journal of Research in Language Studies. 60*(2), 470-497, https://doi.org/10.1111/j.1467922.2009.00559.x

Zimmerman, B.J (2008). Investigating self-regulation and motivation: historical background, methodological development, and future prospect. *American Educational Research Journal, 45*(3) 166-185, https://doi.org/10.3102/0002831207312909

Zimmerman, B. J. (2001). Theories of self-regulated learning and academic achievement: an overview and analysis. In B. J. Zimmerman, & D. E. Schunk (Eds.), *Self-regulated learning and academic achievement: Theoretical perspectives* (pp. 1–37). Mahwah, NJ: Erlbaum.

Živković, S. (2014). The importance of oral presentations for university students. *Mediterranean Journal of Social Sciences, 5*(19), 468-475.