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The effects of a personalized learning plan in a language MOOC on learners' oral presentation skills

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This study explored the impact of a personalized learning plan (PLP) within a language massive open online course (LMOOC) on the oral presentation skills of English as a Foreign Language (EFL) students in Thailand. It also investigated students' attitudes to the LMOOC. The research was conducted with a sample of 178 university students enrolled in a compulsory academic English course, English for Academic Studies. Following the pre-test, in which students delivered an oral presentation, they participated in a five-week LMOOC on English presentation skills, integrated as a blended component of their course. To assess the effectiveness of the intervention, post-test scores were analyzed, comparing students' performance gains from the pre-test to the post-test. Additionally, students' attitudes towards the PLP were explored through a questionnaire and semi-structured interviews. Students demonstrated statistically significant gains in post-test scores across both presentation performance and language proficiency metrics, with greater improvements observed in language proficiency criteria. However, while the pronunciation criterion also showed statistically significant gains, the effect size was small, suggesting a limited practical impact. This finding underscores the need for more explicit instruction and targeted feedback to enhance pronunciation development in the learning process. The students generally expressed positive attitudes toward both the PLP and the LMOOC implementation. The findings suggest that when pedagogically designed and systematically implemented, a PLP within an LMOOC can serve as an effective approach for enhancing oral presentation skills and may contribute positively to the overall language learning experience.

Keywords: language MOOCs, personalization, speaking, academic English, blended learning

Introduction

The rapid global transition to online learning has led to a growing scholarly interest in Language Massive Open Online Courses (LMOOCs) in recent years. This surge in attention reflects the increasing recognition of LMOOCs as a possible learning tool for language education, prompting research into their pedagogical effectiveness, learner engagement, and technological affordances (Díez-Arcón & Martín-Monje, 2022; Jitpaisarnwattana et al., 2022; Sallam et al., 2020). LMOOCs offer significant promise in mitigating key challenges associated with online language learning, particularly in terms of accessibility and cost-effectiveness (Hill, 2012). Their open and scalable nature provides learners with greater opportunities to engage in language acquisition regardless of geographical or financial constraints. In addition to these advantages, a frequently discussed potential of LMOOCs is their capacity for personalized learning (Downes, 2012, 2016). Such discussions often stem from the fact that LMOOCs exhibit a high degree of heterogeneity, as learners often vary in their educational backgrounds, learning objectives, needs, and preferences (Agonács & Matos, 2019). This diversity underscores the importance of adaptable and flexible instructional approaches that can be adjusted to the different profiles and learning needs of language learners. The potential for offering personalized learning experiences was also heightened by the amount of learning data LMOOC participants generate. Such data can be used to create personalized learning pathways/experiences for the participants (Jitpaisarnwattana et al., 2021a).

Personalization in language learning entails offering learners the ability to choose their learning strategies, content, and pace to accommodate diverse individual differences in learning preferences and needs (Godwin-Jones, 2014, 2017). To achieve this, an adaptive learning or a recommendation system has been extensively utilized. These systems tailor instructional content and provide personalized feedback by analyzing learners' profiles and performance within a given course in order to enhance the effectiveness of language learning experiences (Perifanou, 2015; Perifanou & Economides, 2014). Such adaptive systems have been integrated into various MOOCs and LMOOCs to create personalized learning experiences. Despite the hype around the perceived benefits of personalization, empirical studies that examine the impact of personalized learning on language learning are limited, especially in LMOOC contexts. Therefore, the current study aims to address the gaps in research by investigating the effects of a personalized learning plan (PLP) in an LMOOC on participants' oral presentation skills. It also examines the students' attitudes towards the learning plan in LMOOCs. The study is guided by two research questions:

1. What are the effects of a personalized learning plan on students' oral presentation skills?
2. What are the students' attitudes towards a personalized learning plan in an LMOOC?

Personalization

Considered one of the major educational approaches in the 21st century, personalization provides learners with a more tailored approach in content sequencing, learning pace, learning styles, and needs to cater to individual learning differences (Cavanaugh, 2013; Gunawardena et al., 2024). Downes (2016) categorizes personalization in education into two primary forms: “personalized learning”, which involves tailoring instruction to individual needs, and “personal learning”, which emphasizes learner autonomy and self-directed engagement in the learning process. Personalized learning hinges on the principle of using technology to guide learning decisions for learners within a given course. This is to ensure that learning pathways are tailored to individual needs of learners and that learning content is sequenced based on learners’ level of proficiency (Jitpaisarnwattana et al., 2021a). A good example of this type of personalization is adaptive learning. In an adaptive learning environment, learners are presented with different sequences of content based on their language proficiency level and/or prior performance on given learning tasks. This kind of personalization usually leverages learners’ data to curate individualized learning trajectories, ensuring that learners receive content aligned with their proficiency levels and cognitive needs.

The other type of personalization mentioned previously is “personal learning” (Downes, 2012, 2016). Rather than being confined to predefined instructional pathways, this kind of personalization encourages learners to be self-directed and autonomous in making learning decisions by themselves. In other words, personal learning supports rather than provides learning for the learners. They are also encouraged to devise and engage with their own personal learning environments (PLEs). A PLE is a learner-driven digital environment for language learning. It comprises a curated selection of digital tools and resources chosen by the learner to support different aspects of the learning process (Attwell, 2007; Reinders, 2014). Both types of personalization have their own pros and cons. Personalized learning offers learners with structured learning plans that they can follow, while also restricting learners’ autonomy, effectively diminishing their ability to make independent choices. However, although personal learning affords learners with more learning freedom, only highly autonomous learners might be able to capitalize upon the opportunities. To determine which type of personalization is most suitable for a particular context, teachers will need to take several factors into consideration including technological infrastructure, learner traits, learning culture, as well as the nature of the subject matter itself.

Personalization and language MOOCs

In recent years, efforts to improve personalization in education have garnered significant attention, driven by advancements in educational technology. LMOOC environments hold great potential for enhancing personalization

because of their digital infrastructure and flexibility in accommodating diverse pedagogical frameworks. Sunar et al. (2016) conducted a comprehensive literature review on personalization in MOOCs. Three key areas of scholarly inquiry were identified: the demand for personalized learning experiences, proposals for integrating personalization, and the practical implementation of personalized learning strategies. In the last decade, it was clear that the actual application of personalization principles within MOOC and LMOOC environments remains relatively underexplored compared to the other two domains (Jitpaisarnwattana et al., 2022). Within the LMOOC framework, the extensive learning data produced can be systematically analyzed to develop comprehensive learner profiles, which can be used to direct learners towards learning resources, tasks, and activities that are suitable for their language ability (Bull & Wasson, 2016). As mentioned above, one clear example of this is an adaptive/recommendation system where learners receive personalized recommendations for learning materials or structured learning pathways based on their prior knowledge and performance.

In addition to the data-driven personalization, learners in LMOOCs can personalize their own learning by creating their PLEs (Perifanou, 2015; Perifanou & Economides, 2014). They can be supported to create their own PLEs wherein they engage with a diverse array of digital tools and resources and use them to facilitate their learning process (Attwell, 2007; Reinders, 2014). These resources can be drawn from both inside (learning videos, reading materials, discussion forums etc.) and outside (open education resources) LMOOC environments. From a pedagogical perspective, PLEs have frequently been employed within the framework of connectivist MOOCs (cMOOCs) (Downes, 2012, 2016), while recommendation systems and adaptive learning approaches are more commonly integrated into xMOOC (x stands for extended) model, which is more structured than the cMOOC framework. Given the nature of the LMOOC participants in the current study, a personalized learning approach was adopted to create a personalized learning plan based on their profiles and performance in the pre-tests. This is mainly because Thai learners have demonstrated relatively low levels of autonomy and need structured learning plans (references), which poses a challenge for a personal learning approach. Hence, a personalized learning approach is adopted.

Within LMOOC research, the implementation of personalized learning systems remains relatively limited. A notable example is the integration of “Instreamia”, an adaptive learning system, for delivering MOOCs in multiple languages (Bárcena & Martín-Monje, 2014; Godwin-Jones, 2014). The Instreamia platform facilitated personalized learning by offering adaptive feedback and dynamic content sequencing tailored to individual learners. The Open Learning Initiative (OLI) employs cognitive and example-tracking tutors to provide self-directed learning resources across multiple languages. In addition, learner interactions with the system are recorded and utilized to create Open learners’ profiles that can be used to improve the effectiveness of an adaptive learning system (Godwin-Jones, 2014).

A few empirical studies have looked at personalization in the LMOOC

environment. Jitpaisarnwattana et al. (2021a) utilized analytical data to track whether learners followed personalized learning pathways offered to them at the beginning of the course and, if so, how they made use of them. It was found that less than 30% of the participants followed the plan offered to them and that following the pathways was not statistically associated with LMOOC completion. Moreover, Jitpaisarnwattana et al. (2022) investigated learner personalization behaviors within an LMOOC. The study revealed that the primary motivation for learners adhering to personalized learning pathways was the structured sequencing of content. Conversely, those who deviated from the prescribed pathways reported a preference for greater autonomy in their learning process. Despite being a good starting point, these personalization efforts and empirical studies have not yet tapped into the actual effects of personalization on language development. We can say that, despite initial efforts to integrate such approaches, it remains unclear to what extent personalization enhances language learning within the LMOOC context. The current study, therefore, aims to fill this gap to investigate if personalization can have any actual impacts on language development.

LMOOCs and speaking skills

Given the large-scale nature of LMOOCs, it is understandable that many of these courses prioritize the development of receptive skills, such as listening and reading. Research indicates that while LMOOCs can facilitate the acquisition of all language skills, they are more effective for some than others. Vorobyeva (2018) asserts that LMOOCs are particularly well-suited for developing receptive skills, whereas fostering productive skills such as speaking and writing presents greater challenges. For instance, writing requires detailed feedback, particularly with different text types. Speaking presents an even greater challenge, as it is arguably the most difficult skill to develop within an LMOOC, as in other forms of online language learning. As Appel and Pujolà (2021) note, developing meaningful speaking interaction in an LMOOC context remains challenging, from both pedagogical and technical perspectives, since incorporating speaking activities in this context is a highly complex instructional design issue. This may explain why many available LMOOCs do not address this skill on their platforms.

Despite the challenges, the online and large-scale nature of LMOOCs also presents unique learning opportunities. The online presence of large numbers of learners means that both learners and instructors can engage with course content with greater flexibility, reducing constraints related to time and location. However, the level of interaction in most LMOOCs still remains relatively low (Jitpaisarnwattana et al., 2021b; Martin-Monje et al., 2018). In addition, as most learners in LMOOCs are Second language (L2) or Third language (L3) speakers of the target language, there may be limited opportunities for learners to engage in authentic language use and the target culture.

Empirical research on LMOOCs and the development of speaking skills remains limited, with only a few studies addressing this area. Appel and

Pujolà (2021) advocated for the integration of eTandem language learning principles as a design feature in LMOOCs for speaking skills. Seven essential design features for a tandem MOOC were identified, encompassing the learning environment, facilitation dynamics, dyad configuration, task types, task topics, feedback mechanisms, and gamification elements. They emphasized that these features should be considered in the design of LMOOCs intended to foster speaking interaction among learners. It should be noted, however, that the study did not examine the actual effects of eTandem on speaking development. Many studies have underscored the significance of learner interaction in LMOOCs. Jitpaisarnwattana et al. (2021b) investigated the factors influencing learners' decisions to engage or refrain from interacting with peers in an LMOOC that focused on speaking skills. Their findings indicated that a sense of belonging to a group and confidence in using English were primary factors that encourage learners to interact with others in an LMOOC context. Meanwhile, a preference for face-to-face communication, limited language proficiency, and time constraints were the primary barriers preventing them from interacting with others. As can be seen, while existing studies on LMOOCs have examined aspects of speaking, none have specifically explored their impact on learners' speaking development – a gap that the present study seeks to address.

Methodology

Participants

The study participants comprised a cohort of third-year science major students from a public university in Thailand, all of whom were enrolled in a compulsory academic English course, English for Academic Studies, which spanned one semester (15 weeks). The cohort consisted of 178 students, all of whom consented to participate in the study. The students were divided into three groups; however, they were all instructed by the same lecturer. The demographic data revealed that 130 participants were female and 48 were male, with ages ranging from 20 to 22 years. The majority of the learners have been learning English for more than 10 years prior to taking the course. Regarding their English language proficiency, assessments conducted using the university's internally developed English proficiency test categorized 75 students at the A2 level, 92 at the B1 level, and 11 at the B2 level (see Table 1).

Table 1. Demographic information of the learners

Age	F		Gender	F		English language proficiency	F	
	F	%		F	%		F	%
20	40	22.47	Male	48	26.97	A2	75	42.13
21	125	70.22	Female	130	73.03	B1	92	51.69
22	13	7.31				B2	11	6.18

Note. *F = Frequency

“English for Academic Studies” is a mandatory course for all third-year students at the university. It serves as the final English course in the curriculum, following two general English courses undertaken during the first and second years of study. The course offers a total of 3 hours of class time per week over a 15-week period. The course is divided into three sub-modules: 1) academic writing (5 weeks), 2) academic reading (5 weeks), and 3) presentation skills (5 weeks). The first two modules were carried out in class by the course instructor, while the last module was taught through a language MOOC on presentation. In other words, the course was blended with writing and reading taught face-to-face and the LMOOC served as a blended component to develop presentation skills.

The LMOOC

The LMOOC, titled “English Presentation”, is designed to equip learners with fundamental skills for delivering effective English presentations in both professional and academic settings. It was created using Moodle, supplemented with additional plug-ins and a recommendation system. The content of the LMOOC covers essential skills for delivering presentations in English including structuring a presentation, using body language, engaging the audience, creating effective slides, describing figures and expressions, and vocabulary for delivering presentations. There is also a pronunciation scaffolder software (<https://misoton665.github.io/script-annotator/>) embedded to support the students with pronunciation issues (see Figure 1). The structure of the LMOOC is summarized in Table 2 below.

Table 2. The structure of the LMOOC

Module	Learning content	Support system and actions
Module 0	- N/A	- Learners complete the pre-tests - Learners complete the self-evaluation questionnaire - A personalized learning plan (PLP) is generated for learners.
Module 1	- Structuring a presentation	- Pronunciation scaffolder - A PLP
Module 2	- Body language - Engaging the audience	- Pronunciation scaffolder - A PLP
Module 3	- Grammar, vocabulary, and expressions for delivering presentations	- Pronunciation scaffolder - A PLP
Module 4	- Grammar, vocabulary, and expressions for delivering presentations	- Pronunciation scaffolder - A PLP
Module 5	- Creating slides - Describing figures	- Pronunciation scaffolder - A PLP - Learners complete the post-tests

The Personalized Learning Plan (PLP)

The course incorporated a personalized recommendation system, which generated a PLP for learners. These plans were tailored based on learners' profiles and self-assessed proficiency, as determined through a self-evaluation questionnaire. The PLP provides each learner with a unique learning pathway, including recommended learning activities and the types of activities that would be most appropriate for their perceived ability. In other words, the PLP suggests a learning sequence for learners to follow in order to improve their skills. The language of instruction in all video materials was English and learners were required to use English exclusively throughout the course. Although primarily self-paced, the course was structured as a five-week program, with learners being informed of the expected duration upon registration. To determine whether the students followed the PLP or not, the course analytics was used to track if the students actually followed the PLP suggested to them.

Research design and procedures

There are two research stages in this study: experimental study and follow-up study. For the experimental study, this research adopted a quasi-experimental one group pre-test – post-test design. The pre-test asks the students to record a presentation video (5–7 minutes long) on an assigned topic. The students had to submit the video into the system before the intervention began, upon which they received the learning plan. Then they studied in the LMOOC, following their respective plans. The reason why the quasi-experimental one group was adopted was due to the college policy, requiring every student to receive the same teaching input and treatment in all the subjects. So, using this design ensured that the policy was adhered to. As for the follow-up study, a sequential mixed-method research design was adopted and two sets of data, quantitative and qualitative, were collected through two instruments: a personalization questionnaire and semi-structured interviews. At the end of the five-week intervention, the students completed a personalization questionnaire. After receiving questionnaire responses, the researcher analyzed these and invited students who displayed different perspectives to attend the semi-structured interviews.

Instruments

The pre- and post-tests were designed based on the topics related to their profession: nursing. As mentioned above, the tasks were assessed based on two criteria: presentation and language. The presentation rubric consists of three sub-criteria: presentation structure (4%), delivery (3%), and visual aids (3%). The language rubric comprises four sub-criteria: grammar (5%), vocabulary (5%), pronunciation (5%), and coherence (5%). The questionnaire consists of 16 five-point Likert scale items in four categories: effectiveness of the personalized plan, usefulness of the plan, learning motivation, and learning experience. Three open-ended questions were incorporated to enable students to offer

deeper insights into the topics under investigation. To ensure the content validity of the questionnaire, three experts in online language learning reviewed it for item-objective congruence (IOC). The analysis produced a value of 0.937, indicating an acceptable level of validity. In addition, 10 students were invited to participate in semi-structured interviews with the researcher. Selection was based on their questionnaire responses, ensuring the inclusion of participants with diverse perspectives. The interviews were conducted online in Thai and subsequently transcribed and translated by the researcher. To ensure accuracy, the transcripts were back-translated by another faculty member at the university.

Data collection and analysis

Pre- and post-test data were obtained from score reports provided by the course instructor. In both assessments, students were required to deliver a video presentation on two distinct yet familiar topics. The collected scores were analyzed using the Statistical Package for Social Sciences (SPSS) version 30.0. To determine differences between pre- and post-test performance, overall scores and individual component scores were compared using paired-sample t-tests.

The personalization questionnaire was distributed to students via Google Forms following the completion of the post-tests, with all of them submitting their responses. Based on their questionnaire responses, 10 students were selected to participate in Zoom-based interviews with the researcher. Data obtained from the questionnaire were analyzed using fundamental descriptive statistics (frequency, mean scores, and standard deviations). Responses from the open-ended questions and interview transcripts were subjected to thematic content analysis. To enhance the reliability of the coding process, two individuals – the researcher and another English lecturer at the university – independently coded the data.

Ethical considerations and researcher's position

The researcher was also the teacher teaching in the course. When acting as their teacher, the researcher introduced the LMOOC and its features at the beginning of the intervention. During the intervention, the researcher offered technical support and guidance to the participants who encountered technical issues. The role as a researcher only became prominent at the end of the intervention when questionnaires were distributed, and interviews were conducted. Ethical approval for the study was obtained from the ethics committee at Silpakorn University prior to the commencement of data collection. Additionally, learners were provided with a consent form and a participant information sheet before engaging with the LMOOC. The participant information sheet indicates that their learning data and performance in the LMOOC would be used for research purposes. Learners were also informed that participation in the study was entirely voluntary and that they retained the right to withdraw from the research at any stage, even after initial participation.

The effects of a PLP on learners’ oral presentation skills

To examine the impact of the PLP on learners’ oral presentation skills, pre- and post-test scores were analyzed using paired-sample *t*-tests. The results for the overall scores (maximum 30 points) are presented in Table 3 below.

Table 3. Results from the paired-sample *t*-test for the overall pre- and post-test scores

Tests	N	M	SD	t	df	Sig. (p)	Cohen’s d
Pre-test	178	17.15	1.75	-29.55	177	.000	1.58
Post-test	178	20.65	2.17				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

As shown in Table 3, the students had significantly higher overall scores in the post-test (*M* = 20.65, *SD* = 2.17) than in the pre-test (*M* = 17.15, *SD* = 1.75), with a significant difference at the 0.05 probability level, *t*(177) = -29.55, *p* < .001 and a large effect size (*d* = 1.58). Therefore, it can be assumed that after participating in the LMOOC using the learning plan, the students showed overall improvement in their oral presentation skills in the post-test.

Furthermore, the scores for the presentation skills (maximum 10 points) in the pre- and post-tests were analyzed using paired-sample *t*-tests. The results of this analysis are presented in Table 4 below.

Table 4. Results from the paired-sample *t*-test for the scores in presentation criteria

Tests	N	M	SD	t	df	Sig. (p)	Cohen’s d
Pre-test	8	6.24	1.02	-17.61	177	.000	1.03
Post-test	178	7.61	1.17				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

The students scored significantly better on presentation assessment in the post-test (*M* = 7.61, *SD* = 1.17) than in the pre-test (*M* = 6.24, *SD* = 1.02), with a significant difference at the 0.05 probability level, *t*(178) = 10.33, *p* < .001 and a large effect size (*d* = 1.03). This indicates statistically different scores between the two tests, suggesting that, learning through the suggested plan, the students’ performance related to presentation improved in the post-test.

Also, the scores regarding the sub-criteria of the presentation skills including presentation structure (4 points), delivery (3 points) and visual aids (3 points) were analyzed using paired sample *t*-tests. The results are presented in Tables 5, 6, and 7 below.

Table 5. Results from the paired-sample *t*-test for the scores for presentation structure

Tests	N	M	SD	<i>t</i>	<i>df</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Pre-test	178	2.42	0.70	-11.09	177	.000	0.79
Post-test	178	3.06	0.79				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

As seen in Table 5, the students had significantly higher scores on presentation structure in the post-test ($M = 3.06$, $SD = 0.79$) than in the pre-test ($M = 2.42$, $SD = 0.70$), with a significant difference at the 0.05 probability level, $t(177) = -11.09$, $p < .001$ and a large effect size ($d = 0.79$). The analysis indicated that the differences in scores were statistically significant, suggesting that students demonstrated improvement in structuring their presentations following their engagement with the LMOOC.

Table 6. Results from the paired-sample *t*-test for the scores for delivery

Tests	N	M	SD	<i>t</i>	<i>df</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Pre-test	178	1.96	0.43	-2.37	177	.019	0.49
Post-test	178	2.04	0.48				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

It can be seen from Table 6 that the students had significantly higher scores on delivery in the post-test ($M = 2.04$, $SD = 0.48$) than in the pre-test ($M = 1.96$, $SD = 0.43$), with a significant difference at the 0.05 probability level, $t(177) = -2.37$, $p = .019$ and a medium effect size ($d = 0.49$). The analysis revealed statistically significant score differences, indicating that students exhibited improvements in presentation delivery.

Table 7. Results from the paired-sample *t*-test for the scores for visual aids

Tests	N	M	SD	<i>t</i>	<i>df</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Pre-test	178	1.87	0.35	-17.75	177	.000	0.50
Post-test	178	2.51	0.54				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

Regarding visual aids, the students had significantly higher scores on delivery in the post-test ($M = 2.57$, $SD = 0.54$) than in the pre-test ($M = 1.87$, $SD = 0.35$), with a significant difference at the 0.05 probability level, $t(177) = -17.75$, $p < .001$ and a medium effect size ($d = 0.48$). This means that the students significantly

improved their visual aids for the presentation after using the PLP to learn in the LMOOC.

In addition to evaluating presentation skills, a paired-sample *t*-test was conducted to analyze the language proficiency scores (maximum 20 points) from both the pre-test and post-test. The findings from this statistical analysis are detailed in Table 8 below.

Table 8. Results from the paired-sample *t*-test for the scores in language criteria

Tests	N	M	SD	t	df	Sig. (p)	Cohen's d
Pre-test	178	0.91	1.14	-26.45	177	.000	1.07
Post-test	178	13.04	1.48				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

The students scored significantly better on language proficiency criteria in the post-test (*M* = 13.04, *SD* = 1.48) than in the pre-test (*M* = 10.91, *SD* = 1.14), with a significant difference at the 0.05 probability level, *t*(178) = -26.45, *p* < .001 and a large effect size (*d* = 1.07). The analysis revealed a statistically significant difference between the two test scores, suggesting that students’ language skills improved in the post-test as a result of learning through the PLP.

The evaluation of sub-criteria related to language proficiency – namely, grammar (5 points), vocabulary (5 points), pronunciation (5 points), and coherence (5 points) – was conducted through paired-sample *t*-tests. The corresponding results are presented in Tables 9, 10, 11, and 12 below.

Table 9. Results from the paired-sample *t*-test for the scores for grammar

Tests	N	M	SD	t	df	Sig. (p)	Cohen's d
Pre-test	178	2.59	0.49	-12.38	177	.000	0.78
Post-test	178	3.10	0.71				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

The analysis presented in Table 9 revealed that students demonstrated significantly higher scores in grammar in the post-test (*M* = 3.10, *SD* = 0.71) compared to the pre-test (*M* = 2.59, *SD* = 0.49). This improvement was statistically significant at the 0.05 probability level, *t*(177) = -12.38, *p* < .001 with a large effect size (*d* = 0.78). These findings indicate that students’ grammar skills improved following their participation in the LMOOC.

Table 10. Results from the paired-sample *t*-test for the scores for vocabulary

Tests	N	M	SD	<i>t</i>	<i>df</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Pre-test	178	2.76	0.51	-19.13	177	.000	0.85
Post-test	178	3.60	0.66				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

With regard to vocabulary, the students exhibited significantly higher vocabulary scores in the post-test ($M = 3.60$, $SD = 0.66$) compared to the pre-test ($M = 2.76$, $SD = 0.66$). This difference was statistically significant at the 0.05 probability level, $t(177) = -19.13$, $p < .001$ with a large effect size ($d = 0.85$). These results suggest that students' vocabulary use in presentations improved following their engagement with the PLP as part of the LMOOC learning experience.

Table 11. Results from the paired-sample *t*-test for the scores in pronunciation

Tests	N	M	SD	<i>t</i>	<i>df</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Pre-test	178	2.52	0.54	-2.76	177	.006	0.31
Post-test	178	2.59	0.59				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

It can be seen from Table 11 that the students had significantly higher scores on pronunciation in the post-test ($M = 2.59$, $SD = 0.59$) than in the pre-test ($M = 2.52$, $SD = 0.45$), with a significant difference at the 0.05 probability level, $t(177) = -2.76$, $p = .006$ and a small effect size ($d = 0.32$). The analysis revealed statistically significant score differences, indicating that students exhibited improvements in pronunciation. However, the small effect size means that the observed difference may not be sufficiently large to be considered practically significant.

Table 12. Results from the paired-sample *t*-test for the scores for coherence

Tests	N	M	SD	<i>t</i>	<i>df</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Pre-test	178	3.04	0.47	-17.84	177	.000	0.53
Post-test	178	3.76	0.63				

Tests	N	M	SD	<i>t</i>	<i>df</i>	Sig. (<i>p</i>)	Cohen's <i>d</i>
Pre-test	178	3.04	0.47	-17.84	177	.000	0.53
Post-test	178	3.76	0.63				

Note. *N* = number of subjects, *M* = mean of scores, *SD* = standard deviation, *t* = *t* scores, *df* = degree of freedom Sig. (*p*) = significance

The final criterion assessed was coherence, where students demonstrated significantly higher scores in the post-test ($M = 3.76$, $SD = 0.63$) compared to the

pre-test ($M = 3.04$, $SD = 0.47$). This difference was statistically significant at the 0.05 probability level, $t(178) = -17.84$, $p < .001$ with a medium effect size ($d = 0.53$). The findings indicate that students' coherence in presentation improved in the post-test, likely as a result of engaging with the PLP.

Students' attitudes towards the personalized learning plan

Table 13. The effectiveness of the personalized learning plan

		SD	D	N	A	SA	Mean	STD
Q1	F	0	1	40	75	62	4.11	.766
	Percentage	0.0	0.6	22.5	42.1	34.8		
Q2	F	0	2	28	78	70	4.21	.744
	Percentage	0.0	1.1	15.7	43.8	39.3		
Q3	F	0	3	22	90	63	4.20	.714
	Percentage	0.0	1.7	12.4	50.6	33.4		
Q4	F	0	6	27	79	66	4.15	.799
	Percentage	0.0	3.4	15.2	44.4	37.1		
Q5	F	0	2	31	63	82	4.26	.783
	Percentage	0.0	1.1	17.4	35.4	46.1		

Note. F = frequency, SD = strongly disagree, D = disagree, N = neither agree nor disagree, A = agree, SA = strongly agree, STD = standard deviation.

Q1: The personalized learning plan gave me the right level of content that was suitable for my ability.

Q2: The plan gave me the content I found interesting

Q3: The plan was time-efficient to carry out.

Q4: The plan was suitable for my needs.

Q5: Having the personalized learning plan at the beginning gave me a structured way to approach the course.

The five questionnaire items listed above assessed the students' attitudes towards the effectiveness of the PLP. The results showed that most of the students regarded the plan as well-matched to their proficiency level (83.9%) and engaging in terms of content (83.25%). Additionally, the PLP was seen as time-efficient (84%) and aligned with students' individual learning needs (81.4%). Lastly, 81.5% of students reported that the PLP provided a well-structured framework for navigating the LMOOC, facilitating a more organized and guided learning experience.

The qualitative data further supports the quantitative findings, indicating that the PLP provided students with content appropriate to their language proficiency and functioned as a structured learning guideline within the LMOOC. This view was reported in many answers to the open-ended question. For instance, two students stated that:

The activities suggested by the PLP were appropriate for me. They were not too difficult for me to follow, so I felt that it was the right level for me. (Open-ended response, Student 72).

Having the plan at the beginning was very useful for me. In a learning

environment like LMOOCs, it is often difficult for a student like me to know what to do, especially when I started. So, the PLP functioned like a roadmap for me to follow when I learned in the LMOOC. (Interview, Student 7).

Table 14. The usefulness of the plan

		SD	D	N	A	SA	Mean	STD
Q6	F	0	2	17	64	95	4.42	.710
	Percentage	0.0	1.1	9.6	36.0	53.4		
Q7	F	0	1	22	70	85	4.34	.713
	Percentage	0.0	0.6	12.4	39.3	47.8		
Q8	F	0	1	27	62	88	4.33	.750
	Percentage	0.0	0.6	15.2	34.8	49.4		
Q9	F	0	1	25	71	81	4.30	.727
	Percentage	0.0	1.1	14.0	39.9	45.5		
Q10	F	0	1	17	68	92	4.41	.685
	Percentage	0.0	1.1	9.6	38.2	51.2		

Note. F = frequency, SD = strongly disagree, D = disagree, N = neither agree nor disagree, A = agree, SA = strongly agree, STD = standard deviation.

- Q6: The overall personalized learning plan was useful for my learning in the course.
 Q7: The content suggested was useful for my learning in the course.
 Q8: The personalized learning plan was useful for improving my presentation delivery.
 Q9: The personalized learning plan was useful for improving my presentation engagement.
 Q10: The personalized learning plan was useful for improving my language accuracy

Five questionnaire items (listed above) assessed the perceived usefulness of the PLP in supporting students’ learning within the LMOOC context. The findings indicate that the majority of students strongly affirmed the PLP’s value in facilitating their learning, with 89.3% concurring that it was beneficial and 87% acknowledging the relevance of the content recommendations provided. Furthermore, students reported that the PLP contributed significantly to enhancing various dimensions of their presentation skills, including delivery (84.2%), engagement (84.9%), and linguistic accuracy (89.3%).

In answers to the open-ended questions and in the interview, one recurring theme mentioned by several students was that the PLP was very useful in identifying the areas where they needed to improve, as two students stated:

- I think that the plan was very useful for my learning in the course because the plan pointed out the area where I needed to improve. In my case, the plan suggested that I study more about presentation structure and the recommendations provided were very helpful. (Interview, Student 15).
- I liked that the plan specified what I needed to study to improve my presentation skills. It facilitated my learning in the course very well. Like me, my presentation slides (visual aids) were already good, so the plan suggested that I work on other aspects instead. It was a very effective way to learn. (Interview, Student 33).

Table 15. The PLP and learning motivation

		SD	D	N	A	SA	Mean	STD
Q11	F	0	2	30	74	72	4.21	.759
	Percentage	0.0	1.1	16.9	41.6	40.4		
Q12	F	0	2	27	83	66	4.20	.729
	Percentage	0.0	1.1	15.2	46.6	37.1		
Q13	F	0	2	31	68	77	4.24	.774
	Percentage	0.0	2.2	17.4	38.2	43.3		

Note. F = frequency, SD = strongly disagree, D = disagree, N = neither agree nor disagree, A = agree, SA = strongly agree, STD = standard deviation.

Q11: The personalized learning plan motivated me to keep learning in the course.

Q12: The content suggested by the plan was relevant and that motivated me to keep learning

Q13: Because I know exactly what to do in the course, it was easier to motivate myself to learn.

The three questionnaire items stated above were designed to investigate students' attitudes toward motivation in the LMOOC context. The results indicate that the majority of students perceived the PLP as a motivating factor in their learning process, with 83% stating that it encouraged them to continue their studies and 84.7% highlighting the motivating effect of the relevance of the suggested content. Notably, 80.4% of students reported that having a clear understanding of their course tasks through the PLP served as a strong motivator for sustained engagement in the learning process.

As for the qualitative data, many students felt that the PLP recommended the content relevant to them and that motivated them to keep learning in the course, as illustrated by student 7's response to the interview question:

I have taken some MOOCs before, but the experience was overwhelming. I never finished them. There was a lot of useful content, but I was not sure which one I should study. So, the PLP provided to me in this course was good in that it directed me to the content relevant to my needs, so I wanted to keep learning. (Interview, Student 7).

Table 16. The PLP and learning experience

		SD	D	N	A	SA	Mean	STD
Q14	F	0	3	22	74	79	4.29	.746
	Percentage	0.0	1.7	12.4	41.6	44.4		
Q15	F	0	2	20	65	91	4.38	.728
	Percentage	0.0	1.1	11.2	36.5	51.1		
Q16	F	0	2	25	80	71	4.24	.729
	Percentage	0.0	1.1	14.0	45.0	39.9		

Note: F = frequency, SD = strongly disagree, D = disagree, N = neither agree nor disagree, A = agree, SA = strongly agree, STD = standard deviation.

Q14: I had a good learning experience using the personalized plan suggested to me.

Q15: Having a personalized learning plan in an LMOOC improved my learning experience.

Q16: The sequence of content suggested to me made me enjoy learning in the course.

Three questionnaire items (listed above) were designed to examine students' attitudes regarding their learning experiences with the PLP. Descriptive statistical analysis revealed that the majority of students reported a positive learning experience with the PLP, with 86% saying that they had a good experience using the plan and 87.6% affirming that the plan enhanced their learning experience. Additionally, a comparable proportion (84.9%) expressed enjoyment in engaging with the LMOOC, attributing their positive experience to the sequence of content recommended to them.

As for the qualitative data, many students reported the PLP as a factor contributing to their good learning experience in the LMOOC. For example, two students mentioned in the open-ended questions that:

Yes, the plan helped improve my learning experience. It gave me a clear idea of what I had to do in the course and saved me a lot of time in finding out what I had to do. It was really good. (Open-ended response, Student 62).

At first, I was not sure if I would like being told what to do, but as it turned out I really enjoyed it. The suggested content was very relevant to my needs and ability, so I had a good time following the plan. (Open-ended response, Student 47).

In summary, the students thought that the PLP was an effective tool in facilitating their learning in the LMOOC. It was seen as a useful guideline for the students to identify what they needed to improve and to navigate the LMOOC accordingly. Finally, they expressed an overall positive experience in using the PLP to learn in the LMOOC and that the relevance of the content suggested through the PLP helped sustain their engagement in the LMOOC.

Discussion

Following five weeks of engagement in the LMOOC with the implementation of a PLP, students exhibited a statistically significant improvement in their post-test performance, with a large effect size evident in their overall scores. Based on this measure, it is reasonable to assume that the observed enhancement in post-test outcomes was associated, though not entirely, with the learning plan. Furthermore, when analyzed according to specific evaluation criteria, the differences in score gains between the pre- and post-tests were statistically significant, demonstrating a large effect size in both presentation and language proficiency. Notably, the language proficiency criterion exhibited a greater score increase, indicating a more pronounced improvement in this area. With regard to the presentation criteria, students exhibited significant improvements across all three sub-criteria: presentation structure, delivery, and visual aids. However, while presentation structure demonstrated a large effect size, improvements in delivery and visual aids were associated with a medium effect size. As for language proficiency, students demonstrated statistically significant improvements across all four criteria: grammar, vocabulary, pronunciation, and coherence, with the most substantial gain observed in

vocabulary. Nevertheless, while the effect sizes for grammar, coherence, and vocabulary ranged from medium to large, the improvement in pronunciation was associated with a small effect size.

These findings yield several key observations. Firstly, the overall improvement in both presentation and language skills indicate that speaking skills, when augmented by a PLP, can be developed in LMOOC environments. From a design perspective, this underscores the importance of identifying learners' needs and offering personalized learning experiences as essential design elements for LMOOCs aimed at enhancing speaking skills. These features could complement the seven design principles proposed by Appel and Pujolà (2021), further optimizing the pedagogical effectiveness of such courses. While Vorobyeva (2018) maintains that teaching productive skills in LMOOCs remains a challenge, the findings of this study suggest that, with careful instructional design, there is still significant potential for productive skill development within LMOOC environments.

Secondly, the greater improvement in the language proficiency component is unsurprising, given that although the course content addressed both presentation and language skills, the LMOOC remained primarily language-focused. However, it should be noted that improvement in pronunciation was the only criterion that, despite being statistically significant, was associated with a small effect size. From a language development standpoint, this finding is understandable, as pronunciation may require a longer period of instruction to develop compared to other criteria such as grammar and vocabulary, particularly within a short timeframe of 5 weeks. Importantly, empirical evidence from previous studies suggests that participation in an LMOOC can enhance pronunciation comprehensibility (Rubio, 2014). However, the LMOOC in Rubio's study incorporated explicit phonetic instruction and corrective feedback, whereas the LMOOC in the present study relied solely on model presentations and a self-access scaffolding support system. This contrast underscores the critical role of feedback, both automated and human-generated, in facilitating pronunciation development within LMOOC environments.

Regarding students' attitudes, the students reported an overall attitude towards the PLP. They believed that the PLP was effective in supporting their learning in the LMOOC, especially in providing them with relevant content and a structured way to approach the course. This can be attributed to the fact that the plan was generated based on the learners' profiles and self-identified needs, creating the connection between their needs and the generated PLP. Importantly, the learning structure the PLP offered was particularly beneficial for the students in Thai context as they might not be autonomous enough to effectively navigate (the unstructured) learning resources in the LMOOC solely by themselves. This reflects the online learning culture in Thailand and, perhaps, in many Asian countries that a structured and scaffolded learning environment is still essential (Jitpaisarnwattana, 2018; Jitpaisarnwattana et al., 2021a; Treesattayanmunee & Baharudin, 2024). In addition, the students also felt that having the PLP was useful for their learning in the LMOOC both in terms of learning in general and mastering specific aspects of oral presentation



skills. The PLP might have allowed learners to specifically focus on the skills they needed to improve rather than having to study everything in the course. This highlights the benefit of an atomized approach to designing Computer-assisted Language Learning (CALL) courses or activities (Gimeno-Sanz, 2015) that allow students to develop micro-skills they need instead of learning all the required skill sets.

As for motivation, the students perceived the PLP as a motivational tool to sustain their engagement in the LMOOC. This is, perhaps, due to the personalized and structured nature of the learning plan. The fact that the plan was based on self-assessed data means that the plan responded to the students' personal needs. Participating in an LMOOC can be seen as a learning task for the students and the PLP might have added the relevance of the task, especially regarding the content and suitability for their language proficiency. This can encourage the students to see the value of doing the tasks, which is important not only for maintaining learning motivation, but also for facilitating learning achievement (Pintrich & Schunk, 1996; Wigfield & Eccles, 2000). Moreover, the PLP might also offer the students a clear learning pathway and goals, which have been found to positively impact learning motivation, participation, and performance in LMOOC contexts (Conde Gafaro, 2022; Jitpaisarnwattana et al., 2021a). Finally, the students found that having the PLP improved their learning experience in the LMOOC. Again, the fact that their learning needs were addressed might contribute to the reported positive experience. More importantly, as the students had different backgrounds and language proficiency levels, the fact that the PLP suggested and sequenced the content that was suitable for their backgrounds and language ability could also create a positive learning environment for the students. This echoed results from many previous studies in LMOOCs that matching learners with the right level of course was an important part of a good learning experience and the effectiveness of the course (Hsu et al., 2013; Nikiforovs & Bledaite, 2012).

Theoretically, personalized learning is often associated with adaptive learning where students are offered adaptive recommendations as they progress through the course (see applications such as “Duolingo” or “Busuu” as an example). However, the PLP implemented in this study did not actually adapt as students progressed through the course. Rather, the PLP provided students with a possible learning pathway tailored to their profiles and self-identified needs. Essentially, while the former might be considered a strong form of personalization and is based on students' behaviors and performance, the latter is based on students' background and self-perceptions. Despite the majority of personalization systems being adaptive, the implementation of the PLP in this study demonstrated that the other, so-called weaker form of personalization still has a role to play in enhancing not only the effectiveness of language development in LMOOC and CALL environments, but also the learning experience within them. While the PLP may not offer real-time recommendations or adaptive content, it provided learners with a degree of autonomy in their learning process (Downes, 2012, 2016). This is an essential feature in an era increasingly dominated by algorithm-driven educational technologies.

Conclusion

The positive findings of this study offer valuable insights into the development of oral presentation skills in LMOOC environments and the implementation of personalized learning. These results carry important pedagogical implications that warrant further consideration. First, the findings suggest that productive skills can be developed in LMOOC environments, particularly when instruction is focused on a specific aspect of these skills, such as oral presentations in this case. Therefore, teachers or course designers intending to integrate LMOOCs for productive skill development should establish clear, specific, and well-defined micro-objectives to optimize learning outcomes. Secondly, as this LMOOC functioned as a blended component within a broader language course, the positive outcomes indicate that, despite often being positioned as stand-alone courses, LMOOCs can be effectively integrated into existing language curricula. The key lies in identifying or designing an LMOOC that aligns closely with curricular objectives and pedagogical goals. Finally, personalized learning can be an effective approach that teachers and designers should consider when designing a course for a large number of learners with diverse backgrounds as this approach is likely to enhance not only the effectiveness of learning, but also the overall learning experience.

Although a substantial improvement in post-test scores was observed, it cannot be conclusively attributed solely to the PLP. There remains the possibility that students may have been exposed to supplementary input from alternative sources, either deliberately or inadvertently. Additionally, considering the large-scale nature of LMOOCs, this study remains relatively limited in scope ($N = 178$) and is based on a local cohort comprising exclusively Thai participants. Consequently, the findings may not be generalizable to broader populations or diverse contexts. Moreover, the PLP was only implemented for a short period of time (five weeks), which might not be pedagogically adequate for any language improvement to take place. Therefore, a longitudinal study spanning an entire semester should be undertaken to provide more comprehensive insights. Finally, institutional constraints at the study site rendered the adoption of a quasi-experimental design with a control group unfeasible. Thus, future research should consider employing such a design to compare the performance of students who receive PLP with those who do not.

Essentially, this study offers much needed empirical evidence to the LMOOC and MOOC research community regarding the impact of personalization in LMOOC contexts. However, further research is essential to develop a more comprehensive understanding of how and to what extent personalization can be effectively implemented. Future studies conducted in diverse contexts with varied learner profiles are strongly recommended to broaden the scope of existing findings. More importantly, as the PLP proved quite effective in this study, future studies should consider applying the concept with different language skills and in different technological environments.



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