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The Use of H5P to Widen English Lexicon: A Study on Moroccan ESP Students

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ABSTRACT: H5P is an artificial intelligence software that comprises learning content such as presentations, quizzes, interactive videos, and games. This study scrutinizes the role of using H5P in the enhancement of the ESP English Vocabulary of Moroccan Higher Education Students. Based on a convenient sampling and a triangulation model of analysis, one hundred and seventy-five students from the High School of Technology in Khenifra were tested and observed while fifteen teachers were interviewed. The aim of this quasi-experimental study is to analyze the importance of incorporating H5P as an innovative AI synchronously and asynchronously to enrich EST students' ESP vocabulary, which supports language skills mainly writing and speaking. The participants attended different ESP activities using the H5P platform, and the project lasted ten weeks. The data collected were supported by the SPSS software and analyzed to identify the effects of H5P on the participants' impetus and ESP improvement. The outcome also displays that working with H5P during a short period had a relatively significant impact on students' learning sustainability which can empower their language knowledge. Analyses of the questionnaires' responses prior to and after the exposure to H5P reveal the latter significantly contributes to students' ESP vocabulary enhancement. Indeed, the research seeks an alternate teaching approach that would assist students in widening their English vocabulary through novel AI platforms. Teachers may indeed generate novel pedagogies from this paper's outcome. The ultimate results imply that H5P contributes to enriching EFL students' lexicon.

KEYWORDS: H5P, Online Quizzes & Games, English Lexicon, ESP.

1 INTRODUCTION

H5P (HTML5 Package) is an open-source content authoring and publishing platform for creating and sharing interactive as well as engaging web-based content. It provides a user-friendly interface and a wide range of content creators, allowing users to easily develop engaging and interactive learning experiences, presentations, quizzes, games, interactive videos, and more.

H5P is built using web technologies like HTML5, CSS, and JavaScript, and is designed to be easily integrated into learning management systems (LMS), content management systems (CMS), and other web applications. It provides a wide range of interactive content types, including multiple-choice questions, fill-in-the-blanks, drag-and-drop exercises, interactive videos, and more.

One of the key advantages of H5P is its seamless integration with popular content management systems (CMS) such as WordPress, Moodle, and Drupal. This integration allows users to effortlessly embed and manage H5P content within their existing websites or learning management systems, expanding the possibilities for creating interactive and engaging online courses, tutorials, and educational resources.

Further, H5P is so significant and adaptable platform that it radically transforms the way interactive content is created and shared on the web for both learners and instructors. H5P allows educators to design engaging and interactive learning activities that allure students' retention and sustainability. Thanks to its friendly use of interface and extensive range of customizable content types, H5P allows teachers to effortlessly integrate interactive elements into websites, learning management systems, and various digital platforms. From interactive videos and presentations to quizzes, games, and simulations, H5P opens up a world of possibilities, transforming passive consumption into active participation.

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In short, H5P empowers schools and students to create and share interactive content, enhancing the way information is presented and consumed on the web. Its accessibility, versatility, and collaborative nature make it an invaluable tool for educators, trainers, and anyone seeking to deliver impactful and engaging online experiences.

1.1 RESEARCH GAP

The transition of Moroccan students from school to college does not necessarily widen their English lexicon, especially English for Specific Purposes (ESP). indeed, having the ability to communicate in English is a requirement for ESP students, and a specific lexicon becomes a significant language sub-skill to understand, speak, and write in English in addition to the use of English functions appropriately . The mastery of vocabulary is so crucial that students will be able to understand, speak, and write correct English, which facilitates smooth communication . By enriching students' ESP vocabulary, they can decipher specific content and produce texts in the fields . While there is a growing body of research on the use of technology-assisted language learning (TALL) tools for English language instruction, there is a lack of research specifically examining the use of H5P interactive content to enhance English vocabulary acquisition among ESP students.

1.2 SIGNIFICANCE OF THE STUDY

Moroccan ESP students are encountering difficulties in authentic speaking and coherent writing in the target language (English). They presume that vocabulary acquisition is challenging. The latter is due to some factors such as students' lack of motivation in learning vocabulary, limited vocabulary background and context understanding, monotonic teaching methodologies adopted by English instructors, little focus on teaching vocabulary, and absence of pertinent instructional strategies . The study has the potential to contribute to the field of ESP teaching and learning by exploring the potential of H5P to enhance English vocabulary acquisition and promote effective language instruction.

This investigation is hopefully beneficial to overcome the vocabulary difficulties faced by Moroccan university students. The result of this study would be useful as a reference for EFL policymakers and faculty members in Morocco to adapt and adopt the incorporation of H5P and other online game apps into their teaching practice to enhance students' English vocabulary mastery. The finding will also be applicable to English educational researchers who are interested in the use of online platforms to investigate more App usage in language teaching.

1.3 RELATED LITERATURE

Games have an important place in language learning today with the advancement of technology. Boulaid & Moubtassime refer to classroom gamification as "an activity with rules, a goal, and an element of fun" . They enable learners to actively participate in activities and to strengthen their affective reactions such as interest, motivation, and willingness to participate. Furthermore, games often focus on the communicative and functional aspects of language (Gomleksiz, 2005; Yurtseven, 2016). They have positive effects on active participation, allow individuality and competition in learning, and provide opportunities to use language skills in diverse situations (Kartal, 2014). They can be incorporated into classroom activities to provide a funny yet challenging atmosphere and are especially useful to alleviate students' overwhelmed assignments and teachers' monotonous pedagogy.

Thus, game-based learning is an alternative method that promotes an effective language learning environment as compared to traditional methods. Online gamification lessens students' introversion. It allures risk-taking, praises students for their efforts in active participation, contributes to students' self-confidence, invites students to take initiative and diagnose their background knowledge, encourages students to ask questions, helps students to develop their awareness, and corrects their mistakes (Serbu, 2017).

H5P, for example, can be played through different web browsers and mobile devices through its web interface. In September 2013, H5P launched a mobile application for homework. In March 2019, H5P reached one billion cumulative participating players and in the month of May, the company was reported to have 50 million monthly active unique users (Dellos, 2015). Another benefit of H5P is its ability to support various types of interactive content, including interactive videos, presentations, quizzes, games, and more. This flexibility has been noted in several studies as a significant advantage of using H5P for educational purposes. For example, a study by Kharbach and Berrada (2021) found that H5P was particularly useful for creating interactive quizzes, as it allowed for a more engaging and interactive learning experience for students.

The researchers supported the initial idea for H5P, which was to create media where the teacher and the students in a classroom could interact through a quiz in the form of a game where students compete. The aim of the game was to give the answers to the questions on the board, reflected from the teacher's computer, as fast and correctly as possible on their own

digital devices. A chart between questions gave all students' performance and the scoreboard showed the nicknames and scores of the top five students.

Besides, an advantage of H5P is its accessibility features, which have been noted in several studies. For example, a study by Pechenkina et al. (2021) found that H5P was particularly effective in providing accessible content for students with disabilities, such as visual impairments, as it allowed for the creation of content with alternative text and audio descriptions. In addition, H5P has been shown to be an effective tool for improving student engagement and motivation. A study by Gomes et al. (2021) found that students who used H5P-based interactive content had higher levels of engagement and motivation compared to those who used traditional course materials.

However, some studies have noted potential limitations of using H5P, particularly in terms of its learning effectiveness. For example, a study by Caruso et al. (2020) found that while H5P was effective in enhancing student engagement, it did not necessarily lead to better learning outcomes compared to traditional course materials. Overall, the literature on H5P suggests that it is a useful and versatile tool for creating interactive and multimedia-rich content for educational purposes. While there may be some limitations in terms of its learning effectiveness, the benefits of H5P in terms of accessibility, engagement, and motivation make it a valuable resource for educators and content creators.

In short, H5P provides educators and content creators with a cost-effective solution to develop interactive and engaging learning materials. Future research could further explore the specific pedagogical approaches and best practices for maximizing the potential of H5P in different learning contexts

1.4 PREVIOUS STUDIES

H5P has gained significant attention in the educational and e-learning domains due to its versatility and ease of use. Several studies have explored the impact and effectiveness of H5P in various learning contexts. There are few studies that have examined the various aspects of H5P's use in education, such as creating open educational resources (OER), enhancing digital learning, improving engagement and learning outcomes in online classrooms, and assessing the effectiveness of H5P interactive learning activities. These references can provide valuable insights into the application and impact of H5P in educational settings.

To begin with, a study argues that H5P provides a suitable solution for creating such resources due to its versatility and user-friendly interface. Their study put much more emphasis on the importance of accessibility in OER development. It discusses how H5P incorporates accessibility features, such as support for screen readers and keyboard navigation, to ensure that learners with disabilities can engage with the content effectively. They suggest that by using H5P, content creators can easily include interactive elements like quizzes, interactive videos, and interactive presentations, making the learning experience more engaging and inclusive. The study also discusses how educators and instructional designers can customize and adapt H5P content types to suit specific learning objectives and target different learner preferences. Briefly, the study brings to light the benefits of the incorporation of H5P into school activities, for it provides insights into how H5P can be leveraged to create engaging and inclusive educational resources that meet the evolving needs of learners.

In a study by Johnson and Kutzler (2018), H5P was implemented in a university course to enhance student engagement and learning outcomes. The researchers found that H5P modules, such as interactive videos and quizzes, increased student interaction and improved knowledge retention. Students reported higher levels of engagement and satisfaction with the course materials, attributing it to the interactive nature of H5P.

Next, Fischer et al believe that H5P, with its wide range of content types and interactive features, can significantly contribute to enhancing digital learning environments. Their investigation reveals how H5P can be integrated into various learning management systems (LMS) and content management systems (CMS) to create interactive OER. It explores the potential of H5P in promoting active learning, learner engagement, and knowledge construction by allowing learners to actively interact with the content. Further, the study shows how educators and instructional designers can leverage H5P to create interactive quizzes, multimedia presentations, interactive videos, and other interactive activities that enhance learner participation and understanding. The outcome implies that H5P can empower educators to create engaging and effective digital learning resources that align with contemporary pedagogical approaches. It provides practical examples and insights into the application of H5P in various educational contexts, showcasing its potential to promote active learning, engagement, and knowledge construction in digital learning environments.

Similarly, a study conducted by Silva and Baptista (2019) examined the integration of H5P in an online language learning environment. The researchers observed that H5P activities, such as drag-and-drop exercises and fill-in-the-blank questions, promoted active participation and fostered a sense of autonomy among learners. The interactive nature of H5P was found to enhance language acquisition and improve overall learning outcomes.

Furthermore, H5P has also been studied in the context of accessibility and inclusivity. In a research project by Chen and Chiang (2020), H5P content was evaluated for its accessibility features and compliance with web accessibility guidelines. The study highlighted the importance of designing H5P modules that are accessible to individuals with disabilities, ensuring equal access to interactive learning materials.

Later, another study assumes that interactive and engaging activities are crucial for fostering learner motivation, attention, and knowledge retention. The study explores how the H5P framework can be leveraged to create interactive content that promotes learner engagement in an online classroom. The authors discuss various H5P content types, such as interactive videos, quizzes, and interactive presentations, and their potential to enhance learning experiences. They describe how H5P activities were designed and implemented to provide learners with interactive and self-paced learning opportunities. The study also discusses how learner engagement and learning outcomes were assessed through qualitative and quantitative measures. It reveals positive outcomes in terms of learner engagement and learning effectiveness. It highlights how H5P activities, such as interactive videos and quizzes, facilitated active learning and encouraged learners to interact with the content. The authors also found that learners appreciated the interactive nature of the H5P activities and felt more engaged in the online course. The study provides empirical evidence supporting the positive impact of interactive H5P activities on learner engagement and learning outcomes, offering valuable insights for educators and instructional designers seeking to optimize online learning experiences.

Another aspect of H5P that has been investigated is its impact on learner motivation. A study by Wang, Chen, and Xu (2021) explored the use of H5P in a flipped classroom setting. The researchers found that H5P activities, such as interactive presentations and gamified quizzes, enhanced learner motivation and engagement. The interactive and gamified elements of H5P were identified as key factors in stimulating learner interest and promoting active learning.

Again, a recent study claims that H5P, with its interactive content types and customization options, has the potential to improve the quality of online learning experiences. The study examines the influence of H5P activities on knowledge acquisition and retention. It recommends implementing H5P activities in online learning contexts, which implies the potential of H5P interactive learning activities in improving engagement, participation, and learning outcomes in online learning environments. The study displays positive outcomes in terms of learner engagement and learning effectiveness. It indicates that H5P interactive learning activities positively impact learner motivation, participation, and satisfaction. Hence, the study provides empirical evidence supporting the effectiveness of H5P activities and offers insights into their impact on learner motivation and knowledge acquisition.

In summary, the literature review reveals that H5P is a versatile and effective tool for creating interactive content in various educational settings. The studies discussed emphasize the positive impact of H5P on learner engagement, knowledge retention, language acquisition, accessibility, and motivation. However, no prior study has dealt with H5P in relation to the enhancement of the ESP lexicon.

1.5 STUDY OBJECTIVE

This study investigates the effectiveness of H5P-based interactive content in widening the English lexicon for specific purposes among Moroccan ESP students. Accordingly, the researcher believes that the integration of H5P in ESP classroom activities contributes to enriching learners' English vocabulary storage.

The study attempts to find answers to the following research questions:

Q1. To what extent does the use of H5P interactive content improve English language learning outcomes among non-native English-speaking learners?
Q2. How can the incorporation of H5P be important for students' vocabulary?
Q3. What are the challenges of using H5P to widen students' English lexicon?
Q4. Are students and/or teachers satisfied with the incorporation of H5P interactions in the learning process?

1.6 METHOD

An overview of H5P is introduced before delving into the body of the research project. The review was collected from many kinds of resources such as articles from trustworthy academic journals and e-books. The chosen literature was then analyzed and evaluated critically to find the information needed. Three benefits of H5P on the improvement of students' vocabulary are examined. First, this paper suggests benefits from H5P's contribution to motivating students to remain focused and grasp English expressions. Second, the study explains the advantage of H5P regarding the students' vocabulary in context and how

students can use the same word in different linguistic and cultural situations. Third, this project focuses on discussing the importance of H5P in developing students' learning materials and how they can take initiative for their own learning.

The researcher thus uses a pre-test / post-test quasi-experimental design (Fraenkel & Wallen, 2003) to deduce the causal impact of H5P intervention on the learners' vocabulary. A pre-test questionnaire was administered to assess the participants' English for Specific Purposes lexicon before the H5P interaction. An assessment tool was developed for this sake. After the first week, the participants were exposed to H5P interactive activities using a specific English jargon including games and quizzes based on specific content. By the end of the experiment, a post-test questionnaire was administered to the same participants to assess their ESP lexicon. Later the pre-test and post-test scores were compared using SPSS to determine the effectiveness of the H5P interaction in empowering the ESP lexicon. Also, t-tests and ANOVA analysis were resorted to in different research questions and hypotheses.

Furthermore, semi-instructed interviews were conducted with teachers to gather qualitative data on their satisfaction with the incorporation of the H5P interactive activities. This data can complement the quantitative data and provide insights into the learners' experiences and attitudes. While the independent variable stands for H5P game-based learning activities, the dependent variables include EFL students' knowledge and satisfaction with ESP. Both the control and experimental group attended the English course. The former followed the traditional methods while the latter was supported with game-based learning activities.

1.6.1 PARTICIPANTS

This case study comprises sixth-semester Moroccan students enrolled in Aquaculture and Environment Department, Higher School of Technology in Khenifra, Morocco. during the academic year of 2022-2023. There were two groups of students yet attending the same module by the same instructor. The students did not have any previous exposure to H5P or any alike platform. The two classes were assigned to experimental and control groups formed through a simple random sampling method, in which participants had the same probability of being placed in the specified groups (Fraenkel & Wallen, 2003).

Table 1. Distribution of Participants in the Study by Gender and Voc. Mastery

Gender	EG	CG	Total
Female	20 (30.6%)	17 (24.2%)	37 (53.8%)
Male	18 (21.0%)	14 (24.2%)	32 (46.2%)
Level of Vocabulary Mastery			
Beginner	17 (46.0%)	14 (53.0%)	31 (50.0%)
Intermediate	19 (50.0%)	16 (43.0%)	35 (47.0%)
Advanced	2 (4.0%)	1 (4.0%)	3 (3.0%)
Total	38 (51.6%)	31 (48.4%)	69 (100.0%)

Note: EG= Experimental Group, CG= Control Group

As seen in Table 1, there were 69 participants, 31 in the control group and 38 in the experimental group. Although the distribution of these participants by gender was close to each other, female participants (53.8%) were slightly more than male participants (46.2%). The students were studying ESP Module. Almost all participants report that their Vocabulary Mastery is at a beginner and intermediate level.

1.6.2 SETTING

This case study is designed to scrutinize the effects of H5P as a game-based learning activity on students' knowledge and satisfaction with English skills and subskills. It is conducted in the ESP English course, one of the compulsory courses offered to the Aquaculture and Environment Department at the Higher School of Technology in Khenifra. The aim of this course is to enable students to enhance their English speaking and writing skills, which cover listening, vocabulary, and grammar subskills. At the end of this course, students are expected to acquire such skills and widen their English vocabulary in such a way they could communicate smoothly. H5P gamification is incorporated into the ESP Course to provide a setting where participants take an active role in the learning process and interact with each other. For each session, participants are expected to answer at least 20 questions divided into 30 seconds each. The questions are presented in the form of quizzes and jumbles, including pictures, videos, and audio. The emphasis of the games was put more on English vocabulary in context. The winners of each

H5P quiz and game are announced at the end of the session and the three top winners' names are displayed on the podium, and they are referred to as "H5Per of the Week".

1.6.3 DATA ANALYSIS AND PROCESS

The study is conducted in the classes of the sixth-semester ESP Module during the academic year of 2018-2019. Students participate in the study on an intended basis. Pre-tests questionnaires are administered to the students to collect the relevant data for the study prior to their exposure to H5P in the first week of the course. Traditional methods (e.g., narration, question-answer, and demonstration) are employed in the control group. In the experimental group, H5P activities are incorporated starting in the second session.

Table 2. Data Collection Process

Gender	CG	EG
At the Beginning of the Course	Pre-Test (Questionnaires) (1st Week)	Pre-Test (Questionnaires) (1st Week)
During the Course	Traditional Teaching Methods	Game-based activities
At the Beginning of the Course	Post-Test (Questionnaires) (1st Week)	Post-Test (Questionnaires) (1st Week)

2 DISCUSSION

IBM SPSS Statistics 23.0 program is used for statistical analysis of quantitative data. Different statistical tests are used depending on the type of data. Accordingly, an independent samples t-test (i.e., a parametric test) and Mann Whitney-U test (i.e., a non-parametric test) were run for the paired comparison of different groups. A paired t-test (i.e., a parametric test) and a Wilcoxon Signed Rank test (i.e., a non-parametric test) were run for paired comparisons within the same group. The difference between the groups according to the relevant variables was tested at the significance level of $p < .05$.

The researcher investigates if there is a change in the factors of English vocabulary knowledge of ESP sixth-semester students of English before and after exposure to an authentic Open AI platform, H5P. The purpose is also to deduce whether there is a change in the knowledge of some skills mainly listening and subskills such as grammar, vocabulary, and pronunciation before and after working with H5P interactivities. Participants' rates of H5P interactions based on the differences in gender and age are also examined. The gain scores for the pre-test and post-test were used to analyze the third research question (Dimitrov & Rumrill, 2003).

A comparison of the informants' answers in the two questionnaires prior to the exposure to the H5P application and after experiencing the funny live activities reported a significantly greater frequency of participation orientation in the posttest. They also reported significantly greater confidence in their knowledge and skills related to vocabulary background.

Interestingly, most of the questionnaire's items are rated positively by the participants. The latter believe that H5P has made their learning enjoyable, easy to use, and interactive, helping them to understand their ESP better. Undoubtedly, all the four constructed factors that determine learning engagement as described in the literature occur in H5P that lead to student engagement. That is to say, H5P motivates them to take up challenges, is able to control them, absorb the activity, alluring their intrinsic interest and they value the session as a useful activity for learning.

The findings also imply that students accept formative assessment through H5P as a fun learning activity. Students are likely to spend more time on the course if it is enjoyable, engaging, and fun. It is worth noting that students respond positively to learning activities that allow them to interact with their teachers and receive immediate feedback. This can be incorporated into H5P during a teaching session in the classroom.

2.1 Description Of Demographic Attributes

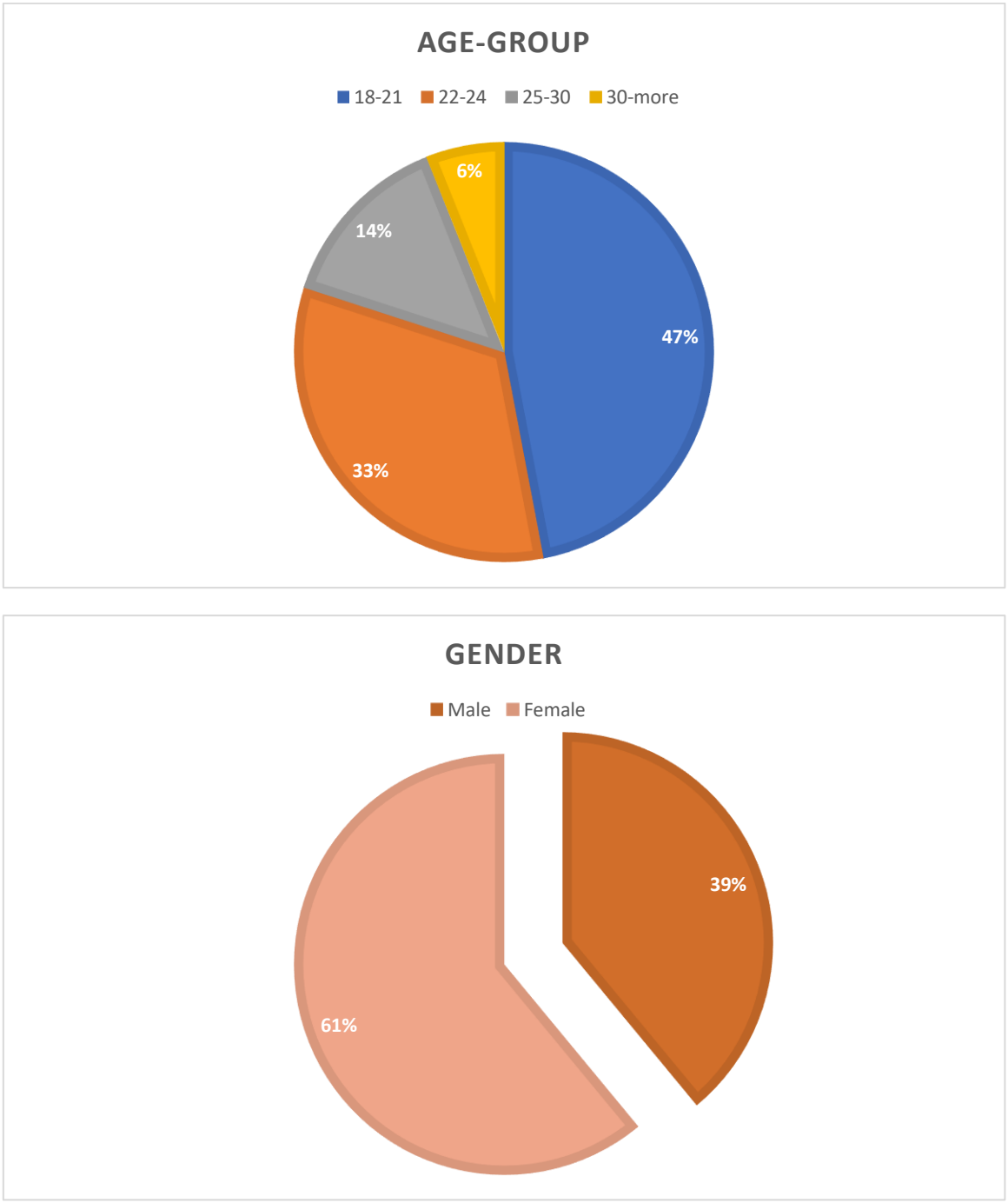

Fig. 1. Description of Demographic Attributes

Figure 1 depicts the demographic constructs for this study. The majority of participants age is from 18 to 21 years old (56% young learners). For gender, 54% of the informants reported female and 46% reported male. For the subject matter, all of the informants are students of ESP (100%). For Mobile Device ownership, a great number of participants report owning at least a smart cell phone (93%) and a personal computer (89%), while more than a half report obtaining a tablet (61%) and a very small number of informants have a smartwatch (13%).

2.2 Description Of Dependent Variables: Awareness Of Open Ai

Figures 2 and 3 (see below) reveal that participants were not aware of the educational role of many Open AI applications such as H5P, Kahoot, Quizlet, PlayPosit, and EdPuzzle, while they are used to working with Facebook and YouTube. This data shows that the rate of participants' awareness changes after their exposure to the H5P experiment (learning with H5P activities).

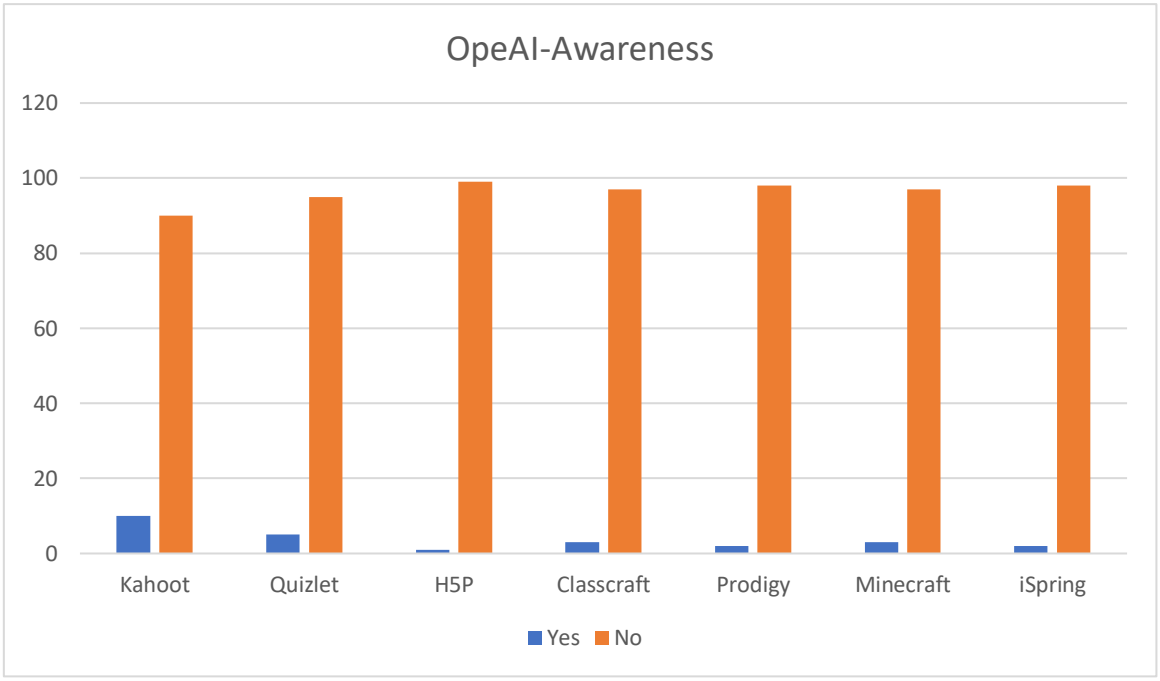

Fig. 2. Students' familiarity with Open AI (before)

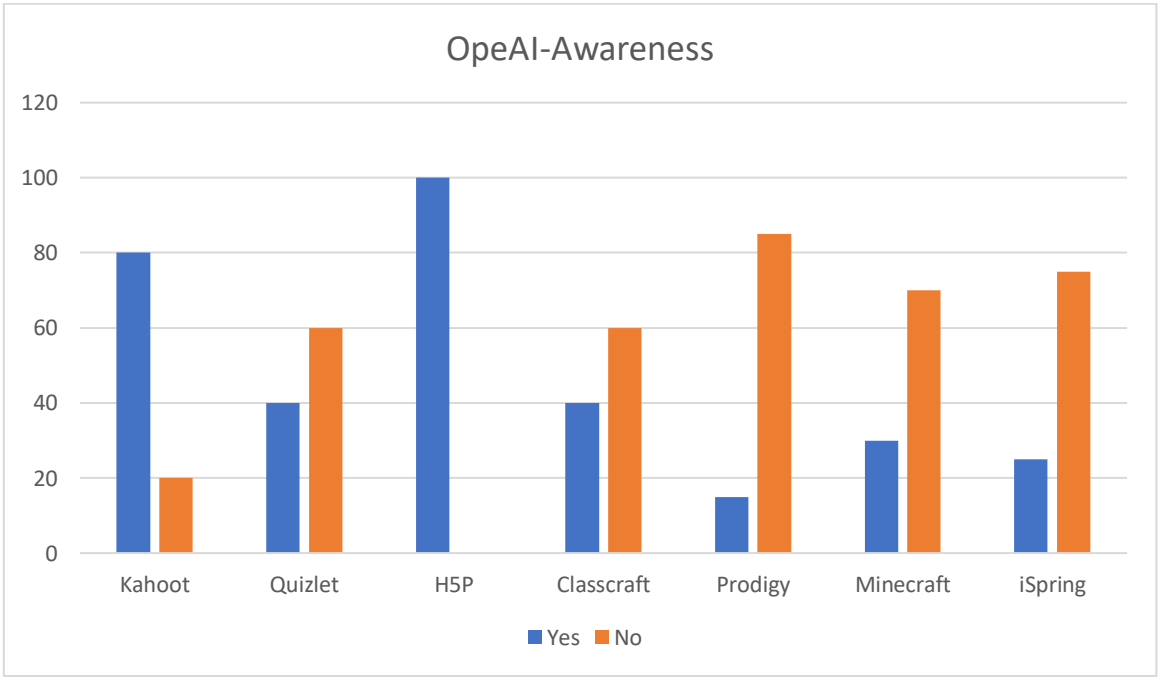

Fig. 3. Students' familiarity with Open AI (after)

2.3 Response About Satisfaction With H5P

A paired t-test was used to compare the participants' pre-survey and post-survey responses to see whether there is any positive significance of the incorporation of H5P. An in-depth comparative analysis of the frequent user and infrequent users of H5P during the 7th week is also conducted through an independent t-test to identify whether the frequency of accessing H5P produced different results. A t-test is usually used in the analysis of data collected from research involving the pre-and-post project (Johnson, 2014). In addition, a chi-square test was conducted to examine whether there was a correlation between the frequency of H5P logging in and reported changes in learners' participation attitudes.

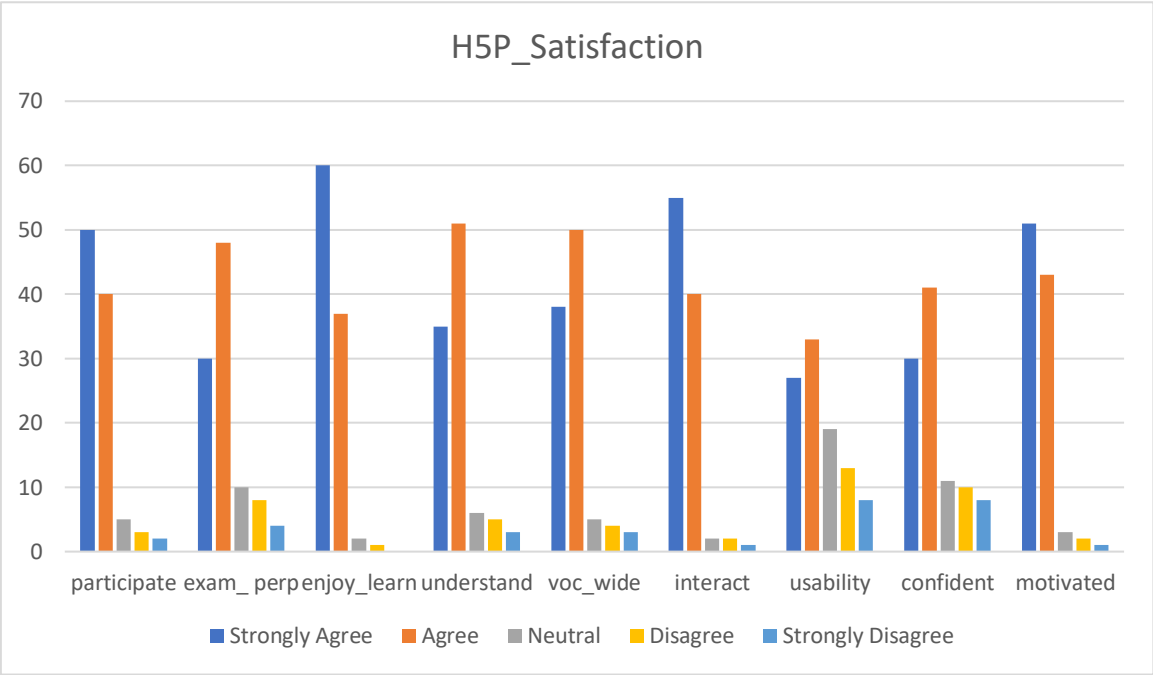

Fig. 4. Students' overall satisfaction with H5P in ESP enhancement

As to learning preferences, more than half of the respondents report preferring both online and face-to-face instruction, while a third of participants report preferring to be instructed through H5P and similar technologies, and a tiny portion report choosing face-to-face instruction only. Other elements related to the participants' vocabulary, positive attitudes, and aptitudes were reported towards H5P gamification, positive attitudes toward the compatibility of H5P Apps with their learning needs' diagnosis and outcomes' evaluation, and positive perceptions of the subjects' expectations of H5P Apps use for ESP and English vocabulary in the post-survey than in the pre-survey.

Interestingly, Figure 4 implies that the H5P contest has a positive impact on the classroom environment and the English for Specific Purposes (ESP) learning outcomes, for most participants confirm that the H5P contest provides an inspiring classroom milieu (92%). Very few participants (3% and 4%, respectively) did not disagree but were indecisive This indicates that the contest creates an engaging and motivating atmosphere for the students, potentially making learning more enjoyable and effective.

Secondly, when it comes to the effects of playing H5P on ESP, the results are overwhelmingly positive, as participants report being highly motivated (96%), taking initiative (89%), and gaining more vocabulary. Furthermore, participants indicate that playing H5P enhances their vocabulary acquisition from class activities (92%). This suggests that the H5P contest effectively facilitates vocabulary learning, possibly through interactive exercises and engaging content. from class activities (92%).

Additionally, a majority of participants (76%) claim that playing H5P helps them prepare well for exams and quizzes. This implies that the contest may contribute to better test performance by reinforcing students' understanding of the material and providing opportunities for practice and review, and prepare well for exams and quizzes (76%), and enhancing basic skills of English (90%). Only 2 % of the students were disagreeing with the positive impact of playing H5P on acquiring extra vocabulary. This implies that the interactive and gamified nature of H5P activities likely stimulates students' interest and encourages them to actively participate in the learning process.

Moreover, participants report that playing H5P enhances their basic skills of English (90%). This indicates that the contest likely supports the development of fundamental language skills such as reading, writing, listening, and speaking. Lastly, while the majority of students agree on the positive impact of playing H5P on acquiring extra vocabulary, a small percentage (2%) disagrees. This dissenting opinion suggests that H5P may not be equally effective for all students when it comes to expanding their vocabulary beyond the core curriculum.

Overall, the data indicate that the H5P contest has a positive influence on the classroom environment, student motivation, initiative, vocabulary acquisition, exam preparation, and basic English skills. These findings suggest that integrating H5P activities into ESP instruction can be a valuable and effective educational approach.

2.4 Response About Vocabulary Knowledge Via H5P

A paired t-test was used to infer the significant variation in the scores of each participant indicating the pre-and-post proficiency (Tavakoli, 2013). The survey's outcomes reveal that participants did not have basic competencies of vocabulary in context and ESP proficiency through the use of H5P before their exposure to H5P activities (see figure 5), while they become not only aware but competent at the use and interaction through such applications after the participation in the project abilities that did not transfer into high skill levels in the use of other technologies. Further, we can note the overall satisfaction of participants with playing/answering the H5P quizzes and jumbles either in classic mode (individually) or in team mode (by group of five max) sequential and competitive games as well as with their loud interactive learning while using H5P.

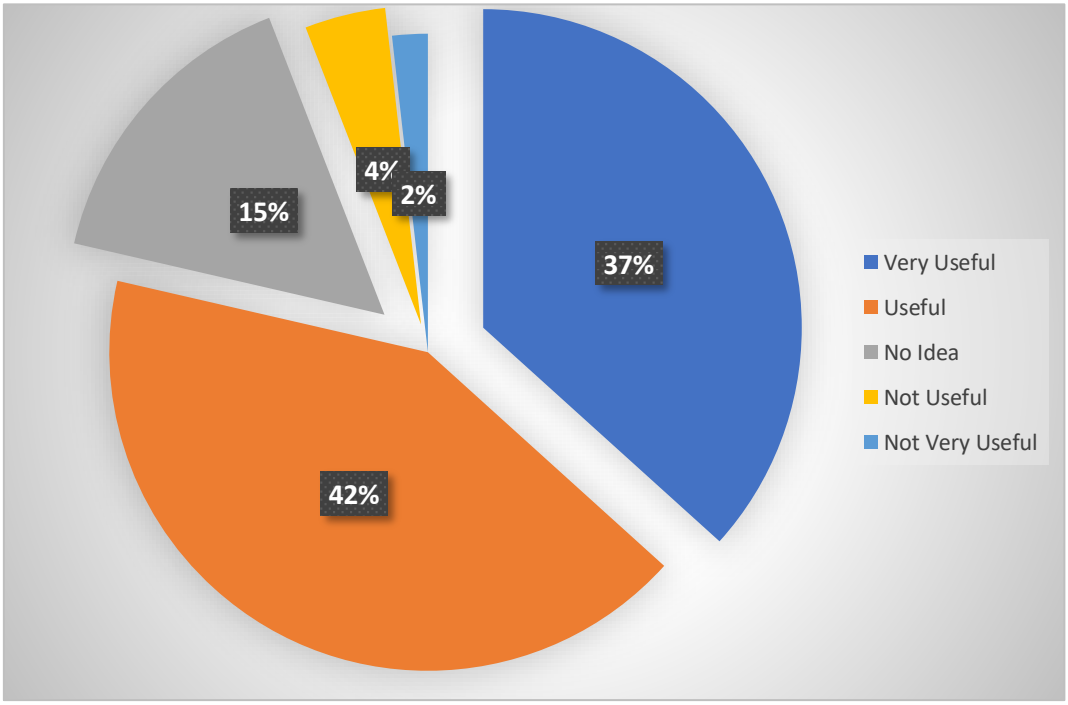

Fig. 5. Percentage of students' Open AI knowledge after experience

Additionally, 25 out of the 38 participants (67%) reported improving their participation. The chi-square test between selfreported frequency of H5P and ESP was significant indicating that the frequency of accessing H5P is correlated with the change in mastering English vocabulary. A closer examination of the data showed that the majority of the frequent users (91%) reported promoting their lexis and thus developing their ESP skills after experiencing H5P interaction. This finding confirms that H5P was reported to have a positive effect on the participants' understanding of new vocabulary especially among the students who frequented H5P.

To spot whether there is a statistically significant difference between the pre-test and post-test means of H5P level of students' knowledge, a two-tailed paired samples t-test is run in SPSS. Such a test provides a mean score of 7.97 with a standard deviation of 14.47. The results of the paired samples t-test yielded a score of 5.37 at a p-value of 0.001 indicating a highly statistically significant difference between the pre-test and post-test means of mastery experience. Therefore, the null hypothesis is rejected.

Independent samples t-test results on pre-test scores of students in the groups for sills and subskills knowledge in English scale are presented in Tables 3 and 4.

Table 3. Comparison between Experiment and Control Groups in English Skills

Gender	Groups	N	Mean	Min.	Max.	SD	t	P
Reading	Experiment	38	2.66	1.0	4.3	0.76	-0.30	0.76
	Control	31	2.72	1.0	4.0	0.81		
Writing	Experiment	38	2.18	1.0	3.3	0.61	-0.69	0.49
	Control	31	2.30	1.0	3.6	0.70		
Listening	Experiment	38	2.55	1.1	4.6	0.84	0.13	0.89
	Control	31	2.52	1.0	4.6			
Speaking	Experiment	38	2.23	1.0	4.2	0.87	0.13	0.89
	Control	31	2.26	1.2	4.0	0.78		

Table 3 displays that the means of speaking sub-factor of students in the experimental group and in the control group was 2.76 and 2.30 respectively. This difference is statistically significant ($p < .05$). Table 4 reveals that the paired t-test results for pre-post test scores of the self-efficacy beliefs scale for English in the experimental group.

Table 4. Distribution of English Skills and Subskills of Experiment Groups

Gender	Groups	N	Mean	Min.	Max.	SD	t	P
Reading	Pre-Test	31	2.66	1.0	4.3	0.76	-1.34	0.19
	Post-Test	31	2.96	1.3	4.5	0.76		
Writing	Pre-Test	31	2.18	1.0	3.3	0.61	-1.39	0.17
	Post-Test	31	2.49	1.0	4.5	0.81		
Listening	Pre-Test	31	2.55	1.1	4.6	0.84	-2.28	0.29*
	Post-Test	31	2.99	2.1	4.0	0.55		
Speaking	Pre-Test	31	2.23	1.0	4.2	0.87	-2.60	0.14*
	Post-Test	31	2.74	2.0	4.0	0.59		

*Note. *p<-.05.*

As seen in Table 4, a statistically significant difference was found between the mean scores of the listening ($t = -2.28$, $p < .05$) and speaking ($t = -2.60$ $p < .05$) sub-factors in the paired t-test results for the pre-test and post-test scores averages of the skill knowledge in ESP in the experimental group. In other words, the scores of the students in the experimental group increased in favor of the post-test between the pre-test and post-test measures of the mean of the listening and speaking factors.

2.5 Interpretation Of The Results

The researcher investigates if there is a change in the factors of satisfaction and competence of students before and after exposure to authentic H5P software. The purpose is also to infer whether there is a change in the scales of students' ESP lexicon before and after interacting with H5P activities. Participants' rates of H5P interactions based on the differences in gender and age are also examined. The gain scores for the pretest and posttest were used to analyze the third research question (Dimitrov & Rumrill, 2003).

A comparison of the informants' answers in the two questionnaires before the exposure to H5P and after experiencing H5P Software reported a significantly greater frequency of participation orientation in the post-test. They also reported significantly greater confidence in their knowledge and skills related to participation readiness.

A paired t-test was used to compare the participants' pre-survey and post-survey responses to see whether there is any positive significance of the incorporation of H5P. In-depth comparative analysis of the frequent user and infrequent user of H5P during the 4 weeks was also conducted through an independent t-test to identify whether frequency of accessing H5P produced different results. A t-test is usually used in analysis of data collected from research involving the pre-and-post project (Johnson, 1978). In addition, a chi-square test was conducted to examine whether there was a correlation between the frequency of H5P logging in and reported changes of learners' participation attitudes.

Data are analyzed to determine means, standard deviations, and significance among the three sequences. These statistics aid in the description of students' and teachers' awareness of H5P tools, frequency of H5P use, satisfaction with H5P interactivity, and their level of proficiency in integrating into the educational setting. Descriptive statistics confirm that there exists a positive impact of H5P software throughout the experiment. This paper provides detailed tables, graphs, and explanations of the data collected throughout the surveys before and after the experiment to deduce insights for ESP students and teachers about H5P's stimuli to widen ESP vocabulary and thus English proficiency.

The regression results confirmed that the four factors combined — Demography, Awareness, Satisfaction, and Competence — explained the significant variance (44.1%) in SDL (adjusted R2). Examining the path analysis results, device ownership (β = 1.313, t =.779), Internet usage (β =.295, t = 4.441), awareness (β =.412, t = 5.890), students' attitudes (β =.295, t = 4.441), teachers' integration (β =.412, t = 5.890), students' competence (β =.295, t = 4.441), and teachers' competence (β =.023, t =.414) in H5P had significant effects on students' ESP lexicon. Therefore, the results of this study combined research hypotheses 1, 2, and 3. R2 for the overall model was 44.7% with an adjusted R2 of 44.1%, a large size effect.

This study analytically deals with the importance of integrating H5P Software in ESP curricula so as to contribute to widening students' lexicon. In so doing, it has clearly stated its aims, provided a comprehensive theoretical background for operationalizing them, adopted validated conceptual frameworks, and, most importantly, made use of a solid mixed-method triangulation design. The path analysis results of students' questionnaires, teachers' interviews, and post-test questionnaire data show that Moroccan ESP students in Khenifra have indeed developed their English vocabulary thanks to H5P interactions. Apart from demographic items, all factors have positive significance towards the role of H5P in the enrichment of students' ESP lexicon. A high rate of responses during the experiment confirms the important role of the integration of H5P in the improvement of students' understanding, yet few informants express their concern with the use of H5P activities. Besides, very few teachers reported having used H5P activities in their ESP teaching process. This reflects how the Moroccan Ministry of Higher Education ignores the educational role of software such as H5P in the reinforcement of students' learning proficiency. In short, the outcome of the current research paper reveals that students of the High School of Technology in Khenifra are strongly satisfied with the H5P interacting games and quizzes, and their English vocabulary became wide.

Figure 6 reveals that a third of the population under study favors H5P interacting activities over other learning style preferences. The Figure also reveals that only 12% of the respondents have a preference for traditional lecturing. Interestingly, more than half of the population (53%) preferred H5P software and traditional lecturing. Students of this preference believe in the importance of combining online software and face-to-face lecturing, while very few respondents did not report any learning style preferences for either H5P or Lecturing. Overall, the data displays that H5P interaction is the most preferred learning style among the surveyed students, with 31% favoring it. However, a significant number of students (53%) expressed a preference for both online and face-to-face learning, indicating a recognition of the advantages offered by each approach.

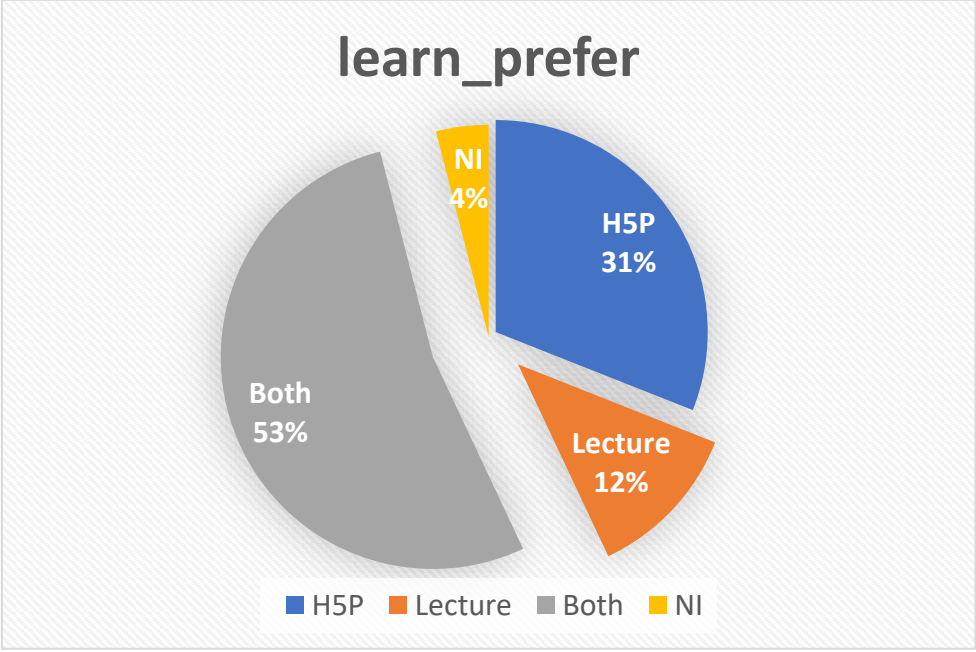

Fig. 6. Learning style preferences

3 IMPLICATIONS AND RECOMMENDATIONS

The incorporation of H5P as an Open AI platform can widen the English for Specific Purposes Lexicon for Moroccan ESP students and hence pave the way for innovative Higher Education Pedagogies. Indeed, this project's result is consistent with the literature on interactive online platforms and their role as a means of students' excitement and engagement in learning (Griffiths, 2002; Anyanwu, 2014; Janssen, 2015). This practical activity is so significant that it confirms a higher presence and engagement, and more retention and sustainability among ESP students inside and outside the classroom. This can also contribute to instructors' formative assessment in the sense that they retain regular feedback and evaluate the understanding of learners in an inspired strategy. More interestingly, H5P guarantees free access, and members can use their own mobile devices to log into the platform. These positive points push teachers of specific English, who wish to shed light on specific jargon, to incorporate this kind of Open AI interactive sites into the curricula of English for specific objectives. Indeed, these new technologies lead to the creation of ground-breaking teaching approaches (Brown, 2016). Briefly, H5P is a free Open AI platform used to create and share interactive content such as quizzes, presentations, and games. This study, then, implies numerous implications and recommendations.

3.1 IMPLICATIONS OF THE STUDY

A number of significant implications can be inferred through the findings of this original paper with the hope of endorsing novel pedagogies and assuring the quality of teaching English vocabulary at Moroccan institutions. Thus, upgrading actions should be considered the sooner the possible in order to cope with the innovative waves worldwide. Above and beyond, the outcomes imply that institutions where English vocabulary is a must are still lagging behind in the incorporation of new technologies such as H5P in the teaching process though the participants in this study report their satisfaction with learning through H5P activities. The results also propose a pedagogical potential H5P and other Open AI technologies may play in the enhancement of students' English vocabulary.

To put it differently, the data suggest that incorporating H5P activities into English for Specific Purposes (ESP) instruction can have a positive impact on students. Teachers can consider integrating H5P activities into their lesson plans to create an inspiring classroom milieu and enhance student motivation, initiative, vocabulary acquisition, exam preparation, and basic English skills. The data shows that playing H5P activities can contribute to vocabulary acquisition from class activities. Teachers should continue to emphasize vocabulary development through H5P and other interactive techniques to enhance students' language proficiency. Additionally, they can explore ways to address the concerns raised by the small percentage of students who disagreed with the impact of H5P on acquiring extra vocabulary.

Besides, the findings highlight the importance of gamification and interactivity in language learning. H5P activities, with their interactive and game-like features, can engage students and make the learning process more enjoyable. Educators can explore other gamified approaches to promote active participation and motivate students in their ESP classes

3.1.1 IMPLICATIONS FOR STUDENTS

The data suggests that playing H5P activities can help students prepare well for exams and quizzes. Educators can leverage H5P to provide opportunities for practice, review, and reinforcement of content covered in class. By integrating H5P activities into their teaching strategies, teachers can better support students' exam readiness and overall academic performance.

Students who are involved in interactive online activities such as H5P are more likely to hone their learning commitment and enthusiasm in the sense that they enjoy interactive and engaging ways of learning. This indeed contributes to increasing their participation and experiencing a more positive class. Further, H5P content is so accessible that even students with disabilities can integrate fully into classroom activities. H5P comprises elements that allow the generation of content that is reachable to learners with visual, auditory, and other disabilities.

Students can customize H5P activities that meet their interests. This can help to improve learning outcomes by providing activities that are tailored to the student's learning style and pace. In short, H5P is easy to use and does not necessitate any prior programming skills. Teachers and students can swiftly generate interactive content, which makes it a fitting instrument for different classroom activities.

Indeed, the dissenting opinions expressed by a small percentage of students regarding the impact of H5P on acquiring extra vocabulary highlight the importance of recognizing individual differences in learning styles and preferences. Teachers should be mindful of adapting their instructional approaches to meet the diverse needs of students, ensuring that alternative methods are available for vocabulary expansion if H5P alone does not cater to every student's requirement.

3.1.2 Implications For Faculty Members

The findings of this study have important implications for teachers and students who intend to use new technologies like H5P in their teaching/learning English vocabulary in context. They should know that Open AI such as H5P plays a crucial role in education, communication, motivation, goal setting, and so forth. In that, Faculty members are supposed to develop positive attitudes and perceptions of the perceived usefulness and ease of use of Open AI technologies like H5P among their students.

One pertinent implication is that teachers can use H5P for formative assessment. The most widely agreed definition is that formative assessment seeks to determine how students are progressing toward a certain learning goal. The overarching goal is to monitor student learning to provide ongoing feedback. That feedback, in its turn, can be used by teachers to improve their teaching and by students to improve their learning, depending on their individual needs, strengths, and weaknesses.

Faculty should regularly assess the effectiveness of H5P activities in achieving desired learning outcomes. They can collect feedback from students, monitor performance, and make adjustments based on the data collected. By evaluating the impact of H5P on student engagement, motivation, and learning outcomes, teachers can refine their instructional approaches and enhance the overall effectiveness of using H5P in ESP instruction

They can also consider incorporating H5P activities into their instruction to create an inspiring classroom milieu. The interactive and gamified nature of H5P can help engage students and create a more motivating learning environment. Teachers can explore different types of H5P activities, such as quizzes, interactive presentations, or interactive videos, to cater to different learning styles and promote active participation.

The findings highlight the positive impact of H5P on vocabulary acquisition. Teachers can use H5P activities to facilitate vocabulary learning by designing interactive exercises, word games, or flashcards. It is essential for teachers to consistently integrate vocabulary-building opportunities throughout their ESP lessons using H5P, reinforcing key terms and concepts relevant to the subject matter.

Moreover, H5P activities can facilitate time management, which permits teachers to use pre-made H5P activities, as well as customize their own activities that can be recycled later. This allows teachers to accomplish more classroom tasks, while students can complete activities independently, freeing up class time for other activities. In brief, the incorporation of H5P in classroom activities can have many positive implications for both teachers and students, including enhanced engagement, personalized learning, accessibility, increased collaboration, and time-saving.

Briefly, Faculty members may benefit from the implications of this data by incorporating H5P activities to create an inspiring classroom environment, foster student motivation, enhance vocabulary development, support exam preparation, cater to individual differences, and continuously evaluate and refine their instructional approaches.

3.1.3 Implications For Policymakers

For quality assurance in higher education, stakeholders and policymakers are invited to enhance the transition from a lecture-based format to a problem-solving approach requiring self-directed, small-group work (see also Trevitt and Sachse-Åkerlind, 1994).

Policymakers may infer a number of relevant recommendations from the outcomes of the current research paper. In that, they are required to establish comprehensive professional development methods focusing on the arrangement of effective teaching training. Such professional strategies should concentrate on ongoing training targeting the necessary skills that could help teachers to make successful integration of H5P as an Open AI educational purpose.

This is a wake-up call for Policymakers to invest in the necessary technology infrastructure, including hardware and software, and to support the use of Open AI software such as H5P in learning curricula. This includes ensuring that schools have access to high-speed internet, computers, and mobile devices. Within the same framework, teachers are supposed to find and attend continuous training and professional development workshops to become competent in the use of such software. This includes, yet not limited to, training on how to generate, implement, and evaluate interactive H5P quizzes and games.

Policymakers can consider promoting the integration of technology, such as H5P, in educational policies and initiatives. This can include providing resources and training for teachers to effectively incorporate technology into their instruction and ensuring access to necessary technological infrastructure in schools. Policymakers can allocate resources and develop programs that focus on providing professional development opportunities for teachers to enhance their skills in utilizing technology tools like H5P. This can include training sessions, workshops, or online courses that equip teachers with the necessary knowledge and strategies to effectively integrate H5P activities into their instructional practices.

However, Policymakers need to ensure that the use of H5P in classrooms is shielded with privacy and data protection protocols. This includes providing guidelines for gathering and saving students' data and ensuring that H5P activities are protected and conform to appropriate data protection procedures.

Overall, the implications of this data suggest that integrating H5P activities into ESP instruction can lead to an inspiring classroom environment, increased student motivation, and enhanced language learning outcomes. Educators should explore the potential of H5P and similar interactive tools to create engaging and effective learning experiences for their students.

3.2 Recommendations For Future Studies

Subsequent to the literature review, previous relevant studies, data collection, and analysis, and the outcomes' implications, recommendations for future research become ostensible. Indeed, several recommendations are inferred through the findings of this research. For example, future studies are recommended to investigate the role of other Open AI technologies in the enhancement of the other English sub-skills such as Grammar, Idioms, and Transcription. This has to be done with a different sample from a different population to grasp different (or similar) results.

Another recommendation for future researchers is to duplicate the study with students from other departments in other institutions to attain more ideas about the benefit of incorporating Open AI Applications in the learning process. Indeed, through this study, it has become apparent that further interviews and observations may be necessary to obtain data on the actual uses of the applications.

Besides, Future studies can explore the effectiveness of H5P activities on university student learning outcomes compared to traditional classroom lecturing. This can involve conducting controlled experiments or comparing student performance data from classrooms that use H5P and those that do not

Future researchers are also expected to scrutinize the power of H5P activities on student retention and sustainability. This can involve qualitative research methods such as focus groups, interviews, or surveys to gather student perspectives.

Future studies can investigate the process of creating H5P activities and compare them to other Open AI software, including the skills required, the time required, and the effectiveness of different approaches. This can involve conducting surveys or interviews with educators who have customized H5P activities.

4 Limitations Of The Study

The outcomes of this research paper may have limited generalization beyond the specific context in which it was conducted. The study only collected responses from students at one Moroccan Higher Education institution within a small-scale department; other Departments of languages such as Arabic and French, where vocabulary in context is mandatory, might be taken into account. Therefore, the findings may not be representative of students and teachers in different contexts or educational institutions. The small sample size of the questionnaire further restricts the generalizability of the results. The researcher attempts to produce an added value within the norms of scientific investigation; however, the research outcome is not free of some shortcomings and limitations. Caution should be exercised when interpreting the qualitative phase of the questionnaire. This study is based only on the responses from students of one Moroccan Higher Education institution at a small-scale department. Thus, generalizability is limited to students and teachers in similar contexts. Additionally, while the study demonstrates that satisfaction is a significant predictor of the incorporation of H5P as an Open AI Application, it is important to consider that students' attitudes may change in the future as they become exposed to and utilize other Open AI technologies.

5 Conclusion

Currently, the way students learn and connect with others has known a dramatic transformation. What students acquire and how they are instructed is no longer through hard copies and handouts delivered from their teachers. Learning activities are now more accessible and instantaneous. H5P, for example, has become pervasive, and teachers of English are invited to find ways to cope with recent Open AI technologies such as H5P to hone their students' vocabulary. It is thus useful to examine how EFL students are currently broadening their English vocabulary thanks to new Open AI Apps like H5P, and how their teachers could incorporate those Apps efficiently and effectively. The current research study addresses H5P as a tool to which students and instructors have access and how they can use their devices to empower their learning effectively and efficiently. Indeed, H5P is a promising formative assessment tool that is feasible, practical, and makes learning fun and enjoyable (Ismail, et al., 2017). To attain such objectives, scholars have proposed that there is an urgent call for alternate approaches (Goodwin

& Kryratzis, 2012), and these approaches should be based on more "authentic" and "real" communication instead of "limited" (traditional) and "unnatural" interactions (Cook, 1997). The most effective way of having such authentic and real experiences could be easily found in a setting that allows students to interact in a more smooth and funny way. Hence, H5P as a new Open AI App may help EFL teachers to generate opportunities for their students to acquire English vocabulary more successfully. In the present study, a realistic learning setting is erected thanks to the incorporation of H5P-based games. The latter is supported by H5P quizzes and jumbles comprising general English vocabulary, vocabulary in context, and vocabulary per theme offered at the Higher School of Technology in Khenifra, Sciences, Sultan Moulay Slimane University Khenifra in Morocco. According to the findings of this paper, there are significant differences between respondents' interaction through H5P based on awareness, satisfaction, and knowledge. It is possible to conclude that knowledge and satisfaction might be strong factors in the potential incorporation of H5P as an Open AI App in classroom activities. Furthermore, H5P usage, as a media of teaching provides students with ample instructional materials to learn English vocabulary easily and deeply. Using H5P as a means of teaching English activities is useful to enrich students' vocabulary, and it is proposed that English educators should use H5P in their teaching practice in order to strengthen English vocabulary among Moroccan university students. Therefore, "there is a need to prepare and support teachers to meet the pedagogical and technological development requirements of their target audience most effectively and efficiently" (Dabbagh & Fake, 2017, p. 393).

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