



**STUDENTS' ATTITUDES TOWARDS USING DUOLINGO AS  
A SELF-LEARNING ARTIFICIAL INTELLIGENCE-BASED  
APP IN DISTANCE LEARNING DURING THE PANDEMIC IN  
THE UNITED ARAB EMIRATES**

اتجاهات الطلبة نحو استخدام ديولينجو كتنطيق تعلم ذاتي بتقنيات الذكاء الاصطناعي داعم  
لمهارات اللغة الإنجليزية ولغات أخرى كلغة أجنبية في التعلم عن بعد أثناء الجائحة في دولة  
الإمارات العربية المتحدة

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**Abstract:**

The present study aims to measure the students' attitudes towards utilizing an Artificial Intelligence -based app of Duolingo, an English language application in developing English skills as a foreign language among primary school pupils during distance learning during the pandemic. To fulfill the purpose of the study, four instruments were constructed; a questionnaire designed by the researcher to determine the skills needed at this stage, a pre-post English test, and an online interview to measure pupils' attitudes towards Duolingo for a self-learning mode of distance education. The study adopted the survey design, and the validity and reliability of the study instruments were established before their use in the study. The sample of the study consisted of 150 pupils from K-12 across the United Arab Emirates, where 60 pupils represented the fifth grade in primary school in Sharjah and 90 represented other grade levels across the country. The Mobile-assisted language learning (MALL) using Duolingo program training was administered to the first group as a pilot study during the academic year 2019-2020 for 9 months, whereas the other group received the training during a summer camp for two months with additional languages other than English. Results of both groups revealed that Mobile-assisted language learning (MALL) using the Duolingo app led to significant improvement not only in pupils' English as a Foreign Language (EFL), but also an enhancement in their motivation toward learning other languages. In conclusion, the study introduced recommendations and implications for the future of learning English.

**Keywords:** Attitude, Mobile-assisted language learning (MALL), Duolingo, distance learning, self-learning, Artificial Intelligence

## المستخلص:

الهدف من هذه الدراسة هو قياس اتجاهات الطلبة من استخدام تطبيق Duolingo المستند إلى تقنية الذكاء الاصطناعي ، وهو تطبيق للغة الإنجليزية مساعد في تطوير مهارات اللغة الإنجليزية كلغة أجنبية بين طلبة المدارس الابتدائية أثناء التعلم عن بعد أثناء الجائحة. ولتحقيق الغرض من الدراسة ، تم إنشاء أربعة أدوات ؛ استبيان صممه الباحث لتحديد المهارات المطلوبة واختبار اللغة الإنجليزية قبلي وبعدي ، وأخيرا مقابلات شخصية عبر الإنترنت لقياس اتجاهات الطلبة تجاه Duolingo بأسلوب التعلم الذاتي في فترة التعلم عن بعد. اعتمدت الدراسة على البحوث المسحية ، وتم التأكد من صدق وموثوقية أدوات الدراسة قبل استخدامها في الدراسة حيث تكونت عينة الدراسة من ١٥٠ طالبا من K-12 في جميع أنحاء دولة الإمارات العربية المتحدة ، حيث مثلت ٦٠ طالبا من الصف الخامس في المدرسة الابتدائية في الشارقة و ٩٠ طالبا يمثلون مستويات الصفوف الأخرى في جميع أنحاء البلاد. تم تقديم تدريب تعلم اللغة الإنجليزية بمساعدة الأجهزة المحمولة (MALL) باستخدام برنامج Duolingo إلى المجموعة الأولى كدراسة تجريبية خلال العام الدراسي ٢٠١٩-٢٠٢٠ لمدة ٩ أشهر ، بينما تلقت المجموعة الأخرى التدريب خلال معسكر صيفي لمدة شهرين مع المزيد لغات أخرى غير الإنجليزية. كشفت نتائج كلا المجموعتين أن تعلم اللغة الأجهزة المحمولة (MALL) باستخدام تطبيق Duolingo أدى إلى تحسن كبير ليس فقط في اللغة الإنجليزية للطلاب كلغة أجنبية (EFL) ، ولكن أيضا إلى تعزيز دافعهم نحو تعلم لغات أخرى. في الختام ، قدمت الدراسة توصيات وانعكاسات على مستقبل تعلم اللغة الإنجليزية بشكل خاص واللغات بشكل عام.

**الكلمات المفتاحية:** اتجاهات - تعلم اللغة بمساعدة الأجهزة المحمولة (مول) ، دوولينجو ، التعلم عن بعد ، التعلم الذاتي ، تقنيات الذكاء الاصطناعي

## 1.1 Introduction & BACKGROUND OF THE TOPIC AND ISSUE OF RESEARCH

### A. UAE 2071 Vision & Distance Education

The United Nation Reported in August that the COVID-19 pandemic has created the largest disruption of education systems in history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. Closures of schools and other learning spaces have impacted 94 percent of the world's student population, up to 99 percent in low and lower-middle-income countries (U.N, 2021). On the other hand, the official United Arab Emirates UAE) Government portal declared that from March 2020, UAE has implemented distance

learning on all UAE public and private schools and higher education institutions as a precaution to protect students from COVID-19. It also launched smart learning platforms and guidelines and instructions manuals to manage students' behavior in distance learning. UAE offered free satellite broadband services for students in areas lacking connectivity and free home internet connection for families who have no home internet connection. The prompt plan to face the world's pandemic was to ensure the continuity of the government's vision and mission for 'Innovative education for a knowledge, pioneering, and global society.' The minister of Education H.E. Hussain Ibrahim Al Hammadi declared that "The development of the education sector is one of the most important goals of the SDGs. Therefore, providing education to all members of society is one of the key instruments for achieving that objective."

The action was taken to guarantee that vision and strategic goals are in place despite all challenges caused by the pandemic. Therefore, one of the Ministry of Education's Strategic Objectives is to attract and prepare students to enroll in higher education internally and externally, considering labor market needs. Therefore, the ministry's main 2021 target is to reach a zero (0%) percentage of students Enrollment Rate in Foundation Year in university, an indicator that measures the share of local students who have to undergo foundation year (a program usually focusing on strengthening Arabic, English, Math and IT) out of the total local students enrolled in the universities in the same year. This led to a huge investment in core subjects' development including curriculum, teacher professional development, and school leadership recruitments.

#### **B. English Language National & International Framework**

As far as the English language is concerned, a National Unified K-12 Learning Standards Framework has been developed in 2014 for English as an International Language. (EIL). It includes Performance Level Descriptors by Grade; this section focuses on helping teachers interpret a student's level of performance or ability as measured by classroom assessment tools. Four levels of performance are identified.

The framework also provides Recommendations for Implementation; guidance on instructional planning, instructional strategies, and the professional development recommended for supporting the implementation of cross-cutting standards; it describes high-level connections between the UAE English standards, interdisciplinary 21st Century themes, and 21st Century Skills, with multiple connections to learning across grades that ensure college and career readiness for all students through the integration of Science, Technology, Engineering, Arts and Mathematics (STEAM) approach.

As a result, the Emirati School Initiative has developed English as a Medium of Instruction (EMI) in all public schools to prepare students for international competencies reaching higher levels in international educational exams such as PISA, TIMSS and IRLS, etc. to be among the top countries as the English language is universal and the most spoken language in the World (Ethnologue, 2021, 24th edition).

### C. Artificial Intelligence & Technology National Strategy

In addition to the education sector development strategy, the UAE launched the National Program for Artificial Intelligence Building a Responsive Artificial Intelligence Nation (BRAIN). The UAE has a vision to become a world leader in (AI) by 2031, according to the official portal for creating new economic and social opportunities for citizens, governments and businesses and generating up to AED 335bn in extra growth. Therefore, at the annual World Government Summit Meeting in February 2018, the UAE announced key elements of its strategy – a welcoming destination for developing AI products, new education programs and championing good governance.

Furthermore, more nations have come to realize the importance of artificial intelligence (AI) in shaping the economics of the future. With Russia, the United States, and the United Emirates all funding serious efforts to advance AI tech, China has established a three-year program to secure AI as a major economic driver by 2020. This is part

of the nation's overarching plan to become an industry leader in AI by 2030. However, Yoshua Bengio is one of the pioneering developers of artificial intelligence and winner of computing's "Nobel prize". His optimism about machines doesn't extend to humanity. He stated that the progress has been made in machine learning has been pretty amazing, and it can empower almost any sector of society (Revell, 2019)

During the last few years, it has been obvious that there is a great impact of using technology in language learning. The dramatic shift in the language learning processes during recent years led to significant changes in the way teaching and learning may happen. Bader Alharbi 2021 confirmed in his paper that due to the pervasiveness of smartphone and tablets among new generations, they become academically beneficial learning tools .

#### D. LMS & ALEF AI-based Education

His Highness Sheikh Mohammed bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai launched the Mohammed Bin Rashid Smart Learning Program to establish a unique learning environment in schools in 2017. Moreover, The Emirati Ministry of Education has invested in AI -based educational platform and launched the "Alef Platform" in all UAE public schools, which will allow the ministry to use the Alef Platform to achieve its goals of developing a digital education system capable of adapting with all possible changes caused due to Covid-19 pandemic and turn the challenges faced in distance learning into promising opportunities.

#### E. Duolingo Pilot Exploratory Study

Due to the success of AI-based platforms in the education system, the researcher applied a pilot exploratory study using Duolingo, the most AI-based language learning app used in the world to two classes during the academic year 2019-2020 .

The study investigated the impact of AI-based learning on students' motivation, language acquisition, literacy skills development and, self-directed and self-regulation skills. After 8 weeks of implementation,

the results show positive feedback and progress in students' end-of-year achievement and their positive attitude to independent learning using Duolingo.

Consequently, the researcher offered Duolingo on larger scale during a summer holiday. More than 500 participants registered in the summer AI -Language program. Users of different ages and levels joined to learn not only the English language but also other languages. The summary of the users' feedback is highly positive in language learning. However, participants noted that among the main ESL four skills, the speaking skill was the least to develop as a lack of chatbot integration. Moreover, the researcher measured parents' and students' feedback about the ALEF AI-based platform regarding the efficacy of language skills development. A significant number stated that the speaking skill is the least skill that is not supported unlike reading, writing, and listening .

Therefore, the current research aims to find innovative solutions to enhance English language learning by investigating the current practices in distance education to improve the overall performance with a focus on speaking skills as the most affected skill in the educational shift. In his study last January about The Attitudes Towards Distance Learning of Ton Duc Thang University, Teran, 2021 found that teachers think that Speaking skill is the most difficult skill to teach as learners in High school and university students in Vietnam are reluctant to speak through the computer. He also stated in his finding that:

“learner's attitude towards speaking is not positive no matter online learning or face-to-face learning. Learners are not confident in speaking skills, while poor internet connection and sound quality may worsen their pronunciation, which leads to a misunderstanding during speaking practice”.

His results typically describe the same attitude of the students of the current study in the United Arab Emirates Public Primary school despite all efforts to maintain high-quality in teaching and

learning standards. The researcher identifies the lack of confidence among ESL learners in speaking skills before covid-19 during face-to-face and that attitude increased negatively during distance learning. While it could be acceptable for students to communicate by typing in the chat box in other subjects during distance learning in virtual meetings, it is crucial for ESL learners must communicate verbally to practice oral skills in English language classes including vocabulary, grammar, fluency, and pronunciation .

### **Statement of the problem**

Based on the previous studies and the results of the pilot study, the problem of the current research can be stated as follows:

During the pandemic of covid-19, students across the globe faced many challenges to continue their education even in countries that provided distance education, students still faced the challenges of self-learning and self-regulation in the new normal era. As far as English language learning is concerned in primary education, there is a potential that Artificial Intelligence based applications and platforms to help educators and learners to manage their learning and achieve better acquire target skills independently to avoid educational loss in crisis times. However, the main problem to be addressed is whether students are ready to the shift in pedagogy that gives the learners their responsibility for a fully student-centered instruction Therefore, this research analyze more than 100 students' experiences and opinions of their exposure to a such learning environment in English language learning as a foreign language (EFL).

### **◆ Questions of the study**

The main question is:

What are K-12 students' attitudes in the United Arab Emirates towards self-learning to develop EFL skills using AI-based learning apps of Duolingo during distance learning of the Pandemic?

For research purposes this main question can be subdivided into the following questions:

1. What are K-12 students' attitudes in the United Arab Emirates towards English skills development using Duolingo?



2. What are K-12 students' attitudes in the United Arab Emirates towards self-learning in foreign languages learning?
3. What are K-12 students' attitudes in the United Arab Emirates towards Duolingo to enhance their motivation towards other foreign language learning?

◆ **Purpose of the study**

This study aimed at:

1. Identifying students' attitudes in the United Arab Emirates (UAE) towards English skills development using Duolingo.
2. Identifying students' attitudes in the United Arab Emirates towards self-learning in foreign languages learning.
3. Identifying students' attitudes in the UAE towards Duolingo to enhance their motivation towards another foreign language learning

**Literature Review**

**Duolingo & previous studies**

In November 2011, Luis Von Ahn and Severin Hacker developed the free program Duolingo. "Free language education for the world" is its catchphrase. based on its website, more than 30 million users have signed up for it. For English, it provides some languages for non-English speakers as well as others.( Munday, 2016). In his Study, Munday concluded that the fact that students can review the language at their own pace makes the author think that Duolingo can still be a useful complement to any course, whether it be online or in-person. Given the disparities between the two levels of study, it should not account for more than 15% of any course grade and is better suitable for novices.

to keep in frequent contact with the language, I also advise students to complete some of XPs each week, which can now be readily tracked using the new Educator's dashboard in Duolingo. As was already noted, this kind of mobile learning enables students to supplement traditional classroom instruction by offering flexible learning that can improve the learning environment.

Although further research is required, the Duolingo study also implies that it encourages learning outside of the course's requirements. The instructor has also noticed, anecdotally, that 10% or so of students in both groups remained using Duolingo after the semester was through. Thus, even if only for a small number of students, it might still be helpful after the course has ended.

Therefore, the study agrees that further research is needed that can account for the learning that occurred as a result of Duolingo, but based on the comments from the participants in this study, we do not see any disadvantages to putting it into practice.

These results match the study conclusion of Loewen et al., 2019 as he stated that participants demonstrate a positive, moderate link between the amount of time spent on Duolingo and learning gains, and participants improved on L2 tests after of the study. The flexibility and gamification features of Duolingo were generally perceived favorably by participants in terms of how they felt about their experiences, but they also expressed varying levels of study motivation and dissatisfaction with the course materials.

### **Methodology**

This is Survey research and is defined as "the collection of information from a sample of individuals through their responses to questions" (Check & Schutt, 2012, p. 160). This type of research allows for a variety of methods to recruit participants, collect data, and utilize various methods of instrumentation. A survey of 40 questions answered by 100 participants represents different grade levels of k-12 students in public and private schools in the united Arb emirates. In addition, they were interviewed online with open-ended questions and discussed their experience using Duolingo during summer language camp in June-August 2020. To validate the study, another survey was used to collect responses from 50 students in grade 5 who used Duolingo for 9 months for a full academic year. Moreover, triangulation is used which refers to the use of multiple methods or data sources in qualitative research to develop a comprehensive understanding of phenomena (Patton, 1999).

Triangulation also has been viewed as a qualitative research strategy to test validity through the convergence of information from different sources. In this study, the researcher's observations are also collected to validate the participant's input.

## Results & discussions

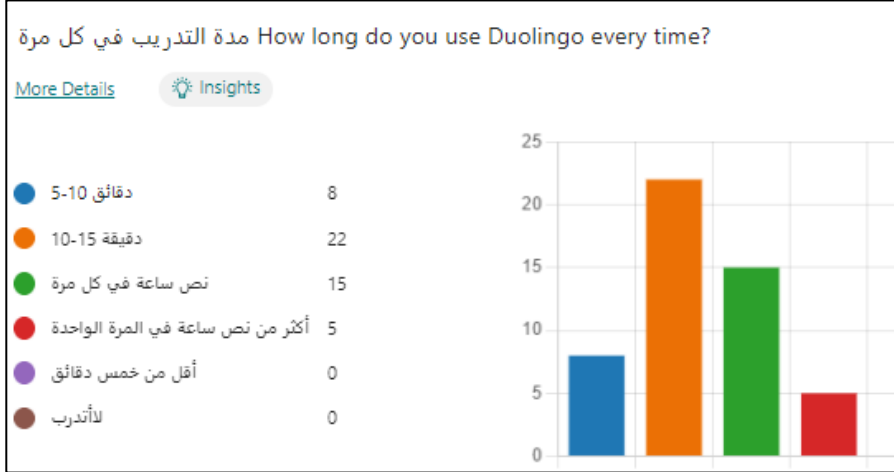
### Pilot group (9 month)

As presented in the below chart, the pilot group participants represent 50 female students in fifth grade in a public school in Sharjah city and 100% are native Arabic speakers. Their overall rating was at high satisfaction for the app use including English language skills and subskills, self-learning, foreign language confidence and, motivation as shown in below summary pie charts:

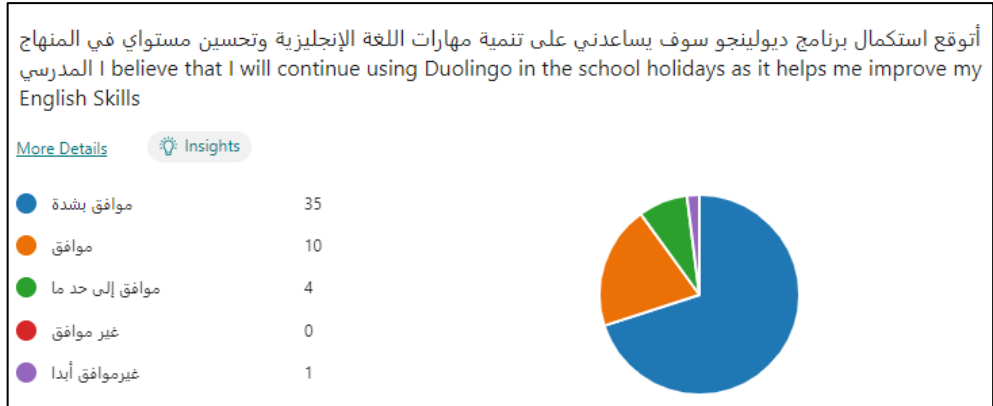


شكل ١ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

## Results & discussions



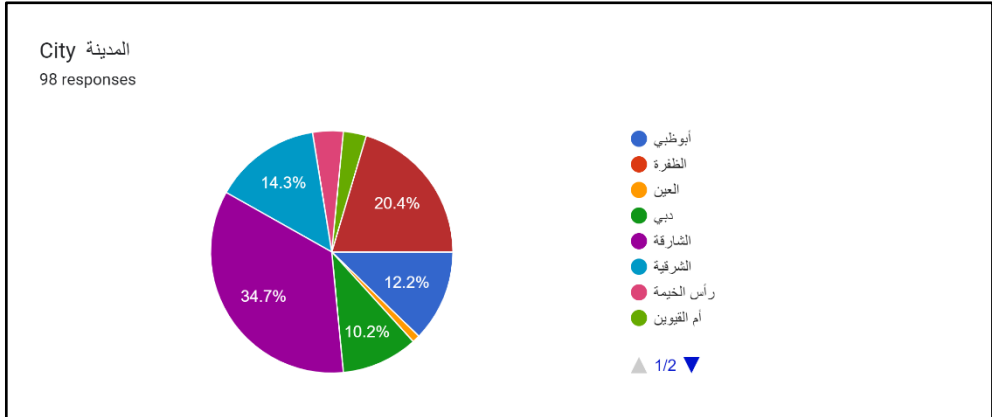
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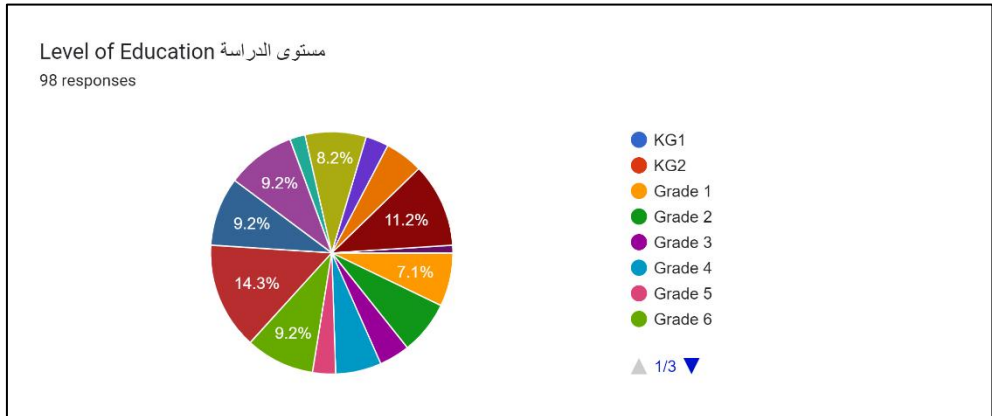
شكل ٣ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

### Extended Summer group ( 2 months)

As presented in the below chart, participants represent all cities across the country and from all grade levels K-12 and 100% are native Arabic speakers. 98% are students

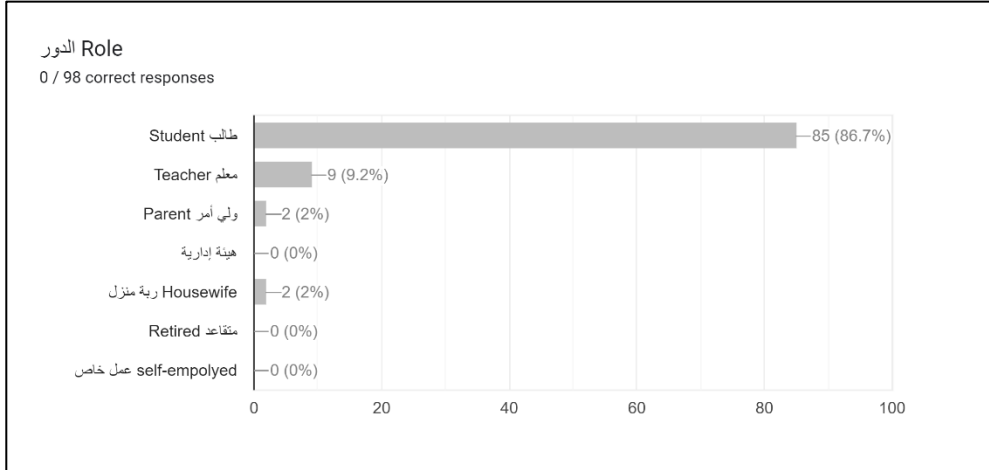


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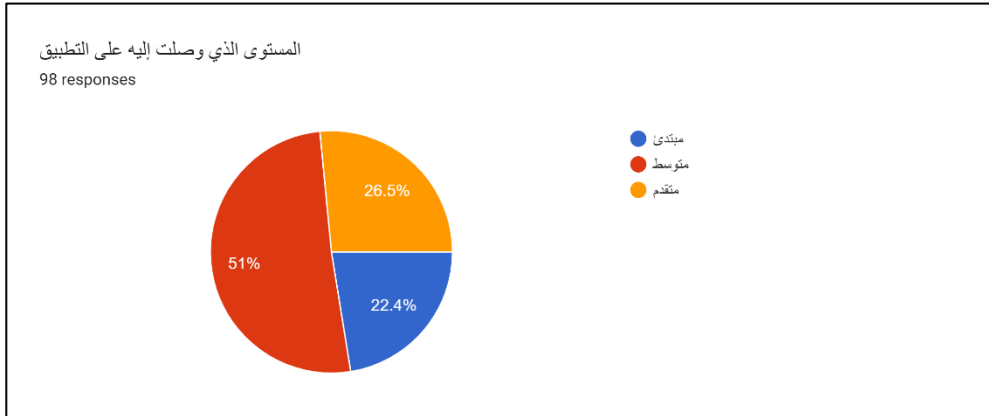


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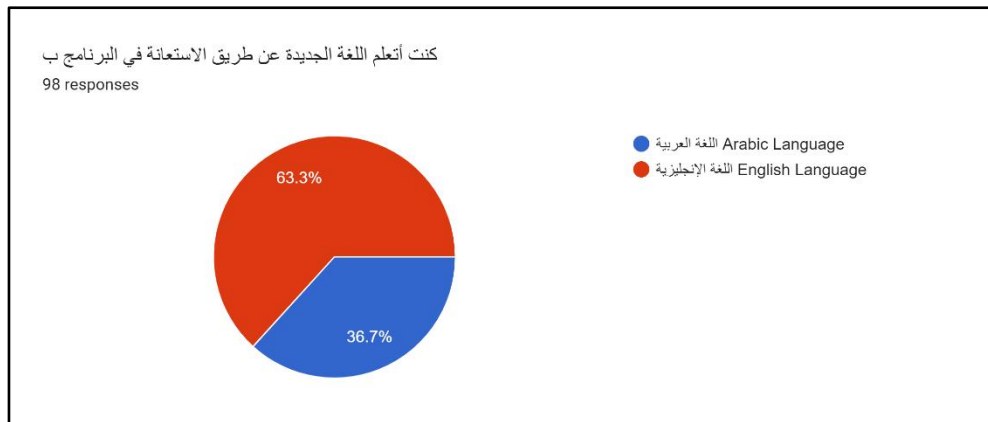
## STUDENTS' ATTITUDES TOWARDS USING... Samaa Abdelghany



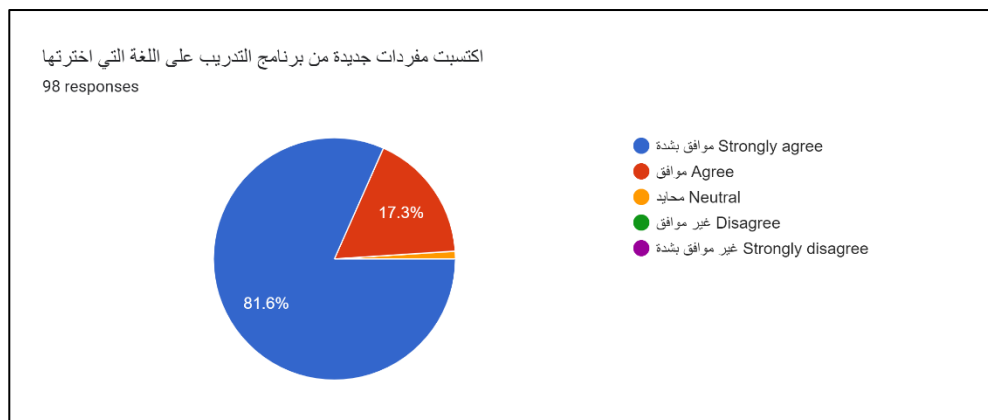
شكل ٦ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



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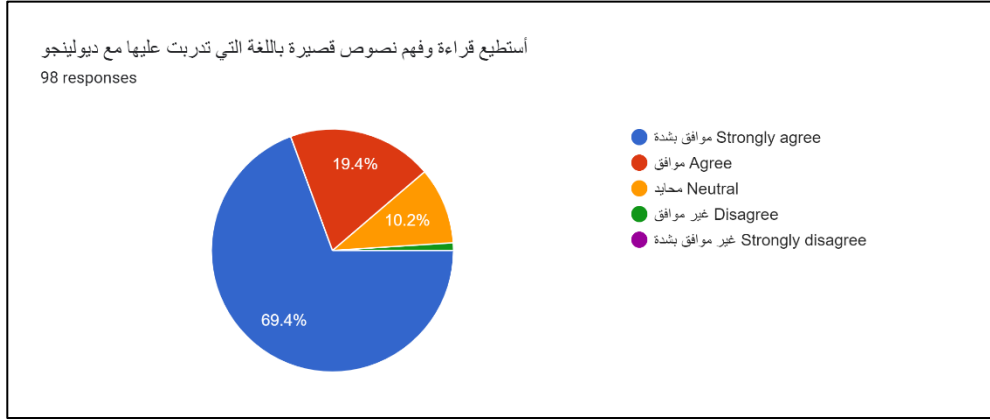


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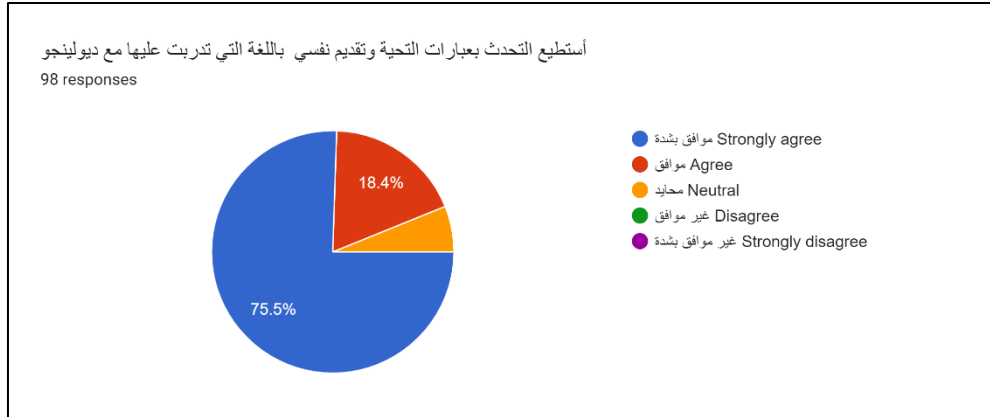


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## STUDENTS' ATTITUDES TOWARDS USING... Samaa Abdelghany

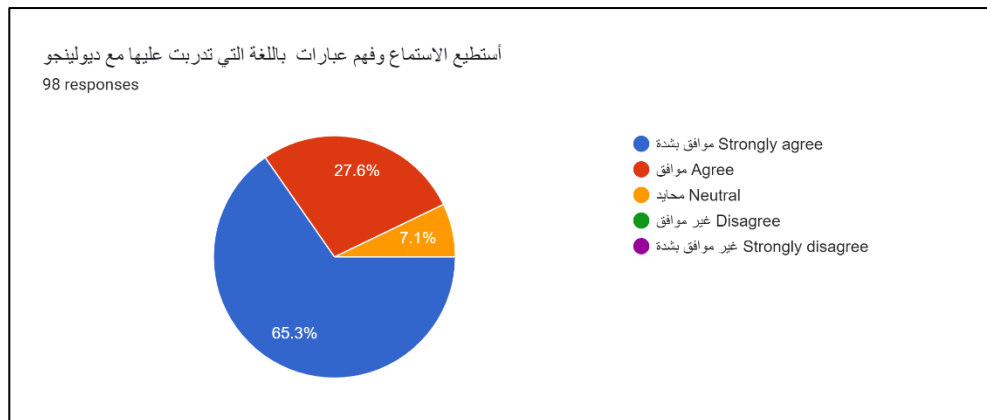


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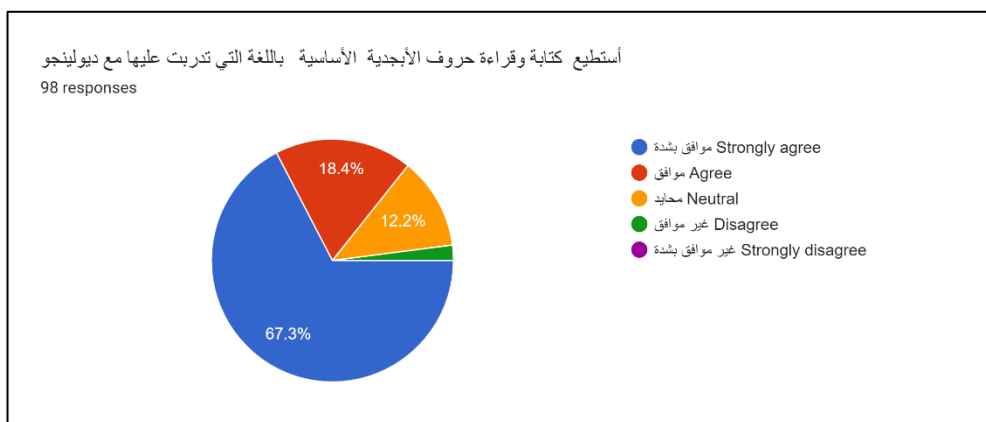


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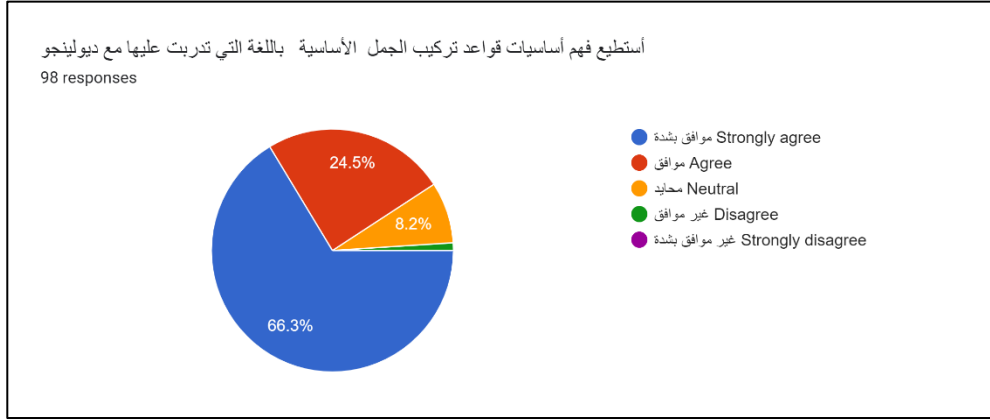


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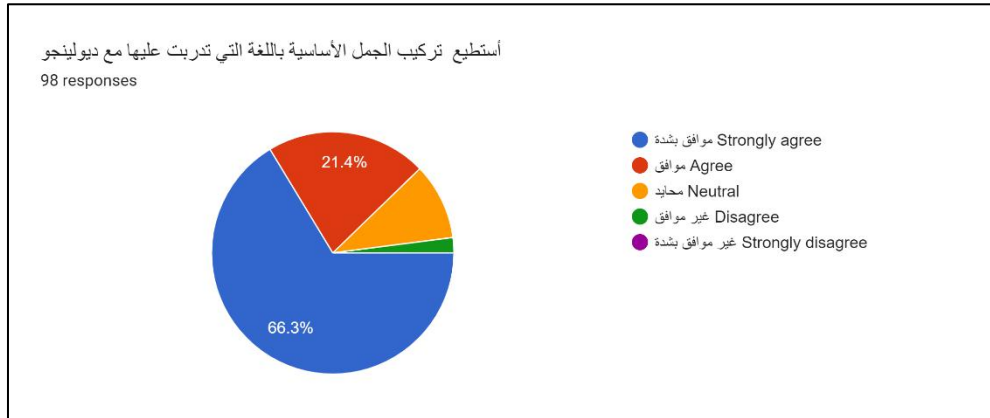


شكل ١٣ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

## STUDENTS' ATTITUDES TOWARDS USING... Samaa Abdelghany



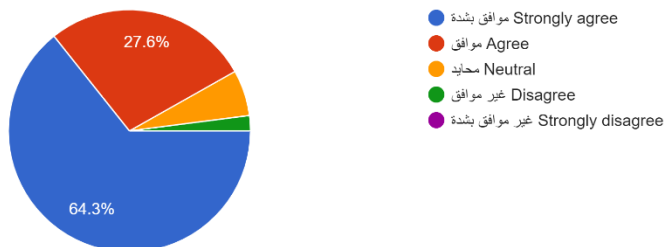
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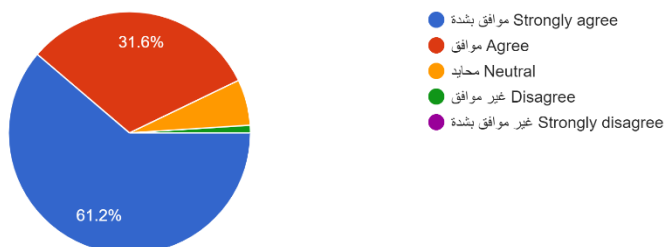
أستطيع استخدام مفردات الموضوعات الشائعة عند التحدث باللغة التي تدربت عليها مع ديولينجو

98 responses

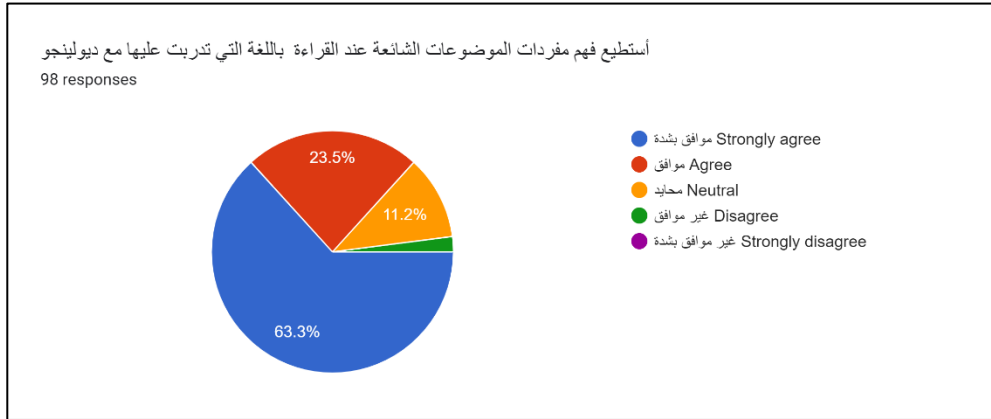


أستطيع فهم مفردات الموضوعات الشائعة عند الاستماع باللغة التي تدربت عليها مع ديولينجو

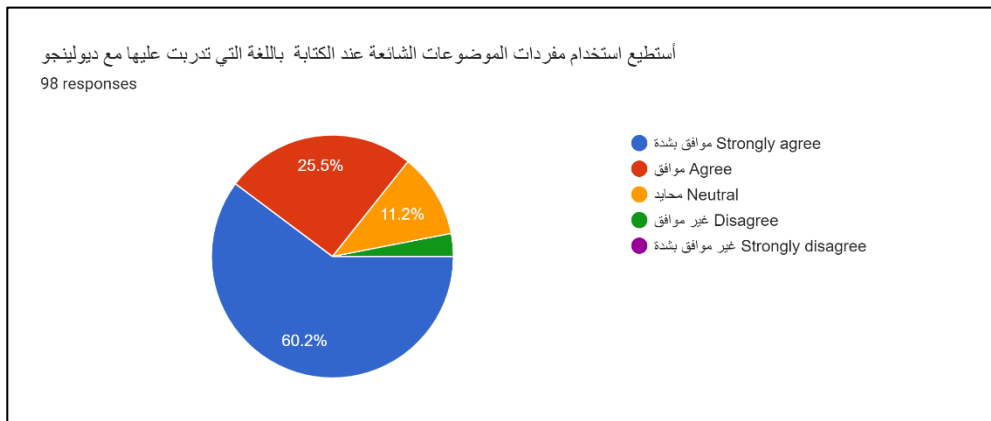
98 responses



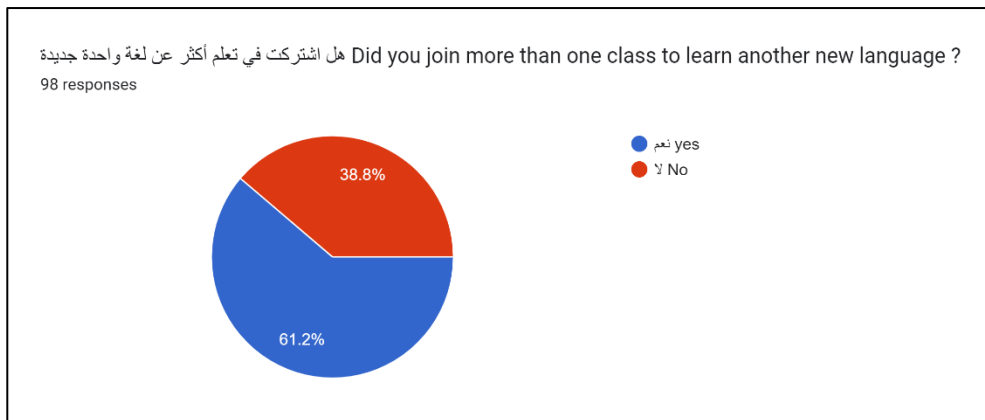
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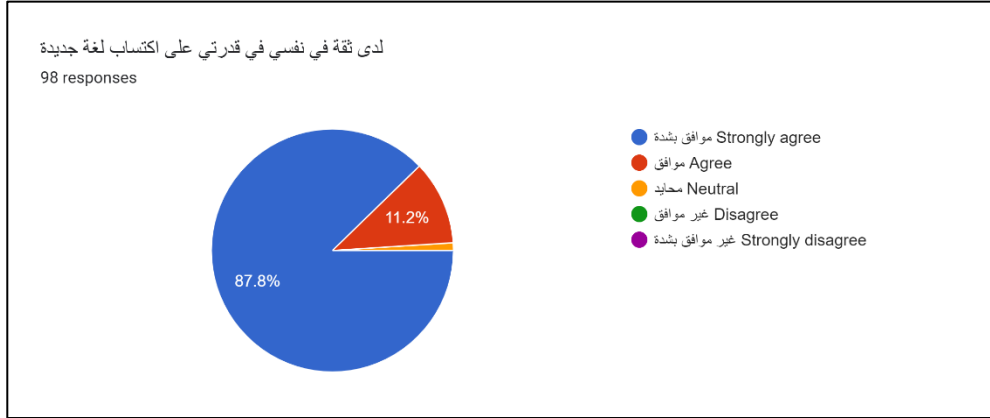
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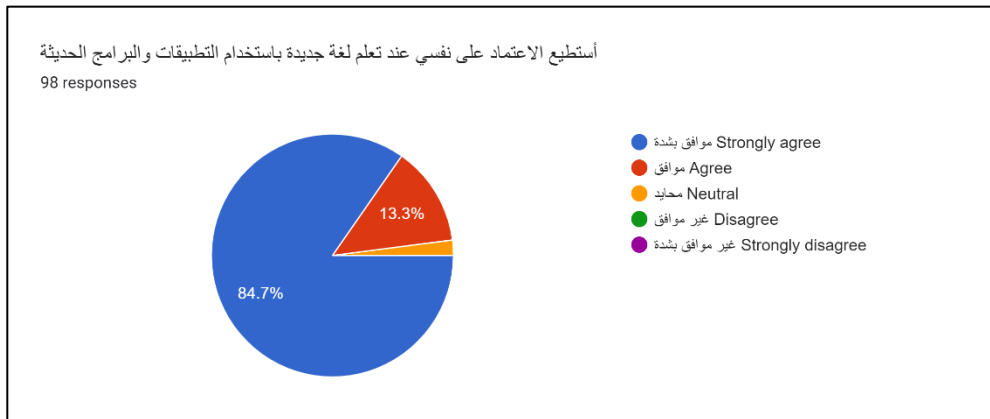
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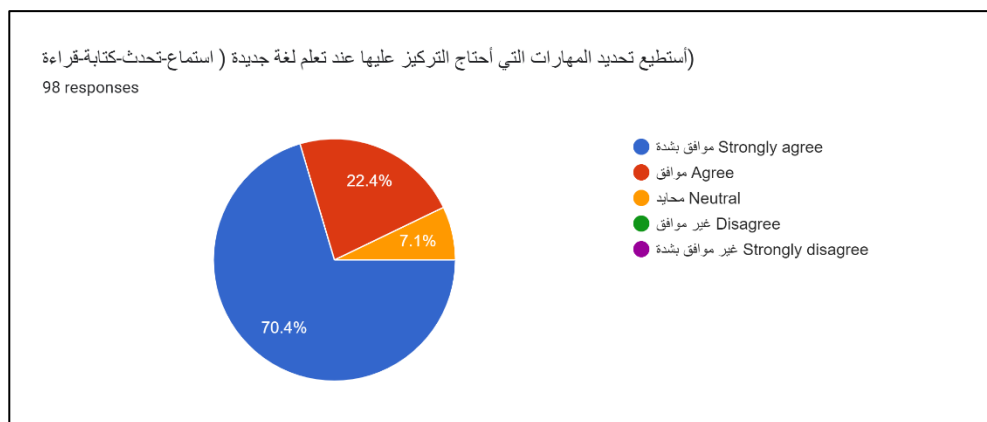
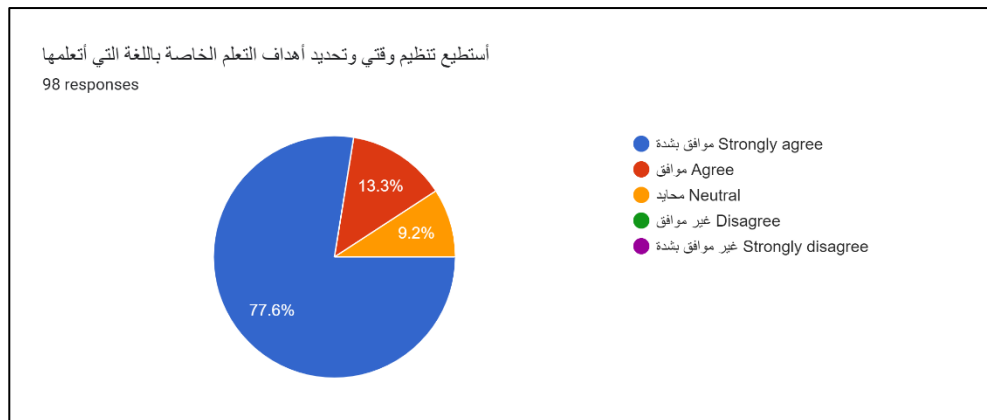
شكل ٢٠-٢١ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



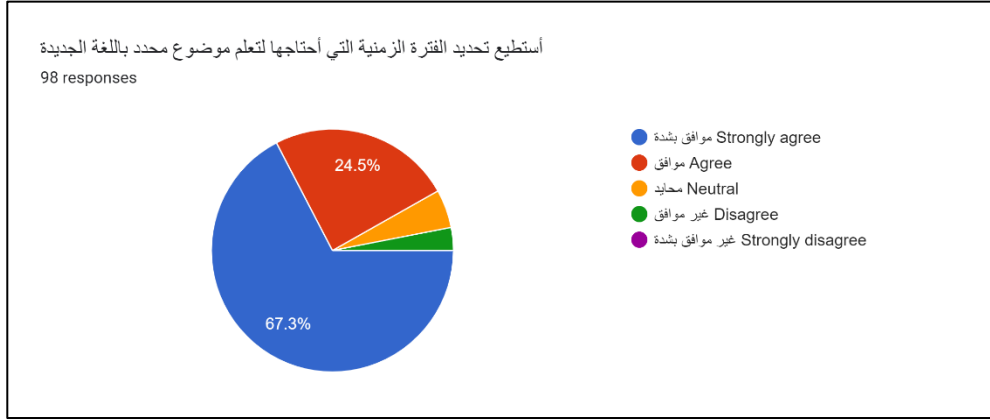
شكل ٢٢ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



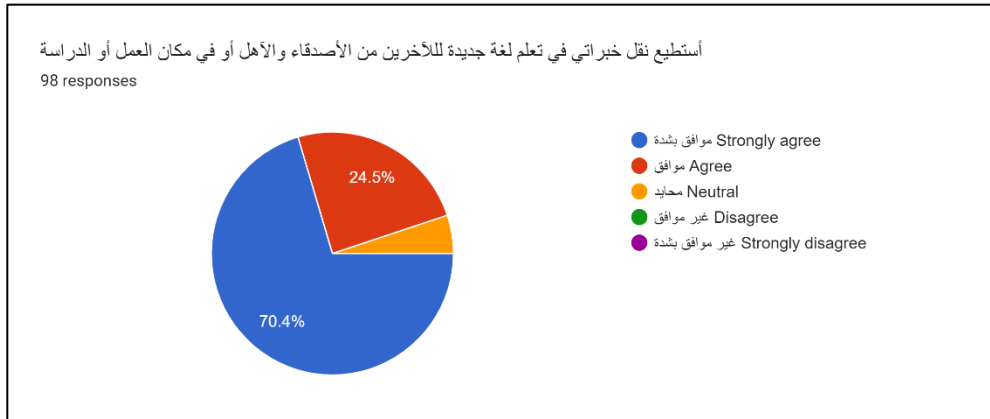
شكل ٢٣ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



شكل ٢٤-٢٥ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

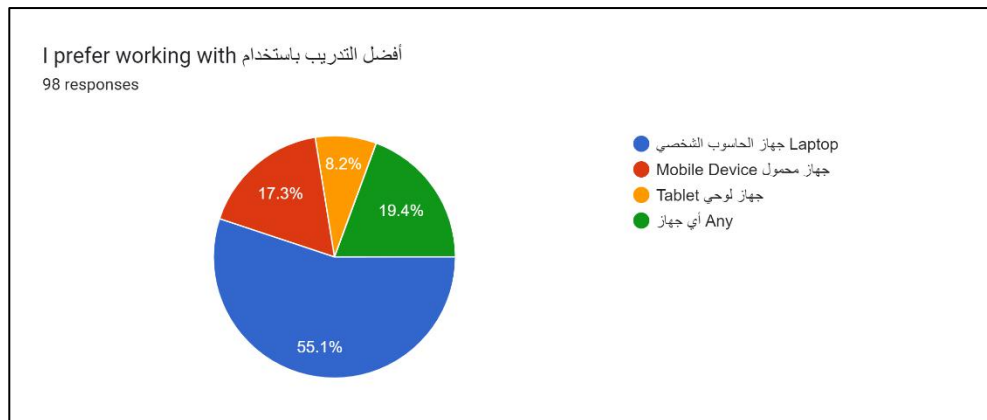


شكل ٢٦ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

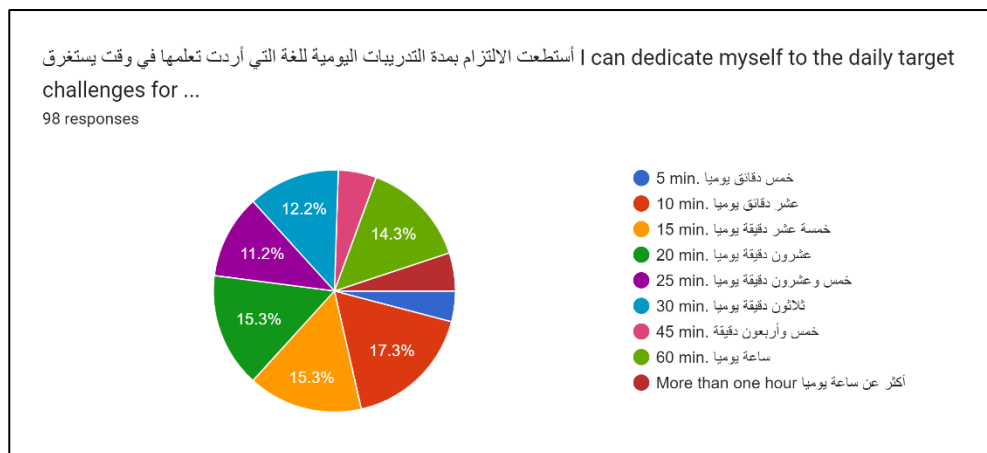


شكل ٢٧ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

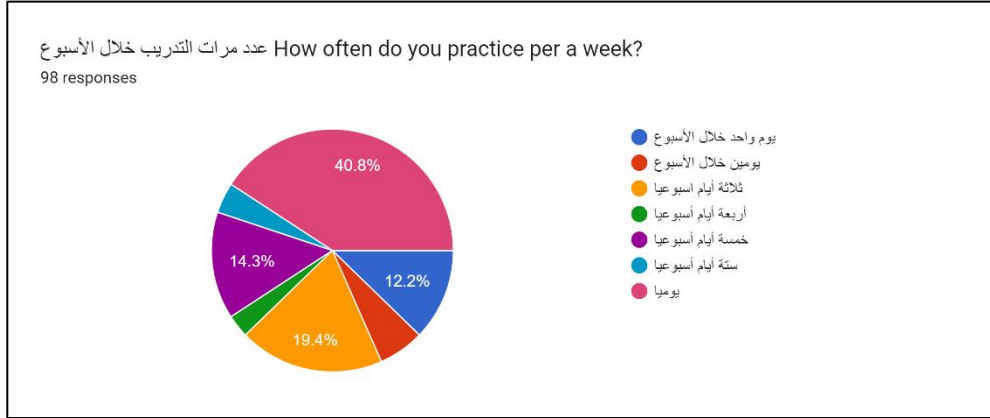




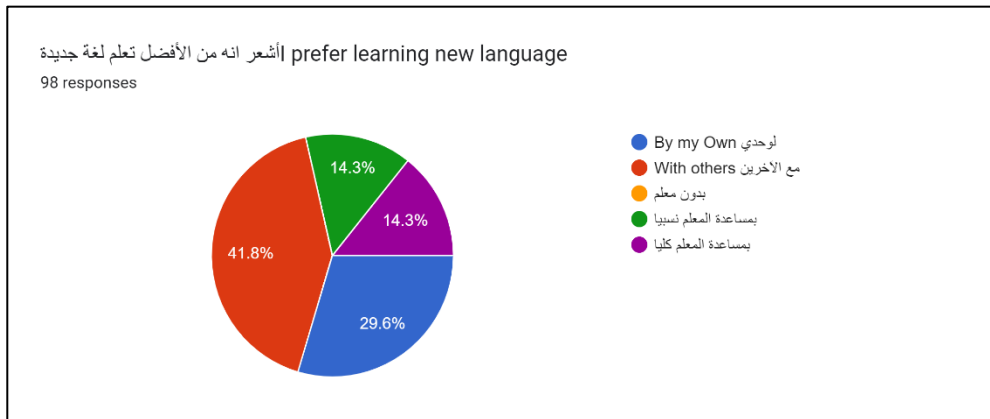
شكل ٢٨ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



شكل ٢٩ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



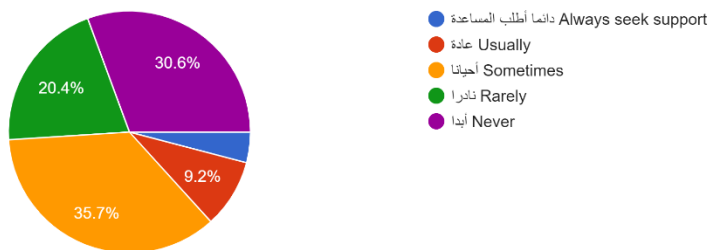
شكل ٣٠ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



شكل ٣١ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

How far do you seek support for your learning journey on Duolingo?  
مدى وجود ولي أمر - صديق - شخص آخر ( الوالد- الوالدة- الأخوة الأكبر) لمتابعة العمل على التدريب

98 responses



شكل ٣٢ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

يمكن أن أتعلم لغة جديدة بدون معلم

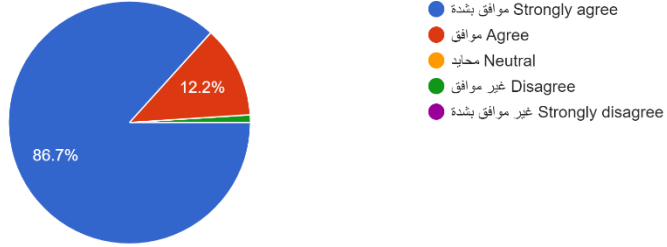
98 responses



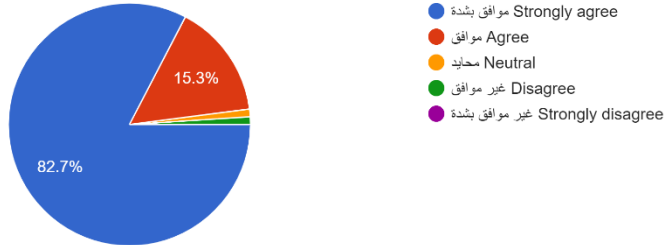
شكل ٣٣ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

## STUDENTS' ATTITUDES TOWARDS USING... Samaa Abdelghany

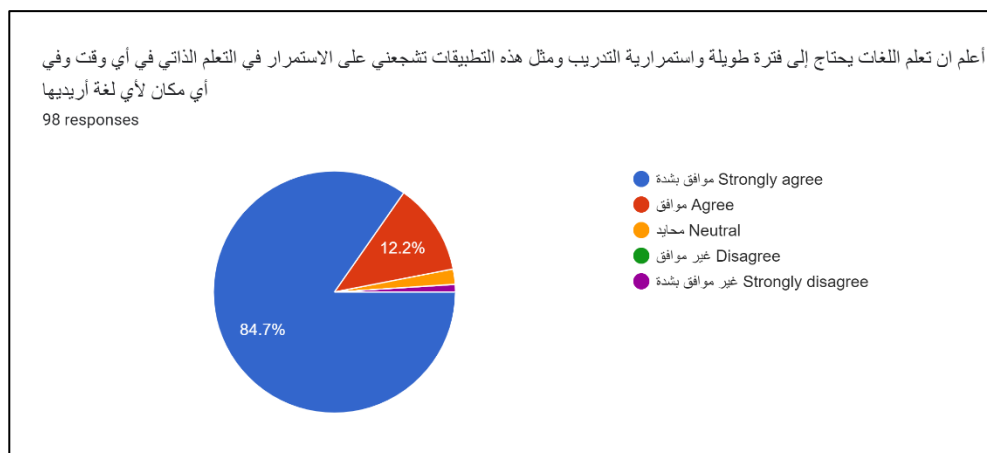
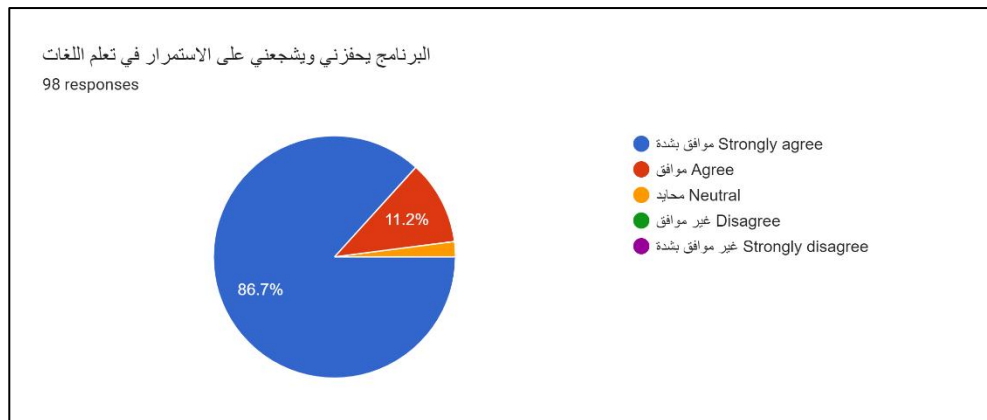
يمكن أن ارشح برنامج ديولينجو للأخريين للبدء في تعلم لغة جديدة  
98 responses



أعجبتني إعادة تكرار السؤال بشكل مختلف للتدريب على الأسئلة التي كنت أخطأ فيها  
98 responses



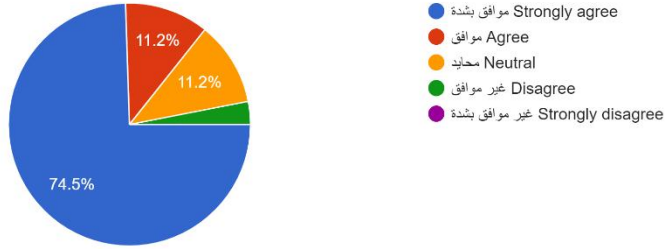
شكل ٣٤-٣٥ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



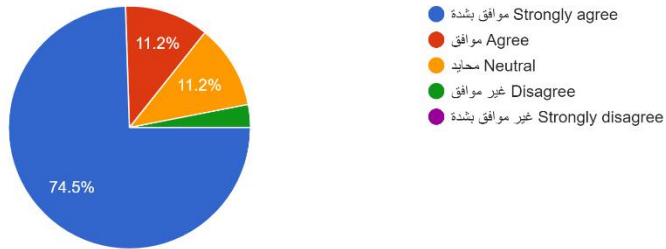
شكل ٣٦-٣٧ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

## STUDENTS' ATTITUDES TOWARDS USING... Samaa Abdelghany

ساعدني البرنامج في مستوى التحصيل لمادة اللغة الإنجليزية في مدرستي وبشكل عام  
98 responses



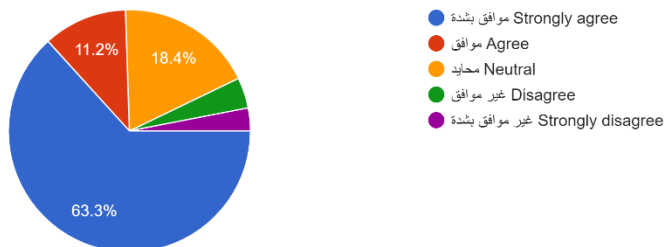
ساعدني البرنامج في مستوى التحصيل لمادة اللغة الإنجليزية في مدرستي وبشكل عام  
98 responses



شكل ٣٨-٣٩ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

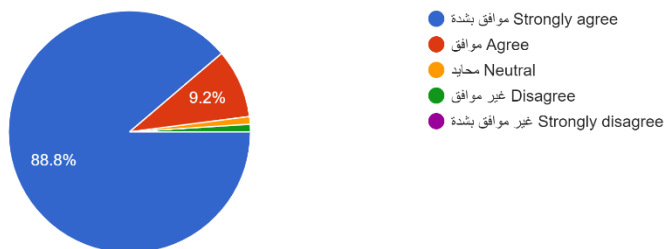
ساعدني البرنامج في مستوى التحصيل لمادة اللغة العربية في مدرستي وبشكل عام

98 responses

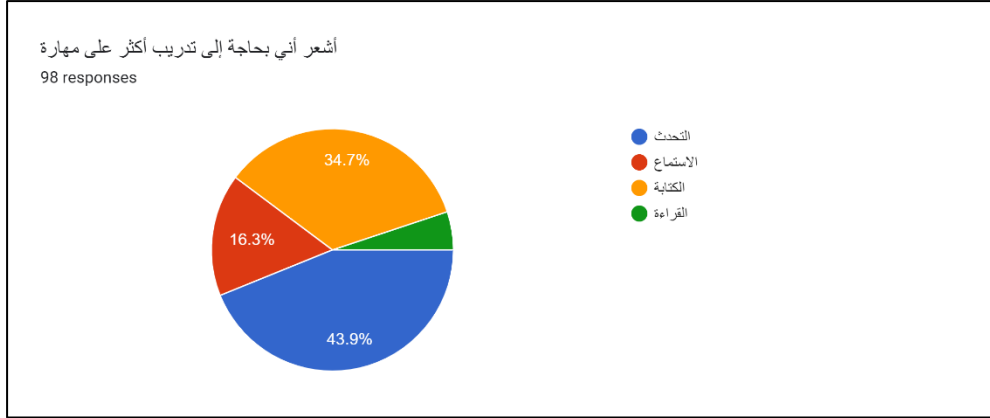


بشكل عام أستفدت من التجربة

98 responses



شكل ٤٠-٤١ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات



شكل ٤٢ اتجاهات الطلبة نحو التعلم الذاتي باستخدام ديولينجو للغات

## Conclusion

This study demonstrated that Duolingo is an app that novice language learners can begin using since it inspires them to keep learning. However, as English is the most popular language on Duolingo, it still needs to be improved to cover more vocabulary, and grammatical rules, Additionally, it ought to be encouraged for use at higher levels. Furthermore, Duolingo shouldn't solely rely on the Direct-Translation Method because it can also more graphically aids. In conclusion, it is advised that schools implement Duolingo to keep pupils entertained. Being comparable to a video game, it may be played while learning. This study established that Duolingo is a helpful language-learning tool for learning a second language. Taking into consideration the appropriacy of some phrases in certain contexts which is culturally sensitive.



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