Learning a brand-new language through Duolingo: A case study of a gifted student

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ABSTRACT

This article describes a case study of a gifted student who spent about two months learning a new language through the use of a mobile application. The purpose of this study is to investigate how a gifted student perceives the effectiveness of Duolingo, as well as how the participant improved his language skills. The participant was a 14-year-old Turkish male who began using Duolingo knowing nothing about French. Data was gathered through interviews, self-reports, and language tests. According to the findings, Duolingo provided a user-friendly, enjoyable, and competitive learning environment for the participant, but it was not regarded as an all-in-one language-learning tool. The participant appeared to gain various language skills, particularly reading and writing skills, without referring to other sources. When considering the improvement level in this case, Duolingo should be a reciprocal learning tool as an addition to language courses rather than a replacement for regular language courses.

Keywords: Case study, Duolingo, foreign language, giftedness.

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INTRODUCTION

Most cognitively evolved species have intelligence, which refers to the ability to learn and comprehend. It is about having the ability to solve problems, make decisions, and conform to the environment in a more efficient manner (Solé-Casals et al., 2019). "Giftedness" refers to abilities such as executive functioning, fluid reasoning, and creativity, as well as a higher intelligence quotient (IQ) (Navas-Sánchez et al., 2016).

Gifted children learn faster and more effectively than their peers, most likely due to the above-mentioned distinct cognitive functioning that allows for different problem-solving strategies (Geake, 2008). Because gifted children have unique characteristics and distinct ways of thinking and learning, they excel in a variety of subject areas, including language learning. It is widely acknowledged that some students are more proficient in foreign language learning than others, and aptitude, an inherited trait, is one of the most important factors in foreign language proficiency (Zoghbor and Alexiou, 2020).

According to some studies (Clark, 2002; Prodanovska-Poposka and Todorova, 2020; Yunus et al., 2013a), gifted children have this ability to use language for receiving, understanding, and transferring information. Their problem-solving abilities enable them to overcome language learning challenges and improve language performance. They respond quickly to new structures in a foreign language and can easily memorize vocabulary and learn new languages (Passet, 2015).

Many strategies have evolved over time to enable the use of appealing and up-to-date methodologies in language learning, and learning through mobile technologies is one of the new ways of learning in the twenty-first century. Language learning, like other disciplines, has a place in mobile learning initiatives these days. More flexible, autonomous, and motivating learning experiences to pique the interest of gifted students and meet their educational needs to learn a foreign language, as regular educational practices can quickly bore them (Gomez-Arizaga et al., 2020). Students can access courses not offered at their school through mobile apps

without having to travel to a special class or hire instructors, which is one of the benefits of using mobile apps (Luque et al., 2020; Reis, 2001). Current technology provides many mobile apps for learners to practice a language and one of them is Duolingo, which offers many opportunities for learners around the world to enjoy the basics of a new language. People can learn a large number of languages for free using mobile apps, making it easier, cheaper, and more enjoyable to improve their language skills (Kuşçu, 2019). Because gifted children can easily adapt to new situations, they can also use these apps to effectively comprehend a language's vocabulary and grammatical structures.

A great deal of research has been conducted on language learning as it is used by various participants in various contexts. However, little research has been conducted on gifted students in terms of new language learning using mobile apps. The purpose of this study is to investigate how a gifted student perceives the effectiveness of Duolingo, as well as how the participant improved his language skills. The research questions to obtain this information are:

1. How is the perception of a particularly gifted student on learning a new language using Duolingo?
2. Can a particularly gifted student acquire language skills in French by utilizing a mobile app?

Below, firstly intellectual giftedness was reviewed, and then learning a foreign language through mobile apps was elicited briefly.

Intellectual giftedness

Giftedness is a term differently defined by scholars in the literature, however, for Gagné (2004) it refers to non-normal human abilities of individuals differing from the average. "*Giftedness designates the possession and use of untrained and spontaneously expressed natural abilities (called outstanding aptitudes or gifts), in at least one ability domain, to a degree that places an individual at least among the top 10 percent of age peers*" (Gagné, 2004, p.120).

Another term with various conceptualizations is intellectual giftedness. A minimum IQ of 130 or higher is considered a very superior IQ, and people with a superior IQ are considered intellectually gifted (Smith et al., 2015). Individuals who act and think differently than the norms can demonstrate a high level of intellectual capacity across multiple domains (Kaufman et al., 2010). In the literature, there has been research on gifted students and their achievement and preferences in various domains such as math, science, or art (Robertson et al., 2010; Stornelli et al., 2009). However, research on how these students use their skills to learn foreign languages is limited. The relationship between foreign language learning and cognitive aptitude appears to be understudied, with few studies examining the foreign language abilities of intellectually gifted individuals (Bain et al., 2010; Serafeim and Alexiou, 2020).

Many studies have suggested that the gifted's higher learning capacity is strongly linked with rapid competence development in foreign languages due to their relative strength in working memory, phonology, spelling, and syntax (Bain et al., 2010; Hayes et al.,1998; Okan & Işpınar, 2009).

Learning a foreign language

According to Gardner and MacIntyre (1992), learning a foreign language is influenced by a variety of factors, but three, in particular, appear to have a significant impact on how well a language is learned. These include cognitive factors like intelligence, language abilities, and experience. The second category is the affective dimension, which includes attitudes toward foreign language learning, and the final factor includes factors such as age and sociocultural experiences.

Individuals with higher IQ scores, according to Mitchell (2004), achieve better results when learning a foreign language. Language aptitude, in addition to intelligence, is a contentious concept defined as a gift for language learning. Gardner and MacIntyre (1992) contend that these two cognitive elements are inextricably linked gifts for language learning. While intelligence determines the level of comprehension of instructions or deductions from learning experiences, language aptitude aids in skill integration. Language learning strategies used in the process are suggested to be important for learning a language, in addition to these two cognitive dimensions. According to Oxford and Crookall (1989), more competent learners appear to employ a broader range of strategies in a broader range of situations.

As previously stated, learning a language requires less effort with higher intelligence, greater language aptitude, and a wider range of strategies. According to this viewpoint, gifted individuals are expected to have a natural competence in learning a new language as a result of their higher-level intelligence, natural aptitudes, and high strategies. Gifted students have distinguishing characteristics and think and learn differently than their peers. In addition, they can quickly learn the fundamentals of a language in terms of grammar, structure, vocabulary, and spelling (Gagné, 2004; Yunus et al., 2013a).

Mobile language learning

Learning a foreign language is greatly aided by

applications designed specifically for this purpose. Duolingo, which debuted in 2012 and offers courses in 27 different world languages, is accessible via web and mobile phone, serving as a Mobile-Assisted Language Learning Platform. Mobile learning is defined as learning through a variety of portable and versatile devices that allow us to learn wherever, whenever, and on whatever subject we want while also connecting with a large number of people to construct knowledge together (Crompton 2013; Sharples, 2005).

Duolingo is an excellent example of mobile learning because it is available in a variety of mobile formats. Duolingo provides translation to help beginners learn a language and to help students become independent language learners. The app is free to use, but after a certain number of mistakes, users must watch ads or use gems to continue. It is divided into sections such as skills, skill-related lessons, and words, and it includes vocabulary and basic sentence structure activities for beginners. Daily activities cover fundamental language skills such as listening, speaking, reading, and writing through translation, dictation, picture identification, word order, matching, and pronunciation, among other things. Thanks to the microphone option in their speaking activities, learners can record and listen to their voices, receive feedback, see and correct mistakes, and share and discuss these responses with others online as needed. It enables gamification elements such as lingots for completing skills or leaderboards to spark competition and inspiration (Kuşcu, 2019; Munday, 2016; Ratzlaff, 2015).

In each language, users progress through levels known as "leagues." For the leagues, 50 users are assigned to each grouping. There are a total of ten leagues. You advance to the next level if you finish in the top ten of each level. If you drop to the bottom 5, you drop a league. Users can set daily study goals for themselves and earn lingots by completing these daily goals. They can buy gifts with these lingots (Kuşcu, 2019). These factors make Duolingo appealing to gifted students, who enjoy language games and require flexibility and healthy competition in order to maximize their potential (Munday, 2016; Rosadah et al., 2009; Yunus et al., 2013a).

METHODOLOGY

A case study method was best suited for the study because it provides an in-depth analysis of processes and characteristics of a real-life context selected from a small number of individuals (Zainal, 2007). The researcher was able to examine the opportunities provided by a mobile app to a gifted student to learn French, as well as the students' perceptions of using an app for his improvement, through this case study.

Participant

This study's participant is a gifted 14-year-old boy with an IQ of at least 130 who has been attending The Official Center for Gifted Children (BILSEM) in Turkey twice a week for two hours for the past five years. These centers accept students through the nomination, diagnosis, group screening, and individual test stages and educate students who have a WISC-R score of 130 or higher. Primary school students participate in the identification process by having their classroom teachers fill out student observation forms. The diagnostic procedure is divided into two stages. First, students interact with a tablet application. This program is known as "Science and Art Centers Group Screening Application." Students who correctly answer a certain number of questions in the group screening application are eligible to take part in the "Individual Evaluation" to determine their special ability levels. Individuals are evaluated in three areas: general mental ability, visual arts talent, and musical talent. The participant has been identified as gifted in General Mental Ability and attends classes in information technologies, mathematics, science, social sciences, English, and Turkish. He also attends regular classes at his school. He is a native Turkish speaker with advanced knowledge of English and basic knowledge of German. He has, however, never taken any French classes.

Instrumentation

To examine and evaluate the effectiveness of Duolingo in-depth, more than one data source was utilized. To determine the attitudes, considerations, and experiences of the participant on using Duolingo in learning a foreign language, interviews were conducted with the gifted student before and after the intervention. He was asked to send voice messages after every session about his perceptions of the process.

To see what skill sets he has acquired, the participant was also tested using a French exam for young learners derived from the official webpage of The Diplôme d'études en langue française (DELF or Diploma of French Language Studies) which is an internationally recognized French Language Proficiency Certificate awarded by France's National Ministry of Education. The French exams given by the DELF are consisted of the levels of the Common European Framework of Reference for Languages (CEFR) and extend from level A1 for beginners to C2 for the most advanced language learners (DELFDALF, 2021).

DELF A1 exam the participant took comprised reading, listening, writing, and speaking sections. In the listening section, there were four multiple-choice questions corresponding to listening to a document. The participant had 30 seconds to read the questions; first

listening, then a 30-second break to answer the questions; a second listening, then a 30-second pause to complete the answers.

The reading section consisted of a reading text with 3 multiple-choice questions and 2 open-ended questions. In the writing section, the student was asked to fill in a hotel registration form composed of 9 questions about the candidate on surname, date of birth, nationality, e-mail, address, postcode, country, telephone, and job. The speaking section is comprised of five words to talk about. The student was asked to introduce himself using his name, age, country, job, and hobbies. Reading, writing, and listening questions were scored on a correct or incorrect basis and each correct answer carried one mark. For the speaking section, two French teachers and the researcher evaluated the number of sentences formed, pronunciation, content, grammatical accuracy, and fluency of the speech using a 5-point Likert-type scale (0: No attempt; 1: weak; 2: adequate; 3: good; 4: excellent).

Procedure

Upon taking the parents' and the participant's approval, the following data collection process was carried out between February 2021 and April 2021. For the initial interview, the participant was prompted with the following questions regarding his attitudes and considerations on learning through the mobile app Duolingo:

1. What are your perceptions of learning a new language using a mobile app?
2. What are the advantages and disadvantages of using Duolingo to learn a language in your opinion?

After the interview, the participant was requested to use Duolingo at least for 10 minutes each day for 2 months. He was also asked to send voice messages daily after each training about the perception of his progress. He also sent the researcher screenshots of his daily progress. The student was not required to complete any set of lessons or skills in order for him to determine when he had learned everything he needed to know. Instead, the student was asked to study at his level, advance at his own pace, and determine his learning strategy whether to go forward or review the topics and maintain a consistent practice.

When the intervention was over, the participant was interviewed with extra questions on his experiences. He was asked whether he would like to continue learning French using the app and to compare traditional ways with his current experience of learning a language.

Followingly, he took the French exam to determine what skill sets he had acquired. Due to the participant's lack of background knowledge necessary to comprehend the French instructions and recognize the vocabulary in the French exam, there was no pre-test. All the interview and exam procedures were taken place in the researcher's office in the presence of the participant's mother. Two non-native French teachers and the researcher were consulted during and after the procedure and analyzed the data.

RESULTS

What is the perception of a particularly gifted student on learning a new language using a mobile app?

Speaking of the first question from the aims of this study, the participant was interviewed on the first day of intervention before the training session. He stated that he had tried improving his English using Duolingo once, however, the new language learning via this app is a brand new thing for him. "How well it works is debatable, but I think it is useful. I've worked with Duolingo in English a few times before. This will be my first experience with French. I would prefer it more if I went ahead with a teacher. I don't think it will improve me enough." These statements are a bit contrary to the literature when considering the assertations of Poureau and Wright (2013) claiming that independent learning is more motivating than teacher-led ones. Another claim is that the gifted prefer flexibility and room for learning (Yunus et al., 2013b) about which the reverse was articulated in this case.

For the second question, he had some hesitations on the advantages of the training and believed a limited improvement could be achieved in the period asserting, "I don't think mobile apps are as helpful as face-to-face training. The most important advantage is that you can work whenever you want. I think it improves vocabulary learning the most. Not sure about other skills, particularly speaking at all. I guess I will learn some French words and daily phrases." On the disadvantage of Duolingo, he was certain that the classroom environment pushes him into control. "If I work constantly, Duolingo can be useful in language teaching, but as there is no external pressure on continuity, it may not be stable. It is even disadvantaged in terms of discipline because it is a little more comfortable." These assertations can be supported by the suggestions of Crocker (2002) on the learning needs peculiar to gifted students, leading to stress when not met. However, it is notable that his concerns about the intervention were nearly over when he first started his daily session according to his voice message sent to the researcher. In general, the subject enjoyed studying via Duolingo, stating "I had a simple and fun experience. I advance with vocabulary focus, I made grammar mistakes. I had trouble with pronunciation, which I think I will overcome over time. Even if it is a language I do not

know, I did not have a hard time because it is close to English. Because I made 5 mistakes, I ran out of hearts and could not take care of all of my mistakes." After the first day, he experienced problems resulting from the policy of the app about limited hearts after incorrect answers in a lesson. During the first month of training, he was having trouble understanding the basics of the French language and was frustrated by the limitations. "It continues with an emphasis on vocabulary. I cannot go back to my shortcomings because the app asks for a fee after 5 mistakes. I make grammatical mistakes, especially with conjunctions. I have problems with both grammar and vocabulary because it progresses very fast. So I started reviewing the same topics rather than going forward. It would be better if the grammar topics were delivered a little more detailed." These troubles he experienced were also stated by Garcia (2013) as the zero knowledge of the beginners brings excitement and satisfaction while some knowledge of the language being learned causes the diminish of excitement as the learner advances.

He kept committing to the program and sending screenshots of his progress, but made pauses to send voice messages. This indisposition to send messages may result from the fact that he could not make the progress he expected and as his heart was limited to looking into the mistakes he had made and correcting them. In the second month, the subject sent an enthusiastic voice message remarking he was improving in time. "I am making slow progress. Since I made a 1-week streak today, the app gave me 3 days of premium for free, which is very nice and encouraging." During the week, the participant occasionally sent voice messages until he got a free 2-week trial premium and stated his motivation, especially for the leagues and the problems experienced with grammar. From this point of view, it is clear that gifted students appraise their learning if they have positive attitudes toward them (Yunus et al., 2013b). Possibly the perfectionist characteristic of the gifted causes them to have worries about shortcomings while performing anything (Deveau, 2006). This is the case for language learning for the study when the participant is concerned about the mistakes he has made, the hearts he has lost, and the grammatical rules he has not acquired. That may be the reason he preferred to review rather than step forward.

The participant seems to find Duolingo an amusing and useful app to practice a new language, particularly because of its gamification feature. Yet, his former attitude towards preferring teacher-led instruction does not appear to change.

During the second month as the vocabulary and grammatical structures progressed, he had some troubles, whereas he enjoyed the leadership when he got top ten advances to the next league. However, he stated that getting to the top of the leagues and winning XPs

had no use in progressing in a language indeed. He kept sending screenshots but ceased the voice messages as he got rid of the Premium trial and had only five hearts to progress. His messages were again enthusiastic when he could advance to Diamond League -the highest league. He was one of the top users in the league and found it fun and motivating, to try to earn more XPs to beat his competitors.

At the end of the intervention, the participant was interviewed with extra questions about his experiences. He was asked whether he would like to continue learning French using the app and to compare traditional ways with his current experience of learning a language.

The student liked the way it was particularly the gamification aspects of it but never hesitated to say that he would prefer a face-to-face course. He enjoyed it more when language was learned through classroom experiences shared by his classmates and teachers. He mentioned that the skills he was trying to acquire in Duolingo did not correspond with the way he learned English and German in the face-to-face courses. Although he found the app user-friendly, competitive, and enjoyable to practice French; he appeared not to like it more than regular courses. He stressed that he needed a more rigid learning environment to concentrate on, whereas the app provides a flexible learning environment where self-directed learning is encouraged. In the classroom with his teacher, he could have learned grammatical rules and vocabulary more thoroughly than he did in English and German.

As for his future intentions, he asserted he would use Duolingo to remain in contact with the French. "As I have lots of things to do, reviewing in Duolingo may not be a priority for me. But if I have enough time, I want to improve my French on time. When available, I can take French classes at school and improve classroom learning with additional sessions in Duolingo so that I can learn French properly". His utterances are strongly related to the complementary aspect of Duolingo, which is indeed the purpose of it to help students improve the linguistic skills that they have gained at school (Kuşçu, 2019). As suggested by Munday (2016), Duolingo can be an effective addition to any course, especially for beginners.

Considering the advantages of mobile apps, such as learning independently without the teacher's instructions and stepping ahead in learning autonomously compared to face-to-face education, it is amazing for this particular student's preference for classroom learning. Interestingly, the participant needed more explicit instruction and assistance to perform given tasks contrary to expectations (Seokhee and Doehee, 2003). This may have resulted from the characteristics of the gifted related to the need for social interaction with friends and teachers during classes so that they can successfully associate their positive attitudes with their learning in an interactive real environment and promote their creativity

(Poureau and Wright, 2013; Rosadah et al., 2009).

Can a particularly gifted student improve his linguistic skills by utilizing a mobile app?

As for the second question from the aims of this study, the participant was tested using a French exam combining four skills.

For the listening section, the total points possible was 4 points, and he got 1 in this section. The first question was multiple choice and he could only answer this correctly. Even though he could understand what was being asked in the tapescript, he stated that he did not have the chance to learn the days of the week and the hours in French and could not answer the related questions. This might reveal that, even though the student might guess the meaning by looking at the context without sufficient vocabulary, he cannot achieve listening comprehension practice (Bogdan, 2016). Duolingo uses dictation exercises to help the users to improve their vocabulary, reading, and listening comprehension (Kuo and Anderson, 2010) which seemed not to work on this participant much.

The reading section proved to be easy for the participant, as he scored 4 out of 5 points. The only mistake he made was on a picture identification task, which is surprising as vocabulary is introduced in Duolingo through pictures (Ratzlaff, 2015). Apart from the only mistake, he made, considering Duolingo the focus is on reading comprehension (Garcia, 2013) we can suggest that the application foster good reading skills.

The writing questions were relatively easy as their vocabulary resembled English, so he could write the true answers for the surname, date of birth, address, postcode, telephone, and job. He scored 6 out of 9 in this section. In the writing section, the participant proved to be relatively accomplished, which could be associated with the fact that the writing task simply required the participants' knowledge of basic words in French (Ratzlaff, 2015).

The possible total points for speaking were 20, and the participant got 0 points for age and hobbies, as he had no attempts. He could utter a single sentence about his name and job. He tried to tell me his nationality but his sentence was a bit like English rather than French. He could get 6 points in this section. Although Duolingo includes pronunciation exercises, as stated by Garcia (2013) not sufficient attention is paid to oral production and communicative approach in the app, as a result, it turns out to be "impossible to string two sentences together" (Bodgan, 2016, p.202).

Our findings show that the gifted student's engagement with Duolingo helped him develop his reading and writing skills. By contrast, he did not show adequate development in terms of speaking and listening skills. To the best of our knowledge, this study supports the fact that gifted students appraise their learning if they have positive attitudes toward them, and from the interviews, we cannot suggest that he had quite positive attitudes, rather he elicited that he would perform better in a foreign language classroom environment. Even though there is research suggesting a great number of learners improved in the course of time with no external sources or assistance, as Ratzlaff (2015) anticipated, mobile apps may not be as effective as traditional classrooms because language learning requires human interaction.

CONCLUSION

In this paper, I attempted to examine the perceptions and progress of a gifted student studying French using Duolingo, a popular mobile application that is available to everyone.

Since the gifted are known for being independent, self-directed learners and talent developers (Feldhusen and Wood, 1997), a mobile app could be assumed as an all-in-one resource for learning a new language for them. However, despite the fact that the student appeared to find Duolingo a user-friendly, enjoyable, and competitive app for practicing French based on the interviews and voice messages, the student's overall perception of the app was not entirely positive. The learning opportunities offered by the app didn't seem to appeal to him as much as regular classes did. The participant performed well in reading and writing on the French exam, which suggests that Duolingo may be useful for enhancing some language abilities. The use of a mobile app to learn a language does not seem to be intended to replace traditional classroom instruction, but rather to supplement it.

Limitations of the study

The study was limited to only one subject. Although the subject's experiences and perceptions of using Duolingo and improving in French were thoroughly investigated, the same results cannot be expected of other gifted students because their interests and characteristics differ. More research could be done to investigate Duolingo's effect on a larger population of gifted people and to compare the app's effectiveness to that of non-gifted people.

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