A REVIEW OF DUOLINGO STORIES

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Thanks to advancements and innovations in online education, self-study can now be effectively supported by promoting learner autonomy, self-regulation, and motivation. In online language education, Duolingo has been especially successful in engaging learners in self-study through various features. The present study is a brief review of Duolingo Stories, a recent addition to Duolingo, with respect to its potential for maintaining self-study. A description of different features of Duolingo Stories is presented along with their implications for self-learning languages. Duolingo Stories provides supplementary reading and listening practice with a focus on vocabulary building in a fun, contextualized, and fairly interactive environment. Using a variety of language learning theories and principles, the present study also investigates the benefits language learners would gain, as well as the limitations they could face, when interacting with the stories.

KEY WORDS: self-study, Duolingo Stories, online language education, language learning theories and principles

1. INTRODUCTION

Online education provides ample opportunities for self-study by promoting learner autonomy. According to the self-determination theory, the need for autonomy is one of the three basic needs of human beings (Ryan & Deci, 2022). However, autonomy also entails responsibility (Hagel & Shaw, 2006), and this is where self-regulation and motivation are of utmost relevance. In the absence of actual classrooms and face-to-face communication with teachers and classmates, students need to make efforts to maintain their motivation (Ribbe & Bezanilla, 2013) and self-regulate their learning and metacognitive strategies (de Fátima Goulão & Menedez, 2015) in online education.

Duolingo, used by several million people worldwide to self-learn languages, can be considered a prototype of online education tools. Nevertheless, empirical research on the effectiveness of Duolingo and its various features is very scarce (Lye, 2021). In the dearth of such empirical studies, a body of research has instead focused on reviewing Duolingo features in accordance with different educational theories. In a similar vein, the present review aims to provide an analysis of Duolingo Stories, one of the recent additions to Duolingo, from the lens of second language acquisition theories and principles to shed some light on the benefits as well as challenges it can bring about for its users, especially self-

taught language learners. The review starts with a general description of the features of this new addition, its historical development, and its status in today's world of online language learning. Next, Duolingo Stories is evaluated from four perspectives: technological features, pedagogical features, teacher/materials developer fit, and learner fit. The review concludes with a summary of the benefits Duolingo Stories provides its users with as well as the limitations it bears.

2. GENERAL DESCRIPTION

Duolingo is one of the most popular language learning apps (Shortt et al., 2022). Part of its popularity comes from its continued adaptation of technological advancements and innovations in education. Since its establishment in 2011 and public release in 2012, Duolingo has been continuously evolving with innovative features (Savvani, 2018). One of the recent additions to Duolingo's core features is Duolingo Stories, introduced in late 2019 (Moon, 2019), which is a set of graded stories designed in a relatively interactive format. The stories have been designed in accordance with the levels of Duolingo lessons. They are generally short, ranging from around 20 to 30 lines. As the level of the stories rises, the number of the lines and their length could also increase slightly. As the user goes on in the story, a few (mainly) multiple-choice questions show up, which need to be answered correctly before the story continues. The questions ask the user to choose either the option that completes a character's exact sentence or an option based on what can be inferred from the story.

Duolingo is often considered one of the most innovative projects in online education (Pellizzoni et al., 2019), and Duolingo Stories, as part of the project, is no exception. While teaching language through stories is not a new idea, what makes Duolingo Stories innovative in the first place is their length. In spite of the various benefits of (short) stories (see, for example, Nojoumian & Yousefpoori-Naeim, 2009), they can be overwhelming to some students and take much of their time (Violetta-Irene, 2015). Each story of Duolingo Stories can be read, or listened to, in less than 5 minutes. The availability of glosses, audio replays for each line, and carefully crafted intonation in the characters' speech, which are all described in the following, help to keep the stories manageable and easy to follow. Moreover, user engagement is constantly maintained by leaving the flow of the story in learners' hands, as they need to either click on the "Continue" button or answer a short question to see the next line of the story.

The stories are enhanced with a few pedagogical features. Glosses are present throughout each story. If the user does not know a word (or phrase), they can hover their cursor on that word to see its meaning. As another supplementary feature, in addition to the first time that each line is played automatically, the user can choose to play that line as many times as they want. From the second replay on, the line is played at a slower pace. Finally, after each story comes to an end, there is one final matching question (matching words/phrases with their meanings), which is tailored to the user's performance during completing the story. The

questions that the user missed or the words they hovered over are included in this final matching question. If the user did not answer any questions incorrectly during the story or never used glosses for any words, then a preset matching question is asked.

The stories have gone through a few changes since their introduction. When first launched, the stories were added as a separate feature to Duolingo's main lessons, but they have been recently integrated into the road map of the main lessons. Moreover, until recently, the stories were presented at two slightly different levels of difficulty. The first time a user wanted to do a story, they would both read and listen to the lines. On the later tries, the user could take the challenge to do a somewhat more difficult version of the story, in which parts of the story could initially be only listened to (the text would appear only if the user asked for it).

Duolingo Stories has generally received favorable reviews and evidence-based support. Redjeki & Muhajir (2020) consider it one of the best resources of Duolingo for practicing listening, reading, and conversation comprehension. In another study, Muslimin & Julaikah (2022) showed how part of the German Duolingo Stories could be matched with parts of the first semester of their 12th-grade curriculum for the reading skill in Indonesia. Hirschi (2020) also argued for the potential Duolingo Stories has for teaching suprasegmental features in pronunciation, as the users would benefit from their prosodic knowledge to better understand the dialogues in the stories. Finally, while some studies on Duolingo and MALL have concluded that the main benefit of using language learning apps is the improvement in receptive explicit knowledge (e.g., Loewen et al., 2020); Brandy (2021) showed that the Stories component of Duolingo was mainly effective in enhancing the receptive implicit knowledge of the user. Nevertheless, the generalizability of Brandy's (2021) results is limited, as it was a case study with two Spanish learner participants.

3. EVALUATION

3.1 Technological Features

Duolingo generally needs internet access, but the app would download a few lessons for use in the offline mode. The progress the user makes in the offline mode will automatically be synced with the user's online profile once there is an internet connection. Duolingo Stories can be accessed both on the Duolingo app (Android and iOS) and on Duolingo's website. While Duolingo users might notice differences between app-based and web-based versions in terms of both content and design of Duolingo's main lessons, Duolingo Stories appear identical on both platforms. Both the website and the app version are very simple to use. Duolingo Stories does not have any specific settings other than the generic settings for Duolingo itself, and there are not many options for the user to set in the Duolingo settings other than the common profile, password, notification, and privacy settings.

3.2 Pedagogical Features

Most of the learner's time is spent reading and listening to the storylines with preset intervals for answering comprehension and vocabulary questions. The main focus of Duolingo Stories is therefore on improving reading and listening in terms of language skills and also vocabulary learning in terms of language components. The improvement of the reading skill is limited to the genre of stories and/or fiction only. Even within this genre, the scope is further limited to dialogues between characters with the occasional use of third-person narration of the story. The listening skill is practiced in a relatively authentic manner. The voices are real human voices with careful consideration of suprasegmental features of phonology to aid comprehension of the stories. These suprasegmental features are, nevertheless, often fairly exaggerated. The automatic replay of the audio at a slower pace, while helpful for some learners, further throws the authenticity of the task into question.

Vocabulary instruction and practice is a major focus in Duolingo Stories. The availability of glosses for every single word greatly helps with creating a stress-free learning environment and maximizing comprehension by lowering students' affective filter level. In line with the Affective Filter Hypothesis, such out-of-class activities have been shown to boost students' motivation and self-confidence, lessen their anxiety, and thus result in better vocabulary acquisition (see, for example, Nath et al., 2017). Moreover, as mentioned earlier, according to the self-determination theory, the need for autonomy is considered one of the three basic needs of human beings. Glosses can promote learner autonomy, as they deemphasize dependence on teachers and can be particularly helpful in self-learning. Note that the glosses for Duolingo Stories do not always work on a word-for-word basis. Lexical knowledge has been dealt with at levels higher than single words too, taking into account larger chunks such as phrases, collocations, and longer interjections. All these lexical items are presented in context while the learner reads or listens to the stories, but the questions are not always contextualized. For example, the final question is a matching of words/phrases with their translations devoid of any context. Therefore, the vocabulary questions can be considered a combination of drills and more meaningful tasks. The vocabulary-related activities are primarily instructional (rather than collaborative) with a few relatively interactive items and the facilitative feature of the glosses.

As for reflecting culture, the stories are around various topics of daily life such as traveling, shopping, entertainment, and studying; therefore, they can be seen as adding a cultural component to Duolingo's main lessons, which are generally culture-free. Nevertheless, the cultural aspects are usually not specific to the target language or the people of the countries speaking that language. A large number of the stories are the same across different languages. Moreover, while there is indeed a trace of culture in the topics of the stories, these topics do not necessarily reflect the true cultural norms or traditions because most stories are manipulated to be amusingly strange rather than representative of real cultures.

3.3 Teacher/Materials Developer Fit

Duolingo seems to have made a conscious attempt to take care of gender biases and racial discrimination throughout its main lessons as well as stories. Even the LGTBQ+ community has been taken into consideration, for example in a story called "Honeymoon," where two female partners plan to go to New York. These considerations have added to the inclusivity of the language and have set the ground for a rather bias-free learning environment.

On the downside, the selection, grouping, and level grading of the stories lack a strong rationale. In terms of vocabulary and grammar, the level of the stories does not correspond to that of the main lessons. The stories seem to have been selected for specific levels merely based on general comprehensibility and to some extent topic relevance. While the stories might be initially expected to consolidate the materials introduced in the main lessons, they often go well beyond them. From the perspective of the Input Hypothesis, the higher level of the stories can be interpreted as exceeding the comprehensible input and the optimal $i + 1$ (Mason & Krashen, 2019) and thus decreasing its pedagogical value. This might also take some of the fun out of the generally amusing stories.

Despite the greater difficulty of the content in the stories, compared to the main lessons, the stories are generally easier to complete. For example, the number of questions asked is lower, multiple-choice questions have fewer distractors (3 in the main lessons versus 2 or even 1 in the stories), and there is no penalty for wrong answers. This is in line with the secondary role the stories play as a nonintegral supplement to the main lessons, so they are less demanding and more fun. This dual approach to the preparation of the stories makes it challenging to comment on their purpose and applicability. From the reading skill perspective, Duolingo Stories holds a mixture of the elements of both intensive and extensive reading (see Maipoka & Soontornwipast, 2021, for a description of the two approaches to reading). Purpose-wise, it is mostly extensive reading, as it has a peripheral role and is supposed to be pleasurable and fun (Grabe, 2009). In terms of linguistic features, however, Duolingo Stories violates some assumptions of extensive reading, i.e., containing longer text while remaining at the linguistic level of the reader (McLean & Rouault, 2017), as all stories are short and at a higher level than the learners' competence.

3.4 Learner Fit

For a user of Duolingo, the stories are a much-needed supplementation to compensate for the lack of sufficient reading and listening exercises in the main lessons. The stories are also very fun, usually with surprising endings, which bring variety to the main lessons. They can also be completed quickly without worrying about failing or losing points and thus perfectly fit those very busy learners who do not have enough time for a focused lesson but still do not want to lose contact with the target language. Although the language of the stories is often above the level that the users have already achieved, the availability of glosses, possibility of replaying the storylines, and fairly easy questions contribute to a pleasant experience of

completing the stories. For learners who need to understand every single word in a sentence to feel they have really understood the sentence, Duolingo Stories can be slightly frustrating, but at the same time, it may help such learners realize that there are also other aspects to comprehension (such as intonation) that they can take advantage of to gain a better understanding of the story. In this regard, the stories can be considered a double-edged sword, the success of which would depend on the learner's approach to using them.

3.5 Summary

Overall, Duolingo Stories is a useful addition to the main lessons of Duolingo by providing further reading and listening practice along with a focus on vocabulary building. It is generally less challenging to complete in comparison with the main lessons, creating a favorable environment for practicing reading and listening, internalizing previously introduced words, and even learning new words and phrases in context. The stories are fun, easy to complete, connected with daily topics, and relatively interactive. The efficiency of Duolingo Stories is, nevertheless, restricted due to a number of limitations, such as its dependence on the learner's approach to interacting with the stories and also the higher level of the linguistic difficulty of the stories compared to that of the main lessons.

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