Computer Assisted Language Instruction Consortium

Learning Technology Review

Duolingo

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PRODUCT AT A GLANCE

Product Type	Language learning website and mobile app
Language(s)	Spanish for English speakers, 25 other languages available via 69 courses
Level	Novice to advanced, all ages
Activities	Speaking, listening, translating, reading. Short-answer translations, multiple-choice, short oral translations and repetition activities, conversation feature via *bots*
Media Format	Downloadable mobile application for iOS, Android and Windows or website version
Operating System(s)	Web-based, iOS 8.0 or later, Android, Windows.
Hardware Requirements	Web-based, cross platform
Documentation	None
Price	Free

General Description

Duolingo is an online language-learning platform which launched in 2012 that offers courses in 27 different world languages. Duolingo is also available as a mobile application on Android, iOS (iOS 8.0 or later), and Windows (Windows 10, Windows 10 Mobile, Windows Phone 8.1 or later) devices. This review will primarily focus on the website version of the software. The site claims to act as a

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private language tutor that provides individualized instruction that motivates its users through game-like activities to promote language acquisition (Duolingo, 2011). Aside from the individualized instruction offered by Duolingo, the site also offers a Duolingo English Test to assess non-native English speakers' proficiency level, an English test for business, as well as Duolingo for schools. This review will focus on the individual tutor function of the site for Spanish for English speakers.

Users can create an account or access activities without an account. However, users can only save their progress by creating an account. After creating an account, users can choose a language to study and immediately begin activities. If users have previous experience with the target language, they are able to take a placement exam to progress to more advanced units. The learning experience is broken up into themed units which start from "Basics" and can range from thematic vocabulary sections such as "Food" or "Family" to more advanced grammar topics such as "Past Perfect" and "Subjunctive Past". Within each of these themed units there are between two and ten lessons available to users. The learner's Home page, found at the top of the page with three other navigational tabs (Words, Activity, and Discussion), shows both the units that have been completed as well as all those that are available. See Figure 1 for a preview of this Home page with units.

In the Words tab at the top of the screen, users have access to a list of vocabulary they have covered thus far through their lessons. This page provides a translation to English, the part of speech, when the word was last practiced by the user, and the strength of the user's knowledge of the word as determined by their performance in the lessons. Next, the Activity tab allows students to track their frequency of use and accomplishments within Duolingo. Finally, the Discussion tab allows students to participate in discussion boards about a broad range of topics from new features of Duolingo and how-tos to specific grammar topics.

The site has incorporated a gamification element into the learning process by allowing users to "level up" to the next section by means of adaptive release. The users must complete each section before moving on to the next, although a "test out" option is available if students have previous knowledge of the language and wish to advance to a higher level. Within this test out option, learners have three lives, shown as hearts in the upper corner of their screen. Each time a user incorrectly answers a question within the test they lose a life. If all lives are lost, the learner must begin the test again or complete the assigned activities that they are trying to test out of. There is no limit on incorrect answers within regular activities, although users cannot advance until they answer correctly. Incorrectly answered questions are recycled until they are answered correctly. Successful completion of

activities and levels also earns "lingots," shown as small jewel icons as seen in Figure 1, which can be redeemed for bonus activities, extra practice, or power-ups.
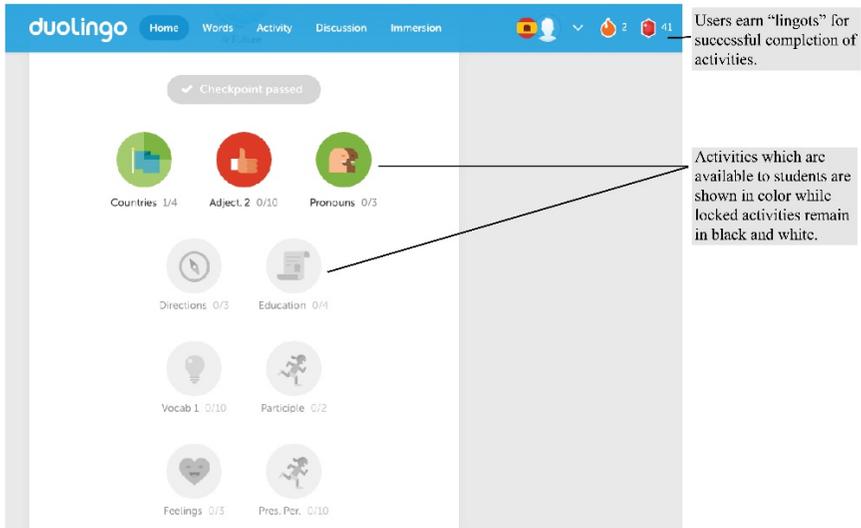

Figure 1: Users receive "lingots" for correctly completing activities.

Previous research on Duolingo has explored the validity of the Duolingo English Test for non-native English speakers (Ye, 2014), the effectiveness of the site for language learning (Vesselinov & Grego, 2012), and the effectiveness of the optional web translations performed under the Immersion tab, which is no longer an available feature (Garcia, 2013). Vesselinov and Grego (2012) found that users' improvement with the target language, Spanish, improved significantly over the course of eight weeks and that the main factor for higher effectiveness was the motivation of participants. It should be noted that this study was funded by Duolingo.

Evaluation

Technological Features
Although a mobile application is available, this review will focus on the web-based program because, as seen in Table 1 below, the website offers a wider range of features. The website requires an internet connection during use, so loading speeds may depend on the quality of the individual user's internet connection. No plug-ins or downloads are necessary to run the website.

Table 1
Website vs. mobile features

Feature	Website	Mobile application (web, Android, iOS)
Home tab features	X	X
Words tab features	X	
Activity tab features	X	
Discussion tab features	X	
Test out feature	X	X
Discuss this question feature	X	X (Android only)
Earn/redeem Lingots	X	X
Share progress on connected social media	X	
Clubs user networking feature		X (Android and iOS only)
Bots automated chat feature		X (iOS only)

The website offers users the option to log in using a preexisting Google or Facebook account or to create an account with Duolingo. Creating an account is free of charge and allows users' progress to be tracked and saved within their account. Users can also link their accounts with LinkedIn, Facebook, and Twitter to share their progress if they so choose as seen in Figure 2.
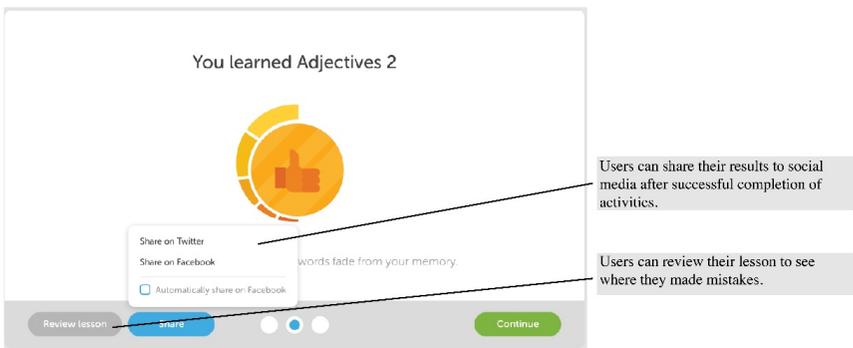

Figure 2: After completing activities, users are able to share and review their progress.

After creating an account, the site is very user-friendly and easy to navigate. All available content can be accessed through the four previously mentioned

tabs at the top of the page. These tabs allow learners to navigate through their personal account. As seen in Figure 1, each unit is shown with both the title and a small graphic to depict the unit's theme. After clicking on the unit they wish to complete, students are brought to the lessons within that unit with an explicit grammar explanation of the themes for that unit beneath them. These grammar explanations are available to users, but they do not need to read or complete them in any form to participate in the activities.

Pedagogical Features

Within the lessons, activities focus primarily on translation skills, pronunciation, vocabulary, listening comprehension, and spelling. Each lesson is quite short, around ten to twenty questions each. This contributes to the game-like quality of the site. Users can see their progress through the program after each lesson and are not bogged down by lengthy lessons, which the authors of the site hope will motivate users.

These activities are, as claimed on the site, created with the intention of using the website as a language tutor. Therefore, most vocabulary activities are largely instructional in nature with drill activities featuring matching or multiple-choice questions. The explicit grammar sections available to users are also instructional in nature, as they provide a written explanation of the grammar, but do not leave room for users to interact with a human instructor or to ask questions. That being said, some of the other activities are interactive in nature, as seen in Figure 3, featuring speech recognition to evaluate oral production and immediate feedback on written translation activities.
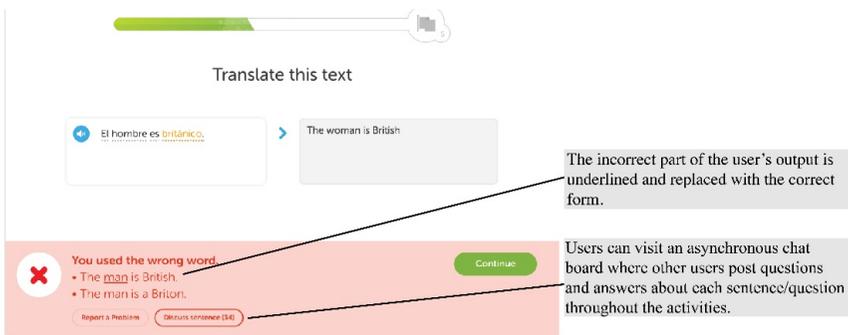

Figure 3: Users have multiple forms of feedback available to them.

Some facilitative tools are also available to students, such as the glossing capabilities within activities, as seen in Figure 4, and the vocabulary lists with translations available under the previously mentioned Words tab, although this feature is not available from within the activities.
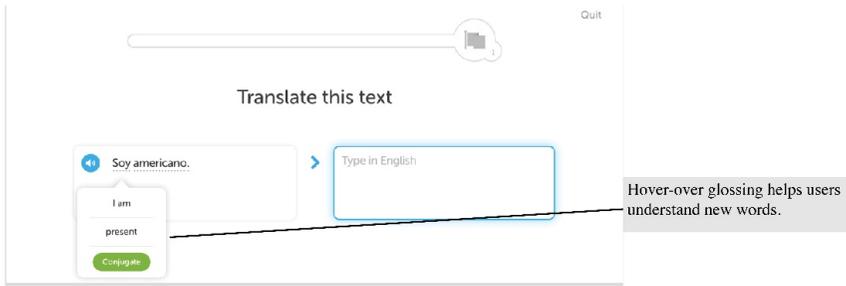
Figure 4: Some scaffolding is available to the users via glossing features.

While these activities do cover a wide range of language and linguistic skills, there is an evident lack of activities that focus on pragmatic or cultural skills. However, Duolingo does not make any claims about promoting inter-cultural competence or cultural awareness, only that it can serve as a language tutor. This may be problematic to those who espouse sociocultural approaches to language learning and teaching in which language and culture are considered inseparable concepts.

Teacher Fit (Approach)

Duolingo takes a behaviorist approach. The mandated production of oral output does not take into consideration meaning or context. Similarly, the production of written output has very little to no context; a heavy emphasis is put on the production of structurally accurate output. More specifically, these activities represent the repetitive nature of the Audiolingual Method (ALM) (Block, 2003; Koike & Klee, 2013; Skinner, 1957; VanPatten & Williams, 2015). Correct answers are rewarded by moving onto a new level and incorrect answers receive negative reinforcement. This feature forces the user to answer correctly before moving on to the new material. Users also receive negative feedback through the repeated production of output, which must be structurally correct as per the standards of the language, in order to move through the levels. This controlled release of levels and use of negative feedback indicate a behaviorist approach. In accordance with this behaviorist approach, the production of structurally accurate output in the L2 is instilled in the learner as a series of new behaviors.

In conjunction with the corrective nature of feedback given in response to incorrect production that is prevalent in ALM, one common expectation that many language learners have is that they will be, and want to be, corrected by their instructor when they make mistakes (Bargiel-Matusiewicz & Bargiel-Firlit, 2009). In this aspect, Duolingo holds true to their promise to function as a personal language tutor. Both in oral and written output, users receive

negative feedback in written form as seen in Figure 3. This feedback is most frequently provided in the form of a recast of sorts that pinpoints or emphasizes the exact location of the user's mistake, hoping to draw their attention to the problem so that it can be corrected in future output (Aljaafreh & Lantolf, 1994; Mackey, 2006). While this negative feedback can help students to notice the gaps in their language production, it lacks the more scaffolded feedback approach that is favored in modern communicative methods. Nevertheless, if the desired outcome is focused on target-like pronunciation and grammaticality, ALM can be a good fit.

While some argue that repetitive activities, such as oral production activities, have a place in the acquisition of target-like pronunciation, ALM has been widely criticized for producing learners who cannot communicate in real-life contexts. This can result in learners who can memorize and repeat in the target language but lack the ability to creatively produce the language in authentic and significant contexts (Koike & Klee, 2013).

Many of the grammar-focused activities also show evidence of being based in the grammar translation method, as users do a great deal of translating between English and the target language, with explicit grammar explanations provided at the start of the unit. This grammar translation approach also often lacks the context needed for learners to produce the L2 in authentic contexts (Koike & Klee, 2013). Even many of the listening/reading activities require students to listen to an utterance in the target language and translate it into English or simply to transcribe it in the target language. As recent trends in language pedagogy have moved toward more communicative methods, it may serve Duolingo well to implement contextual as well as cultural elements into their curriculum to better prepare students for authentic language interactions. Again, however, if the goals of the activities are to produce grammatically sound translations, the use of the grammar translation approach is valid here.

Previous research on the effectiveness of Duolingo (Vesselinov & Grego, 2012) measures the abilities of users of Duolingo on another online, grammar-based language placement exam. As Duolingo makes no claims to be a communicative-based language-learning tool, this is a reasonable measurement for the effectiveness of what the program claims. However, in modern second language acquisition and pedagogical research that has a strong emphasis on communicative methodologies, it seems that this approach to assessing Duolingo's effectiveness as a language-learning tool may be overly simplistic.

Therefore, it seems that Duolingo, although some of its theoretical frameworks are outdated, may have positive effects on students' acquisition of pronunciation, vocabulary, and basic grammar structures. However, the hodge-podge

effect of implementing multiple pedagogical approaches and the overall lack of context in the software may make these acquired skills difficult for users to apply in real-world uses of the target language.

Learner Fit (Design)

One of the claims made by Duolingo in their manifesto is to "create the most effective educational system possible and tailor it to each student" (Duolingo, 2011). The idea of tailoring a language program to each individual learner would be an ideal way to take into account learner differences. While there are some attempts toward individualization by means of the placement test that users can take to opt out of lower level materials and the strength meters shown for different skills, Duolingo's curriculum remains quite prescribed. The adaptive release feature forces users to complete certain sections before they can continue on to other sections. Learners are not given an option to choose specific purposes for their intended language use or even to choose activities that are a better fit to their learning style, and the same type of activities are repeated throughout all the units.

Learner differences such as sex or age are not taken into account, although most content is generic enough that this is not a noticeable issue. While the supplementary tools such as those found in the previously mentioned Words and Immersion sections can be utilized or not depending on user preferences, the actual activities that form the language curriculum give learners very little control over the content of their language course.

Summary

To conclude, while Duolingo is consistent in its claims to serve as a free, private tutor-like language learning experience, there are issues with its claims regarding the individualization of the platform to each user. The use of ALM and the grammar translation method may be appropriate for purposes such as acquisition of vocabulary or some grammar points, but they lack the ability to coach students in the authentic production of the target language. Therefore, in a modern setting that is focused on communicative methods of language teaching, Duolingo may be most effective as a supplementary language learning tool rather than as the main or only source for learners who want to utilize the target language in authentic contexts.

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