

DUOLINGO AND SUPPORTING TEACHER ASSESSMENT

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ABSTRACT

Duolingo has been collecting feedback from education users for the past seven years in order to make the app useful as a classroom tool, in addition to its ongoing use in informal learning settings. To understand teachers' experiences about Duolingo for classroom and to understand further measures recommended to strengthen the platform for classroom instruction, the purpose of this paper was to examine the research question: What are educators' feedback on Duolingo's school program based on a netnographic analysis of discussion boards? Netnography was used to research publicly available data concerning how educators can use the assessments in Duolingo classrooms as an instructional tool to personalize learning. The netnographic analysis found three themes among educators' comments: (Theme 1) questions about grading, credit, and testing; (Theme 2) the use of grading rubrics; and (Theme 3) requested modifications from Duolingo for the Duolingo school program. In understanding the educators' concerns with Duolingo for Schools, with modifications to connectivity issues and scoring guidelines, educators and students may be better prepared to learn with Duolingo in a classroom setting. With some additional improvements to Duolingo classrooms, educators may benefit from using the progress reporting in Duolingo classrooms as an assessment to support personalized learning.

Keywords: *online language learning, classroom progress reports, assessments*

INTRODUCTION

In August 2021, the app Duolingo released new and improved tools for teachers who use the language learning platform for students in their classrooms (Miller, 2021). Duolingo has been collecting feedback from education users for the past seven years (Duolingo, 2015a; 2015b) in order to make the app useful as a classroom tool, in addition to its ongoing use in informal learning settings. Duolingo has streamlined the app's classrooms for educators based on hundreds of teacher responses (Duolingo, 2015a). The teacher-oriented features explored in this article have emerged as a result of feedback from users on the Duolingo discussion board forums. However, educators have requested many features that have still not been integrated into the platform. Therefore, it is important to understand and share teachers' experiences with

Duolingo for classroom use in order to consider further measures to strengthen the platform for classroom instruction. The purpose of this paper was to examine the question: *What is educators' feedback on Duolingo's school program based on a netnographic analysis of discussion boards?* Netnography was used to research publicly available data concerning how educators can use the assessments in Duolingo classrooms as an instructional tool to personalize learning. Netnography is a newer methodology supporting researcher observation, documentation, and analysis of human behavior applied to online environments (Charles & Gherman, 2019; Kendal et al., 2017). These findings may help inform researchers and educators on strategies to get the most out of Duolingo in schools while pinpointing areas for improvement.

LANGUAGE LEARNING SUPPORT FOR TEACHERS

Language learning software provides significant value for educators in the classroom. For example, software—such as Duolingo—offers a valuable supplement to traditional language instruction methods, allowing educators to enhance their teaching strategies and provide students with additional resources and practice opportunities (De la Vall & Araya, 2023). In addition, language learning software often incorporates interactive exercises, engaging activities, and multimedia content that can make the learning process more enjoyable and immersive for students (Russell, 2020).

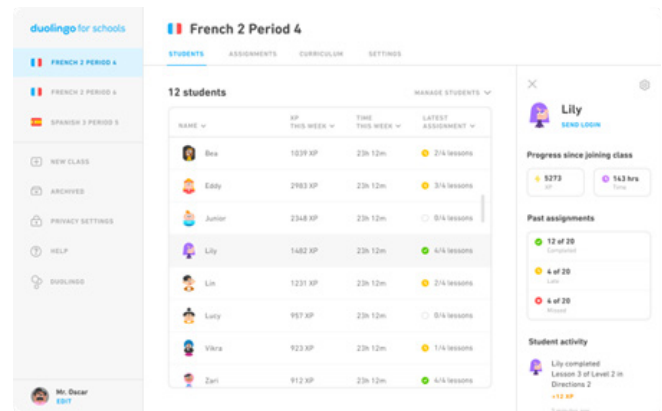
Language learning software provides personalized learning experiences. For example, Duolingo allows educators to tailor the content and pace of instruction to each individual student's needs, ensuring that each learner can progress at their own pace and focus on areas where they need more support. Adaptive algorithms and data analytics in these software platforms can provide valuable insights into students' strengths and weaknesses (Chen et al., 2021), enabling educators to track their progress, identify areas for improvement, and provide targeted feedback.

HOW DUOLINGO WORKS FOR TEACHERS

In terms of using the app for formal instruction, Duolingo already has features that streamline the process for teachers. The teacher may enroll students in a class by creating accounts for students using their email addresses; the teacher can also create unique email addresses for students who are too young to create their own email accounts. When the teacher is ready to invite students to join the class, they can view which students have joined and resend login information to those who have not accepted the invitation to join the classroom, as seen in Figure 1. The dashboard is the primary tool teachers use to manage everyday classroom functions. Educators may adjust their classroom settings so targeted content is available for each student.

Whether enrolled on their own or through a class at their school, students progress through each unit of each course by earning XPs (experience points), which are part of Duolingo's system of gamified learning. Duolingo is gamified, which means users are engaged with elements and mechanics traditionally found in video games (Bende, 2017). These elements are effective in

Figure 1.
Duolingo Student List



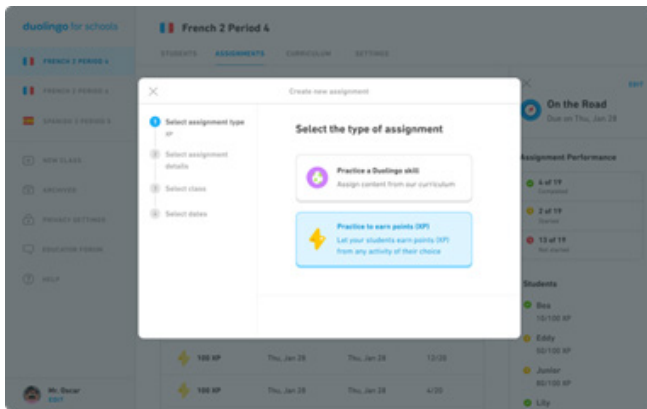
Source: Miller (2021)

educational software as they create incentives for learners to make progress. Students can earn XPs by completing lessons or Stories, demonstrating a user's proficiency and progress (Savvani, 2018).

The units of Duolingo are known as "Skills." As students progress through their assigned lessons, progress made in their Skills will be displayed as pictures of colorful circles, depicting a student's grammar and vocabulary proficiency level. When a circle turns gold, this indicates that the user has completed the unit at a proficient level. Educators can assign Skills lessons that focus on grammar, vocabulary, or Stories (listening) to promote reading and comprehension (Mulya & Refnaldi, 2016). As students complete multiple Skills, made up of multiple lessons or collections, they become more proficient in targeted content (Savvani, 2018). The data teachers receive from Duolingo can help with forming learning groups or updating assignments based on individual learning needs (Mulya & Refnaldi, 2016). In addition, the data provides educators with information on how to select appropriate topics to meet students' needs. Teachers are able to adjust students' content by assigning them specific Skills, as seen in Figure 2, based on their individual learning needs.

Although educators may augment their course curriculum by assigning particular Skills to students, they can also create XP assignments that allow students to use any other activities available on Duolingo, such as Stories (Duolingo, 2021; Miller, 2021). Duolingo Stories allow users to engage in narrative stories based on scaffolding that improve learners' reading comprehension

Figure 2.
Create Assignments



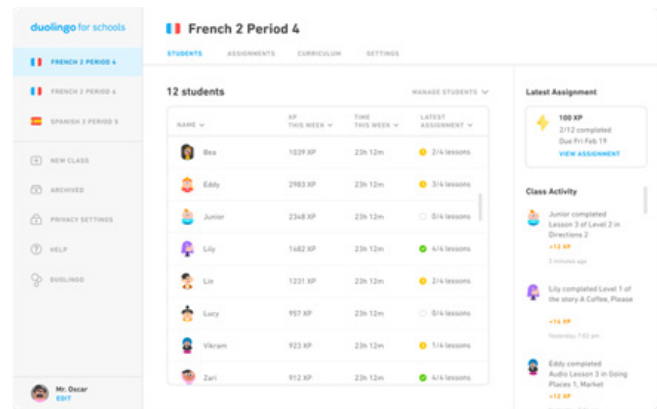
Source: Miller (2021)

in a foreign language with “mid-story exercises” (Jiang et al., 2020). In 2020, Duolingo implemented the Common European Framework of Reference (CEFR) to standardize the skills for language acquisition to align with this model, which is based on the scaffolding theory often used in instructional practice (Jiang et al., 2020). Scaffolding is a key part of Duolingo’s structure, as it offers a way for students to build their skill set with support each step of the way. Miller (2021) noted that the Curriculum tab shows which Duolingo Skills are presented in each language course and unit and how the unit aligns with the CEFR. Students cannot advance until they prove mastery of the content in their current lesson.

Educators are also able to view the students’ activity on their classroom dashboards to help inform their instruction (Miller, 2021). The information about student activity is presented at both the class level and the individual level, which tracks activity completion and assignment progress. The educator is able to track the length of time each student has spent on the units, the XPs they have accrued each week, and whether they have completed the assignments on time (Figure 3).

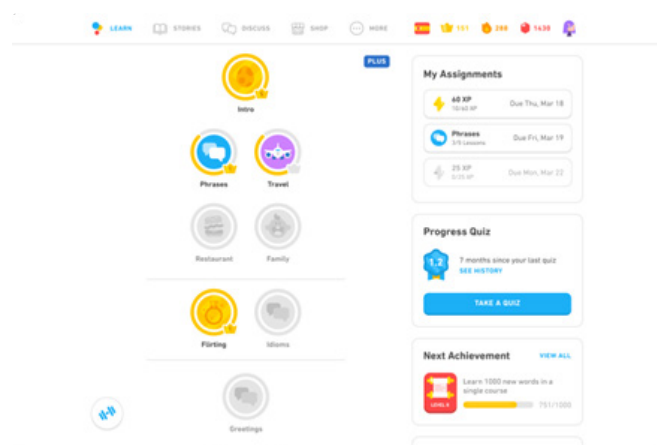
Students cannot access their assignments through the mobile app, as they must log on to the desktop version of Duolingo to see their assignments, progress on quizzes, and next achievements, as seen in Figure 4. However, any work and activities completed on the mobile app count towards their overall progress in the course.

Figure 3.
Viewing Student Activity



Source: Miller (2021)

Figure 4.
Students’ Experience



Source: Miller (2021)

The next section explores the methodology used to answer this study’s research question about educators’ responses to the Duolingo school program.

METHODOLOGY

The purpose of this study’s qualitative netnography analysis was to examine educators’ feedback and examples concerning the effectiveness of using the Duolingo for Schools program. The current study analyzed 20 discussion boards that contained the keywords *lesson*, *lessons*, *grade*, *grading*, *assign*, *assignment*, and *homework*. With an average of 32 posts/exchanges per discussion board, data from 20 discussion boards were analyzed to understand how ongoing conversations among Duolingo educators may point to areas for improvement for Duolingo for

Schools. A netnographic methodology was used to explore publicly available online data present on Duolingo discussion boards.

Researchers have outlined netnography as an academically rigorous methodology that allows researchers to collect digital data through nonintrusive methods in the participants' naturalistic setting (Heinonen & Medberg, 2018; Kozinets, 2010). In doing so, the data collected for this study reflect participants' thoughts that were openly shared in their chosen environment with anonymity. Kozinets (2010) described the process of netnography through six steps: (a) coding; (b) noting; (c) abstracting and comparing; (d) checking information and refining; (e) generalizing; and (f) theorizing. Cumulatively, these steps allow the researcher to establish codes, patterns, and relationships and then develop concepts and constructs hierarchically; the researcher then translates these units into generalizations and theories that relate to the participant sample as a whole (Kozinets, 2010). These six steps were followed in the data analysis process of the 20 discussion boards that served as data for this study.

RESULTS AND DISCUSSION

The analysis focused on 20 discussion boards that displayed educators' comments about their students and classrooms in the Duolingo for Schools

program. In education, scaffolding is at the foundation of many lessons and instructional units (Shin et al., 2020). Duolingo is based on scaffolding theory, supporting the advancement in levels through the successful completion of activities and milestones (Wood et al., 2007). Considering the role of scaffolding theory in education, this analysis aimed to answer the question: *What are educators' perceptions on the effectiveness of using Duolingo's school program?* Experiences and examples shared by educators were gathered for analysis. Using a text analysis of the 20 discussion posts, several key terms were gathered to determine the frequency of issues and concerns about using Duolingo in the classroom. Table 1 presents a frequency of terms as they relate to the qualitative findings and themes.

The netnographic analysis found three themes among educators' comments: (Theme 1) questions about grading, credit, and testing; (Theme 2) the use of grading rubrics; and (Theme 3) requested modifications from Duolingo for the Duolingo for Schools program.

Feedback About Grading, Credit, and Testing

Educators had different issues with grading, assigning credit, and testing on Duolingo based on the age group of their students. One issue that teachers mentioned was the fact that only one

Table 1.
Frequency of Teacher's Issues or Concerns with Duolingo Classroom

Theme	Terminology from Discussion Posts	Frequency Count for Each Term
Grading/Testing	Grades	36
	Testing/Tests	42
	Credits	21
Rubrics	Grading Systems	21
	Point Systems	15
	Progress	34
	Setting Goals/Class Goals	21
	Points	26
Recommendations for Modifications	Email/Privacy	16
	Classroom Discussion/Privacy	11
	Slow Speeds/Stuck	7
	Tracking Student Progress	16

Note: The frequency count highlights how often the terms are mentioned by the educators and demonstrates how important these issues and concerns are among the educators, as they are mentioned many times.

teacher can be assigned to each class. Teacher 1 described:

One student, many teachers—a student can just subscribe to one teacher. If your students take an Italian class and subscribes to that teacher, it automatically unsubscribes the student from your class. This I would consider a major design flaw.

One teacher stated that there were issues regarding the inability of multiple teachers to interact and manage students in a single class. Additionally, this teacher stated that each course should provide a private discussion board where the students in the class can interact only with one another. Previous research has shown that discussion boards are highly important for Duolingo users to gain social support that may encourage a greater understanding of the language's cultural context (Neuschafer, 2021). When reflecting on a sibling that was enrolled in a Duolingo classroom, Teacher 2 mentioned two major suggestions:

- 1. Allow students to enroll in multiple sessions.** Right now, my sister's school is not using the dashboard to track their students' progress, but someday they may. And as her brother, I would also like to know how she is doing at school. Alternatively, different language teachers at her school may want to track her progress in different language courses, for example, both French and Spanish.
- 2. Create a separate place for students to comment.** I'm not quite sure how you can do this, but I know the problem is there. Children don't know the forum regulations, and may leave spam comments when they get bored, especially when they are forced to use Duolingo by their school teachers. To avoid clutter, or at least to reduce the workload of forum mods a little bit, the educators should be allowed to moderate the comments/posts of their students. It would be perfect if there was a place for educators to follow all the activities of their students. This may also help educators answer their students' questions more quickly.

Another commenter mentioned similar concerns about having only one teacher assigned to a class. Teacher 3 mentioned:

Multiple-teachers-per-student support is a must. Just look at the massive disgust of teachers across the country when Google launched Classroom with only single-teacher support. In my school, an ESL student has (or can have) classroom teachers, intervention specialists, an ESL coordinator, and an ESL aide who all want to be able to access student information for support. Google Classroom does a bad job at this. Khan Academy is an example of one that does a great job offering multiple "coaches."

Teacher 3 emphasized the need for multiple educators to have access to the classrooms, as students have more than one instructor or educational support. On a practical level, teachers mentioned that they need further guidance in assessing Duolingo's activities. For example, problems may arise when educators are unsure of which activities should be weighed in the students' grades. While XP can show the teacher how much work has been earned cumulatively, it does not necessarily mean that students are completing material that is advancing their proficiency at higher levels. Teacher 4 shared concerns over quality progress, stating:

I would like to give [students] credit for the progress they make, whether they test out or do the lessons. I assigned a ton of stuff—the entire first three sections of the program. (They are Spanish 2 students but most of them need a lot of review.) I can see that a lot of them have accumulated XP and made progress, but I only see that assignments are actually completed for a few students. What I was hoping was that when the students had demonstrated mastery of a topic, whether by completing lessons or testing, the assignment would show as completed and they could earn points that way. But it is not quite working out that way.

Teacher 4 noted how more feedback on student progress can help provide educators with a better sense of areas of strengths and weaknesses. In summary, many educators reported problems they

would like to see addressed, and they were also able to contribute strategies about how to assign grades that are not just based on accumulated XPs but other checkpoints, as explained below.

Educators Share Grading Rubrics

Since many teachers' questions are focused on how to assign grades to students, several users offered their own strategies and detailed grading rubrics with other teachers on the Duolingo platform. One teacher uploaded a rubric (Figure 5) provided to beginner college students that were only based on accumulated XPs.

Figure 5.
Sample Rubric

Teacher 5's Rubric

- 100% — 5 lessons done on 5 different days (Remember that it is 10 minutes each lesson)
- 95% — 5 lessons done on 4 different days
- 90% — 5 lessons done on 3 different days
- 85% — 5 lessons done on 2 different days
- 80% — 5 lessons done on 1 day
- Less than 5 lessons: 15 points per lesson done (better than 0)
- Don't forget, lessons are due on Sundays at 4 p.m.

Research shows that it is better to do a little throughout several days than a big chunk on one day, which is why I prefer this approach. Each student works near their own level. This year, I am considering giving students extra points for streaks on Duolingo (which are very easy to see on their page).

Another commenter shared another grading system based solely on XPs. Teacher 6 demonstrated seeing value in participation.

"In my middle school classes, I require them to be active every day. They receive seven points every week, one point for every day active," Teacher 6 stated.

Teacher 6 continued to share how points towards a participation grade encourage students to practice, leading to more earned XPs. However, there may be issues with grading solely based on earned XPs, since it only focuses on regular participation rather than skills accumulated. One commenter provided a link to a detailed grading system in a Google document. This grading rubric

was based on a point system where greater amounts of XPs earned translated to more points earned in the class. However, they also implemented a system to strengthen "upper-division skill" by passing through Skills checkpoints.

Teacher 7 mentioned that only grading based on earned XP can result in students taking easier units, so having a checkpoint for them to cross will ensure that students are meeting more advanced-level goals or "Golden Skills." Teacher 7 also stipulated that students must work for "at least 10 minutes per day, for seven days per week." Another educator, Teacher 8, mentioned that simply grading based on XPs was especially important to address among older students, such as high-school students who have "figured out how to outsmart the system, already." As such, it may be important for educators to understand how to ensure students are making high-level progress by keeping track of their Golden Skills and other checkpoints. Rubrics based solely on XPs may omit important criteria for assessing students' gains as they progress through the Duolingo program.

Educators also relied on weekly progress emails that Duolingo sends out to teachers. When setting up a classroom in Duolingo, educators will receive progress reports via email as a reminder to go in and view the progress, or lack of progress, students are making. Teacher 9 shared their process for basing grades on both XP and Skills progress, claiming:

You can give "assignments." Click on the left of your classroom and there will be a button. You can choose XP or Skills. You can choose the length of time, but the default is one week. When time is up, you can:

1. click on the assignment to see who did it, and/or;
2. click on each student to see their activity, and/or;
3. wait for the weekly progress email that Duolingo usually sends out.

In addition to the information provided by weekly progress emails, another strategy to ensure that students are completing high-level activities is using the lingot store. Lingots are the currency of the application's gamification elements, which

help students learn at a faster pace (Duolingo, 2021). Collecting lingots throughout the courses can enable users to obtain bonus skills, power-ups, and tests to skip to more difficult levels (Duolingo, 2021). Teacher 10 mentioned that students could use the lingot store to buy additional tests, which they could take to receive extra credit grades. Teacher 10 shared:

Have students take the test in the lingot store (costs 25 lingots) and it will give them a grade out of 5 (example: 3.75/5). You could multiply it by 20 to give them a percentage grade, or grade them on improvement from one testing to the next. This would require them to have the lingots, and if they don't, they would need to finish more lessons, start a streak, or do something to earn them before taking the test.

Lingots can serve as a proxy for a form of assessment that can allow the teacher to develop grades for students' work. However, one weakness of this aspect of the system is that it appears that students can "cheat" by looking up answers to tests online, as stated by Teacher 11:

Students tried to "cheat" by testing out of every level to earn a ridiculous amount of points (they used the internet for answers). Well, now I can't figure out how to reset their account to zero so they can legitimately participate in our contests. Please have a way for teachers to undo testing/work if they know students did it dishonestly. Or have a way for users to reset their own accounts without eliminating their account, or link to Gmail and I'll have the students do that (or is there already a way to do this?).

While there were no replies as to addressing dishonesty among classroom students, the challenge is there for Duolingo application designers to consider. The results showed that many educators were aware of the various strategies that could be used to measure students' proficiency in the language, while others were more likely to use a simple rubric that bases their grades on cumulative activity. As such, more educators should be informed on how to measure progress more

accurately, especially for tech-savvy and/or older students who have found ways to cheat the system.

Potential Modifications for Duolingo for Schools

Users shared feedback about the length of time it takes Duolingo's website to grade their responses. Technical flaws in the program ended up acting as a deterrent to the regular use of Duolingo. For example, many users were rerouted to a "Learn" page after they became stuck on a "Please wait" message. Some users mentioned that this occurred alongside slow connections to other websites; however, others reported this problem even if the users had fast internet, which they verified through their internet service provider. The users were unsure whether the completed lessons during poor connectivity contributed to their overall unit progress. Classroom Student 1 stated:

Three times today, after submitting the last response, my page got stuck on the "Please wait" message. Finally, I was brought back to the "Learn" page without any fanfares or credit for the completed lesson. My internet is being slow on other websites too, but Duolingo is by far the worst. Is anybody else experiencing problems?

While the student did not mention bringing the matter up with the classroom teacher, another student offered Classroom Student 1 verification and comfort. Classroom Student 2 stated:

I've had this problem, too, for quite a while now! And my internet is NOT slow—it's really just this site! It's putting me off of doing my daily lessons, since I've been redoing some of them several times, only to get stuck on the "Please wait" message, and then, after a significant amount of time, would be redirected to the "Learn" page without any of the stuff I did being accounted. I'm not sure if my credits were registered later—I'll have to keep an eye out for that. What I did notice is that for some of the lesson bundles (not sure what the right word is), I've advanced in teeny tiny steps. The level moves from being 20% completed to 23% completed. [Edit:] It seems to me the missing XP might have been registered (I'm talking half an hour later!) Much too slow for our fast-food

culture. At any rate, I am still wondering if it's DL or my ISP? Or a combo?

Similar complaints were seen on Duolingo discussion board forums, wherein Duolingo classroom users cited six additional forums outside of their shared classroom forum pertaining to the same topic of connectivity. Duolingo may benefit from providing a more seamless user experience for educators and students based on these connectivity issues.

Instructors also shared similar issues. For example, several educators mentioned issues with the instructor dashboards, which they wanted to have more options and the ability to customize. Teacher 12 explained:

I want my dashboard to notify me if students turn their mics off. Please help me as an educator. I have some students who keep turning their mics off. I am monitoring them closely, but I want my students speaking Spanish and not just typing it.

Teacher 13 asked for some specific features via a detailed list. Teacher 13 would like the following improvements in the Duolingo classroom:

- Collapsible progress by student name, month, week, day, and skill
- The ability to zero in on an area students are struggling most with
- To organize via toggle: students most-to-least progress, least-to-most progress (according to their course)
- Moving the minus sign to somewhere less precarious, and giving it either an immediately clear label or a hover label, like the change language portal badge on the Home tab
- Give students the ability to remove educator-student autonomy over the flow of their information
- Link website guidelines inside of the school feature
- Enable the educator to set goals and the students to see progress on goals and when they've met them (like the golding of a skill [Golden Skills], but where the teacher sets the goal)

- Chat forums for the educator and their students that are separate from the main forums, so we can focus on the topics immediately relevant to our students
- Separate immersion points from course points
- Keep people from seeing my email when sent the link to join the course
- Allow educators to know how far away a skill is from becoming gold
- Small FAQ
- Total XP column, plus a daily/weekly progress until the daily/weekly goal is completed column

Overall, Teacher 13's concerns were about classroom privacy and more feedback on student progress. In summary, the results show that Duolingo can benefit more teachers and students by creating customized dashboards that help educators keep better track of their progress, especially as it relates to understanding how to close the gap between a student's current level and their Gold Skill goals.

IMPLICATIONS AND RECOMMENDATIONS

The findings of this study hold significant benefits and value for educators who utilize language learning software in their classrooms. The research highlights the ongoing efforts of Duolingo to improve its platform for formal instruction, incorporating feedback from teachers over the years. Educators can take advantage of streamlined features that facilitate classroom management, such as enrolling students, monitoring their progress, and assigning targeted content based on individual learning needs. The gamified nature of Duolingo, with its XP system and progress indicators, incentivizes students to engage and make progress in their language learning journey. Educators can find value in the features of Duolingo, as gamification helps engage learners. In addition, teachers can utilize the data provided by Duolingo to form learning groups, customize assignments, and select appropriate topics to meet individual student needs. Furthermore, integrating features, such as Duolingo Stories, and alignment with the CEFR framework enhances reading comprehension and language acquisition through scaffolded narratives. By leveraging the insights from this study,

educators can maximize the benefits of Duolingo in their classrooms while identifying areas for further improvement, enhancing language instruction and personalizing learning experiences for their students.

Educators' feedback and examples gathered through the netnography analysis shed light on areas for improvement in schools that use the Duolingo language learning program. The study highlighted the importance of scaffolding theory in education and the role of Duolingo in supporting students' progression through language learning levels and activities. Future research should focus on conducting follow-up studies to track the long-term impact of Duolingo on language assessments in the classroom. By examining how Duolingo's use influences students' language learning outcomes, researchers can gain valuable insights into its effectiveness and identify strategies for improving its integration into educational settings. Such studies can contribute to the ongoing development of language learning tools like Duolingo, enhancing their potential to enhance language assessments and improve students' language proficiency.

SUMMARY

The current study examined the following question: *What are educators' perceptions of the effectiveness of using Duolingo's school program?* The study employed netnography, which pinpointed three themes apparent among users who are teachers: (a) questions about grading, giving credit, and testing; (b) grading rubrics to guide their grading process; and (c) modifications for Duolingo for Schools. The first theme regarding grading, giving credit, and testing reflects common concerns in existing research regarding adopting new educational technologies (Feldman, 2020; Twigg, 2003). The findings extend the existing literature by demonstrating that language educators examine supplemental education for effectiveness and relevancy. The second theme regarding issues with rubrics and grading reflects similar findings of teachers and their concerns with developing a rubric that can be used for grading student participation in supplemental learning activities (Castaneda et al., 2021). The findings highlight the importance of scaffolding in instructional development, including the construction of rubrics to measure success among students. The final theme

concerning recommendations for future improvements is in line with other findings about how educator input contributes to the effectiveness and continuous improvements of educational tools (Omarova et al., 2021). Overall, the findings from this netnography study demonstrate that educators are always examining the effectiveness of educational tools to ensure students have access to quality programs.

Duolingo software designers can improve the Duolingo classroom experience by making the grading process more seamless for educators. At this time, there appears to be minimal guidance for how to assign credits, grades, and appropriate tests. In understanding the educators' concerns with Duolingo for Schools, with modifications to connectivity issues and scoring guidelines, educators and students may be better prepared to learn with Duolingo in a classroom setting. With some additional improvements to Duolingo classrooms, educators may benefit from using the progress reporting in Duolingo classrooms as an assessment to support personalized learning.

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