

ONLINE LANGUAGE LEARNERS AND DISCUSSION BOARD USAGE OVER TIME

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ABSTRACT

This research used qualitative netnography to examine the use of Duolingo German discussion boards among users of varying levels of engagement. The sample contained six participants of various levels of engagement. The criteria for selecting participants were based on usage counts in the discussion board community. This study aimed to examine information that could answer the research question, “How do individual Duolingo German users use discussion boards over time among highly engaged, moderately engaged, and lower engaged users?” The netnographic analysis resulted in three themes: (1) highly engaged users continue to contribute to discussions over time; (2) moderately engaged users seek educational supplementation in their conversations; and (3) lower engaged users are more likely to participate in the discussion boards to connect socially about tangential topics over the span of months. The analysis indicated that the frequency of engagement is related to the content of the comments posted. In understanding how users engage with the discussion boards over time and the frequency of engagement, researchers and educators may be more informed about how users utilize the discussion boards to tutor, learn, and socialize.

Keywords: *online language learning, discussion boards, user type, German language, netnography*

INTRODUCTION

Duolingo, a free online language learning application, stands as a prominent online platform entwining gamified mechanics within its comprehensive curriculum. Many users turn to online language learning, such as Duolingo, because of the convenience, flexibility, and accessibility it offers (Loewen et al., 2019), allowing students to tailor their language learning experience to fit their schedules and preferences. Blanco (2020) reported approximately 500 million Duolingo users throughout 194 countries worldwide. Duolingo offers users an expansive array of languages, including German. The German language is spoken by an estimated 130 million native speakers worldwide (Blanco, 2020), and it is an official language in Germany, Belgium, Austria, Luxembourg, Switzerland, and Liechtenstein (Thiele, 2020). Additionally, individuals in 42 countries speak German as a language

minority (Thiele, 2020). There are 45 million individuals of German heritage in the United States, with 1.4 million German speakers. According to Duolingo (<https://www.duolingo.com/enroll/de/en/Learn-German>), there are 9 million users who participate in German courses.

Delving into a specific Duolingo Research Report (DDR-20-04) offers a glimpse into how Duolingo’s machine learning algorithms work synergistically to tailor practice exercises by aligning them intricately with learners’ individualized needs and skill trajectories (Jiang et al., 2020). This process supports the implementation of scaffolding theory, where Duolingo has effectively improved the enunciation of speech, proficiency in common words and phrases, and learning via echoing (Yakaeva et al., 2017). In education, the scaffolding theory is essential as it refers to the process of providing structured support and guidance to learners

by gradually reducing support as students develop competence and independence in a particular skill or knowledge area (Zhou, 2021).

In addition to the scaffolding theory, Duolingo uses the Common European Framework of Reference (CEFR), which educators use to assess and describe language proficiency levels in learners and to facilitate the communication and alignment of language teaching and learning across different contexts and languages (Piccardo, 2020). Duolingo's courses are aligned with CEFR to standardize the acquisition of language skills at set proficiency levels (Jiang et al., 2020).

Focusing on Duolingo German, the courses are divided into 144 subunits that contain four to five lessons each. These lessons increase in difficulty as users/learners progress from Level 1 to Level 25, thus instilling more proficiency in recall and production over time (Jiang et al., 2020). In addition, the personalized practice exercises repeat relevant lessons to minimize gaps in language proficiency, depending on individual goals and needs (Jiang et al., 2020). Neuschafer (2021) examined Duolingo's German discussion boards and the evolution of learning needs unit by unit. The researcher found that users turned to the discussion board community by:

(1) seeking support during the initial stages of learning; (2) learning to navigate Duolingo; (3) using moderators and plus users to explain difficult concepts; (4) seeking support to address areas of concerns with the Duolingo software; (5) understanding why their answers were wrong; (6) demonstrating more advanced levels of fluency (Neuschafer, 2021, p. 3).

These findings were replicated in a second study examining the evolution of learning needs between Spanish and German users (Neuschafer, 2022).

These studies indicated that using asynchronous discussion boards may help users support sociocultural learning (see Vygotsky, 1978) by offering more immersive foreign language learning experiences. Additionally, these experiences may provide social support that supplements memorization-based exercises on the Duolingo app. For example, while Duolingo may teach learners how to construct grammatically correct

sentences and phrases, users may not understand how to communicate using socially appropriate words without additional culturally relevant information (Neuschafer, 2021, 2022). Neuschafer (2021, 2022) found that participating in discussion boards may increase intercultural competence, as noted by Dearsdorff (2006), in speaking German by increasing "requisite attitudes of respect, openness, curiosity, and discovery" (Neuschafer, 2022, p. 10) in ways that are not solely available on the app.

The current study builds upon Neuschafer's (2021, 2022) previous netnography findings. According to Addeo et al. (2019), netnography can be explained as a research method involving the systematic study and analysis of online communities and social interactions to gain insights into virtual communities' behaviors, beliefs, and culture. This study used data from asynchronous discussion boards, which are online platforms where users can post messages, comments, or questions that can be viewed and responded to by others at different times, allowing for flexible and non-real-time communication (Li & Yu, 2020).

The purpose of the current study was to examine the self-reported experiences of Duolingo German users. The guiding research question was, "How do individual Duolingo German users use discussion boards over time among highly engaged, moderately engaged, and lower engaged users?" The findings from this study may expand upon previous findings about Duolingo's German language discussion boards by focusing on how individual learners use the discussion boards at various levels of engagement over time. The choice of the German language learning population for this study is particularly significant due to the widespread use and importance of the German language worldwide. In examining data and findings, researchers and educators may be more informed about how Duolingo discussion boards may supplement the application's courses to potentially increase German language proficiency among learners. Investigating the experiences of Duolingo German users not only contributes valuable insights into language learning dynamics but also has broader implications for the field of language education and the facilitation of cross-cultural communication in today's interconnected world.

METHODOLOGY

This research used qualitative netnography to examine the use of Duolingo German discussion boards over time among users of varying levels of engagement. In addition, netnography was used to examine publicly available discussion board posts and user information. Netnography is an appropriate methodology for examining Duolingo discussion boards because it is a nonintrusive method for analyzing digital data in a naturalistic setting (Heinonen & Medberg, 2018). A methodology rooted in ethnography, netnography protects user identities while offering valuable insights by using pseudonyms, anonymizing data, and focusing on collective online behaviors and patterns (Hanell & Severson, 2022). It enables researchers to present contextual, qualitative findings on experiences within online communities without revealing personal information (Fenton & Parry, 2022). Netnography was also chosen because the researcher may identify and contextualize the users' thoughts, questions, ideas, and concerns as they interact with the discussion boards to supplement their studies (Delaney et al., 2019). The following will present more information on the netnographic design, including the sample, data collection, and analysis.

Discussion Boards

The netnographic sample for this study included gathering publicly posted data from six Duolingo German participants of various levels of engagement. The criteria for selecting participants were based on usage counts in the German discussion board community. Users who posted 151 times or more were considered highly engaged users. Those who posted between 51 and 150 times were considered moderately engaged users, while those who posted 50 times or fewer were considered lower engaged users. Two participants who met the inclusion criteria for each group were randomly selected from a pool of 19,513 Duolingo German discussion board participants. Data from the six participants were collected from the German discussion board comments posted between 2013 and 2021. Five discussion boards were analyzed for each of the six participants, totaling 30 discussion boards. The data collected were the conversations posted in the discussion boards, which were converted to text for further analysis.

Data Analysis

Netnography is outlined in six steps by Kozinets (2010): (a) coding, (b) noting, (c) abstracting and comparing, (d) checking information and refining, (e) generalizing, and (f) theorizing. First, I drew codes and categories from the downloaded discussion board files in the coding step. Noting was used to summarize my reflections as memos. To identify patterns such as relationships, similar phrases, differences, and shared sequences, I used abstracting and comparing (Kozinets, 2010). For example, I used abstracting to form general concepts and constructs in order to indicate instances of discrepancies or distinctions. Checking and refining were used to identify and filter the elucidation of patterns, similarities, differences, and processes. Generalizing was used to explain how the data of the sample may reflect the greater population as a whole. The final step, theorizing, involved drawing conclusions about the data that supported the research question (Kozinets, 2010).

RESULTS AND DISCUSSION

The purpose of the study was to examine the self-reported experiences of Duolingo German users. The guiding research question was "How do individual Duolingo German users use discussion boards over time among highly engaged, moderately engaged, and lower engaged users?" The analysis helped to identify how individual learners use the discussion boards at various levels of engagement over time. Six participant discussion board postings were examined, with two participant representatives from the three specified levels of engagement (highly, moderately, and lower engaged users). Two participants were highly engaged in discussions, with an average of 253 posts. For the moderately engaged users, the two sampled participants posted 90 total comments on average. For the lower engaged users, there were 19 total comments posted on average. Overall, the results show that the types of comments individual users made remained similar over time. However, the frequency characteristic of each user did predict the types of comments they made.

The netnographic analysis resulted in three themes: (1) highly engaged users continue to contribute to discussions over time; (2) moderately engaged users seek educational supplementation in their conversations; (3) lower engaged users are

more likely to participate in the discussion boards to connect socially about tangential topics over the span of months. Overall, the content within the comments posted did not change significantly over time among users; however, the engagement frequency did predict the posts' content among users.

Theme 1: Highly Engaged Users Continue to Contribute Over Time

The first theme to emerge from the analysis was that highly engaged users make comments over a longer period over a span of many years and have the highest proficiency in the German language. The sample of highly engaged users, or users with 151 posts or higher, included two users who made an average of 253 posts. I analyzed five discussion boards per user, with 10 discussion boards in total. User 1 was active in the discussion boards over a span of 7 years, from 2014 to 2021. This user made 266 comments. In terms of post engagement, this user had a total of 59 months, with an average of 4.51. User 1 indicated that they were a native German speaker, and while they participated in other Duolingo courses, they did not have a German language badge. This badge appears next to the username and avatar and indicates the level of Duolingo German that they have completed. However, User 1 demonstrated mastery of the German language and was also an expert in grammatical rules, as seen in the comment below. This post was a discussion of the sentence, "Seid nicht Traurig," which is translated into "Don't be sad." User 1 gave context about similar phrases to the topic above in response to another user in 2016:

Seien Sie nicht traurig = formal form, singular and plural

If using an imperative: yes, the informal imperative is used without personal pronoun (while the formal imperative uses "Sie"):

Sei nicht traurig. (sing. informal)

Seid nicht traurig. (pl. informal)

Seien Sie nicht traurig. (sing./pl. formal)

More recently, in 2021, User 1 continued to post similar comments. User 1 commented on a post about the sentence, "Ich sitze gerne am Fenster," which is translated into "I like sitting by

the window." Here, User 1 gives context about the difference between words that are grammatically correct versus words that are typically used:

People keep trying to translate "gern/e" with all these upbeat terms, like "happily" and "cheerfully." My German source says it really doesn't mean that. Really. It just means you like whatever it is, or, my source says, something like, "I'm good with it."

From the provided discussion and interaction on the discussion board, it can be inferred that User 1 is offering advice to other German language learners by providing context and clarification on language nuances. In this case, User 1 emphasized the distinction between the grammatical correctness of words and their typical usage. User 1 explained the proper interpretation of the word "gern/e" and advised against translating it with overly positive terms. During the span of comments made between 2014 and 2021, User 1 continued to engage in the discussion boards similarly to a German language tutor and revisited the same discussion boards within a span of several years to answer new questions users made. The provided information suggests that User 1 exhibits characteristics that align with the idea of highly engaged users who contribute actively and consistently over an extended period. By engaging in discussion boards between 2014 and 2021, User 1 demonstrated a sustained commitment to the Duolingo German community, indicating a long-term interest and dedication to the platform. This behavior resembles that of a German language tutor, implying a willingness to share knowledge and help fellow learners improve their language skills (Thurston et al., 2021).

User 2 posted between 2013 and 2020, or 6 years. This user posted 241 times, and their badge indicated that they participated in the course until Level 11. This user had a post engagement of 44 total months and an average of 5.48 months. Although it is not known whether User 2 is a native speaker, they frequently answered advanced-level questions to users at higher levels ranging from Level 16 to 25. Like User 1, User 2 repeatedly revisited discussion board forums over many years, often responding to new questions. User 2 also functioned similarly to a German language

tutor. For example, in the discussion board about the sentence, “Sie sind dran” (It is their turn), User 2 responded to the question, “So, ‘dran’ is an adjective that means ‘the next’ or something like that? ‘Sie sind dran’ = You are next ... ??” User 2 responded in 2013:

“Dran” is a shortening of “daran,” which stands for “an der Reihe,” which literally means “at the turn.” So “Sie sind dran” literally means “you are at the turn.”

Daran is a pronominal adverb, a combination of da (there) and an (at, attached) and can be used to replace an object where something is attached to another thing: Der Schlüssel hängt am Haken. Der Schlüssel hängt daran.

The interactions posted by User 2 indicate proficient and dedicated contributions to the German language learning community, offering comprehensive insights to learners at advanced levels. With a consistent record of providing detailed explanations, contextual understanding, and comparative analysis, User 2’s long-term engagement and willingness to assist across various proficiency levels align with the role of a knowledgeable and committed language tutor within the Duolingo German community. In addition, the responses and advice provided by User 2 indicate several key traits associated with highly engaged users: prolonged engagement, advanced proficiency, educational contributions, consistent improvement, and a commitment to sharing knowledge over an extended period. These attributes collectively contribute to the broader understanding that highly engaged users make comments over the years and possess the highest levels of language expertise within the German learning community. Overall, highly engaged users demonstrated great proficiency and talent for explaining grammatical rules. They appeared to be motivated to offer detailed explanations about grammatical rules and appropriate word usage over several years. Overall, the findings involving highly engaged users resonate with the established research that underscores the importance of sustained engagement, expertise, peer interactions, and collaborative learning within online educational settings (Hernández-Sellés et al., 2019).

Theme 2: Moderately Engaged Users Seek Educational Supplementation

The second theme to emerge from the data analysis was that moderately engaged users make comments over a relatively shorter period during the duration of their studies. Moderately engaged users were defined as those who posted between 51 and 150 times. Two users, User 3 and User 4, were randomly selected and had an average post count of 90. User 3 made a total of 101 posts between 2017 and 2021. This user had a post engagement of 14 total months and 7.21 months on average. User 4 made 79 total posts and was active between 2014 and 2021. User 4 had a post engagement of 18 total months and an average of 4.39 months.

Moderately engaged users did not repeatedly visit the discussion boards to answer new questions over time (compared to highly engaged users); rather, they were only active commenters during the immediate duration of their studies. The findings indicated that moderately engaged users demonstrated less confidence about the German language and were not native speakers. For example, User 3 offered a comprehensive explanation of their understanding of the discussion board topic, possibly to summarize the lesson’s takeaways for the other users. The topic sentence in the discussion board was “We are happy that you are with us” (Wir freuen uns, dass Sie bei uns sind). User 3 added their summary of their understanding of their studies to others and responded to another user’s question, “Why not mit uns?”:

Reflexive verbs are pretty common in many European languages, but in comparison are rather rare in English:

He hurt himself.
She found herself.

*In German, they are more frequent.
Sometimes, they make perfect sense:*

Ich wasche mich. (“I wash myself,” as opposed to my dog)

But often, the reason for using this form is lost in history, and the verb just has to be learned as is:

Ich befinde mich im Garten. (“I’m in the garden,” literally “I find myself in the garden”)

Sie setzt sich hin. (“She sits down,” lit. “She seats herself”)

Ich erinnere mich nicht. (“I don’t remember” (myself))

Remember that verbs often have a “direct object.” This will be in the accusative case:

Der Mann isst einen Apfel.

Some verbs have an additional “indirect object,” which will be in the dative case:

Der Mann gibt dem Kind einen Apfel. (The man gives an apple to the child.)

The reflexive pronoun will take the place of one of these objects.

Because the reflexive part takes up the object, some reflexive verbs need a preposition to go with them. This preposition has to be learned together with the verb.

sich interessieren für (to have an interest in)

sich freuen auf (to look forward to)

sich freuen über (to be happy about)

sich kümmern um (to care for)

sich treffen mit (to meet with)

In most reflexive verbs, the direct object gets replaced by the reflexive pronoun. Thus, use the accusative versions.

Ich rasiere mich. (“I shave,” literally “I shave myself”)

If the verb already has a direct (accusative) object, the reflexive pronoun will be in the dative case. First, consider this example (mich is in the accusative):

*Ich wasche mich. (I wash, literally “I wash myself”)

In the next example, “die Haare” is the Accusative object. Hence, the reflexive pronoun is in the dative (“mir”):

Ich wasche mir die Haare. (“I wash my hair,” literally “I wash the hairs to myself”)

Here are some verbs with dative reflexive pronouns:

Ich wünsche mir einen Hund. (I wish for a dog.)

Ich sehe mir den Film an. (I watch the movie.)

Ich habe mir das Bein gebrochen. (I broke my leg.)

The findings indicated that User 3 contributed by explaining the discussion board topic and aimed to summarize lesson takeaways for fellow users. Despite offering a detailed understanding of reflexive verbs and their prevalence in German compared to English, User 3’s responses indicated a lack of overall confidence, as they highlighted instances where the rationale for using certain forms may be unclear.

Similarly, User 4 actively engaged with the discussion board topic, offering explanations intended to aid fellow learners. In one response, User 4 discussed the translation of “I have been living here for 3 years” (Ich wohne hier seit drei Jahren). User 4’s reply conveyed their understanding yet incorporated phrases like “I think” and “you could always double-check with the other responses,” which suggested an element of uncertainty in their response approach. This hesitancy in their words indicated a cautious approach to assisting others despite their willingness to contribute to the discussion.

This analysis showed that moderately engaged users participated in the discussion boards to supplement their studies and to provide their takeaways to other users. They did not revisit the boards over and over again to act as a tutor for other users. Although they showed proficiency in their studies, the findings indicated that moderately engaged users were more likely to engage in tangential topics and make social and humorous commentary. The behaviors exhibited by Users 3 and 4, characterized by cautious contributions, personal insights, and occasional uncertainty, align with existing research highlighting the varying levels of involvement and individualized approaches to learning within online communities (Chiu, 2022; Jayanti & Singh, 2010). Their tendencies reflect the diversity of learners’ engagement styles and the nuanced relationship between personal experiences, context, and active participation in online learning environments.

Theme 3: Lower-Engaged Users are Socially Engaged

The third theme to emerge from the data analysis was that lower engaged users are more likely to participate in the discussion boards to connect socially about tangential topics over the span of months. Lower engaged users also used the discussion boards to engage in the lesson subjects while actively studying the course within the span of

months or years. Lower engaged users were those who made 50 or fewer comments and were chosen randomly. Five discussion boards were analyzed for both User 5 and User 6. The two lower engaged users had an average total of 19 comments. User 5 was active between 2014 and 2021 and posted a total of 20 comments. The post engagement for User 5 was 15 total months and 1.54 months on average. User 6 was active between 2015 and 2021. Their post engagement was 7 total months or 2.57 months on average. Lower engaged users typically did not comment about the lesson topics, although this did occur less often. Rather, they commented on tangential topics that were somewhat related to the lesson topics and offered humorous commentary.

For the topic of the lesson, “Religion ist die Basis für die Messe.” (Religion is the foundation for the mass), User 5 offered commentary about the vocabulary based on their personal experience of the topic:

But apparently, fenix, die Messe can also translate as the mess, as in chaos. “Religion is the basis for the mess” sounds like a valid answer to me—leaving aside whether you agree or not.

User 5 also engaged in slightly personal topics that were not related to learning German but also commented on vocabulary usage:

As someone who knows a certain amount about religion, the English sentence here sounds odd to me. “Faith is the foundation of the Mass” or “Salvation is the foundation of the Mass” would sound more likely. And yes, you could perhaps say “The Mass is the foundation of the (Roman Catholic) religion”—though as I am not a Catholic I would stand to be corrected on that.

For the topic of the lesson, “Meine Freunde bluten” (My friends are bleeding), User 6 posted, “I’ve got 4 people bleeding in a way... get well soon” in response to another user’s comment, “I’ve gotten around 6 sentences where someone’s bleeding in a row. Is everything ok in Duolingo HQ?”

The findings indicate that User 5, while contributing minimally to the discussion community, was inclined to share insights based on personal

experiences and observations. In response to the lesson topic “Religion ist die Basis für die Messe” (Religion is the foundation for the mass), User 5 commented on vocabulary nuances, drawing attention to the potential alternate translation of “Messe” as “mess,” indicating a willingness to offer perspectives beyond the conventional. User 5 also ventured into slightly personal topics unrelated to German learning, reflecting on religious concepts and language usage. Furthermore, User 6’s involvement in the lesson “Meine Freunde bluten” (My friends are bleeding) consisted of a lighthearted response to another user’s comment, showcasing a brief but lighthearted interaction that added a touch of humor to the community. This behavior reflects the broader understanding that engagement does not always follow a linear path and can still foster valuable learning experiences within online educational contexts (Hoi & Mu, 2021; Lock et al., 2021). Overall, lower engaged users were more likely to offer their social commentary about the topic sentences and less confident responses about the discussion board contents. Lower engaged users also were more likely to make jokes and humorous comments on the discussion boards.

STUDY IMPLICATIONS

The findings of this netnographic study have implications for educators and instructional designers. The findings showed that while the content of user comments remained consistent, the frequency of engagement influenced the types of comments made. This nuanced understanding of engagement styles can inform educators tailoring instructional strategies to accommodate diverse learning needs. Educators can allocate their time and resources more efficiently by identifying which resources or tools resonate most with different engagement groups. For students with lower engagement levels, educators can implement targeted interventions to boost their interest and participation. On the other hand, instructional designers can optimize user experiences. By understanding the types of engagement among users, instructional designers can foster a more supportive and enriching learning environment that encompasses tutoring, learning, and social interaction within language learning, ultimately enhancing the efficacy of online language learning platforms.

The theoretical implications of these findings are noteworthy as they shed light on the dynamics of language learning within the context of online platforms. By identifying distinct patterns of engagement and their relationship to the content of user interactions, this study contributes to our understanding of how learners engage with digital resources and social learning environments. Identifying highly engaged, moderately engaged, and lower engaged user groups suggests that engagement is not a uniform concept but a multidimensional construct influenced by individual motivations and behaviors.

RECOMMENDATIONS

Further investigation is warranted into the specific strategies and interventions that can effectively boost engagement among language learners at different proficiency levels. Exploring the role of personalized feedback, peer interactions, or gamified elements within Duolingo's discussion boards could provide valuable insights into optimizing user engagement. Secondly, comparative studies across various languages offered by Duolingo could shed light on potential language-specific factors influencing engagement patterns, helping educators or instructional designers tailor their approaches accordingly. Additionally, exploring the transferability of the observed benefits of discussion board participation, such as enhanced intercultural competence, to other language learning contexts or platforms would be valuable. Finally, longitudinal studies tracking the language proficiency development of Duolingo users who actively engage in discussion boards could provide a deeper understanding of the long-term impact of these interactions on language acquisition. Future research studies in this area should continue to examine the multifaceted relationship between online language learning, engagement, and socio-cultural aspects to inform effective and culturally relevant language education strategies.

SUMMARY

The focus of the study involved using a qualitative netnography to examine the use of Duolingo German discussion boards over time among users of varying levels of engagement. This study aimed to build upon Neuschafer's prior research on German discussion boards (2021, 2022). The research study aimed to identify themes about how

individual Duolingo German learners use the discussion boards at various levels of engagement over time. The analysis was based on six users and 30 total discussion boards in which three themes were developed: (1) highly engaged users continue to contribute to discussions over time; (2) moderately engaged users seek educational supplementation in their conversations; (3) lower engaged users are more likely to participate in the discussion boards to connect socially about tangential topics over the span of months. The analysis showed that users did not change the types of comments they made over time regarding content within users and that the frequency of engagement is related to the content of the comments posted. In understanding how users engage with the discussion boards over time and the frequency of engagement, researchers and educators may be more informed about how users utilize the discussion boards to tutor, learn, and socialize.

In conclusion, this study utilized a qualitative netnography approach to delve into the dynamic landscape of Duolingo German discussion boards across varying levels of user engagement. By extending the groundwork laid by Neuschafer (2021, 2022), this research presents findings regarding insights into the behaviors of language learners within this virtual ecosystem. Understanding the nuances and dynamics of each level of engagement has profound implications for educators, instructional designers, and platform developers. With insights into how users evolve their engagement patterns and the interconnectedness of engagement frequency with comment content, educators can tailor their instructional strategies to accommodate different engagement styles. Furthermore, platform developers can fine tune user experiences, creating tailored interfaces that cater to diverse learning needs and social interactions. By leveraging this understanding, educators and platform developers can prepare to create a more supportive and enriching learning environment that nurtures the multifaceted dimensions of tutoring, learning, and social interaction within the language learning journey.

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