

The Effect of Language-Learning Apps on Positive Language Transfer

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Abstract: Today, the widely used language learning apps (LLAs) have greatly changed the general experience and landscape of language learning. This research collected the foreign language learning experiences of over 350 language learners with a survey and specific stories with multiple interviews to explore how the many educational features may affect language transfer, specifically positive transfer. Through these studies, we were able to narrow the research on language transfer to these most-used methods for language education in LLAs: spaced repetition, multimodal feedback, contextual learning, and gamification. The most prominent ways these methods affected language transfer were through the impact of lexical transfer, semantic transfer, pragmatic transfer, and motivation. The study of language transfer, within the context of LLA use, provides valuable insights into the challenges and opportunities associated with language acquisition in the digital age. It is crucial to understand the dynamics of language acquisition, especially in this gradually globalized world that is based on languages and communication, and with more studies and research, the process of language learning may be further improved upon and made efficient.

Keywords: language-learning applications (LLAs), language learning (LL), education methods, language transfer.

1. Introduction

As the times push into an era of digits and information, language learning is affected as much as the temporal landscape. Since their emergence, language-learning apps (LLAs) have been leading the tide of online language learning; they possess many features, such as high accessibility, flexibility, and convenience, making them immensely popular [1]. The market for English language learning alone, for instance, reached 1.8 billion in revenue in 2013, an expectation of over \$3.1 billion in 2018, and has an expected compound annual growth rate (CAGR) of 11.1% over 5 years [2].

The rise in popularity raises also the necessity to discuss one of the most prominent phenomena of language learning and acquisition in linguistics - language transfer. This paper will seek to explore how the many educational features and methods utilized by LLAs, specifically apps designed for language learning, including both full language-learning package apps and separate skill Apps, will affect the process of language learning.

1.1. Language Transfer

For learners who have experiences with linguistic knowledge or language features of more than one language, the phenomenon known as "Language Transfer", or the influence of L1, the learner's first language, or the main language they are referring to while learning, on the acquisition of L2, the language they are trying to acquire. There are two major types of language transfer – positive transfer and negative transfer, and earlier studies on this topic have been mostly focused on the latter, or how the knowledge of L1 hinders the learning process of L2. Researchers such as Lado have been trying to discover and suggest ways around negative transfer, and seeking to make the learning process of languages more efficient, came up with the theory of Contrastive Analysis (CA) in language learning, which said that it is possible to predict and describe the patterns that will cause difficulty in learning, and those that will not cause difficulty, by comparing systematically the language and culture to be learned with the native language and culture of the student. [3].

With such research as a base, subsequent ones added upon and broadened the understanding of language transfer. Researchers began to acknowledge and focus on positive transfer, where the knowledge of L1 positively impacts and facilitates the learning process of L2. With Professor Selinker's establishment of the notion of an "interlanguage", or a system of language evolved from a learner's L1 in the process of L2, linguistic researchers no longer viewed language transfer as a static interference of linguistic frameworks of language learners, but as a dynamic progress, constantly evolving with the learners' experience [4].

In the modern field of linguistics, the process of language acquisition is perceived as the result of an intricate interplay between cognitive mechanisms and environmental conditions [5] - cognitive theories highlight the role of cognitive processes in transferring knowledge, such as voluntary transfer and motivation, while sociocultural theories emphasize the influence of social context and interaction [6]. Recent studies have dived deeper into specific areas of language transfer, e.g. lexical, the transfer of cognates and lexicon; semantical, the transfer of word and text meaning; pragmatical, the transfer of language usage in context etc.

1.2. Language Learning Apps

Ever since the great leap in smartphones, mobile learning, or the use of mobile devices for educational purposes, has been growing in both scale and popularity, with their features of convenience and flexibility and also the possibility to connect with others all over the world in some way, either native speakers or co-learners, language learning apps provided unprecedented opportunities for experiencing different cultures and languages [7]. However, with these new learning possibilities rises also an interest in research in the areas of how might LLAs bring change or effects to the process of language learning, especially how they may affect the phenomenon of language transfer.

Starting with a specification of LLAs, a taxonomy of LLAs based on their features proposed by Rosell-Aguilar [8] divided LLAs into three main categories: Apps specifically designed for language learning, including full language-learning package apps and separate skill language learning apps; Apps not specifically designed for language-learning but may be useful for language learners; and also dictionaries and translation apps. Focusing on the LLAs that are specifically designed for learners, including full-package and separate skill apps, many educational aspects are prominent and frequently used by these apps necessary for discussion, such as spaced repetition, multimodal learning, contextual learning, and gamification. These educational methods will be the main focus of this paper, and there will be a further analysis and review in the data analysis portion. This paper aims to analyse based on the data collected from the survey and interviews the main aspects of LLAs affecting language-learning, categorize them with respect to educational methods, and find out the ways as to how these methods of LLAs affect the process of positive language transfer.

2. Methodology

This research collected data in two main ways: a survey to collect quantitative data from a large number of language learners using LLAs, and separate interviews to discuss the specific details and learning experiences. The participants of all research are anonymous and give their consent before proceeding into actual materials.

The survey portion of this research consists of about 10 questions, the number may differ slightly based on the choices the participants chose. The style of questions in this survey was derived from the method of “implicit assessment”, which originally used simple questions that, for instance, asked participants to choose either “good” or “bad” for a given question, aiming to analyse the underlying motives and reasonings behind the simple choices [9]. This research has the same purpose but slightly changed the style of questions to require participants to classify the many given aspects of LLAs into either positive or negative, then purposefully guiding participants to sort out how the different aspects affected their process of language transfer.

The aim of this survey is to get an overview of how the general language-learning crowd views LLAs in their learning process of foreign language(s), and get a basic understanding and classification of which aspects of LLAs, linking with educational methods, affect language transfer most heavily and how.

With this information as the foundation, the interviews can act as specific evidence of learners' experiences for each category of educational methods that LLAs utilized. The interviews will ask learners about their learning motivation and LLAs' usage motivation, their study method, how their L1 affected the learning of L2, how LLAs helped with this process etc. All interviewees are language learners of at least one foreign language at the conversational level and have used LLAs as aid at some point for that language. This paper will keep all interviewees anonymous, simply addressing them as participants A, B, C and D.

3. Results

From the surveys sent online, 340 valid answers out of the 350 collected will be looked at by this paper; the data came from almost every single province of China. The four interviews were also completed with the sharing consent of the anonymous participants. Based on the answers collected from the survey questions of LLAs' usage motivation, most prominent positive educational aspects, aspects that positively affect language transfer, and the interview questions on LLAs' usage experiences, it is possible to conclude four most prominent educational aspects of LLAs that are affecting the language learning and language transfer of the participants: spaced repetition, multimodal feedback, contextual learning, and gamification. This paper would like to analyse each of the listed aspects' effects on positive language transfer with literature and interview information.

3.1. Spaced Repetition

Spaced repetition is one of the most used learning methods by LLAs. All four interviewees mentioned its significance in LLAs and language learning; from the survey, 173 (74.89%) of the participants chose this as one of the most useful aspects of LLAs, and 148 (71.15%) thought this was one of the greatest factors influencing their process of language transfer. As Participant B said when he talked about his English learning experience with the App "Baicizhan (百词斩)", which is a specially designed Chinese app for vocabulary learning: "The repetition mechanism is the most helpful aspect of this app I'm using. It made my learning, especially vocabulary memorization very efficient. It's a lot better than learning a lot of stuff than forgetting and having no idea how to review or where to start." He mentioned this interval-ed repetition kept him thinking of learnt information, and even

though it was boring at first, he felt the educational method helping him memorise the multiple definitions, and relate them and their nuances to the new terms he's learning. Similarly, participant C who has learnt multiple foreign languages and was using LLAs for her fourth, thought spaced repetition was the most helpful aspect of LLAs for similar reasons of efficiency, semantic connection etc.

3.2. Multimodal Education

More than half of the participants submitted responses concerning either visual (120, 51.95%) or audio feedback (134, 58.01%) – both of which go under the category of "multimodal learning". Also shown in the interview with Participant D, a polyglot learner who has learned over 31 languages and fluently speaks over 7, he mentioned the method of multimodal learning to be his favourite aspect of LLAs. He mentioned that in his learning process of French with LLAs, he used many audio and visual features, such as "French listening daily (每日法语听力)" and "Sounter (French learning with music and lyrics)". Multimodal learning is helpful, in Participant D's words, "because the traditional way of learning almost always only focuses on the semantics with ways of teaching such as translations, forcing students to make connections between the difference in concepts between the different languages. But with a well-designed system of multimodal education, there are many possible ways of acquiring and comprehending the new meaning in languages, such as direct visual and sound feedback and connections made when learning the concept of animals which in general are more direct and intuitive, and also easier to memorize."

3.3. Contextual Learning

Contextual learning is also one of the most popular aspects of LLA design, picked by 123 (59.13%) survey participants among the most positive aspects of LLAs affecting language transfer. Participant C, using Duolingo for her Spanish studies, described her personal experiences with the many benefits of contextual learning. She said that the short stories section of Duolingo, her favourite part of Duolingo learning, not only boosted her motivation for language learning but also gave her valuable insights into how the language may be used in real life, not only as isolated knowledge and processed input. She realized that languages are not only words and letters but can also be meanings and stories that are fun and relatable. "With exposure to real-life conversations and stories and being able to understand what I'm learning with context, I was able to get the new language faster and with less effort. It's like taking the building blocks from your original language and assembling them, with enough context, into the new language. The context-based learning helped with this process of mine, where I assemble my knowledge into actual usage. Just as Steve Kaufman, a polyglot who speaks over 20 languages, mentioned in his interview with Jforrest, his secret to learning languages is to "Expose myself to the language every so often. And I don't focus on the explanations, I focus on getting the language into me through a lot of reading and listenin [10]", or in other words, exposure and contextual learning.

3.4. Gamification and Motivation

In the survey, 20.43% (47) people picked reasons like fun and entertainment for their LLAs' usage motivation. Many also picked practice reminders (53.25%) and character immersion (32.9%). These aspects that make LLAs fun and immersive, or the incorporation of game mechanics and design principles into LLAs, are known as gamification.

Participant A, an interviewee who has used Duolingo for learning French, said that the only reason she was willing to do the repetitive practice provided by Duolingo was because of its reward mechanisms, which were, in her words, "addictive and fun". Also, the short stories, which were

"hilarious and do sometimes bring something new", would have to be "unlocked" by doing practice, giving her more incentive to do the practices. According to her, the addictive gaming aspects and the cartoon character that claimed to be her friend gave her more motivation to learn and practice on top of what she originally had.

4. Discussion

4.1. Spaced Repetition

In Robert Bjork's essay "Applying Cognitive Psychology to Enhance Educational Practice", he emphasises the importance of "desirable difficulties" in promoting long-term learning, or the concept of "spaced repetition", where concepts are reintroduced at increasing intervals to strengthen memory [11]. Through algorithms that provide review schedules based on forgetting curves, LLAs can effectively utilize the theory and method of spaced repetition. Also, instead of simply going over the materials again, the process of retrieval, or repetition that encourages active recall of information and connections between known information, is proven to be more effective than simply repeating [12]. Research from Butler has shown this practice method can positively impact the transfer of knowledge, especially semantically, from previously learnt context and linguistic structures to new ones, since this method specializes in connecting terms with statements and definitions [13].

4.2. Multimodal Learning

This method goes beyond traditional text-based methods, incorporating visuals (images, videos, infographics), audio (songs, podcasts), and interactive elements to engage learners [14]. By immersing learners in all senses and strengthening the links between form and meaning, this method encourages the transfer of semantics or the connection of known concepts and meanings with newly learnt terms. Studies by Dubois & Vial and Mayer & Moreno suggest that presenting information through multiple input modes reduces cognitive load and improves information retention, and, similarly, Plass et al. found that multimodal environments fostered deeper comprehension and vocabulary acquisition. This may act as a bridge for the gap between educational input received by the learners and the inherently multimodal nature of real-world communication, where understanding often relies on a combination of spoken language, visual cues, and context [15-17].

4.3. Contextual Learning

This pedagogy emphasizes connecting language learning to real-world situations, aligning with the "diverse family of instructional strategies" advocated by Mazzeo [18] that seamlessly integrates core skills with practical situations. By providing learners with opportunities to engage with language in relevant contexts that resonate with their interests, contextual learning fosters deeper connections to pre-existing linguistic knowledge [19]. This shift away from abstract memorization towards practical application empowers learners to utilize language more effectively in various scenarios. By using these context-based situations like daily conversations, real-life stories etc., LLAs can utilize their digital advantage and help learners construct new pragmatic situations, who may then connect to, and transfer from how they would react in such situations in their L1, and help learners build a new linguistic framework.

4.4. Gamification

This method leverages the appeal of games, with reward elements like points, badges, leaderboards, and challenges, to transform language learning into a more interactive and enjoyable experience [20]. Studies by Dicheva et al. and Wu demonstrate increased student motivation and engagement in

language learning activities when gamified elements are introduced [21-22]. Furthermore, Yoon & Park found that gamification can promote learners' motivation and vocabulary acquisition and improve overall learning outcomes. [23]

The great impact brought to learning motivation also affects the process of language transfer. Since the concept of motivation is generally seen as consisting of the following: a significant goal or need and the desire to attain the goal [24-25], learning a new language can often be tied to fulfilling these goals or needs. Factors such as belief in language learning success, perceived value of outcomes, and the potential of rewards can all be significantly impacted and added upon by gamification. Also, motivation is crucial for learners to be able to recognize opportunities for transfer [26] and to take advantage of these opportunities [27]. For example, someone intending to work abroad, thus learning a language, may recognize the opportunities to consciously transfer known circumstances when it comes to work and purposely focus more on such regions.

5. Conclusion

This research started with the background of today's educational landscape and with literature, defined the terms significant for this study. Then, the methodology for data collection was offered. The collected data and interviews gave this paper four main regions to research: spaced repetition, multimodal learning, contextual learning, and gamification. The analysis of all of this points to the fact that LLAs play a significant role in positive language transfer, especially in semantics, pragmatics, and motivation. The findings correspond with previous literature and show how much potential LLAs possess.

As for future studies, researchers should focus on how MBL and LLAs may affect negative language transfer; and given the wide array of language transfer types, future researchers may wish to find out how specific categories of language transfer are affected by LL. Furthermore, with the gradually developing landscape of MBL and specifically the use of AI in education, research on such regions of educational linguistics may be carried out.

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