

# The Impact of ChatGPT on Vocabulary Learning in L3 German Class

## ChatGPT'nin Üçüncü Dil olarak Almanca Dersinde Kelime Öğrenimine Etkisi

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### ABSTRACT

Although technology is an established issue in applied linguistics, integrating chatbots, particularly ChatGPT into language learning, especially third-language (L3) learning, is a novel and mystic issue. To demystify this integration, the current study explores the role of ChatGPT in enhancing vocabulary learning, which makes up the skeleton of language, in L3 German class since multilingualism is becoming a norm nowadays. The participants of this exploratory qualitative case study, who are A1-level German learners, are three university students. They read and analyse five different ChatGPT-created texts and adapt the topic of texts to themselves via ChatGPT in which they are supposed to incorporate theme-related keywords throughout five weeks. Data is gathered through semi-structured interviews, vocabulary tests, and reflective journals. Grounded theory was conducted to analyse the data. The findings provide insights into the participants' academic achievement through cognitive and affective dimensions. Pedagogical implications are discussed.

**Keywords:** ChatGPT, Vocabulary learning, L3 German, University students

### ÖZ

Teknoloji, uygulamalı dilbilim alanında yerleşik bir konu olmasına rağmen, sohbet robotlarının, özellikle ChatGPT'nin dil öğrenimine, bilhassa üçüncü dil (L3) öğrenimine dahil edilmesi yeni ve gizemli bir konudur. Bu ilişkiyi aydınlatmak amacıyla, mevcut çalışma ChatGPT'nin L3 Almanca dersinde dilin temel yapı taşı olan kelime öğrenimini geliştirmedeki rolünü araştırmaktadır çünkü çok dillilik günümüzde bir norm haline gelmektedir. Bu keşfedici nitel durum çalışmasının katılımcıları, A1 seviyesinde Almanca öğrenen üç üniversite öğrencisidir. Katılımcılar, beş hafta boyunca ChatGPT tarafından oluşturulmuş beş farklı metni okur ve analiz eder, ardından tema ile ilintili anahtar kelimeleri dahil ettikleri metinlerin konusunu ChatGPT aracılığıyla kendilerine uyarlarlar. Veri, yarı yapılandırılmış görüşmeler, kelime bilgisi testleri ve yansıtıcı günlükler aracılığıyla toplanmıştır. Verileri analiz etmek için gömülü teori kullanılmıştır. Bulgular, katılımcıların akademik başarılarına dair bilişsel ve duyuşsal boyutlar aracılığıyla içgörüler sunmaktadır. Pedagojik çıkarımlar irdelenmiştir.

**Anahtar Sözcükler:** ChatGPT, Kelime öğrenimi, Üçüncü dil olarak Almanca, Üniversite öğrencileri

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## INTRODUCTION

The pervasive influence of Artificial Intelligence (AI) has indelibly permeated myriad facets of human existence, profoundly reshaping paradigms across diverse domains, notably exemplified by its profound imprint on the educational landscape (Gocen & Aydemir, 2021). The integration of AI within the educational milieu appears to epitomize the trajectory of educational evolution (Hwang et al., 2020). Correspondingly, scholarly inquiry probing the intricate interplay between AI and the pedagogical realm, particularly in language acquisition and instruction, has experienced a discernible surge over the past quadrennial interval (Crosthwaite & Baisa, 2023).

In contradistinction to their conventional antecedents, specifically rule-based chatbots predicated upon predefined protocols extrapolated from external knowledge reservoirs, the focal point of research has also extended to AI-powered chatbots. These cutting-edge iterations of chatbots possess an inherent trait, namely their capacity to engage users cogently through natural linguistic exchanges (Ashfaque et al., 2020), integrate knowledge from previous interactions (Jiang et al., 2022), offer thorough instructional support (Huang et al., 2022), develop individualised learning programs (Smutny & Schreiberova, 2020), and provide immediate feedback (Lee et al., 2020). It is worth acknowledging that these attributes bestow upon them the potential to function as valuable assistants in language learning pursuits (Fryer et al., 2019).

An example of such avant-garde AI-powered chatbots is ChatGPT, which made its inaugural debut in November 2022. Subsequently, ChatGPT 3.5 was unveiled in beta format via *chat.openai.com* and is accessible following registration of a cost-free account. Moreover, a premium variant of ChatGPT, designated as ChatGPT-4, was unveiled in March 2023. Scholarly examinations about chatbot-facilitated learning are characterised by scrutinising various chatbot attributes, evaluations concerning their appropriateness, and typologies of learning activities in which they are harnessed (Lee et al., 2020). Nonetheless, these investigations predominantly emanate from the United States and primarily encompass in-class applications limited to single sessions in addition to following quantitative research design with a particular focus on English as a foreign or second language except one studying Chinese as a second language (Huang et al., 2022). These studies delving into the amalgamation of chatbots into language learning and instruction have delineated favourable outcomes vis-à-vis students' grammatical knowledge (Kim et al., 2019), listening skills (Kim, 2018b), and writing skills (Godwin-Jones, 2022; Lin & Chang, 2020), while their contributory role in augmenting vocabulary knowledge remains a topic of equivocation (Jia et al., 2012; Kim, 2018a). To elucidate the intricate interplay between vocabulary enhancement and the deployment of an AI-powered chatbot, this study aims to reveal the role(s) of ChatGPT in a unique research context, i.e., German as a Foreign Language and an equivocal research area, i.e., vocabulary enhancement through a qualitative analysis in which ChatGPT was employed for a longer term as an out-of-class activity. Thus, this study

also aligns with Fu et al.'s (2022) call for longitudinal studies focusing on the link between a technology-oriented pedagogical intervention and any kind of language learning outcome by moving away from experimental research paradigm yielding contradictory findings due to the lack of methodological rigour, i.e., random selection and assignment of participants (Ballance, 2024) and opting for complexity-oriented perspectives (Marek & Wu, 2014).

## LITERATURE REVIEW

### Chatbots, ChatGPT, and Foreign Language Skills

The historical application of chatbots within educational contexts traces its origins to the early 1970s (Kim et al., 2022). Concurrently, their utilisation spanned various educational disciplines, with a substantial focus on foreign language education (Zhang et al., 2023). However, a paradigm shift has ensued with the introduction of AI-powered chatbots, transcending the conventional rule-based precursors. This evolution stems from their conspicuous merits, notably encompassing the provision of linguistic input (Huang et al., 2022), the elicitation of learner interest (Kohnke, 2023a), and the concomitant advancement of holistic learner development (Kohnke, 2022).

Furthermore, these entities afford learners the flexibility to cultivate their linguistic proficiencies ubiquitously, thus ensuring immediate aid by means of skill-adjusted levels, individually tailored learning resources, and bespoke learning trajectories (Kuhail et al., 2023). Consequently, AI-powered chatbots engender a pivotal role in orchestrating an authentic and interactive milieu for language acquisition (Chiu et al., 2023), as they offer linguistic expressions, queries, and lexicon, which human interlocutors might be deficient in (Huang et al., 2022). Moreover, these advanced chatbots proficiently execute formative assessments, coupled with instantaneous feedback provisioning (Kuhail et al., 2023), components that are instrumental to the efficacious acquisition of language.

Prior studies, extensively focused on English as a foreign or secondary language, have unearthed the propensity of AI-powered chatbots to engage learners, fuel their perseverance (Kohnke, 2023b), and augment their scholastic achievements (Wang et al., 2017) in grammar (Kim et al., 2019), listening (Kim, 2018b), and writing (Godwin-Jones, 2022; Lin & Chang, 2020). Nonetheless, the pedagogical effectiveness of vocabulary acquisition via chatbot-mediated means remains ambivalent (Jia et al., 2012; Kim, 2018a), while endeavours directed at honing speaking skills have yielded suboptimal outcomes. Notably, Haristiani (2019) claims that chatbots, Cleverbot primarily, necessitate a configuration facilitating vocal interaction to ameliorate spoken proficiency. In a parallel vein, Çakmak's investigation (2022) into the interplay between chatbot-human interaction, specifically with Replika, and L2 speaking performance underscores negative perceptions and attitudes toward the chatbot interaction.

Unveiled in November 2022, ChatGPT, standing as a foremost AI-powered chatbot, holds promise to transcend the aforementioned pedagogical attributes by engaging in intricate

conversational interchanges with users. Liu and Ma (2024), by way of illustration, underscore ChatGPT's potential as a potent linguistic pedagogical instrument that learners of English as a foreign language should harness to cultivate creativity and productivity. Similarly, Bin-Hady et al. (2023) adopt a global perspective in their approach toward ChatGPT's integration within English learning, positing that this integration heightens learners' linguistic aptitude, scaffolds the learning trajectory, and dispenses timely feedback regarding learning accomplishments and linguistic utility.

However, Fryer et al. (2019) proffer the concept of the "novelty effect," denoting the initial novelty of AI-powered chatbots as a plausible explanation for transient learner engagement and ephemeral performance enhancements. This effect, however, tends to recede as learners familiarise themselves with the AI-powered chatbot, i.e., ChatGPT as in this study which lasted five weeks to overcome this effect.

### Theoretical Framework

Flow theory, introduced by Csikszentmihalyi (1975), delineates a cognitive state experienced during intricate undertakings within a comfort zone between anxiety and ennui states. This state emerges when the challenge presented is neither overly arduous to cause frustration nor excessively facile to evoke tedium. Central to this phenomenon is diminished self-awareness, as elucidated by Csikszentmihalyi (1988), coupled with a gratifying sensation stemming from a perceived sense of control and affirmative advancement, as Marr (2001) posited. This engrossing mental state materialises when learners engage in deliberately chosen activities and harbour a fervent interest in a premise congruent with Abbott's (2000) viewpoint. Notably, this also aligns with Krashen's (1982) Forgetting Principle, wherein optimal language input is so captivating and pertinent that the learner may even momentarily disregard its foreign linguistic nature.

Within this framework, the theory of flow advances the notion of a symbiotic interplay between contextual elements and individual attributes that collectively impact learners' psychological disposition (Seligman & Csikszentmihalyi, 2000), thus exerting a parallel influence on their performance in acquiring foreign languages. The elements of flow include alignment with learners' proficiency levels, learners' agency in task control, task allure, assigned time period, the immediacy of feedback, an autotelic experience, and the learners' language aptitude (Csikszentmihalyi, 1990) coalesce to engender a psychological milieu characterised by enjoyment, engagement, lack of self-consciousness, and focus, as expounded by Egbert (2004).

Given the confluence of these task attributes with the functional capabilities of ChatGPT, such as text complexity modulation, learner-controlled text interaction, and provision of real-time feedback in diverse settings, the theoretical underpinnings of flow find resonance in the present study. This alignment is further substantiated through the operationalisation of Zhang et al.'s (2023) RAISE model, which espouses the facets of Repetitiveness, Authenticity, Interactivity, Student-centredness, and Enjoyment in the context of effective chatbot-facilitated learn-

ing. With this theoretical insight, this exploratory study aims to investigate the role(s) of ChatGPT integration as an out-of-class tool in fostering L3 German learners' vocabulary knowledge at a state university with the following research question:

How does ChatGPT affect L3 German learners' vocabulary knowledge?

## METHODOLOGY

### Research Design

An exploratory qualitative case study methodology, as delineated by Fraenkel, Wallen, and Hyun (2012), was employed in this research to scrutinise a select cohort of students pursuing the acquisition of L3 German in a university in Türkiye. The primary objective of this inquiry was to assess the efficacy of deploying ChatGPT as an instructional tool to enhance these students' lexical competence.

### Participants

The research initially comprised a cohort of five individuals pursuing the study of L3 German within the context of a state university in Türkiye during the spring term of 2023. This group consisted of one male and four female participants. However, it is noteworthy that two of these individuals, both females, encountered difficulties in task execution and expressed a desire to discontinue their involvement. Consequently, the study proceeded with three remaining participants: one male and two females. These participants, aged between 20 and 22 years, are native Turkish speakers and possess a curriculum-mandated English proficiency at the B1 level, while their proficiency in German adheres to the A1 level as per the university curriculum. Their exposure to the German language amounts to approximately one and a half years, with a cumulative instructional duration of 90 hours.

It is pertinent to mention that the selection process for the study participants involved an invitation extended to highly motivated individuals keen on advancing their German language proficiency and augmenting their vocabulary knowledge. This entailed including three high-achieving students whose academic performance consistently achieved an average score of no less than 90 out of 100. Consequently, the selection approach adopted adhered to a non-probability purposive sampling method, underpinned by a criterion sampling strategy, as explicated by Onwuegbuzie and Leech (2005), which was employed in recruiting participants for this study.

### Data Collection

Semi-structured interviews were conducted both prior to and subsequent to the integration of ChatGPT, serving as the primary data collection method for this study. The initial interview encompassed topics related to the participants' background in German language acquisition, their self-perception, motivations for learning German, and their attitudes and cognitions pertaining to vocabulary acquisition. In contrast, the subsequent interview centred on the potential alterations in their self-perception and motivations for learning German, as well as the impact, if any, of ChatGPT integration on their vo-

cabulary proficiency. Notably, each participant engaged with ChatGPT as an extracurricular tool for a period of five weeks, wherein they adapted the content to their individual preferences by employing the target vocabulary words following their analysis of the weekly thematic material. In the ensuing week, they orally presented their ChatGPT-assisted texts, comprising approximately 80 to 100 words, and engaged in reciprocal questioning with their peers.

To ensure the participants' comfort and facilitate effective communication, the interviews were conducted in their native language, i.e., Turkish. Each interview session lasted between 35 and 45 minutes and was audio-recorded with the explicit consent of the participants. Additionally, the students were requested to maintain reflective journals, comprising five weekly entries in Turkish. Importantly, they received no specific directives or guidelines regarding the content or structure of these reflections to mitigate potential biases and uphold the integrity of qualitative research.

A pre-test was administered to gauge the participants' baseline knowledge of the target vocabulary items before any interventions. This pre-test consisted of a written list encompassing 30 words, comprising 25 designated target words and five non-target words. Students were instructed to provide the Turkish or English equivalents of any words they already knew or to mark 'NK' (Not Known) if they were unfamiliar with a word. Significantly, none of the participants were familiar with any of the target words.

The stimulus for ChatGPT-facilitated learning consisted of five distinct passages, each centred on a different thematic subject, incorporating 120 to 175 words. Notably, each passage incorporated five predetermined target words (an illustrative example can be found in the Appendix). A post-test was administered to assess the retention of target vocabulary words following the intervention wherein students provided the Turkish or English counterparts of the target words.

### Procedure

After ethics committee approval had been received (Approval Number: 297826), the initial interview and pre-test were administered in a face-to-face setting within the university's language classroom. Participants were allotted a 15-minute window to complete the pre-test during this assessment. However, due to an earthquake in Türkiye, subsequent classes were conducted via the Zoom platform. The instructor, who also served as the researcher in applied linguistics, possessed prior teaching experience with the involved students. Target words were selected from the Goethe Institute's resources (available at A1\_SD1\_Wortliste\_02.indd (goethe.de). The rationale behind this choice was the thematic categorisation of words corresponding to proficiency levels, aligning with the research objectives.

Notably, the pre-test results affirmed that none of the students were familiar with any of the designated target words. In the following week, the students were introduced to ChatGPT, a tool hitherto unfamiliar to them. Comprehensive and continu-

ous guidance was provided on creating an account and engaging with the platform effectively. Subsequently, the researcher determined the thematic content based on the students' expressed interests and their desire to cultivate vocabulary knowledge in specific domains (refer to Table 1 for a breakdown of themes and associated target words).

Conforming to the predefined thematic frameworks, the researcher employed ChatGPT to generate textual materials incorporating the target words, with minor grammatical adjustments made to enhance readability. During the initial week of the intervention, the students explored the thematic domain of "Essen und Trinken" (Food and Drinks). After collectively reading and analysing the text, each student independently addressed comprehension questions and subsequently personalised the topic by discussing their regional culinary traditions, preferences, and dietary habits, employing the set of five target words. These self-generated texts were forwarded to the teacher for evaluation and feedback. Additionally, the students maintained reflective journals detailing their thoughts and emotions after each week. A similar procedure was replicated for the subsequent themes spanning five weeks. It is worth noting that while all students interacted with ChatGPT during the first week, their engagement with the tool progressively intensified from the second week onward. Table 1 provides an overview of the themes and associated target words for each week.

**Table 1:** Themes and Target Words

Week	Theme	Target Words
1	Essen und Trinken	Die Birne - Der Durst - Das Hahnchen - lecker - Das Fleisch
2	Einkaufen	verkaufen - bestellen - brauchen - Das Gemüse - Die Kleidung
3	Reisen	Die sehenswürdigkeiten besichtigen - zufrieden - wandern - Das Gepäck
4	Erziehung	Auskunft - Das Ergebnis - Der Fehler - Die Prüfung - Das Studium
5	Klima & Wetter	Der Herbst - scheinen - schneien - regen - kalt

Longer interactions between students replacing monologues reflected this increasing engagement. Table 2 showcases the enactment of Zhang et al.'s (2023) RAISE model in this research.

A critical juncture was reached upon the culmination of the comprehensive five-week intervention, during which the students delved into the intricacies of the five designated themes. At this point, the participants underwent a post-test evaluation, encompassing an assessment of their grasp of the target vocabulary words. Additionally, the researcher conducted a second interview with each student, facilitating a deeper exploration of their evolving perspectives and experiences stemming from the intervention.

**Table 2:** The Enactment of RAISE Model

Repetitiveness	Authenticity	Interactivity	Student-Centredness	Enjoyment
Continuous guidance about how to use ChatGPT	ChatGPT-created sample texts with target words.	Dialogues with ChatGPT while producing personalized texts	Selecting the topics to be covered	Effortless and easy text-production.
Weekly review of the themes covered	Adapting the sample text to oneself	Dialogues with the teacher before the class  Dialogues with the peers in the class.	Student-student interaction in the class.	Immediate feedback  Longer interactions in the class.

### Data Analysis

The process of analysis in this study followed the principles of constant comparative analysis, as outlined by Glaser and Strauss (1967), to elucidate the emerging themes from both the pre-intervention and post-intervention datasets. Qualitative coding procedures, encompassing open coding, axial coding, and selective coding, were judiciously employed through a series of meticulously orchestrated steps:

- Verbatim transcription of the recorded data was conducted, with meticulous attention to detail, including rectification of any transcription inaccuracies identified through corrective listening.
- Data analysis was executed using MAXQDA, with the initial phase involving open coding. This iterative process entailed a repetitive cycle of comprehensive data scrutiny, followed by necessary adjustments to the coding scheme as the analysis advanced.
- Once it was ascertained that the codes had attained a level of saturation sufficient to cover the entire dataset, categories and themes were systematically generated to encapsulate the emergent patterns and insights.

Moreover, a rigorous peer review process was integrated into the data analysis to mitigate the potential impact of researcher bias. A departmental colleague, well-versed in qualitative data analysis techniques, actively participated in the analysis process, contributing to intercoder reliability assessments.

Subsequently, broader categories were refined to best encapsulate the conceptual underpinnings of the data, taking into account selected segments. Conceptual selective analysis within the framework of selective coding was executed, involving the construction of a table to facilitate the juxtaposition of selected categories from the first interview (pre-ChatGPT introduction) and reflective journals generated during the intervention, with those emerging from the second interview (post-ChatGPT utilization). This methodological approach ensured a comprehensive examination of the evolving themes and insights.

To enhance the trustworthiness of the study, four criteria suggested by Lincoln and Guba (1985) were rigorously addressed:

- Credibility:** This criterion was upheld through data triangulation, intercoder reliability assessments, and mem-

ber-checking, fostering confidence in the veracity of the findings.

- Transferability:** Thick descriptions were employed to enhance the applicability of the findings in diverse settings.
- Dependability:** An inquiry audit was conducted to ensure the consistency and replicability of the findings.
- Confirmability:** Data triangulation was once again employed to affirm the neutrality of the findings, safeguarding them against undue researcher bias or influence.

Despite the small sample size, it is noteworthy that it can be adequate to attain data saturation (Cresswell, 2013). Whereas the employment of larger sample sizes entails the endeavour to imbue data with a semblance of 'objectivity,' small sample sizes afford the opportunity for a more profound explication of participants' data. This is owing to the potential concealment of nuanced significances beneath the overt meaning, necessitating a meticulous revelation (Charmaz, 2011). In other words, in qualitative research, prioritizing depth over breadth emerges as a paramount consideration.

Furthermore, the study's transferability was bolstered by its multiple-case design, following the principles advocated by Stake (2013). Each of the three individual cases contributed to the generation of conclusions, illuminating the findings in the context of both commonalities and distinctions, as outlined by Fraenkel, Wallen, and Hyun (2012).

### FINDINGS

The ensuing findings are delineated across the subsequent instances. Comprehensive data emanates from semi-structured interviews, vocabulary assessments, and reflective journals, thereby affording a comprehensive insight into each student's transformation pertaining to the acquisition of the L3 German lexicon through integration with ChatGPT. In this context, 'Int' signifies semi-structured interviews, encompassing 'Pre-Int' for interviews conducted before ChatGPT integration and 'Post-Int' for those conducted after integration. The designation 'VT' is representative of vocabulary tests, with 'VT1' denoting the pre-ChatGPT assessment and 'VT2' connoting the post-ChatGPT evaluation. Furthermore, data gleaned from the reflective journals maintained by L3 German students is annotated as 'RJ.'

## Azra

Azra, a sophomore student at a state university, has been engaged in English language acquisition since her primary school years. Her immersion into the realm of German commenced just one year ago, coinciding with the inception of her university studies. Throughout her academic journey, she has consistently ranked within the top echelons of her cohort, consistently securing prominent positions in both mid-term and final examinations.

Subsequently, Azra received an invitation to partake in this research. She displayed a notable enthusiasm for acquainting herself with the intricate procedural intricacies incumbent upon her participation and offered her informed consent for her involvement in the study. During the preliminary interview preceding the commencement of the research intervention, Azra self-identified as a committed and dedicated language learner. However, she did articulate some reservations, which are delineated as follows:

*'Although I have been learning German for one and a half years, I have made more progress than I did in English. I can understand what I read, and I can speak German. It is a great feeling. However, I need to improve my vocabulary knowledge. I study hard, but I do have limited vocabulary knowledge.'* (Pre-Int)

Her reservations stemmed from what she perceived as inefficient approaches to the acquisition of German vocabulary, as she articulated:

*'Although I use online dictionaries and keep a vocabulary list regularly, I cannot get involved in studying vocabulary items, thus failing to develop my vocabulary knowledge. I have difficulty in remembering the words I have learnt. I repeat the words and their meanings sometimes. After a while, it gets boring.'* (Pre-Int)

There is evidence that she utilises the paper-pen method to improve her vocabulary knowledge and finds it boring. In addition, she regarded this method as time-consuming by stating: 'I spent hours on learning these words. However, I cannot know how to use them even if I remember their meanings.' (Pre-Int). In the pre-intervention vocabulary test (VT1), she exhibited the ability to provide the Turkish equivalents of the two given words. Commencing from the very first week, she began to express a growing fascination with ChatGPT, describing it as an engaging and time-efficient tool, as she recorded in her reflective journal:

*'Previously, I had difficulty in adapting the themes we had covered to myself. Besides, I used to end up having hesitations about the grammatical structures. ChatGPT is so amazing and I enjoyed its assistance. It also saved me hours which I used to waste drafting the topic.'* (RJ).

Furthermore, she initiated a genuine appreciation for the sense of agency and prompt feedback afforded by ChatGPT, leading her to engage in ongoing dialogues as the weeks unfolded actively:

*'Now, I go beyond one-off dialogue providing me with the text including the key words. I play with the words. I ask some fur-*

*ther questions till I get the most suitable one for me. I enjoy this so much that I sometimes do not even notice how fast time flew by'* (RJ).

As her immersion in ChatGPT deepened and familiarity grew, the sense of enjoyment and engagement appeared to evolve into an autotelic experience. This sentiment was eloquently conveyed during her second interview, conducted after the conclusion of the intervention:

*'I am happy that I have had a chance to go beyond classical language learning methods. I could also go beyond doing homework. ChatGPT not only provided me with the text fast and easily but also enabled me to enjoy language learning. So, I wanted to be in interaction continuously since I did not feel like doing homework but playing with the words. It has been so amusing for me. It also helped me to learn how to enjoy freedom.'* (Post-Int).

In the second vocabulary test (VT2), she demonstrated remarkable proficiency by successfully providing equivalents for all target words, with an 80% accuracy rate in Turkish and a 20% accuracy rate in English. This notable achievement, combined with her autotelic experience, prompted her to re-evaluate and reframe her language learning objectives and patterns of language utilisation in the following manner:

*'With ChatGPT, I have noticed that my focus should be on meaningful interaction not memorising the structures and words, which might end up not remembering the structures or words. However, enjoying the process might end up forgetting the time you spent on language learning but remembering the structures and words'* (Post-Int).

This observation further underscores the convergence between ChatGPT and Krashen's (1982) Forgetting Principle.

## Serdar

Being a sophomore student at a state university, Serdar has been learning English since primary school and has been learning German for one and a half years since he started his university education. He has been an active student in German classes and has got high marks in the mid-term and final examinations.

When he received an invitation to partake in this research, he wanted to complete all the procedural steps and learn his responsibilities. He also gave his consent for this study. In the first interview before the intervention, Serdar defined himself as a developing German speaker. In addition to his joy, he expressed his anxieties before the intervention as follows:

*'My German is good and I have been improving it grammatically and orally. Yet, I am a bit worried about my limited vocabulary knowledge because I tend to use the same basic words. Will I be able to expand my vocabulary knowledge? If so, how much? At least, I must know as many words as I do in English. I plan to go to Germany. I should memorise daily language words and I should be able to use them efficiently. As of now, I cannot.'* (Pre-Int)

His pre-intervention vocabulary test (VT1) results were in line with his anxieties since he could write only one word's Turkish equivalent. Uninteresting and disengaging methods of German vocabulary building seem to lie behind his concern: *'I note down keywords and sometimes practise synonyms and antonyms by using online dictionaries. But I get bored easily and tend to stop studying. So, I think I forget them some while after.'* (Pre-Int).

Having started to interact with ChatGPT, he expressed his engagement and enjoyment in his reflective journal: *'I thought it would be like an online dictionary. ChatGPT is something different. I have fun while interacting with it and I do not get bored. Rather, I want to do more. (RJ). He also expressed his autotelic experience: 'First, I aimed to do homework in the best way possible. But now, I interact with ChatGPT as I want to do so. Interacting with ChatGPT is like interacting with a kind friend who knows Turkish, English, and German.'* (RJ). Having control and being able to adapt to the proficiency level seem to encourage him to spend more time on vocabulary learning: *'When I discovered that ChatGPT was there to guide me in a fast and suitable way, I started to ask ChatGPT to translate the text into Turkish or English so that I could better understand the text or vice versa. Also, I asked ChatGPT to simplify the language. It performed it instantly. It was great.'* (Post-Int).

In line with this agency, he emphasised that he wanted to interact with ChatGPT any time: *'From the second week on, ChatGPT became my friend and teacher who I wanted to interact with'* (Post-Int). He also added that authenticity was another engaging aspect: *'As a person, I would like to express my own characteristics and my own culture. ChatGPT helped me to personalise texts and produce texts reflecting me literally.'* (Post-Int). Furthermore, in the second vocabulary assessment (VT2), he exhibited an exceptional level of competence by effectively providing synonymous expressions for all designated terms. His performance yielded a commendable accuracy rate of 76% in Turkish, while in the domain of English, his accuracy rate stood at 24%.

### Mina

Mina is a sophomore at a state university and has been learning English since primary school and has been learning German for one and a half years since her admission into university. After being invited to take part in the research, she was eager to complete all the procedural steps and gave her consent for the study. In the first interview before the intervention, Mina defined herself as a competent German learner despite her concerns about her vocabulary knowledge:

*'I am competent at German in terms of reading comprehension, listening, and speaking. Also, I get high scores in mid-term and final exams. However, I feel my vocabulary knowledge is not enough. It makes me feel nervous. I listen to music and go over the words we have covered in the lessons. Yet, all I can do is to be able to remember some of these words when I hear or read them. My vocabulary knowledge is not as good as my grammar knowledge and other skills. I must definitely solve this problem.'* (Pre-Int)

Her concern seems to stem from uninteresting vocabulary exercises and lack of time to practise them, as indicated in this quote:

*'Finding a word's definition exercise in the dictionary and then reading it in a sentence is not enough. Being unable to use it for yourself is troublesome without any guidance. Additionally, there is not much time to use them in different places.'* (Pre-Int)

Beyond this struggle, she thinks that foreign language learning should be effortless and easy as in the first language by expressing: *'We have not spent so much effort to learn grammar or vocabulary in Turkish. That should be the case for German, too.'* (Pre-Int). Once she started to interact with ChatGPT, enjoyment and engagement began to replace her concerns, as she indicated in her reflective journal: *"From the first week on, I started to talk to a thoughtful language guide. I enjoyed every second and did not even notice that our conversation lasted for hours."* (RJ). In the following weeks, she began to enjoy intrinsic rewards: *'Doing homework turned into doing a hobby. My roommates asked me to stop studying. But it was not like studying, but giving yourself a gift.'* (RJ). She revealed that the most significant insight she gained in this research was the continuous interaction with ChatGPT without time and place constraints, as she stated in her second interview:

*'German learning is now not limited to class hours. I can go online and practise the dialogue with ChatGPT anytime. Thanks to these continuous dialogues, I can learn the words faster and more easily. Also, I can learn further words related to the topic while adapting the text to me.'* (Post-Int)

By highlighting the role of control over the task, immediate feedback and the capability to customise the proficiency level of the text, she enjoyed complete concentration on the task, leading to autotelic experience by stating:

*'My active role in designing and shaping the text enabled me to be more engaged in the task. It was like being the director of your movie. Immediate responses of ChatGPT kept me on track and it was fun to be able to simplify the complex parts or delete unrelated parts. Actually, all these made me love this process so much that I did not limit myself to a particular period of time'* (Post-Int).

She also added that the sample texts and her own texts were not cognitively overloaded by expressing:

*'In the previous terms, the texts we read had some unrelated and boring issues or there were some parts grammatically more challenging. But, these sample texts were a perfect fit for us. I benefitted a lot. So, I could produce texts that really reflect me in terms of meaning and grammar.'* (Post-Int)

Additionally, in the second vocabulary test (VT2), she exhibited exceptional linguistic aptitude by adeptly presenting corresponding counterparts for all designated words, achieving a proficiency rate of 72% in Turkish and 28% in English.

## DISCUSSION

This research aimed to investigate the influence of ChatGPT on the vocabulary acquisition of L3 German learners. Beyond attaining commendable vocabulary proficiency, the outcomes have unveiled emergent thematic strands of both cognitive and affective dimensions. Specifically, these encompass cognitive facets such as *information crystallisation, heightened focus, augmented engagement, and deep learning* alongside affective aspects including *enjoyment, agency, intrinsic motivation, and enthusiasm* for in-class discourse.

Evidently, ChatGPT played a pivotal role in fostering students' lexical development. In this regard, this investigation aligns itself with the research of Wang et al. (2017), as it provides empirical substantiation for the affirmative impact of ChatGPT on vocabulary acquisition. The remarkable proficiency exhibited by students in generating the L3 German lexicon corroborates the quantitative findings of Kim (2018a), thus attesting to the beneficial effects of chatbots on English vocabulary acquisition. Kim's study holds significance due to its methodological rigour, characterised by random student selection and allocation, both acknowledged cornerstones in experimental research, as underscored by Ballance (2024).

To ensure this substantial achievement, it is imperative to acknowledge the cognitive and affective affordances offered by ChatGPT. ChatGPT succeeded in sustaining engagement and enjoyment by providing concise information tailored to the students' aptitude, aligning with the argument put forth by Kuhail et al. (2023). This, in turn, facilitated a deeper level of focus and learning among all students. In essence, the mutual interplay between ChatGPT's affordances, encompassing task allure, prompt feedback, learner-driven text interaction, and content tailored to individual proficiency levels, in conjunction with students' agency in enhancing vocabulary knowledge, profoundly influenced their psychological disposition, mirroring the assertions of Seligman and Csikszentmihlyi (2000). This synergy culminated in a sense of enjoyment, engagement, self-unconsciousness, and unwavering focus, as expounded upon by Egbert (2004).

Furthermore, students reaped the benefits of an authentic and interactive milieu, akin to the emphasis by Chiu et al. (2023), which ignited intrinsic motivation and enthusiasm for in-class dialogues. Formative assessments and immediate feedback (Kuhail et al., 2023) further empowered students' agency, allowing them to experience autotelic moments (Csikszentmihalyi, 1990). In this context, students could garner a more profound comprehension of linguistic nuances through their interaction with ChatGPT compared to their self-directed efforts, primarily reliant on online dictionaries devoid of real-time feedback—a potentially disengaging endeavour, in alignment with Crosthwaite and Baisa (2023).

In accordance with Krashen's (1982) Forgetting Principle, ChatGPT facilitated the intersection of agency and autotelic experiences by providing students with optimal and captivating language input, synonymous with information crystallisation. In essence, the authenticity and interactivity underpinning

ChatGPT's interface placed students at the epicenter of their learning experience, thus allowing them to derive genuine pleasure from the process.

In sum, this investigation underscores the affirmative influence of ChatGPT on vocabulary acquisition in a distinct linguistic domain, namely German, within a unique educational context, i.e., Türkiye. The study adopts a qualitative approach and elucidates the cognitive and affective affordances through the lens of flow theory, thus contributing valuable insights into the realm of language acquisition.

## CONCLUSION

The present study significantly contributes to the growing body of evidence affirming the constructive role of ChatGPT in augmenting vocabulary proficiency. This augmentation is primarily attributable to the enhanced levels of control, agency, engagement, and enjoyment engendered by ChatGPT, all of which align harmoniously with the tenets of flow theory. By allowing students to partake in autotelic experiences, providing instantaneous feedback, and presenting them with engaging and stimulating texts, ChatGPT emerges as a pedagogical tool that transcends the mere expansion of vocabulary knowledge. Rather, it holds the potential to nurture holistic development and foster learner autonomy. Consequently, this study contributes substantively to the extant literature positing that ChatGPT catalyzes student engagement in the multifaceted language acquisition process.

Furthermore, this study holds profound implications for policymakers, educators, and instructors. It underscores the imperative of introducing students to the realm of ChatGPT, as the first-hand experience reported here led to a transformation in the students' perception of foreign language acquisition and utilisation. Importantly, this study suggests that educators should be well-versed in ChatGPT and equipped with the necessary training to harness its potential as an adjunct to traditional classroom instruction. Such an approach could yield substantial benefits in terms of student engagement and language learning outcomes.

It is worth noting that this study, while valuable in its insights, is constrained by its relatively small sample size, constituting one of its limitations. Future research endeavours could expand upon these findings by conducting studies encompassing diverse student profiles within various university contexts. The effect of ChatGPT on plurilingual development might also be examined inasmuch as students provided some words' Turkish and some others' English equivalents. These investigations could employ quantitative or mixed-methods research designs with a larger participant pool, thereby offering a more comprehensive understanding of ChatGPT's enduring impact. Additionally, the long-term effects of ChatGPT on students' autonomy, creativity, and productivity warrant investigation, as they represent potential avenues for further scholarly exploration.

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## APPENDIX

### ESSEN UND TRINKEN

Essen und Trinken sind wichtig für uns. Wenn wir Durst haben, können wir etwas trinken, um den Durst zu löschen. Wasser oder Saft sind gute Getränke. Manchmal haben wir auch Hunger. Dann können wir eine Birne essen oder ein Hähnchen. Eine Birne ist eine leckere Frucht. Hähnchen ist Fleisch, das man braten oder grillen kann. Es schmeckt sehr gut! Beim Essen und Trinken geht es darum, den Geschmack zu genießen. Wir können verschiedene Gerichte ausprobieren und neue Geschmackserlebnisse entdecken. Eine ausgewogene Ernährung mit gesundem Essen ist wichtig für unsere Gesundheit. Wenn wir uns bewusst mit dem Essen und Trinken beschäftigen, können wir eine bessere Kontrolle über unsere Ernährungsgewohnheiten haben und uns insgesamt besser fühlen. Deshalb sollten wir darauf achten, gesunde Lebensmittel in unsere tägliche Ernährung einzubeziehen.

### Die Fragen

1. Was sind gute Getränke, um den Durst zu löschen?
2. Was kann man essen, wenn man Hunger hat?
3. Wie kann man Hähnchen zubereiten?
4. Warum ist eine ausgewogene Ernährung wichtig?
5. Wie kann man eine bessere Kontrolle über seine Ernährungsgewohnheiten haben?