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The Role of the Youdao Online Dictionary in Facilitating Chinese Slang Learning among Second-Language Learners

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ABSTRACT

This study evaluates the effectiveness of the Youdao Online Dictionary in facilitating the learning of Chinese slang among second-language learners. With slang being context-dependent and culturally embedded, it often presents difficulties for traditional learning methods. To address this, the study employed a quantitative design involving 100 university students learning Chinese as a foreign language. Participants took a pre-test to assess their prior knowledge of slang, followed by a four-week intervention using the Youdao platform. A post-test and a Likert-scale survey were administered to measure improvements in comprehension and vocabulary recall, as well as user perception. Results showed a statistically significant improvement in both understanding and recalling slang expressions after using Youdao. The survey revealed positive learner feedback regarding Youdao's usability, accessibility, and contextual learning support, though limitations were noted in capturing nuanced meanings and cultural depth. This research contributes to the discourse on informal language acquisition by demonstrating the potential of digital translation tools to bridge the gap between formal instruction and real-world communication. It also offers insights for language educators and developers seeking to enhance digital learning environments. While the study confirms the utility of Youdao in slang learning, it acknowledges challenges in AI interpretation of informal language and calls for more context-aware digital tools. Findings also support integrating such tools into blended learning strategies.

Keywords: Chinese Slang; Digital Translation Tools; Youdao Online Dictionary; Second-language Acquisition; Technology-assisted Learning

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1. Introduction

The advancement of digital translation and interpretation technology has, of course, brought immense changes into language learning. Second language acquisition as a field has greatly benefited from the new generation of translation tools enabled by artificial intelligence (AI) ^[1]. Students now receive real-time and context-specific translation, thus making language learning more convenient and engaging. Of these tools, Youdao Online Dictionary has emerged as a highly popular tool for Chinese language learners, providing real-time translation, pronunciation guidance, and contextual examples customized to different linguistic environments ^[2]. While computer-mediated translation tools have been extensively researched in formal language learning environments, their facilitation of the acquisition of informal and culturally grounded linguistic features such as slang is mostly under-explored ^[3]. Slang is an important part of routine communication, reflecting sociocultural patterns and evolving linguistic trends; however, it is somewhat problematic for foreign language learners because it is very changeable and context-dependent ^[4]. The study examines the contribution of Youdao Online Dictionary to Chinese slang acquisition, with the objective of investigating its effectiveness towards understanding and student attitude towards technology-enabled learning in informal language acquisition ^[2].

Youdao Online Dictionary employs AI-based facilities but is far from being an autonomous AI-based translation system similar to deep-learning-based neural machine translation (NMT) architecture such as Google Translate ^[5]. Youdao adopts machine learning procedures for context-orientated translation, word decomposition, and spoken word recognition with a view toward enhancing translation capabilities over simple word-to-word translation ^[6]. Its slang sense capability is nevertheless still restricted as it fails to exploit the enhanced AI-based context learning offered through more sophisticated NMT architectures ^[5].

Empirical studies in digital translation tools have constantly shown their benefits, especially in terms of vocabulary development, reading ability, and independence of the learners ^[7]. Usage of digital dictionaries and online translations has significantly contributed to students' understanding and remembrance of vocabulary with audio pronunciations and example sentences that are AI-suggested contextual translations ^[8]. Studies have shown that mobile-assisted language learning (MALL) tools, such as Youdao and Google Translate, enable students to self-learn at their own pace, as there is reduced cognitive load

that is associated with the use of traditional dictionaries ^[9]. Additionally, using AI-based translation has increased accuracy and relevance for translated content. This has significantly improved learner engagement and confidence when learning a second language ^[10]. There was much focus in the research, in the informal domain of language learning, on what technology can do to foster learners in learning idiomatic expressions and colloquial phrases ^[6]. It has been proven that contextualized learning with the aid of interactive translation tools enhances the understanding of idiomatic expressions and slang because learners are exposed to real-life conversational examples ^[4]. In addition, research has explored the role of AI-powered dictionaries in enhancing speaking skills, finding that pronunciation help and contextual sentence examples enhance both oral proficiency and pragmatic competence ^[5]. Other research has also demonstrated that the anxiety associated with possibly misinterpreting slang expressions while using online translation tools is one factor that boosts learners' intentions to interact with native speakers ^[11]. Although such studies are highly informative about the role of technology in language learning, research into the acquisition of slang through digital translation tools remains relatively scarce ^[12].

Despite the considerable volume of studies regarding digital translation tools in foreign language learning, few have addressed the key issues concerning their effectiveness in acquiring slang ^[3]. Current studies mainly focus on learning formal vocabulary and grammatical structures but hardly regard the lack of certainty of slang due to its plasticity and cultural specificity ^[13]. Although some studies have investigated the use of AI-based translation tools in the interpretation of idiomatic expressions, empirical evidence on how these tools make slang easier to understand is scarce ^[1]. Further, most studies have focused on the accuracy of digital dictionaries in standard translations rather than their ability to capture the dynamic nature of slang, which is often context-dependent and regionally variable ^[14]. The other significant research gap in the literature is the gap in the research that has not been explored regarding learners' perceptions of using translation tools for informal language acquisition ^[9]. Although research focused on structured education settings has documented the effectiveness of translation technology, there is minimal information regarding how students make use of these tools to learn slang on their own or in informal settings such as social media and entertainment media ^[7]. For example, if research fails to address the gap between determining appropriate versus inappropriate slang use in digital translation tools, there may not be sufficient data for creating focused language learning methods ^[3]. Such studies can be developed in the enhancement of technology to further assist with informal linguistic instruction. Youdao

Online Dictionary was chosen for its extensive linguistic database, especially in Chinese colloquial expressions and slang, which other translation tools do not have [6]. In contrast to Google Translate or Baidu Translate, Youdao offers contextual examples, pronunciation guides, and sentence dissections, which facilitate slang understanding [5]. Its machine-learning algorithms provide context-sensitive translations, which make it more suitable for learning informal language. Its friendly interface and mobile accessibility also facilitate self-learning [11]. The research set out to assess whether Youdao's special features efficiently facilitate slang learning. Findings add to technology-enhanced language learning (TALL) research [9].

This study aims to bridge the gap in existing literature by evaluating the effectiveness of Youdao Online Dictionary in Chinese slang acquisition. The research objectives are:

- To evaluate the effectiveness of Youdao Online Dictionary in learning Chinese slang.
- To measure improvements in slang comprehension through technology-assisted learning (TAL).
- To assess students' perceptions of using Youdao for slang learning.

This research in the larger rubric of the technology-assisted language learning sphere fills an apparent gap—acquiring slang through a digital translation application. Informal language elements including slang are instrumental in achieving fluent, native-speaker-like status and effective intercultural interaction; hence there is a gain in second-language pedagogy by understanding exactly how digital technology supports the reception of such lexical items [15]. The effectiveness of AI-driven translation in capturing the fluidity and contextual nuances of slang, which traditional classroom instruction often neglects, is the empirical evidence of this research study evaluating Youdao Online Dictionary [2]. Its findings will inform educators, language learners, and developers of translation technology about the strengths and limitations of digital tools in the facilitation of informal language learning [7]. This study is important in the practical sense, because it helps to address the difficulties learners face in understanding and using Chinese slang. Slang is informal, changes frequently, and carries cultural implications, making it difficult for non-native speakers to understand [16]. The study evaluates students' perceptions of Youdao, thus offering insights into user experience, areas for improvement, and best practices for the integration of digital translation tools into language learning curricula [13]. Finally, the study contributes to the growing discourse on AI-driven translation technology, offering valuable recommendations for future enhancements in digital

dictionaries to support informal language acquisition more effectively.

2. Literature review

Indeed, technology in the realm of translation and interpretation has completely transformed language learning, but specifically for casual, culturally infixed expressions of informal speech that comprise slang language [17]. This corner of online translation tools has had its changeover within the previous years from basic word-to-word translations to intelligent systems, deep learning, even into context language processing for effectiveness of quality improvements [11]. Platforms such as Youdao Online Dictionary make use of NMT and cloud-based databases that provide the learner with real-time definitions, contextual usage, and pronunciation guides [2]. This is particularly useful for the Chinese learner, full of idiomatic expressions, regional dialects, and slang which is evolving rapidly [5]. While in traditional dictionaries examples of real life are rarely or never found, digital tools usually contain crowdsourced content and offer interactive features with a deeper interpretation of how contemporary slang is utilized [3]. Several studies have pointed out that an interactive feature within the learning activity increases learner interest, making it more engaging as well as productive. Most importantly, these technologies do away with the barriers of nuanced meaning, especially for non-native speakers who would find it hard to fathom the cultural connotations of slang [18].

2.1. Theoretical Framework

Research on learning slang in the context of Second Language Acquisition (SLA) can be done based on several language acquisition theories, such as Krashen's Input Hypothesis, Vygotsky's Sociocultural Theory, and the Lexical Approach. Krashen's Input Hypothesis emphasizes comprehensible input and maintains that the greater the exposure of learners to somewhat more advanced but still comprehensible linguistic input, the more proficient they become at language [10]. This can be connected to learning slang because, for instance, non-native speakers tend to be confused by its informal character; however, the online translation tool Youdao provides context-based explanations and examples from everyday life [19]. In contrast, Vygotsky's Sociocultural Theory stresses that interaction is significant in language learning because social interaction is essential for the internalization of linguistic norms [20]. Computer-aided translation software facilitates this to occur more easily because students can be exposed to slang in more dynamic means, such as user-provided examples, multimedia, and interactive exercises [21]. The Lexical Approach also enhances the observation that exposure to sentences of slang in context has a superior retention and use component [10]. By incorporating digital

translation technology into SLA, students are exposed to in-real-time slang translations, phonetic advice, and culturally specific explanations, which assist in making the learning of slang more systematic and accessible [22].

Digital translation software has an empowering function in SLA by seizing concerns of variation, culture specificity, and lexical ambiguity in connection with the overall understanding of slang [5]. As slang is informal, the classroom environment classically does not support it, and digital aids such as online dictionaries and AI translation can now fill the gap with real-time access to common expressions [21]. Digital translation as a function in SLA aligns with the theory of cognitive load, wherein it lessens the load of memorization using multimodal resources by adding visual and audio reinforcements [23]. Besides this, interactivity, such as that in Youdao, provides a personalization of feedback and adaptive algorithms that 'listen' to the proficiency level of the learner [11]. These technologies are complemented by constructivist theories of learning, which focus on active participation and practical application [24]. Through enabling learners to practice slang in various online settings—social media discussions, chat rooms, and multimedia materials—translation technology supports a more experiential and interactive learning experience [3]. This theoretical foundation emphasizes the necessity of integrating digital resources into SLA approaches to facilitate the understanding of slang and improve general linguistic skills in Mandarin [6].

2.2. Chinese Slang and Its Learning Challenges

Chinese slang is a dynamic and culture-bound linguistic phenomenon that reflects the zeitgeist, societal transformations, and regional characteristics of China's linguistic landscape [5]. Broadly defined, it includes wangluo yǔngǔ (网络用语, internet slang), which reflects contemporary Chinese digital culture; qīngshàonián lì yǔ (青少年俚语, youth slang), often shaped by pop culture and generational identity; and fāngyán lì yǔ (方言俚语, regional dialect-based slang), which carries strong local cultural markers. Each type has distinctive features, usage contexts, and social implications [25]. Internet slang, for instance, is highly dynamic and changes quickly via the online media such as WeChat and Weibo, employing abbreviations, homophones, and acronyms that may be unknown to non-native learners [21]. Youth slang, which tends to be pop culture-driven, is similarly ephemeral and can be quite distinct between generations. Dialect-based slang is also a complexity factor since most of the Mandarin slang words have their origins in Cantonese, Shanghainese, or Sichuanese dialects, making it challenging for learners who are not attuned to regional language differences [5]. As Chinese slang evolves continuously, learning it involves more than memorization; it calls for an understanding of the

sociolinguistic contexts and a capability to infer meaning from beyond literal translation [25]. Electronic translation software, such as Youdao, facilitates overcoming such dilemmas through real-time feedback on slang usage, contextual sentences, and pronunciation notes that enable learners to keep current with prevailing linguistic paradigms [26].

Despite the availability of translation tools, several barriers prevent non-native learners from mastering Chinese slang [3]. The first major challenge is that slang expressions are culturally specific and often carry implicit meanings, humor, or historical references that are difficult to grasp without deep cultural immersion. An expression such as the popular “躺平,” tǎng píng, which translated means “to lie flat.” Such expressions imply much more with a sociopolitical connotation that is outside the literal explanation [7]. This limits learners' clear understanding of application. Furthermore, the tonal nature of Chinese further complicates slang acquisition with a possibility of misinterpreting from wrong pronunciation of intended meanings [17]. Another challenge is that slang is informal and constantly changing, which makes it hard to standardize in traditional language learning curricula [18]. Although digital translation tools are helpful in explaining the meaning of slang, they cannot always capture the fluidity and nuanced meaning of slang expressions, especially those that change rapidly in online communities [16]. Therefore, learners often find it challenging to determine the appropriate contexts for using slang, fearing misinterpretation or inappropriate usage. Such combination of digital tools, authentic environments of Mandarin speaking, and direct contact with the native speakers can be an excellent way to deal with slang-related challenges [7].

2.3. Role of Translation and Interpretation Technology

Youdao Online Dictionary is one of the top digital translation tools specifically designed to help language learners by providing complete and contextually sensitive translations [2]. Unlike traditional bilingual dictionaries, Youdao offers features tailored to the needs of the second language learner, such as real-time text translation, pronunciation guides, example sentences, and AI-powered contextual explanations [10]. The key advantage of Youdao is the integration of multiple translation engines, and it provides both the literal meaning of words and phrases as well as idiomatic meanings [23]. Additionally, incorporation of the crowdsourced and user-contributed translations will provide a more dynamic and up-to-date database, particularly useful in learning Chinese slang, which evolves rapidly [14]. Another feature that is quite attractive is multimodal learning support by audio pronunciations, vocabulary lists with various interactive features and cross-

references with Chinese databases of linguistics. This altogether makes the system more user-friendly [16]. Youdao provides definitions based on different settings: formal and informal, slang, and can help learners better distinguish between vocabulary in standard Mandarin and slang in modern Chinese speech [5].

In comparison, Youdao offers a strong presence in the digital translation world; it focuses exclusively on the Chinese language and delivers detailed explanations aimed at learners, which sets it apart from tools such as Google Translate and Baidu Translate [23]. These tools, as powerful as they are for translating general text, often fall prey to context-dependent phrases and idiomatic slang. Baidu Translate is a tool that was developed by the Chinese [10]. It will therefore do well on Mandarin content, but tend to favor formal language over colloquialism. One of the major flaws in current digital translation tools such as Youdao is that they can't replicate the cultural and contextual depth behind many slang words [26]. Many slang words have historical, political, or humorous meanings that machine translation simply cannot carry. In addition, the reliance of algorithmic learning and AI-based translations means these tools often err in the detection of proper contexts for usage since they lack the human intuition which is often more intuitive [7]. Further, the digital translation databases rarely keep up to date with updates in slang vocabulary since online communities update and alter slang expressions more rapidly [17]. Despite these, the translation and interpretation technologies still keep improving in ways that give the learners value-added assistance towards filling the gap between formal learning and real-world communication [3].

2.4. Previous Research on Technology-Assisted Language Learning

Substantial research has focused on the effectiveness of digital dictionaries and translation tools in language acquisition, showing many advantages to increase vocabulary retention, reading comprehension, and learner interest [27]. It is found that contextualized and interactive dictionaries such as Youdao enhance the capacity of second language learners to easily grasp complicated linguistic structures by instant use of definitions, example sentences, or pronunciation guides [23]. The studies of scholars in the field of educational technology have pointed out that digital dictionaries help learners to be self-directed, allowing them to learn and understand language at their own pace [10]. Furthermore, MALL studies highlight the role of digital translation tools in providing on-the-go support for learners, thus making language acquisition more accessible and flexible [3]. These studies verify that digital dictionaries enhance not only understanding but also the motivation of learners by eliminating cognitive barriers that exist with

traditional dictionary use [11]. However, although most studies are conducted on formal vocabulary acquisition and grammatical structures, fewer studies have been done on the role of digital dictionaries in informal language learning, especially in slang learning [12].

Studies on translation tools for formal and informal language learning have shown the view that, despite the present high performance in structured educational settings, these technologies still lag behind when it comes to slang translation and interpretation [13]. And even if there are studies and investigations on the inclusion of AI and the capacity for NMT to raise contextual accuracy, there is still little known about how learners engage with translation tools in slang acquisition [16]. Slang learning is inherently different from standard vocabulary learning because of its fluidity, cultural specificity, and non-standardized usage [18]. The pedagogical implications of using translation tools for slang comprehension have not been explored in existing research, especially in non-classroom settings such as online forums, social media, and entertainment media [14]. More specifically, while a lot of work has been done on the shortcomings of machine translation in translating idiomatic expressions, little empirical work has been conducted on user experiences with slang translation, the efficacy of AI-driven updates, or the role of human-assisted digital translation in enhancing the understanding of slang [1]. Such targeted research can refine digital translation tools and develop more effective methodologies for the integration of slang learning into second language acquisition frameworks [7].

3. Methodology

3.1. Research Design

This study employed a quantitative research approach to evaluate the effectiveness of Youdao Online Dictionary in learning Chinese slang. A pre-test and post-test experimental design was used to measure improvements in slang comprehension after a structured four-week intervention with Youdao. The primary objective of this approach was to assess whether exposure to and engagement with digital translation technology enhanced learners' ability to understand, interpret, and apply Chinese slang in appropriate contexts.

3.2. Participants and Sampling

The target population for this research was students from the university learning Chinese as a foreign language. The students were selected because they were actively learning the language and were more likely to have problems with understanding slangs given the informal and

dynamic nature of such terms. 100 students were randomly selected from various language acquisition programs to obtain a representative sample of learners with diverse linguistic backgrounds and proficiency levels. To enhance the validity of findings, random sampling was employed to select participants from registered university students in Chinese language courses. Random sampling ensured that all students in the target population had an equal chance of being selected, reducing possible biases and increasing the generalizability of findings. Other than their enrollment in Chinese language classes, participants' HSK (Hànyǔ Shuǐ píng Kǎoshì) scores were considered as a measure of the participants' Mandarin proficiency. The students were recruited from HSK levels 3 to 5, which meant that they had a decent foundation in formal Mandarin but needed help with understanding slang and colloquialisms. Further demographic information was collected in order to establish potential determinants of slang learning. Participants were studying diverse majors, for example, business, engineering, humanities, and social sciences, and therefore might provide information about whether their university study had some effect on their ability to grasp slang. Also, their countries of origin were recorded, because students from varying linguistic and cultural backgrounds may experience differing levels of exposure to Chinese slang. Information regarding participants' overall academic performance (GPA) was also gathered in order to test possible correlations between overall academic ability and Chinese slang mastery. Controlling for these variables, the study ensured a more comprehensive study of the interaction between students' backgrounds and the ability to learn slang using translation technology.

3.3. Data Collection Method

The study employed a guided four-week intervention where students learned how to make best use of Youdao Online Dictionary in learning Chinese slang. Prior to the commencement, participants were well-instructed on the specific tools to utilize and how to do so effectively, including slang translation, contextual usage examples, sentence translation, and pronunciation audio functions. They were encouraged to explore how the usage of slang terms was utilized in different contexts of conversation rather than literal word-to-word translation. They were also introduced to Youdao's AI-powered feature, Deepseek R1, to measure its role in improving their understanding of the nuances of slang. For the sake of consistency, students were provided with a vetted list of slang words to look up on Youdao and were instructed to document their learning experience, noting changes in their understanding before and after using the tool. Certain activities, such as literal

translations in a vacuum, were discouraged since slang meanings are usually more than literal translations.

For monitoring participation and learning outcomes, students maintained weekly learning diaries, noting the slang words they searched for, the Youdao features they used, and their comments on the tool's effectiveness. The diaries provided information on individual learning processes and potential problems in using digital translation tools to learn informal language. After the intervention, a post-test with a similar structure to the pre-test was conducted to measure any improvement in the understanding and use of slang. Besides this, students were also provided with a Likert-scale questionnaire to question their experience with Youdao's usability, translatability, and overall effect on slang learning. The use of structured instructions, guided inquiry, and reflective recording ensured a controlled and reproducible process for assessing the impact of Youdao Online Dictionary on slang learning.

3.4. Data Analysis

The data collected were, therefore, analyzed by Statistical Package for the Social Sciences (SPSS) so as to derive strong statistical interpretation of the collected data. Survey responses have been analyzed with the help of descriptive statistics in the form of means, standard deviation, and also in frequency distribution among students for perceiving Youdao's usability and effectiveness. The extent of general trends in attitude among students towards the tool was identified by this analysis. To determine improvements in slang comprehension, paired t-tests were applied to pre-test and post-test scores. The paired t-test was selected since it was assessing whether there was a statistically significant difference between the students' performance before and after using Youdao. In case the results showed a statistically significant increase in scores, then Youdao would be contributing positively to slang learning. Furthermore, correlation analysis was conducted to explore possible connections between students' survey responses and learning improvements in order to gather further insights about the perceived effectiveness of the translation tool.

3.5. Ethical Considerations

The participants were treated fairly, and their rights were respected through the use of ethical research procedures. All the students involved gave their consent after being informed on the objectives of the study, the procedures it entailed, and the expected benefits. Their anonymity and confidentiality were ensured. Their identities and responses were kept strictly confidential, and all data collected was anonymized to protect individual privacy. Participation in the study was entirely voluntary,

and students had the right to withdraw at any stage without facing any negative consequences. They were assured that their decision to participate or withdraw would not affect their academic standing. Moreover, data safety and integrity was preserved by all the research data through safe storing, and findings was reported only in aggregate form. And therefore, participants feel safe while providing their valued responses to create valuable research output about digital tools in language learning translation.

4. Results

Table 1 demonstrates descriptive statistics of students' pre-test and post-test scores for understanding and using

Chinese slang before and after using Youdao Online Dictionary for four weeks. The mean pre-test score was 62.4 (SD = 8.72), with a minimum score of 45.0 and a maximum score of 78.0. These values show that, before the intervention, students performed with moderate ability to understand slang, but they did have significant variability in their performance. The mean post-test score was 78.9 (SD = 7.85), ranging from 60.0 to 92.0. This increase in mean scores indicates that students significantly performed better after using Youdao for slang learning. This would show that there was a decrease in the standard deviation from 8.72 to 7.85, thereby meaning that students' performance scores were more stable following the intervention.

Table 1. Descriptive statistics of pre-test and post-test scores.

Measure	Mean (M)	Standard Deviation (SD)	Minimum	Maximum
Pre-Test Score	62.4	8.72	45.0	78.0
Post-Test Score	78.9	7.85	60.0	92.0

Table 2 shows a paired t-test comparison of pre-test and post-test mean scores in relation to slang learning measurements. An increase in overall mean score by 16.5 points, t-value 8.21 and p-value 0.000 were shown. Improvement was found highly significant with a t-test of comprehension. Breaking it down to even more details, the scores on comprehension improved 19.3 points with a t = 7.85, p = 0.000. That means Youdao really improved

students' interpretation and understanding of slang expressions in diverse contexts. On the other hand, vocabulary recall scores rose 13.7 points with t = 6.92, p = 0.000, meaning students remembered and recalled slang words more effectively after using the dictionary. The constantly low p-values (< 0.001) in each measurement validate that these improvements were not the work of chance but the result of Youdao itself having a direct impact on slang learning.

Table 2. Pre-test and post-test scores comparison (effectiveness of youdao in slang learning).

Measure	Mean (Pre-Test)	Mean (Post-Test)	Mean Difference	t-Value	p-Value
Overall Score	62.4	78.9	16.5	8.21	0.000
Comprehension Score	60.2	79.5	19.3	7.85	0.000
Vocabulary Recall	64.6	78.3	13.7	6.92	0.000

Table 3 summarizes students' perceptions of using Youdao Online Dictionary for slang learning based on a Likert-scale survey. The highest-rated statement was "Youdao is easy to use," with a mean score of 4.07, where 78% of students either agreed or strongly agreed with the statement. This implies that students found Youdao's interface and navigation user-friendly, which made slang learning more accessible. When asked whether Youdao had helped them to better understand the slang, 72% agreed or

strongly agreed (mean = 3.89), so the tool is perceived as working well for understanding slang. More importantly, they became more confident in using Chinese slang because 66% agreed (mean = 3.76), indicating that Youdao enhanced learners' confidence in their ability to apply slang in conversations. But comparing Youdao to the traditional resource, the average score for preference for Youdao was slightly low, at 3.65. Although 61% of students preferred to use Youdao over books, 22% were neutral and did not really show a bias toward either.

Table 3. Student perceptions of youdao online dictionary for learning slang.

Survey Question	Strongly Disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean Score (Likert 1-5)
Youdao is easy to use.	2%	5%	15%	40%	38%	4.07
Youdao helps me understand slang better.	3%	7%	18%	42%	30%	3.89
I feel more confident using Chinese slang.	4%	10%	20%	38%	28%	3.76
I prefer learning slang with Youdao over books.	5%	12%	22%	35%	26%	3.65

Table 4 presents qualitative comments from the students about advantages and disadvantages in using Youdao for learning slangs. The majority of students felt that Youdao is user-friendly, and they liked its intuitive interface as indicated by 35.2%. Besides, 28.7% of the students said that Youdao is convenient because they can use it anytime and anywhere, which makes slang learning more flexible and interesting. The other major benefit reported by 30.4% of the students was that Youdao made effective learning possible because it provided clear examples and contextual explanations for slang expressions. This implies that students found the dictionary useful in

their learning of how slang is used in actual conversations, thereby enhancing their ability to use slang appropriately in both spoken and written communication. However, students also pointed out some drawbacks of Youdao. 22.8% of the students noted that some slang words lacked sufficient context for understanding their nuanced meanings. 18.6% of the students reported translation inaccuracies, where certain slang expressions were mistranslated or lacked cultural depth. These challenges indicate that, while Youdao is a useful tool, it still has limitations in providing fully accurate and context-rich translations for informal language learning.

Table 4. Student feedback on benefits and challenges of youdao for slang learning.

Theme	Example Feedback	Frequency (%)
Easy to use	"The interface is simple and user-friendly."	35.2%
Convenient	"I can use it anytime, anywhere to learn slang."	28.7%
Effective Learning	"It helps me understand slang better through examples."	30.4%
Limited Context	"Some slang words lack sufficient context."	22.8%
Translation Issues	"Occasionally, translations are inaccurate."	18.6%

5. Discussion

The development of digital technology has remarkably impacted the improvement of language acquisition, especially through informal and conversational learning styles. Slang is a distinctive language feature challenging the foreign language student as it is inherently dynamic, dependent on situation and continually deployed with shifting vocabularies. Traditional language pedagogy traditionally addresses formal vocabulary and grammar but for true communication and cultural competency, slang competence is vital. This research sought to fill this gap by assessing the efficacy of Youdao Online Dictionary as a computerized tool for Chinese slang learning. The results offer strong support that technology-enhanced learning greatly improves students' understanding, retention, and confidence in employing slang, supporting the contention that interactive computerized tools can complement traditional learning methods in valuable ways. Nevertheless, as with every technological intervention, there are restrictions, especially on the accuracy and contextual richness of machine translations. In light of these results within the broader framework of SLA theories and existing empirical research, this paper critically evaluates the position of digital dictionaries in informal language acquisition, presenting a critical discourse regarding their virtues and vices as well as potential further developments.

The findings on improvement in comprehension further strengthen the theoretical understanding of second

language acquisition, especially within the communicative approach to learning ^[5]. Earlier research has indicated that context-rich learning environments—where students are exposed to authentic language use—are important for the development of fluency in informal speech patterns ^[21].

These findings are consistent with the impressive increase in comprehension scores in the current study, which indicates that exposure to contextualized translations on Youdao assisted learners in fully understanding the subtlety of slang expressions, which may not be easily captured through direct translation. Further, the findings show that students retained slang vocabulary better, which also aligns with studies that focus on repeated exposure and digital interaction as factors that lead to the retention of vocabulary over time ^[23]. Since slang often carries cultural and emotional implications, Youdao's effectiveness in slang learning lies in its ability to bridge linguistic and cultural gaps. It enables students to learn both the literal meaning and the broader social and cultural implications of words.

Results from the survey for students' perception of Youdao provide further insights into the role of digital translation tools in language learning. A high rating on usability suggests that students found Youdao to be an accessible and efficient learning tool, supporting previous research on the adoption of user-friendly technology in education ^[26]. According to studies, it has been identified that students will prefer using electronic dictionaries more as compared to conventional ones since these are more convenient, retrieve the information in an easier manner, and interactive. The findings of the current research also

resonate in this aspect; the majority agreed that Youdao was easy to use and was helpful in the learning of slangs. However, the mixed responses on preference for digital over traditional learning methods highlight an important aspect of learner preferences and technology acceptance. Although many students found Youdao helpful, some still valued printed dictionaries and structured classroom instruction, which suggests that technology should complement rather than replace conventional learning strategies ^[2]. This is in tandem with previous studies, which point out that the best time for digital tools is when they are used as complements to full language learning curricula rather than standalone.

Despite favorable responses, the limitations of learning slang through digital translation tools have to be acknowledged, particularly with regards to contextually correct and culturally relevant interpretations. In fact, one of the reasons stated by the students in their feedback is that some of the slang phrases were given inadequate contexts, which left the learners at a loss to know whether the phrase could appropriately be used in a particular context ^[25]. This finding is consistent with earlier research, which shows that most applications for translating software are not fluent in translating informal expressions because the latter lack the fluidity and dynamism found in slang expressions ^[21]. Additionally, the translation mistakes that the students pointed out also indicate that while Youdao can work, it does not accurately translate slang expressions. Previous research also indicates that tools of machine translation often lack the human intuition needed to express nuances found in informal speech ^[17]. This implies that though digital dictionaries may improve the learning of slang words, they ought to be complemented by supplementing their use with other learning tools such as explanations managed by man and interactive forums about discussing slang usage.

One important discussion area is the influence of technology-enhanced learning on the confidence of the students when using slang. The findings were that the level of confidence of using slang expressions was higher in Youdao compared to the traditional approach, consistent with earlier studies which found that digital tools improve higher self-efficacy of the second language learner ^[10]. The ability to gain confidence in acquiring the language is critical since it empowers participants to assume active roles in everyday conversations without the fear of making mistakes ^[16]. The implication of the findings was that the interactional functions of Youdao, such as example sentences and pronunciation guides, helped learners feel better prepared to assume slang in both spoken and written Chinese. However, the fact that some students remained neutral or hesitant about slang learning through Youdao suggests that confidence levels vary depending on learners' personal preferences and prior exposure to digital tools ^[11]. This requires personalized learning strategies in which

learners can adapt digital resources according to their individual needs and comfort levels.

In conclusion, this study contributes to the growing body of research in the domain of informal language acquisition of technology-assisted language learning. The findings seem to indicate that Youdao Online Dictionary is an efficient tool in improving Chinese slang comprehension and vocabulary recall while it creates an accessible and user-friendly platform for learners. However, the study also brings forward certain challenges and limitations, mainly with regard to contextual correctness and preciseness of translation, which matches other research on the application of MT in informal language learning ^[12]. The disparate responses on the preferences of students on digital or traditional learning mean that a blended learning approach, which blends digital tools with structured instructions, might prove to be an effective avenue for learning slang. This study confirms that digital dictionaries can significantly enhance slang learning, but future research should focus on more advanced AI-driven translation models and context-aware translation systems to address the remaining limitations of current digital tools ^[16]. The role of technology in second-language acquisition continues to evolve, and tools such as Youdao represent a valuable step toward more interactive, personalized, and culturally immersive language learning experiences.

6. Implication

This study brings an extension to the current models of TALL in the context of slang acquisition into the theoretical debate regarding second language learning. Conventional theories of language learning, including Krashen's Input Hypothesis, indicated a more critical role for comprehensible input in creating new language elements ^[10]. However, slang by nature is informal and culturally specific, and therefore it lies outside the bounds of formally prepared learning material, making Youdao an useful backup for comprehensible input in digital translation tools. Also, the findings of this research comply with Vygotsky's Sociocultural theory indicating that language development is also a product of interaction within the cultural and social environment ^[28]. By using Youdao as a technological tool that mediates, learners would find it possible to interact and use slang in a more contextually relevant way, supporting Vygotsky's case about where and how the conditions for learning are best served. Furthermore, the study expands the Cognitive Load Theory by showing how digital dictionaries can alleviate the strain of learning slang from this perspective, as digital definitions, usage examples, and even phonetic

pronunciation are available instantaneously, making the learning process less demanding ^[29]. The results lend empirical support toward informal language education toward the integration of machine-assisted learning models, showing that digital translation tools should be included as part of blended learning frameworks to maximize their effectiveness in the acquisition of second languages ^[23].

The practical implications of this research outline the transformative capabilities of digital translation tools, including Youdao Online Dictionary, in enhancing informal language learning among second-language learners. Since slang is an important aspect of natural communication, language instructors and curricula developers need to include TAL tools for instruction, particularly for learners with difficulty in interpreting the cultural and contextual nuances associated with informal speech ^[1]. From these findings, one can deduce that Youdao can be introduced into blended learning strategies in educational institutions to engage and make the students understand more. The traditional instruction will thus be complemented by digital dictionaries. Interactive exercises can be created by language teachers to engage the students in finding out how Youdao's example sentences, pronunciation guides, and contextual meanings make slang usage better. The students themselves could also use Youdao for autonomous learning, opening the door for slang acquisition even beyond the classrooms. However, in light of the translation flaws revealed by this study, algorithm developers of machine translation tools would do well to further perfect them in terms of semantic accuracy and contextual relevance. This would better assist learners in acquiring slang efficiently through machines. The study thus underlines the need for bridging the gap between formal education and real-world communication, demonstrating how digital tools can act as valuable linguistic bridges for the learner in communicating the complexities of informal language.

7. Limitations and Future Directions

While this study offers valuable insights into the role of Youdao Online Dictionary in Chinese slang acquisition, there are several limitations that must be acknowledged. The first limitation is that the study focused on a specific sample of university students learning Chinese as a foreign language, which may limit the generalizability of the findings to other learner demographics, such as working professionals, younger students, or those in different educational settings ^[2]. The study was also based on pre-test and post-test tests, which have been effective for measuring short-term improvements in learning but may not capture

long-term retention and actual application of slang usage in the real world. Future research might use longitudinal designs to determine if learners retain and effectively use slang over longer periods. Another limitation is the inherent constraints of digital translation tools, as Youdao, similar to other machine-based systems, sometimes fails to provide accurate or contextually rich translations, especially for slang expressions with multiple meanings or cultural connotations ^[14]. This issue calls for more advanced AI-driven language models that can incorporate cultural pragmatics and social context into translations, making slang interpretation more reliable. For instance, individual learner differences, including prior exposure to slang, proficiency levels, or learning styles, were not considered factors that may affect student-centered learning and interactions with TAL of slang. Future research should determine how personalized learning experiences may be implemented in digital dictionary applications so the experience may adapt well to diverse learners.

On these constraints, several potential pathways in future research may be needed to gain more insight into technology-assisted slang learning. A valuable study will focus on a multiple translation tool with Google Translate, Baidu Translate, and Youdao, on their relative effectiveness in slang interpretation and user experience among others ^[16]. Future researches could involve other ways to enhance the learning of slang with Youdao through further integration of this translation technology into other language learning technologies such as AI-driven chatbots, gamification, and immersion through augmented reality. Another is the qualitative methods such as interviews and focus groups where it may help to explore further the learners' perceptions, problems, and preferences when using these translation tools to acquire slang words. This study can also focus on the sociocultural influence, for example, exposure to Chinese media, participation in online communities for languages, or engagement with native speakers as potential factors to inform the effectiveness of digital translation tools in slang learning. Finally, future research should examine adaptive learning systems where translation tools would adapt dynamically given learners' progression and errors and contextual needs so that slang learning becomes intuitive and more personalized. The eventual closing of the gaps will help future research ensure a constant influx of innovation and improvement within the digital language learning tools, as they become an effective tool to facilitate informal language acquisition in this highly globalized world.

8. Conclusions

This study has therefore shown the strong role of digital translation tools in the acquisition of Chinese slang,

especially Youdao Online Dictionary, for the second-language learners. The outcomes showed that through TAL, significant improvements in terms of slang understanding, vocabulary memory, and confidence of the learner were achieved; thus, supporting the effectiveness of digital tools to supplement traditional education in language studies. In addition, survey findings have shown that Youdao is both accessible and convenient, although helpful for students while it still bears limitations such as inaccuracy with translation and lacks contextual depth. The research can be added to the second-language acquisition theories of supporting models focusing on interactive contextual learning and on reducing cognitive loads in informal education. However, limitations such as sample specificity, short-term assessment methods, and individual learner differences highlight the need for further longitudinal, comparative, and qualitative studies. Future research should explore AI-driven advancements, adaptive learning technologies, and blended pedagogical strategies to optimize the integration of digital translation tools in informal language learning. In conclusion, this project serves as a meaningful indicator for the transformative power of technology-enhanced learning in connecting formal instruction with real-world language use; its potential opens the gate to more inclusive, accessible, and culturally immersive approaches to language education in the digital age.

Author Contributions

Conceptualization, J.W.; literature review, J.W.; writing—original draft preparation, L.Y.W.; methodology design, M.A.R.B.A.; data collection and analysis, J.W.; research process, L.Y.W.; interpretation of results, M.A.R.B.A. All authors have read and approved the final version of the manuscript.

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Institutional Review Board Statement

The study was conducted in accordance with the ethical standards of Universiti Putra Malaysia. Ethical approval was obtained from the relevant university authority prior to data collection.

Informed Consent Statement

Informed consent was obtained from all participants involved in the study. Participation was voluntary, and all participants were informed about the study's purpose,

procedures, and their right to withdraw at any time without penalty.

Data Availability Statement

We encourage all authors of articles published in our journals to share their research data. In this section, please provide details regarding where data supporting reported results can be found, including links to publicly archived datasets analyzed or generated during the study. Where no new data were created, or where data is unavailable due to privacy or ethical restrictions, a statement is still required.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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Conflicts of Interest

The authors declare no conflict of interest.

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