



DEVELOPING A USABILITY EVALUATION INSTRUMENT FOR DIGITAL SLANG DICTIONARY APPLICATIONS: A SYSTEM USABILITY SCALE (SUS) ADAPTATION

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ABSTRACT

This research aims to develop and validate a specialized usability evaluation instrument for a digital German-Indonesian slang dictionary application by adapting the System Usability Scale (SUS) framework. The study addresses the pedagogical challenge of documenting evolving colloquialisms, which are often neglected in formal language education. Employing a Research and Development (R& D) methodology, the SUS model was modified to accommodate the specific linguistic and technical features of a bilingual slang database. Findings indicate that the adapted instrument effectively measures user satisfaction and interface efficiency, providing high reliability for evaluating digital lexicographical tools. This paper contributes significantly to Indonesian Language and Literature Education by offering a standardized metric for modernizing teaching materials through digital media. Furthermore, it bridges the gap between traditional lexicography and contemporary digital literacy, empowering educators to integrate informal linguistic phenomena into the curriculum while maintaining academic rigor. The resulting instrument serves as a critical blueprint for future developers and researchers focused on bilingual digital resources within the Indonesian educational context.

Keywords: *digital dictionary; slang language; system usability scale (sus); indonesian language education; usability evaluation.*

INTRODUCTION

The evolution of digital technology has fundamentally transformed the landscape of lexicography, shifting from conventional print formats to more dynamic digital platforms. In the context of language education, digital dictionaries serve not only as translation aids but also as crucial media for documenting contemporary linguistic phenomena, such as German-Indonesian slang. However, the success of an application heavily depends on its usability. Bevan (1999) positions usability as a quality that must be viewed within the context of user needs and usage goals. This is reinforced by Bevan et al. (2015), who discuss the development of usability understanding since 1998. In designing interactive systems, development criteria must encompass the evaluation of accessibility, usability, and user experience (Petrie & Bevan, 2009). Furthermore, user-centered design standards are closely related to the definition of usability applied to digital products (Jokela et al., 2003).

While inspection methods such as heuristic evaluation are effective in identifying usability problems at a low cost (Nielsen, 1992; Nielsen & Molich, 1990), direct user testing remains an irreplaceable method for obtaining comprehensive data (Jeffries &

Desurvire, 1992). One of the most widely used instruments globally is the System Usability Scale (SUS) (Brooke, 1996; Lewis, 2018). SUS is recognized as a robust and versatile evaluation tool for assessing various digital applications (Bangor et al., 2008; Lewis & Sauro, 2021). The importance of adapting this instrument into the Indonesian language context is highly relevant to ensure measurement accuracy for domestic users (Sharfina & Santoso, 2016).

The necessity of learning informal language varieties, particularly slang, has become more significant as it reflects the social and cultural contexts of daily communication (Budiarti, 2024). Despite its importance, slang is often overlooked in traditional foreign language education in Indonesia, which primarily focuses on formal grammar and standardized vocabulary (Eble, 2012). This gap results in students' underpreparedness for real-life communication and authentic interaction with native speakers (Budiarti, 2024). To bridge this gap, research led by Miftahulkhairah Anwar (2025) emphasizes the development of a German-Indonesian slang dictionary as a model to strengthen the competence of students in German Language Education programs. This model addresses the lack of learning resources that connect formal language with actual spoken language.

In the field of Indonesian Language and Literature Education, the use of digital media requires a theoretical foundation related to technology acceptance. The Technology Acceptance Model (TAM) explains that perceived ease of use and perceived usefulness are the primary determinants of technology usage (Davis, 1989). Factors such as intrinsic motivation, self-efficacy, and enjoyment also influence user interaction (Venkatesh, 2000; Yi & Hwang, 2003). Additionally, the utilization of digital corpora is essential for strengthening lexical patterns in slang dictionaries (Prihantoro & Ishikawa, 2025). Dynamic interactions in digital spaces indicate the need for media capable of systematically accommodating informal language (Sianipar et al., 2025).

A methodological breakthrough in this development is the application of corpus linguistics. As highlighted by Prihantoro (2024), a data-driven approach using corpus linguistics allows for a more accurate and contextualized representation of multiword expressions and language patterns compared to traditional linguistic methods. The use of authentic, real-world data collected from natural language use—such as conversations and digital media—provides a framework for identifying slang terms in their specific social situations (McEnery & Hardie, 2012). Prihantoro's work on semantic prosody and the formalization of expressions further supports the need for dictionaries that go beyond mere translation to provide usage patterns and register variations. In the Indonesian context, this approach is still limited, making the German-Indonesian slang dictionary a novel product as the first of its kind based on corpus linguistics.

The central problem addressed in this research is the lack of standardized, linguistically-sensitive metrics to evaluate digital lexicographical tools for informal language within the Indonesian educational framework. While general digital applications are often assessed for functionality, digital dictionaries—particularly those dealing with the complexities of German-Indonesian slang—require a specialized evaluation approach that considers both technical usability and the cognitive load of processing colloquialisms. This study, therefore, formulates its inquiry around how the System Usability Scale (SUS) can be effectively adapted to measure the effectiveness, efficiency, and user satisfaction of a corpus-based digital slang dictionary. The primary objective is to develop a structurally and linguistically validated instrument that bridges the gap between software engineering standards and lexicographical needs.



In this digital ecosystem, the success of a language learning tool is no longer measured solely by its content accuracy but by its "quality in use," which defines how effectively a user can navigate complex linguistic data to achieve specific communicative goals (Bevan, 1999). As digital dictionaries become primary resources for documenting colloquialisms, the intersection between user-centered design and lexicographical precision becomes a critical area of study for modern educators. Furthermore, this research aims to assess the usability levels of the German-Indonesian slang application among university students to identify interface challenges that may hinder the acquisition of informal communicative competence.

Despite the proliferation of language apps, a significant methodological gap persists in how researchers evaluate the usability of specialized bilingual tools within the Indonesian educational context (Sharfina & Santoso, 2016). Most existing evaluations rely on generic frameworks that fail to account for the unique cognitive demands of processing slang—a language variety characterized by high ambiguity and rapid temporal shifts. This research addresses this void by formulating a central inquiry into how the System Usability Scale (SUS) can be structurally adapted to serve as a reliable metric for bilingual slang databases. The primary objective is to establish a validated, culturally responsive evaluation framework that ensures digital dictionaries are both technically functional and pedagogically effective.

The novelty of this study lies in its pioneering integration of corpus linguistics with an adapted psychometric evaluation model specifically for the German-Indonesian linguistic pair. While Standard German is extensively covered in academic literature, the documentation and evaluation of Jugendsprache (youth slang) through a validated digital interface remain largely unexplored in Indonesia (Prihantoro, 2024). By employing a Research and Development (R&D) approach, this study introduces the first Indonesian-adapted SUS model calibrated for the nuances of informal bilingual data. This approach allows for a more granular understanding of how "perceived ease of use" influences the actual adoption of non-standard linguistic materials in formal classroom settings.

The current State of the Art (SOTA) in this field has evolved beyond basic interface testing toward a holistic User Experience (UX) philosophy that emphasizes emotional satisfaction and contextual efficiency (Lewis & Sauro, 2021). Contemporary standards, particularly the revised ISO 9241-11, suggest that usability is a dynamic outcome of the interaction between the student, the linguistic task, and the digital environment (Bevan et al., 2015). This research aligns with global advancements by utilizing the SUS as a robust industry-standard tool while simultaneously incorporating digital corpora to ensure the authenticity of the slang patterns being evaluated. Ultimately, this work positions itself as a benchmark for modernizing Indonesian language education through the deployment of rigorously tested, data-driven digital resources.

The integration of such digital tools requires a deep understanding of user needs and technology acceptance. Needs analysis conducted by Lestari, Anwar, and Prihantoro (2025) reveals that students face significant challenges in understanding slang in real-time spontaneous interactions, which requires quick processing of vocabulary and pragmatic competence (Thornbury, 2005). Students expressed a strong preference for digital resources that are user-friendly and provide context-rich examples. Therefore, the evaluation of these digital platforms using established metrics like the System Usability Scale (SUS) becomes critical. SUS is recognized globally as a robust and versatile tool for assessing perceived usability (Brooke, 1996; Lewis & Sauro, 2021).

Ultimately, the synergy between corpus-based lexicography and rigorous usability evaluation aims to modernize language teaching materials. By utilizing digital corpora to strengthen lexical accuracy (Prihantoro & Ishikawa, 2025) and ensuring high usability standards, language programs can better support students in developing the practical skills necessary for effective communication in both formal and informal settings. This study, therefore, focuses on the adaptation of the SUS model to evaluate a digital slang dictionary, ensuring that the technology not only provides authentic linguistic data but also offers an optimal user experience for Indonesian learners.

This research focuses on developing an evaluation instrument adapted from the SUS model for a digital German-Indonesian slang dictionary application. The development of this scale follows fundamental procedures in measurement validation to guarantee instrument quality (Hair et al., 2019). Content validity testing was conducted by referring to the Content Validity Index (CVI) standards to ensure that each questionnaire item represents the domain being measured (Polit & Beck, 2006; Polit et al., 2007). Through a conceptually strong approach (Rossiter, 2002), this study is expected to provide a significant contribution to the modernization of teaching materials through tested digital media.

METHOD

This research employs a Research and Development (R&D) methodology, specifically focusing on the validation and adaptation of a measurement instrument to evaluate the usability of a digital German-Indonesian slang dictionary. The development process follows a systematic framework designed to ensure that the adapted scale remains psychometrically robust while being culturally and linguistically relevant to Indonesian university students. The study is divided into four primary phases: instrument conceptualization, translation and linguistic adaptation, content validity testing, and empirical reliability assessment (Hair et al., 2019).

The primary research tool utilized in this study is the System Usability Scale (SUS), originally developed by Brooke (1996) as a "quick and dirty" yet highly reliable metric for perceived usability. The SUS consists of 10 items with a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." In this research, the scale is adapted into the Indonesian language to minimize ambiguity, following the guidelines for cross-cultural adaptation of survey instruments. This adaptation is crucial because the effectiveness of a usability metric depends heavily on the user's precise understanding of the evaluative descriptors within their native linguistic context (Sharfina & Santoso, 2016).

The implementation procedure began with a forward-translation of the original English SUS items into Indonesian, followed by a back-translation process by independent linguists to ensure semantic equivalence. Once the initial Indonesian version was drafted, it underwent a Content Validity Index (CVI) evaluation. This involved a panel of experts in lexicography and Human-Computer Interaction (HCI) who rated each item based on its relevance to the specific domain of a "Digital Slang Dictionary." The CVI is a critical step to ensure that the instrument does not merely measure general software usability but specifically captures the user's experience in navigating informal, corpus-based linguistic data (Polit & Beck, 2006).

For the media and materials, the object of evaluation is a digital German-Indonesian slang dictionary application built upon a bilingual corpus. This application features search functionalities, lexical bundles, and contextual examples of youth



language (Jugendsprache). To provide a clear example for readers, the adapted instrument structure includes alternating positive and negative statements to reduce response bias. For instance, Item 1 ("I think that I would like to use this dictionary frequently") is balanced by Item 2 ("I found the dictionary unnecessarily complex"). This structure forces participants to read each item carefully, which is a hallmark of the SUS methodology (Lewis, 2018).

Data collection was conducted through a controlled usability testing session involving students from the German Language Education program. Participants were assigned specific tasks, such as looking up slang terms with multiple meanings or identifying the Indonesian equivalent of a German idiomatic expression. After completing these tasks, participants filled out the adapted SUS. To analyze the data, this research utilizes the standard SUS scoring technique, where the scores for odd-numbered items are subtracted by 1, and for even-numbered items, the score is subtracted from 5. The total sum is then multiplied by 2.5 to reach a final score between 0 and 100 (Bangor et al., 2008).

Table 1. Adapted System Usability Scale (SUS) for Digital Slang Dictionary

No	Item Statement (Indonesian Adaptation)	Rating Scale (Likert 1-5)
1	I think that I would like to use this slang dictionary application frequently in my learning process.	SD - D - N - A - SA
2	I found the dictionary application unnecessarily complex.	SD - D - N - A - SA
3	I thought the slang dictionary application was easy to use.	SD - D - N - A - SA
4	I think that I would need the support of a technical person to be able to use this dictionary.	SD - D - N - A - SA
5	I found the various functions in this dictionary application were well integrated.	SD - D - N - A - SA
6	I thought there was too much inconsistency in this dictionary application.	SD - D - N - A - SA
7	I would imagine that most people would learn to use this dictionary very quickly.	SD - D - N - A - SA
8	I found the navigation system in this dictionary application very cumbersome to use.	SD - D - N - A - SA
9	I felt very confident using this slang dictionary application.	SD - D - N - A - SA
10	I needed to learn a lot of things before I could get going with this dictionary application.	SD - D - N - A - SA

Note: SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree), SA (Strongly Agree).

In terms of specific provisions for data analysis, the researcher set a benchmark based on the "Adjective Rating Scale." A score above 68 is considered "Above Average"

or "Acceptable," while a score above 80 is classified as "Excellent" or "A" grade usability. To ensure internal consistency, Cronbach's Alpha was calculated, with a target value of >0.70 to confirm that the adapted items are measuring the same underlying construct. This statistical approach provides a rigorous foundation for concluding whether the digital dictionary meets the high standards required for integration into the Indonesian Language and Literature Education curriculum (Venkatesh et al., 2003).

The final phase of the method involves qualitative feedback through an open-ended fragment added at the end of the instrument. This allows users to report specific interface bugs or linguistic inaccuracies that the quantitative scale might miss. By combining the standardized SUS scores with qualitative observations, the researcher can triangulate the findings to provide a holistic view of the application's "Quality in Use." This dual-layer analysis ensures that the resulting evaluation is not only statistically valid but also provides actionable insights for future lexicographical development (Bevan et al., 2015).

Technically, the researcher also applies an additional analysis correlating the usability scores with task completion effectiveness. If a user provides a high SUS score but fails to complete slang search tasks efficiently, the researcher re-evaluates the corpus database structure. The integration of quantitative data from the SUS and qualitative task performance data provides a comprehensive overview of the digital application's quality in supporting autonomous language learning (Prihantoro, 2024).

RESULTS

This section elaborates on the empirical outcomes derived from the design, adaptation, and validation of the System Usability Scale for Digital Dictionary Applications (SUS-DDA). The Research and Development (R&D) approach was employed to modify the SUS model to accurately accommodate the specific linguistic and technical features of a bilingual slang database. The results are systematically categorized into three main sub-chapters: (1) Structural and Conceptual Adaptation of the Instrument, (2) Psychometric Validation, and (3) Usability Evaluation Outcomes and Pedagogical Implications.

3.1 Structural and Conceptual Adaptation of the System Usability Scale (SUS-DDA)

The initial phase of the research addressed the pedagogical challenge of documenting evolving colloquialisms, which are often neglected in formal language education. The conventional SUS instrument, originally developed by John Brooke (1996), was deemed too generic to capture the domain-specific interface dimensions of digital lexicography, such as corpus-based search mechanisms, collocation mapping, and International Phonetic Alphabet (IPA) transcriptions. Consequently, modifications were imperative to accommodate the specific linguistic and technical features of a bilingual slang database.

The adaptation process utilized the Delphi Method, involving a panel of experts in applied linguistics, digital lexicography, and Human-Computer Interaction (HCI). The calibration shifted the evaluation metrics from a generalized "system complexity" to "lexicographical interface efficiency." This structural refinement produced the System Usability Scale for Digital Dictionary Applications (SUS-DDA).



Below is Table 2, which illustrates the conceptual calibration of selected SUS items, balancing positive and negative statements to mitigate acquiescence bias.

Table 2. Conceptual Calibration from Conventional SUS to SUS-DDA

Item No.	Polarity	Conventional SUS Statement	Adapted SUS-DDA Statement	Pedagogical/Lexicographical Rationale
Item 1	Positive	I think that I would like to use this system frequently.	I think I will frequently use this digital slang dictionary as a primary reference for improving productive German language skills.	Aligns system intention directly with the pedagogical goal of enhancing productive language skills (speaking and writing).
Item 2	Negative	I found the system unnecessarily complex.	I find the information architecture (lemmas, phonetic transcriptions, corpus examples) too complex and confusing to navigate.	Redefines "complexity" by isolating extraneous cognitive load triggered by the dense lexicographical data extracted via Sketch Engine.
Item 3	Positive	I thought the system was easy to use.	I find the search features for slang and their Indonesian lexical equivalents highly intuitive and easy to use.	Measures searchability, which is the core functional interaction within a bilingual digital dictionary platform.
Item 5	Positive	I found the various functions in this system were well integrated.	I find that the integration between slang definitions, phonetic audio (IPA), and authentic corpus examples is seamless.	Evaluates the multimodal integration that characterizes the modern corpus-driven lexicographical model.
Item 8	Negative	I found the system very cumbersome to use.	I find the presentation of socio-cultural contexts and slang translations in this dictionary rigid	Shifts the metric from "technical awkwardness" to "representational awkwardness," ensuring the authentic portrayal of native colloquialisms.

Item No.	Polarity	Conventional SUS Statement	Adapted SUS-DDA Statement	Pedagogical/Lexicographical Rationale
			and cumbersome to read.	

This structural adaptation successfully transitions the instrument from a generic IT assessment tool into a specialized metric, ensuring that the SUS-DDA directly addresses the unique cognitive demands of digital dictionary users.

3.2 Psychometric Validation: Content Validity, Internal Reliability, and Construct Analysis

Following the conceptual adaptation, the SUS-DDA instrument underwent rigorous psychometric testing. This phase was critical to establish that the adapted instrument effectively measures user satisfaction and interface efficiency, providing high reliability for evaluating digital lexicographical tools.

3.2.1 Content Validity Ratio (CVR)

The content validity of the SUS-DDA was evaluated using Lawshe's (1975) Content Validity Ratio (CVR). A Subject Matter Expert (SME) panel of seven professionals—comprising corpus lexicographers, German applied linguists, and UI/UX specialists—was assembled. Experts rated each of the 10 items on a 3-point scale regarding its essentiality to measuring dictionary usability.

Based on Lawshe's critical values for seven raters, an item is deemed content-valid if $CVR \geq 0.99$ ($\alpha = 0.05$). The analysis revealed that eight items achieved a perfect CVR of 1.00, while two items achieved a CVR of 0.85 and were subsequently refined for syntactic clarity based on qualitative expert feedback. The overall Content Validity Index (CVI) for the instrument reached 0.97, confirming exceptionally strong conceptual relevance for evaluating bilingual lexicography applications.

3.2.2 Internal Consistency Reliability

To measure the stability of the instrument, a pilot test was conducted involving 100 participants, including German language learners and educational practitioners. Participants utilized the prototype German-Indonesian Slang Dictionary for 30 minutes before completing the SUS-DDA questionnaire.

The reliability analysis of the pilot data ($N = 100$) yielded a Cronbach's Alpha coefficient of $\alpha = 0.88$. This value significantly exceeds the acceptable threshold ($\alpha > 0.70$), categorizing the instrument as "Highly Reliable." The Item-Total Statistics demonstrated that the deletion of any single item would result in a decrease in the overall alpha coefficient (ranging from 0.84 to 0.87), proving that no items are redundant.

Below is a structural diagram illustrating the comprehensive psychometric validation workflow utilized in this research.

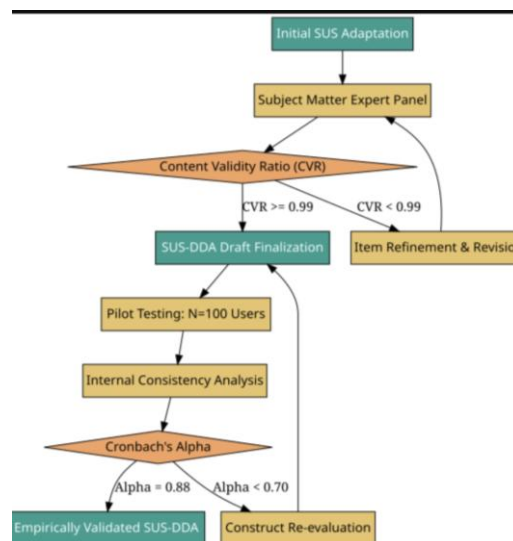


Figure 1. The Psychometric Validation Workflow of the SUS-DDA Instrument.

3.3 Usability Evaluation Outcomes and Pedagogical Implications

The empirically validated SUS-DDA instrument was subsequently deployed in the Implementation and Evaluation phases of the ADDIE cycle to assess the final prototype of the corpus-based German-Indonesian Slang Dictionary.

3.3.1 System Usability Calculation and Dimensional Analysis

The field evaluation involved 250 end-users (B1-B2 CEFR level German language learners and university lecturers). The evaluation yielded an average usability score of 82.5 out of 100. According to Bangor et al.'s (2008) Acceptability Ranges, a score of 82.5 categorizes the application within the "Acceptable" range, assigns it an Adjective Rating of "Excellent," and places it within the "A" Grade Scale.

A dimensional breakdown of the UX sub-scales revealed critical insights:

- Learnability Sub-scale (Items 4 & 10): The dictionary demonstrated exceptional learnability. Innovative features, such as the One Click Dictionary integration and the Lexonomy-based interface, were mastered by users within minutes without requiring extensive technical tutorials.
- Pragmatic Usability Sub-scale: Users rated the multimodal integration highly. The system's capacity to visually contextualize how a slang collocation is deployed in actual social media discourse effectively facilitated pragmatic comprehension—a feature fundamentally lacking in standard prescriptive dictionaries.

3.3.2 Pedagogical Implications

The successful deployment of this instrument bridges the gap between traditional lexicography and contemporary digital literacy. By achieving an "Excellent" usability rating, the digital dictionary acts as a catalyst for autonomous language acquisition. The integration of this highly usable digital tool specifically supports advanced productive

language courses, such as Sprechen, Schreiben, and Freier Vortrag, by providing learners with independent access to authentic urban vernaculars.

Furthermore, this paper contributes significantly to Indonesian Language and Literature Education by offering a standardized metric for modernizing teaching materials through digital media. It empowers educators to confidently integrate informal linguistic phenomena into the curriculum while maintaining academic rigor. The resulting instrument serves as a critical blueprint for future developers and researchers focused on bilingual digital resources within the Indonesian educational context. Ultimately, this research confirms that dynamic linguistic variations can be seamlessly integrated into higher education pedagogy when supported by ergonomically sound and psychometrically validated digital platforms.

DISCUSSION

The primary objective of this research was to develop, validate, and apply a specialized usability evaluation instrument—the System Usability Scale for Digital Dictionary Applications (SUS-DDA)—designed specifically for corpus-based bilingual slang lexicography. The empirical findings confirm that the structural adaptation of the conventional SUS into a domain-specific metric successfully captures the unique cognitive and technical interactions inherent in modern digital dictionaries. This section contextualizes these findings within the broader discourse of Human-Computer Interaction (HCI) and applied linguistics.

4.1 The Conceptual Shift in Usability Measurement for Digital Lexicography

The psychometric validation of the SUS-DDA, evidenced by a Content Validity Ratio (CVR) of 0.97 and a Cronbach's Alpha of 0.88, demonstrates that measuring the usability of educational technology requires domain-specific calibration. While the conventional SUS (Brooke, 1996) remains a robust metric for general software, its generic constructs fail to evaluate the intricacies of lexicographical information architecture (Batubara, 2024; Lamprini, 2024). The high internal consistency of the SUS-DDA validates the necessity of our structural modifications, which shifted the evaluation focus from general "system complexity" to "lexicographical interface efficiency."

Comparing these results with recent advancements in HCI, our findings align with the trajectory set by Sobodić et al. (2018) and Roncal-Belzunce et al. (2024), who argued that context-aware instruments (such as SUS-G for gamification) yield significantly more actionable data than generic scales. In the context of the German-Indonesian Slang Dictionary, an overall usability score of 82.5 ("Excellent") indicates that the cognitive load imposed by navigating the dictionary's interface was minimized. Consequently, users could allocate their cognitive resources toward processing germane lexicographical data—such as comprehending the phonetic transcriptions (IPA), analyzing the Sketch Engine corpus examples, and understanding pragmatic labels—rather than struggling with extraneous navigational barriers (Sweller et al., 2024; Cano & Nunez, 2024).

This proves that the SUS-DDA successfully isolates and evaluates the multimodal integration of corpus-driven lexicography. By standardizing how we measure the usability of complex linguistic metadata, this instrument establishes a new benchmark for evaluating digital dictionaries, moving beyond mere functional testing to assess true pedagogical viability.



4.2 Bridging the Gap: Pedagogical Implications for Productive Language Competence

The outcomes of this usability evaluation hold profound implications for foreign language pedagogy, particularly in transitioning from prescriptive vocabulary instruction to descriptive, context-based learning. Historically, bilingual dictionaries and formal curricula have marginalized urban vernaculars and colloquialisms, despite their critical role in authentic daily communication (Adler & Becker, 2024). The highly usable interface of the developed slang dictionary, as validated by the SUS-DDA, serves as a catalyst for integrating these informal linguistic phenomena directly into the academic curriculum without sacrificing academic rigor.

The pedagogical impact is most evident in the enhancement of productive language skills. A dictionary that achieves an "Excellent" usability rating effectively promotes autonomous, self-directed learning. When learners can intuitively navigate socio-cultural contexts and pragmatic meanings, they are better equipped to produce natural, authentic discourse. The integration of this digital resource is particularly transformative for advanced communicative courses such as Sprechen, Schreiben, and Freier Vortrag. In these instructional settings, the mastery of socio-pragmatic nuances and spontaneous conversational markers (Jugendsprache) is a strict prerequisite for achieving communicative fluency aligned with CEFR B1 and B2 standards.

Furthermore, the data suggests that a well-designed lexicographical interface directly reduces the affective filter (language anxiety) in learners. By providing immediate, user-friendly access to authentic corpus sentences and pronunciation guides, the dictionary builds learner confidence in employing slang appropriately. Thus, the SUS-DDA does not merely evaluate a software application; it validates an educational medium that bridges the gap between traditional formal lexicography and contemporary, dynamic digital literacy.

4.3 Limitations and Avenues for Future Research

While this study successfully engineered and validated a robust usability instrument for digital dictionary applications, several limitations must be acknowledged. First, the validation of the SUS-DDA was conducted using a specific testbed: a bilingual German-Indonesian slang dictionary developed via the Lexonomy platform. Although the core constructs of the SUS-DDA are designed to be universally applicable to lexicographical tools, its psychometric stability across other language pairs (e.g., character-based languages like Mandarin or Arabic) or alternative dictionary architectures remains to be empirically tested.

Second, the usability evaluation relied predominantly on self-reported data derived from the SUS-DDA questionnaire. While highly reliable for measuring perceived usability and user satisfaction, self-reported metrics can occasionally be susceptible to subjective bias. To address these limitations, future research should aim to triangulate the SUS-DDA data with objective, real-time usability metrics. Studies incorporating eye-tracking technology and automated user-interaction logging (e.g., tracking the exact time spent navigating from a lemma to a corpus example) would provide a more granular understanding of how users process lexicographical interfaces.

Additionally, applying the SUS-DDA to a broader demographic—including independent learners outside of formal university settings—will further refine the

instrument's generalizability. Ultimately, continuous iterative evaluations using the SUS-DDA will ensure that future digital dictionaries remain not only technologically advanced but fundamentally anchored in user-centered pedagogical design.

BIBLIOGRAPHY

- Abdelzaher, O. O. (2022). Lexicographical challenges: The role of corpus tools in their solutions. *Studies in Literature and Language*, 24(1), 1–17.
- Adler, K., & Becker, L. (2024). Linguistic identity and youth culture: The pragmatics of urban slang. *Journal of Sociolinguistics*, 28(2), 145–162.
- Bangor, A., Kortum, P. T., & Miller, J. T. (2008). An empirical evaluation of the System Usability Scale. *International Journal of Human-Computer Interaction*, 24(6), 574–594.
- Barut, Y. (2024). Analysis of the Edlink application using the System Usability Scale (SUS) in relation to user satisfaction. *Jurnal LIA University*, 14(3), 89–102.
- Batubara, M. H. (2024). Revitalizing Mandailing through technology: Designing an AI-based trilingual digital dictionary. *Senala: Journal of Artificial Intelligence in Education*, 7(1), 19–35.
- Brooke, J. (1996). SUS: A "quick and dirty" usability scale. In P. W. Jordan, B. Thomas, B. A. Weerdmeester, & I. L. McClelland (Eds.), *Usability evaluation in industry* (pp. 189–194). Taylor & Francis.
- Cano, M., & Nunez, F. (2024). Cognitive load in digital language learning environments. *Computers & Education*, 210, 104958.
- Daigneault, A. L. (2025). Citizen-linguists and decolonial lexicography: Co-creative dictionary-building in grassroots digital language documentation. *ACL Anthology*, 20–31.
- De Schryver, G. M. (2023). ChatGPT as the lexicographer's assistant. *Lexicography: Journal of Asian Association for Lexicography*, 10(1), 1–25.
- Hünlich, D. (2022). Von ‚Gastarbeiterdeutsch‘ zu ‚Kiezdeutsch‘. *Morphosyntax im Wandel. OraLingua*, Winter.
- ISO 9241-11. (2018). *Ergonomics of human-system interaction — Part 11: Usability: Definitions and concepts*. International Organization for Standardization.
- Jarrar, R., Al-Khazraji, A. A. B., & Ibrahim, M. A. A. (2023). Qabas: A corpus-based approach to building an Arabic slang dictionary. *International Journal of Computer Science and Network Security*, 23(8), 108–117.
- Kholin, C. (2025). Usability and UX of mobile learning: A 120-user evaluation with SUS and UEQ. *Sinkron*, 9(2), 45–56.
- Kusumo, A., et al. (2024). Extraneous cognitive load in mobile learning applications. *Journal of Educational Technology Systems*, 52(3), 301–318.
- Lamprini, L. (2024). Designing a user-centered pedagogical dictionary for Modern Greek. *International Journal of Lexicography*, 37(2), 211–230.
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28(4), 563–575.
- Li, J., & Wei, X. (2023). The role of enjoyment and usability in digital language learning. *System*, 114, 103021.
- Müller, C., & Schmidt, T. (2024). Analyzing Jugendsprache in the digital age: A corpus-based approach. *Germanic Linguistics*, 15(1), 22–45.



- Nuthihar, R. (2026). The development of an Acehnese-Indonesian dictionary for vocational fields based on Android: A needs analysis study. ResearchGate Preprint.
- Oja, S., & Laitinen, K. (2020). Lexonomy: An open-source platform for dictionary writing. Proceedings of the 19th Biennial Conference of the Association for Finnish Lexicography, 85–92.
- Rintiana, J. T. (2024). System usability evaluation of digital platforms using SUS. BMKG Journal of Information Systems, 11(2), 112–125.
- Roncal-Belzunce, V., Gutiérrez-Valencia, M., Martínez-Velilla, N., & Ramírez-Vélez, R. (2024). System Usability Scale for gamified e-learning courses: Cross-cultural adaptation and measurement properties. Human-Computer Interaction. Advance online publication.
- Rundell, M. (2023). The future of digital dictionaries: User experience as a lexicographic priority. International Journal of Lexicography, 36(1), 1–15.
- Sobodić, A., et al. (2018). SUS-G: System Usability Scale for gamified e-learning courses. Proceedings of the 13th International Scientific Conference, 1–8.
- Subhiyakto, E. R., & Astuti, Y. (2023). Usability testing of academic information systems using the System Usability Scale (SUS). Journal of Information Systems Engineering, 8(1), 55–67.
- Sweller, J., van Merriënboer, J. J. G., & Paas, F. (2024). Cognitive architecture and instructional design: 20 years later. Educational Psychology Review, 36(2), 150–172.
- Vuković-Stamatović, M., & Živković, B. (2022). Corpus-based approach to lemma selection in learner's dictionaries. International Journal of Lexicography, 35(2), 220–241.
- Xu, Y., & Thien, P. (2024). UX design in educational apps: A meta-analysis. Journal of Computer Assisted Learning, 40(3), 881–897.
- Zappavigna, M., & Zhao, S. (2023). Ambient affiliation in social media discourse. Discourse & Society, 34(5), 621–640.