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Development of the Alhidayah Dictionary Application as a Digital Media for Arabic Language Research Terms

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Arabic Language, Research Terminology Dictionary, Dictionary Development

Abstract

In practice, many individuals still make errors when translating certain Arabic terms. These mistakes frequently occur in the translation of research-related terms, which often consist of two-word constructions. Such terms are commonly translated partially or word by word, resulting in inaccurate or misleading interpretations. Therefore, this study aims to develop a dictionary application of Arabic research terminology, particularly terms related to educational research. This application is named Alhidayah Dictionary. This study employs a Research and Development (R&D) methodology. The development model adopted in this research is the ADDIE model, developed by Reiser and Mollenda, which consists of five stages: analysis, design, development, implementation, and evaluation. Data collection techniques used in this study include documentation and questionnaires. The questionnaires were utilized to assess product feasibility and to gather user responses. The collected data were analyzed using percentage-based statistical analysis. Based on the validation results from expert reviewers, which were subsequently converted using a media feasibility interpretation criteria table, the developed Alhidayah Dictionary application obtained a feasibility percentage of 79%. This result indicates that the application falls into the category of highly feasible. However, one limitation of this dictionary application is the requirement to pay an annual domain fee in order to maintain its accessibility. It is therefore expected that future researchers will be able to develop a more efficient and up-to-date dictionary application.

Kata Kunci:
Bahasa Arab, Kamus Istilah-Istilah Penelitian, Pengembangan Kamus

Abstrak

Pada praktiknya masih banyak orang salah dalam menerjemahkan beberapa istilah Bahasa Arab, dimana kesalahan tersebut kerap terjadi saat menerjemahkan istilah-istilah dalam penelitian yang biasanya terdiri dari dua kata, yang kemudian diterjemahkan secara parsial sehingga memnghasilkan terjemah yang kurang tepat. Sehingga penelitian ini bertujuan untuk mengembangkan Aplikasi kamus istilah-istilah penelitian bahasa Arab khususnya yang berkaitan dengan penelitian pendidikan. Aplikasi kamus ini diberi nama Kamus Al Hidayah. Penelitian menggunakan metode *Research and Development* (R&D). Adapun model pengembangan penelitian ini adalah model ADDIE yang dikembangkan Reiser dan Mollenda. Tahapan pengembangan pada penelitian ini adalah analisis, desain, pengembangan, implementasi dan evaluasi. Teknik pengumpulan data yang digunakan pada penelitian ini adalah dokumentasi dan angket. Angket digunakan untuk menguji kelayakan produk dan respon pengguna. Data yang diperoleh dianalisis menggunakan rumus presentase. Berdasarkan hasil validasi para ekspert kemudia dikonversikan dengan tabel kriteria interpretasi kelayakan media, dapat dijelaskan bahwa kelayakan aplikasi Kamus Alhidayah yang dikembangkan mendapatkan presentase 79%. Hal ini dapat disimpulkan bahwa pengembangan Kamus Alhidayah masuk dalam kategori sangat layak. Kelemahan aplikasi kamus ini adalah harus membayar domain setiap tahun agar kamus bisa tetap digunakan, semoga peneliti selanjutnya dapaat mengembangkan Aplikasi Kamus yang lebih efesien dan mutakhir.

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Introduction

Writing is an activity of expressing ideas through a thinking process expressed in written form (Munawarah & Zulkiflih, 2021). Writing is a skill that must be mastered by anyone involved in the academic world, whether students, teachers, lecturers or other academics. As mandated in the Regulation of the Minister of Research, Technology and Higher Education of the Republic of Indonesia No. 16 of 2015 and in accordance with the Tri Dharma of Higher Education, in addition to disseminating knowledge and providing community service, lecturers are also required to conduct research, either by writing journals or other scientific works (Permenristekdikti, 2015).

Students at both undergraduate and postgraduate levels are required to complete a final assignment in the form of a thesis, dissertation or dissertation to obtain a certain degree. This final assignment is carried out through a research stage. Writing scientific papers will certainly encounter challenges, especially for novice writers. Even simple issues can involve writing structure, such as punctuation and appropriate word choice (Al-Moslmi, T. et al. 2017). A more significant challenge is translating the work into a foreign language (Essa et al., 2025). Most students majoring in Arabic Language Education at universities in Indonesia adhere to the policy of writing their undergraduate theses, dissertations, and theses in Arabic (Elsabagh et al., 2025).

In practice, many students still mistranslate several terms, as many scientific terms cannot be translated freely. (Muaad et al., 2025) These errors often occur when translating research terms, which typically consist of two words, which are then partially translated, resulting in inaccurate translations. (Rajab et al., 2025). Based on this, to assist Arabic language researchers in translating scientific terms, it is necessary to design a dictionary containing contemporary scientific terms and Arabic research expressions.

To avoid errors in translating research terms, researchers are attempting to develop an Arabic dictionary compiling research terms (Bashir et al., 2021). A dictionary is a reference containing a number of words accompanied by explanations or interpretations of their meanings, and its contents are organized in an orderly manner according to a specific system (Atthar, 1979). A dictionary in Arabic is also called a mu'jam, which is a collection of vocabulary, expressions, or terms accompanied by interpretations or interpretations of meaning collected in a book (Atthar, 1979). In general, Arabic dictionaries distributed in Indonesia are general dictionaries, which usually contain general vocabulary translated from Arabic-Indonesian or Indonesian-Arabic (Oueslati et al., 2020). In line with the need for vocabulary in certain disciplines, takhshisy dictionaries or specialized dictionaries compiled by lexicologists to support specific disciplines or skills, such as literary dictionaries, medical dictionaries, educational

dictionaries, research dictionaries, geography dictionaries, mathematics dictionaries, and so on (Al-Qasimy, 1991).

The dictionary produced in this research is more specific, as it specifically includes research terms in Arabic language education. The dictionary to be developed is a specialized dictionary. *(mu'jam takhsiy),* so that the content or load is the terms or vocabulary used in writing scientific papers or research. The urgency of this research includes the absence of a special dictionary. *(Mu'jam Takhsi)* digital-based containing research terms, the resulting dictionary product can be installed generally so that its benefits can be felt by anyone who needs it, a dictionary of terms that will be developed to be one of the companions in translating the theses of students of the Arabic Language Education study program (especially Arabic at UIN Jurai Siwo Lampung).

This research utilizes the ADDIE model. ADDIE was originally developed as a learning and theory design model for the United States Army in the 1950s, producing high-quality soldiers. In the mid-1980s, educational practitioners adapted the model for application in the educational world (Hidayat & Nizar, 2021). ADDIE is an acronym for the development implementation steps, namely analysis, design, development, implementation, and evaluation (Raiser & Depsey, 1990). So the stages in this research will begin with conducting an analysis (Pujiati, P. et al. 2025), then making a product design, then the product design will begin to be developed, then validated by experts (Aly, S. et al. 2020), the results of this validation will later become notes for improvements or evaluation of the product being developed.

Previous research has been conducted, including research entitled "Development of the Al Af'al Dictionary to Improve Writing Skills of Arabic Language Education Study Program Students at IAIN Pontianak" (Arifudin, 2020). This study aims to create an Al-Afal Dictionary to help students understand the changing forms of verbs in Arabic. Similar to this study, the resulting product is an Arabic dictionary. However, while the dictionary was designed for verbs, this study designs a contemporary scientific dictionary and

Arabic research expressions, which are expected to assist students, academics, and others in writing scientific papers in Arabic.

Other development research has produced quite a lot of Arabic dictionaries, for example research entitled Development of the EKKI Arabic-Indonesian Pocket Dictionary to increase the Arabic Vocabulary, (Rahmawati, 2021). Development of an Arabic-Indonesian Pocket Dictionary to Improve Reading Skills, (Rahmawati & Liana, 2021) "Application Dictionary as a Companion Media to the Book Al Arabiyah Al Mu'asiroh" (Ahmala, 2018) and several other research findings. These studies attempted to produce a visual Arabic dictionary, emphasizing images to explain word meanings (Wazery, Y. M. et al. 2022). The dictionary the author will create will emphasize a more definitive terminology containing scientific terms in Arabic research (Hamdy, A. et al. 2025). Based on the previous research review above, it can be concluded that research on the development of Arabic dictionaries has been conducted (Antoun, W. et al. 2020). Although many studies on similar topics have been conducted, the resulting products have focused solely on vocabulary.

Meanwhile, the dictionary that the author will create, in addition to containing scientific vocabulary related to research, will also include a summary of examiners' questions during thesis examinations. These questions are also accompanied by answers that have been translated into Arabic, so it is hoped that it will help students who have difficulty finding Arabic vocabulary to answer examiners' questions. Therefore, the position of this research is a follow-up research of relevant research that has been conducted previously and this research looks for gaps or parts that have never been studied by previous researchers.

Method

This study employed a Research and Development (R&D) approach, as it aims to produce and validate an educational product in the form of a digital Arabic research terminology dictionary application (Gall, & Borg, 2020). The

development process adopted the ADDIE model**,** which consists of five systematic stages: *analysis, design, development, implementation,* and *evaluation*, due to its effectiveness and adaptability in instructional media and digital application development (Branch & Dousay, 2020). The *analysis* stage focused on identifying users' needs and challenges in translating Arabic research terminology within academic writing contexts (Creswell & Guetterman, 2021). The *design* stage involved structuring the dictionary content, organizing search features, and planning the user interface to ensure usability and instructional clarity in a digital learning environment (Mayer, 2020). The *development* stage included compiling research-related terminology, translating entries into Arabic, and developing the dictionary application as an Android-based digital product (Alessi & Trollip, 2021).

Data were collected through documentation and questionnaires to obtain comprehensive qualitative and quantitative information related to product development and evaluation (Sugiyono, 2020). Documentation techniques were used to identify, verify, and compile Arabic research terminology from up-to-date academic sources to ensure contextual accuracy and terminological validity (Bowen, 2020). Questionnaires were administered to subject-matter experts, media experts, and prospective users to assess product feasibility, usability, and acceptance, as questionnaires are effective tools for measuring perceptions and evaluative judgments in educational R&D studies (Taherdoost, 2021). A four-point Likert scale was employed to minimize neutral responses and enhance the objectivity of evaluative data (Joshi et al., 2020). The collected data were analyzed using descriptive quantitative techniques based on percentage calculations and feasibility criteria to determine the validity and overall quality of the developed dictionary application (Widoyoko, 2021).

Result and Discussion

The main activity carried out at this stage is analyzing the urgency of developing an Arabic-language research dictionary. At this stage, the researcher

presents the results of observations and literary studies focused on three aspects: dictionary users, the contents of the dictionary (product), and the dictionary's purpose.

User Analysis

The target audience for this dictionary is academics who need a dictionary to design Arabic-language research. Specifically, the target audience is students, lecturers, researchers, and others involved in the development of Arabic language education. If it is narrowed down to a narrower area (UIN Jurai Siwo Lampung), the dictionary product produced can be an example for the publication of other special dictionaries in certain fields of science, for example biology dictionaries, mathematics dictionaries, economic dictionaries, banking dictionaries, and others which are designed in Indonesian-Arabic bilingual.

Content Analysis

In general, Arabic dictionaries available in Indonesia are general dictionaries, typically containing common vocabulary translated from Arabic to Indonesian or Indonesian to Arabic. The dictionary produced in this study is more specific, as it specifically addresses research terms in Arabic language education. Therefore, its content consists of terms and vocabulary used in scientific papers or research. In bilingual dictionaries, the terms source language and target language are known. The source language is the language that is the source of the inventory object that will be included in the vocabulary search, while the target language is the language that is the result of the translation (Sunaryo et al., 1990). The source language in this dictionary is Indonesian, while the target language in this dictionary is Arabic. Indonesian as the source is presented as an entry that then leads to the target language, in other words, this designed dictionary is an Indonesian-Arabic dictionary.

Objective Analysis

In line with its title, the purpose of this dictionary is to collect vocabulary related to research terms. Operationally, this dictionary aims to help *users* (users) such as students, university students, teachers, lecturers, academics, education

practitioners, translators and other parties who need translations of research terms. The vocabulary contained in this dictionary is more contextual, this aims to avoid errors in the translation process. For example, when translating a term consisting of two words, such as "yellow book", if referring to a general dictionary, the translation will be "kitab =".*book*" and "yellow=*asparagus*" so that the yellow book is interpreted as*book of asfar*, this is not correct, because the term yellow book in Arabic can be interpreted as*heritage.* Apart from that, this dictionary aims to fulfill the need for special dictionaries, the number of which is still minimal, because almost all bilingual dictionaries on the market are general dictionaries.

Dictionary Design

The dictionary developed was named the Al Hidayah Dictionary. During the design phase of the Al Hidayah Dictionary, researchers created a blueprint, or draft, of the dictionary to be developed. Broadly speaking, the researchers designed the dictionary's systematics, vocabulary, and format.

Dictionary Systematics

In the systematics of compiling a dictionary, there are several models or patterns of compilation, including: *Nidzam Nutqi*, namely the vocabulary of the dictionary which is arranged based on the sound of the first letter, then the alphabetical system which is the dictionary which is arranged based on the lemma or basic word*(word list)*, furthermore *qafiyah system*which is arranged based on the output of sound sounds (makharijul huruf) which is commonly used in Arabic literary dictionaries in the era of Arabic language codification.

The Al Hidayah Dictionary will be designed using the didzam muthqi (articulative) pattern. Thus, the vocabulary is arranged based on the first letter of the word's derivation, then arranged alphabetically, for example, analysis, error analysis, correlation analysis, qualitative analysis, quantitative analysis, how, however, teaching materials, and so on. The didzam muthqi (articulative) pattern was used when researchers were inventorying the required vocabulary. This inventory process was carried out by typing each word into a Microsoft Excel

table. This process was carried out before the vocabulary was entered into the dictionary application.

Cut Off

In Indonesian and foreign languages, there are two types of word forms: base form and derivational form. Base forms are known as lemmas or root words, while derivational forms are derived forms or words that have been affixed or repeated. The vocabulary or terms compiled in this dictionary are derivational forms, allowing users to go directly to the target vocabulary, not the root word. This Dictionary of Contemporary Terms and Phrases in Arabic Language Education Research contains 1,524 words. Based on this vocabulary size, and according to Bo Sevensen's dictionary classification, it is classified as a small dictionary or simple dictionary. However, considering the type of dictionary being developed, a specialized dictionary containing only research terms, the number of words in this dictionary is considered sufficient and adequate for use by students, lecturers, and academics who need it.

Physical Form of the Dictionary

This dictionary was originally designed as a manual, a printed dictionary containing vocabulary and expressions related to Arabic language education research. However, based on reviewer feedback during a research proposal seminar, it will be made into a digital dictionary in the form of an application that can be installed on users' smartphones. More specifically, this Al Hidayah dictionary is an Android-based digital dictionary containing terms used in Arabic language education research.

Dictionary Development

At this stage, there are several stages carried out, including:

Vocabulary Inventory

During the development phase, the dictionary design developed during the design phase began to be realized. Initially, the Al Hidayah Dictionary was designed as a conventional dictionary (book), but based on reviewer feedback at a proposal seminar, it was developed into an Android-based application in

collaboration with programmers. The development process begins with typing vocabulary using Microsoft Excel, which consists of two columns: Indonesian vocabulary and its Arabic translation (mufradāt). The vocabulary is compiled from various trusted sources, such as dictionaries and Arabic-language scientific works. Each vocabulary word is accompanied by a syakal/harakat to minimize pronunciation errors by beginner learners. In the process of transforming into a digital dictionary, the Al Hidayah Dictionary was initially developed as software installed on a PC or computer. However, in practice, this dictionary was deemed impractical and inefficient because its operation required several button activation steps for optimal operation. These limitations prompted further development towards a more flexible and accessible system.

The transformation phase began with processing the vocabulary list using Microsoft Excel, which then adjusted the data format so it could be imported into a MySQL database. Next, the researchers built a local server using XAMPP to manage the database and web server. This process included creating a database, tables, and fields using MySQL Frontend, followed by data import and checking the accuracy of the imported data to ensure database consistency and integrity. In the next stage, the application interface was developed by designing the initial display using HTML, CSS, and JavaScript using Visual Studio Code. Display and functionality were tested by running a local web server and checking it through the Google Chrome browser. Furthermore, the researchers developed database query scripts and search features using PHP and JavaScript, then displayed and evaluated the results to ensure the dictionary application functioned optimally and responsively.

At this stage, the Al Hidayah Dictionary display can be shown in the following image:

The image above shows the Al Hidayah Dictionary on a computer program connected to a website. It's used in the same way as a typical digital dictionary: by typing in the required vocabulary. The Al Hidayah Dictionary is both an Indonesian-Arabic and an Arabic-Indonesian dictionary, allowing users to enter *keyword* speak Arabic or Indonesian *space* search.

Dictionary Implementation

Activities carried out in the implementation stage include conducting validation with material experts and media experts. The results of the validation by these experts will later become the basis for evaluating the developed product. In the validation stage, researchers used a questionnaire. This validation questionnaire was filled out by material experts and media experts. This validation questionnaire is quantitative, so the data can be processed and presented in percentage form using a Likert scale as a measurement scale.

Table Scale Likert

No	Quantitative Analysis	Score
1	Strongly agree	4
2	Agree	3
3	Don't agree	2
4	Strongly Disagree	1

From the table above it can be explained that a score of 4 for a strongly agree response, a score of 3 for an agree response, a score of 2 for a disagree response and a score of 1 for a strongly disagree response. The quantitative data obtained from the question naire was then analyzed by calculating the average of each respondent's answer, to calculate the average was done in the following way:

$$\frac{Total\ score\ obtained}{Highest/ideal\ score}\ x\ 100$$

The average value results are then interpreted based on the following feasibility table:

Average score %	Category
0-25	Not feasible
26-50	Less qualified
51-75	Eligible
76-100	Very Worthy

The biology dictionary application media is declared theoretically feasible if the feasibility percentage is ≥ 51% (Sugiyono, 2012).

Subject Matter Expert Validation

This media expert validation aims to measure whether the material in the Al Hidayah Dictionary is in accordance with the dictionary's objectives, namely to help students, university students and Arabic language education practitioners in translating Arabic language education research terms. Validation results from subject matter experts indicate that the Al Hidayah dictionary is good and appropriate. This is evidenced by the average total score of 955 from subject matter experts. Referring to Sugiono's feasibility table, 95% falls into the very appropriate category.

Media Expert Validation

Aspects assessed by media experts included ease of use and navigation of the Al Hidayah dictionary application, visuals, and usability. Validation results from media experts revealed three aspects: ease of use and navigation, consisting of five indicators; visuals, consisting of five indicators; and usability, consisting

of two indicators. Validation results by media experts indicated that, for the ease and navigation aspect, which consists of five indicators, four indicators received the maximum score of 4 (strongly agree), and one indicator received a score of 3 (agree). Overall, these ease and navigation aspects do not require improvement.

Furthermore, in the visual aspect, there are 2 indicators with a value of 2 (disagree), namely the indicator "the design of the Al Hidayah Dictionary is attractive" and "the composition of the color selection in the Al Hidayah Dictionary Application is appropriate". This will later become a reference for making product improvements at the evaluation stage. Regarding the dictionary's usability, with the indicators "The Al Hidayah Dictionary can help users translate Arabic educational research terms" and "The Al Hidayah Dictionary can be used anywhere and anytime (flexible)," the media expert gave a score of 3 (agree). Overall, this usability aspect does not require improvement.

Overall, based on the results of the media expert validation, the average total score of the Al Hidayah dictionary was 83.33%. Referring to Sugiono's feasibility table, it falls into the very feasible category. However, to improve the Al Hidayah Dictionary, improvements will be made according to the media expert's suggestions. Improvements will focus on indicators that received a score of 2 (disagree) and the suggestion written by the media expert, namely, "it would be better if the dictionary was made into an Android-based application so that it is more flexible."

Dictionary Evaluation

At this stage, researchers will make improvements based on the indicators that received the lowest scores during the questionnaire distribution to experts and the suggestions offered. Indicators that received a score of 2 (disagree) from media experts were the statements "The Al Hidayah Dictionary is interesting" and "The color composition of the Al Hidayah Dictionary Application is appropriate." Furthermore, media experts suggested that the Al Hidayah Dictionary, which was originally web-based, be changed to an Android-based version for greater flexibility.

Based on these suggestions, the evaluation of the Al Hidayah dictionary was carried out by updating the Al Hidayah Dictionary application, namely by creating a webview using the application.*Android Studio*. *Android studio* is *Integrated Development Environment*The official (IDE) for Android application development and is open source or free.

To create the Al Hidayah Dictionary webview using Android Studio, the programmer begins by opening the application and selecting the file menu and then selecting new project. The project creation menu is displayed in the following image:

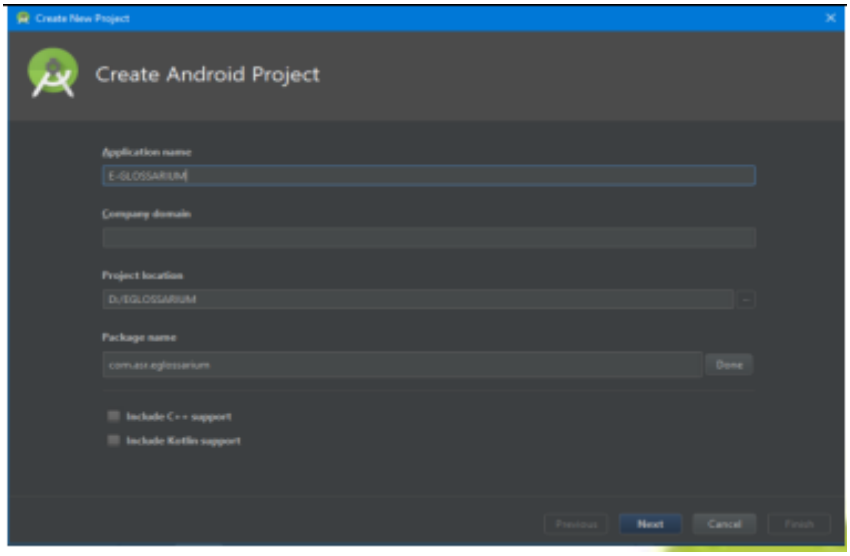

Image: Create Android Project Menu

At this stage, the researcher and programmer input data into the menu.*Create Android Project*, after the filling is complete, the Target Android Devices menu appears which contains the minimum specifications for the Android operating system version that is supported when you want to use the KamusAl Hidayah application. Next, the configuration is carried out*pada file activity_main, AndroidManifest.xml*At this stage, the name of the Al Hidayah Dictionary project is filled in, then the required data is inputted and the program is tested using the Android Studio application.

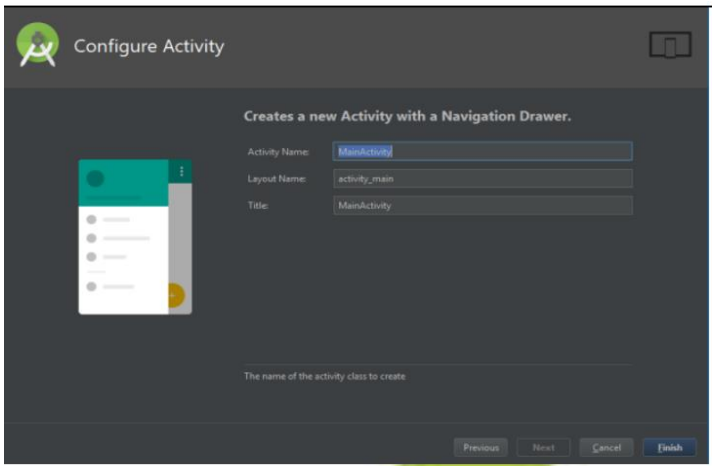

Image: Main Activity File View

After the configuration and testing process was carried out, the researcher and the programmer purchased a domain and hosting at Niagahoster. Hosting is a service that functions to store and manage data on a website or application, so that the application we create can be accessed by anyone via the internet. After purchasing hosting, the researcher and the programmer uploaded the Al Hidayah Dictionary Application to the Niagahoster hosting program using the Winscp application and configured the webview folder on the webhosting. After that, the Al Hidayah Dictionary Application was ready to be installed on a smartphone. The following is the appearance of the Al Hidayah Dictionary icon on a smartphone.

Image: Display of the Al Hidayah Dictionary Logo on a Smartphone

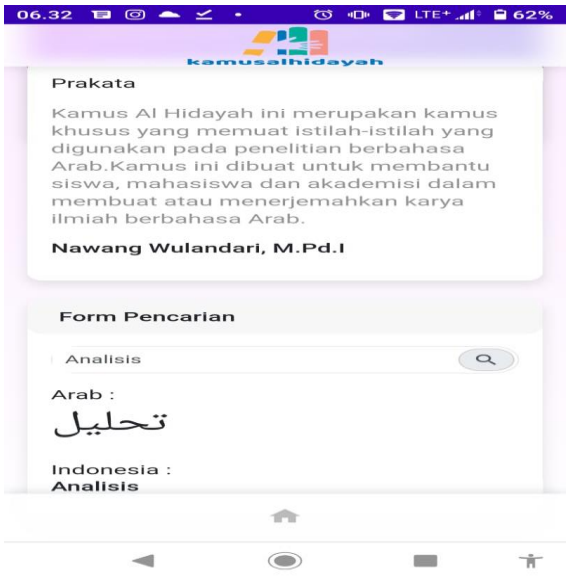

Image: Initial View of Al Hidayah Dictionary when it is Operational

Al Hidayah Dictionary Feasibility Test

The feasibility test of the Al Hidayah Dictionary was conducted by distributing a questionnaire using Google FormulIr. The questionnaire contained 15 statements with answer options of strongly agree, agree, disagree, and strongly disagree. Respondents in the product feasibility test were students of the PBA Study Program at UIN Jurai Siwo Lampung who were in the process of completing their thesis. Based on the results of the feasibility test questionnaire, the following results were obtained:

Table of Results of the Al Hidayah Dictionary Application Feasibility Test

Questionnaire Statement Number	Rate-rate %	Criteria
1	86	Very Worthy
2	84	Very Worthy
3	84	Very Worthy
4	75	Eligible
5	79	Very Worthy
6	79	Very Worthy
7	79	Very Worthy
8	80	Very Worthy

9	81	Very Worthy
10	80	Very Worthy
11	79	Very Worthy
12	78	Very Worthy
13	79	Very Worthy
14	79	Very Worthy
15	76	Very Worthy
Average Percentage of Total		79%
Criteria		Very Worthy

Based on the table above, the average percentage value was 79%. This average value, according to Sugiono's feasibility table, falls into the "feasible" category. Therefore, based on the Al Hidayah Dictionary Application trials conducted, it can be concluded that the Al Hidayah Dictionary is categorized as very feasible.

Conclusion

This study concludes that the development of the Al Hidayah Dictionary using the ADDIE model was systematic and effective in producing a high-quality digital learning resource. Through the stages of needs analysis, design, development, validation, and evaluation, the dictionary successfully transformed from a conventional printed concept into a practical Android-based application. The high validation scores from material experts (95%) and media experts (83.33%) confirm that the product meets academic, pedagogical, and technical standards, making it suitable for supporting the understanding of Arabic research terminology, particularly in educational research contexts.

One of the most noteworthy and unexpected findings was the significant impact of media expert feedback on the direction of product development. Rather than merely improving interface design, the feedback prompted a fundamental shift from a website-based platform to an Android application. This transition substantially enhanced accessibility, usability, and learner engagement, indicating that platform choice can be as critical as content quality in digital

learning tools. The finding highlights the importance of iterative expert validation in ensuring that educational technologies align with users' real needs and learning habits.

Despite its strengths, this study has several limitations. The evaluation focused primarily on expert validation, without extensive field testing involving a diverse group of end users, such as students and researchers from different institutions. Additionally, the study did not measure long-term learning outcomes or compare the effectiveness of the dictionary with other existing digital lexicographic tools. Future research is therefore recommended to conduct broader user-based trials, integrate learning analytics, and assess the dictionary's impact on users' academic performance over time.

Acknowledgment

The author would like to declare that in the process of writing this paper, artificial intelligence (AI) technology was utilized as a supporting tool. This technology was used to assist in literature searches, bibliographic data compilation, and grammatical refinement. However, all substance, analysis, and conclusions remain the author's own academic work

Author Contribution Statement

Nawang Wulandari conceptualized the study and identified the need for a digital dictionary to support Arabic language research terminology. She designed and developed the Alhidayah Dictionary application using the ADDIE model, conducted data collection and analysis, and coordinated the validation process with material and media experts. She also interpreted the findings, refined the application based on expert feedback, and prepared the manuscript. The author read and approved the final version of the manuscript.

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