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## Development of Word Root-Based Digital Dictionary of *Shorof* Mastery

Muhammad Zahid 'Afafarrasyihab Rahimadinullah<sup>a, 1</sup>, Mohammad Ahsanuddin<sup>a, 2</sup>,  
Irhamni Irhamni<sup>a, 3</sup>, Romyi Morhi<sup>b, 4</sup>

<sup>a</sup>Universitas Negeri Malang, Indonesia

<sup>b</sup>Yala Rajabhat University, Thailand

<sup>1</sup>[muhammad.zahid.2102318@students.um.ac.id](mailto:muhammad.zahid.2102318@students.um.ac.id)\*, <sup>2</sup>[mohammad.ahsanuddin.fs@um.ac.id](mailto:mohammad.ahsanuddin.fs@um.ac.id),

<sup>3</sup>[irhamni.fs@um.ac.id](mailto:irhamni.fs@um.ac.id), <sup>4</sup>[romyi.m@yru.ac.th](mailto:romyi.m@yru.ac.th)

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#### \*Corresponding

#### Author:

Name: Muhammad Zahid  
'Afafarrasyihab  
Rahimadinullah  
Email:  
[muhammad.zahid.2102318@students.um.ac.id](mailto:muhammad.zahid.2102318@students.um.ac.id)

### ABSTRACT

The goal of this research was to explain how to develop a word root-based digital dictionary for *shorof* mastery and to make language learners easier in recognizing word root and meaning in the use of dictionaries as well as to find meaning of each or some vocabularies in the text. The research method used in this study was Research and Development, using the ADDIE model which includes five stages, namely (1) analysis, (2) design, (3) development, (4) implementation, and (5) evaluation. The subjects were college students and students of Al-Khoirot Islamic Boarding School Malang. The data collection techniques were observation, interview, and questionnaire. This development research data analysis technique used two data analysis techniques, namely qualitative descriptive analysis and quantitative descriptive analysis. The qualitative data is in the form of data identification, data grouping, data presentation and explanation, and conclusion. While the quantitative data is a percentage analysis technique in analyzing quantitative data. The results of this development were in the form of a word root-based digital dictionary for *shorof* mastery that has six displays, which are preface, instructions for use, dictionary, exercises, references, and developers. The assessment by students and college students reached an average score of 94.7% which is valid category. Hence, it can be concluded that this digital dictionary is feasible to use at any time in learning Arabic and students are able to learn independently wherever they are.

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### Keyword

Development; Digital Dictionary; Word Root; *Shorof*

### مستخلص البحث

الغرض من هذا البحث هو شرح كيفية تطوير القاموس الرقهي على أساس جذور الكلمة لإتقان الصرف لتسهيل متعلمي اللغة على تعرف جذور الكلمة والمعاني الجذرية في استخدام القواميس وإيجاد معنى كل المفردات أو معظمها في النص. طريقة البحث المستخدمة في هذا البحث هي البحث والتطوير ( *Research and Development* ) باستخدام نموذج ADDIE الذي يتضمن خمس مراحل وهي (1) التحليل ( *analyze* )، (2) التصميم ( *design* )، (3) التطوير ( *development* )، (4) التنفيذ ( *implementation* )، (5) التقييم ( *evaluation* ). عينة البحث المستخدمة هي طلاب المدارس والجامعات في معهد الخيرات الإسلامي مالانج. تقنيات جمع البيانات هي بطرق الملاحظة والمقابلة والاستبيان. استخدمت تقنيات تحليل البيانات لهذا البحث تقنيتين لتحليل البيانات، وهما تقنيات التحليل الوصفي النوعي وتقنيات التحليل الوصفي الكمي. البيانات النوعية في شكل تحديد البيانات، وتجميع البيانات، وعرض البيانات وتفسيرها، والاستنتاجات. أما البيانات الكمية هي تقنية تحليل النسبة المئوية في تحليل البيانات الكمية. كانت نتيجة هذا التطوير في شكل القاموس الرقهي على أساس جذور الكلمة لإتقان الصرف الذي يحتوي على ستة مظاهر، وهي المقدمة ودليل الاستخدام والقاموس والتمارين والمراجع والبيانات الشخصية للمطور. نتيجة تقييم الطلاب يصل إلى 94,7% في الفئة الصالحة. وبالتالي، يمكن الاستنتاج أن هذا القاموس الرقهي صالحة للاستخدام في أي وقت لتعلم اللغة العربية ويمكن للطلاب التعلم بشكل مستقل أينما كانوا.

تطوير: قاموس رقهي؛ جذور الكلمة؛ صرف

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## INTRODUCTION

The use of dictionaries among school and university students is very important in developing language vocabulary and understanding more thoroughly (Sarigul, 2016). Dictionaries tend to be the most likeable tool to look up the meaning of words, grammar, or context in which words are used in the target language (Mustaufiy & Sadat, 2020). It also becomes main reference in language learning, especially foreign languages. (Asyraf et al., 2017). Likewise, in Arabic language learning, the existence of a dictionary is very helpful in finding the meaning of each *mufradat* in Arabic texts for beginners (Hastang, 2017; Mustaufiy & Sadat, 2020).

Arabic dictionary has been widely printed in Indonesia with their respective characteristics, such as the Arabic-Indonesian dictionary by *Mahmud Yunus, Al-Munawwir, Al-Bisri, Al-Azhar*, etc. (Hastang, 2017). These dictionaries are categorized as alphabetical dictionaries. Since to find Arabic vocabulary one must refer to the initial letter of the base word, understanding of the *shorof* knowledge is required so that they are able to know it (Ariati, 2021). *Shorof* is one of the important components that must be considered in Arabic learning. (Al-Khasy & Yusuf, 2020). According to Taufiqurrochman (2019), in the history of the development of Arabic dictionary in Indonesia, the preparation of Arabic dictionary began with the morphological system which is still used today. The advantage is that it is considered more thoroughly; the functions and benefits of the dictionary are fulfilled; helping students in learning the basics of *shorof* or morphology.

This is in contrast to *abjadi* dictionary, which is based on articulation. Hence, to find Arabic vocabulary, there is no need to refer to the initial letter of the base word. In fact, it can directly refer to the initial letter of the word. One example of an Arabic-Indonesian *abjadi* dictionary is the Contemporary Arabic Dictionary by Atabik Ali and A. Zuhdi Mudlor.

In the modern era nowadays, dictionary are not only in the printed form, but also in the form of applications or known as digital dictionary (Knežević et al., 2021). Digital dictionary can be accessed using internet on gadgets, for example: *Al-Ma'ani, Mutarjim, Al-Muhit*, dan *Mu'jam Al-Basith* dictionary (Khalfi et al., 2016). These dictionaries are implemented an *abjadi* system that does not require basic knowledge of *shorof* in its use (Besse Wahida., 2017; Mustaufiy & Sadat, 2020). However, based on research conducted by Ariati (2021) and Mustaufiy & Sadat (2020), students still experience difficulties in using word root-based dictionary. Thus, both students and college students using digital dictionary are not stimulated by their *shorof* knowledge (Mustaufiy & Sadat, 2020).

Based on the background that the researchers have put above, researchers developed a word root-based digital dictionary for *shorof* mastery

which contributed to solve the problems mentioned. Then, the researchers started by conducting a study from previous researches in accordance with the research theme to find out the sub-study that has or has not been studied in the previous studies. Therefore, a comparison is needed whether there are elements of similarities or differences with the context of this research. Researchers found several previous studies such as the results of Al-Khasy & Yusuf's research (Al-Khasy & Yusuf, 2020) entitled "*Inovasi Pembelajaran Morfologi Bahasa Arab Pada Tashrif Lughawi Dengan Finger Gymnasti*". This research was about finger gymnastic method (*metode senam*) by utilizing technology in the form of a video of lughawi tashrifan practice with finger gymnastic found on a youtube channel named Muhammad Alghiffary to explain the relationship between tashrif lughawi and finger gymnastics. This research discussed morphology or *shorof*, but the focus was on the use of finger gymnastic as a teaching tool in the practice of *tashrif lughawi*.

Secondly, the result of research with the title "*Sistem Pembelajaran Al-Qawa'id Al-Sharfiyah Di Indonesia Dalam Perspektif Neurolinguistik*" written by Danial Hilmi (Hilmi, 2017). This study discussed the learning of *al-qawaid al-sharfiyah* in the perspective of Neurolinguistic which demands students' efforts in functioning the two sides of left and right brain through several formulas that help understand and compile *tashrif* formulas with the introduction of characteristics that are generally useful for two things; It is the ability to recognize material with the characteristics of its word form and the ability to construct word changes with proficiency in *tashrif* (word change) without memorizing first. The result of research on *al-qawaid al-sharfiyah* learning in the Neurolinguistic point of view said that the learning process in Indonesia is less effective in which a supportive environment has not been formed. In contrast to islamic boarding school where the environment is naturally available and a long time to master. Moreover, the problem is that learning *al-qawaid al-sharfiyah* has not functioned the brain properly, so that the tashrif that has been memorized cannot last long because the information in memory is not processed properly.

Thirdly, the results of research by Ihwan et al (Ihwan et al., 2022) entitled "*Pengaruh Penguasaan Ilmu Nahwu Dan Sharaf Terhadap Kemampuan Membaca Kitab Fathul Qarib*" showed that there is a close relationship or correlation and a significant positive influence between mastery of *nahwu* and *shorof* with the ability to read *Fathul Qorib* book. This can be proven by the result of the average *nahwu shorof* mastery test score obtained by respondents of 80.24 with a very good category, while the respondents from the *Fathul Qorib* book reading test scored of 78.8 with a fairly good category. Hence, the influence value of variable X on variable Y is 22.73% and there are still 77.27 other things affecting variable

Y. This showed that more students master the *nahwu* and *shorof* material, the better their ability to read the yellow book, especially the book of Fathul Qorib.

This study related to the previous researches above showed that although there was relevance to this research, there were also significant differences as stated in the first study which discusses the problem of using finger exercises as teaching aid in the practice of *tashrif lughawi*. The second study discussed the learning of *al-qawaid al-sharfiyah* in the perspective of Neurolinguistic which requires students' efforts in functioning the two sides of the left and right brain through several formulas and the third study discussed the correlation between mastery of *nahwu* and *shorof* with the ability to read Fathul Qorib book, while in this study discussed the development of a word root-based digital dictionary for *shorof* mastery.

Based on that phenomenon, the objectives of this research as follows: (1) designing word root-based digital dictionary for *shorof* mastery for students and college students, (2) describing level of effectiveness of the product development of word root-based digital dictionary for *shorof* mastery for students and college students. Through this research, the development work made in the form of a digital dictionary based on word root for *shorof* mastery. In addition to increase the mastery of *shorof* of its users, the digital dictionary to be developed is expected to be the best solution to make it easier to find the meaning of *mufradat* in Arabic text. This dictionary will also be equipped with practice to train active and effective self-learning.

## METHOD

This research used research and development. One of the media that pays attention to basic stages of media development design which is simple and easy to understand is the model developed by Reiser Molenda, namely ADDIE which stands for analysis, design, development, implementation, and evaluation (Molenda, 2015). The developer chose the ADDIE research model since the object developed is learning media not software engineering, so the ADDIE method is suitable for the product development process (Rayanto & Sugianti, 2020). The research procedures on the ADDIE model as follow:

### Analysis Stage

The very first stage is to conduct need analysis, need identification, and task analysis. This stage is carried out in two ways, which are field study and literature study. The field study was to identify Arabic learning activities using dictionary, characteristic, and obtaining information related to the needs of students and college students in learning Arabic by using a word root-based dictionary at Al-Khoirot Islamic Boarding School in Malang. This field study used

three steps, interview, observation, and distribution of need analysis questionnaires. Observation step was to identify the process of learning Arabic by using word root-based dictionary for students at Al-Khoirot Islamic Boarding School in Malang. Meanwhile, the interview and questionnaires were conducted by researchers with students and college students at Al-Khoirot Islamic Boarding School in Malang.

Literature study was also conducted, including identifying the state of the Arabic dictionary used at Al-Khoirot Islamic Boarding School in Malang. This stage used as the main basis for the identification and availability of dictionary to support the learning implementation. In this step, information on dictionary that needs to be developed for students and college students in learning Arabic had been obtained.

#### Design Stage

Researchers made a design of a digital dictionary based on word root such as determining the elements and establishing framework needed in the development of the dictionary, as well as looking for references used in developing material or subject matter to be studied. In addition, instruments used in the assessment of the developed product were prepared, starting from giving questionnaires for students and college students toward the development product.

#### Development Stage

At this stage, the product made and arranged in accordance with the design at the previous stage. The steps in this development are (a) creating a display design and (b) compiling the material content with the draft material that had been prepared.

#### Implementation Stage

The implementation stage is an activity of using development product in the form of a digital dictionary based on word root. Researchers conducted product trial in terms of appearance or functionality to students and college students from Al-Khoirot Islamic Boarding School in Malang by giving response questionnaires related to development products.

#### Evaluation Stage

The product that has been prepared or developed is successful and as expected based on existing needs. Should there are things that are not appropriate after the product test, it must be repaired then refined according to comments or suggestions regarding product deficiencies. The purpose of this stage is to produce a quality product that is truly valid and suitable for use.

Evaluation of this research and development is carried out formatively and summatively. Formative evaluation is an evaluation carried out after completing

the stages of the ADDIE model. While summative evaluation is an evaluation at the last stage in the ADDIE model procedure.

### **Product Test**

Product testing is a collection process in determining level of product feasibility and validity that has been developed. This stage includes test design, test subject, data type, data collection technique, data collection instrument, and data analysis technique. The test design of this product research and development was carried out by students and college students as assessors of the product developed in order to obtain the result of student and college student responses toward the result of digital dictionary product based on certain criteria. The test subjects of this product research and development were 12 people, who were six students and six college students from Al-Khoirot Islamic Boarding School in Malang. Then the test was conducted to gain result which later be analyzed as a reference for revision.

The data of research and development are quantitative and qualitative data. Quantitative data is generated by students' and college students' response questionnaires to development product. Qualitative data is obtained in the form of a description of the results of interview and observation of the learning activity process at the Al-Khoirot Islamic Boarding School in Malang, need analysis questionnaire, suggestions and comments on the validation questionnaire, students and college students questionnaire sheet. Data collection technique consists of interview, observation, documentation, and questionnaire. The instrument used to collect data in this research was a questionnaire sheet. The questionnaire sheet used to collect review data from students. This research data analysis technique used two data analysis techniques, namely qualitative descriptive analysis technique and quantitative descriptive analysis. The qualitative data is in the form of data identification, data grouping, data presentation and explanation, and conclusion. While the quantitative data is a percentage analysis technique in analyzing quantitative data. The percentage technique is useful in processing field test score.

## **RESULTS & DISCUSSION**

### **Development of Word Root-Based Digital Dictionary for *Shorof* Mastery**

The development of word root-based digital dictionary for *shorof* mastery is developed based on the model developed by Reiser Molenda, namely ADDIE. The description of this study result is based on the following steps:

#### ***Analysis***

The first stage carried out by researchers was to identify Arabic language learning activities using dictionary, characteristic, and obtaining information

related to students and college students need in learning Arabic by using word root-based dictionary at Al-Khoirot Islamic Boarding School in Malang which was done by observation and conducting interviews or asking several questions to students and college students. When conducting the observation, researchers observed the process of learning activities in order to obtain data or information. The observation result that have been carried out at Al-Khoirot Islamic Boarding School showed that the availability of Arabic dictionaries used at Al-Khoirot Islamic Boarding School in Malang as a support for the implementation of learning in the form of Arabic-Indonesian dictionaries by *Mahmud Yunus*, *Al-Munawwir*, and *At-Taufiq*. These dictionaries are categorized as alphabetical dictionaries. Since to find Arabic vocabulary must refer to the initial letter of the base word and requires an understanding of *shorof* knowledge in order to know it. Meanwhile, students experienced difficulties in using word root-based dictionary. Hence, that students grumbled that they cannot use the dictionary and their competence of *sharaf* aspect of Arabic is still lacking.

The results of students interview when using Arabic dictionary at Al-Khoirot Islamic Boarding School are as follows: (a) there are 3 students and 2 college students said it was difficult to determine the root of a word in the dictionary, 2 college students said it was difficult to determine the exact meaning of the word and 3 students and 2 college students said it was difficult to determine the root of a word while determining the exact meaning of the word. (b) even the students have dictionaries, they often seek information about vocabulary or *mufradat* that they do not know the meaning then ask orally to their friends who know better or to the teacher or *ustadz* who teaches them. The real use of the dictionary can be seen only when doing assignments which are dominated by translation tasks that are written not oral and seen during *mutalaah* or deliberations on the book to be studied with the caretaker of the Al-Khoirot Islamic Boarding School, even then the students also still depend on their seniors or *ustadz* in using the dictionary and looking for the right meaning of words.

Based on the research finding, it can be concluded that it is necessary to develop an appropriate dictionary for students to increase students' activeness and interest in learning Arabic and to be able to receive Arabic vocabulary easily. From this various information, it can be seen that most students have not been maximized in terms of absorbing the functions and benefits of Arabic dictionary and not maximized in interacting with Arabic dictionary in their daily lives.

### **Design**

The design or planning step of this product were setting the goals of student success in using a word root-based digital dictionary for *shorof* mastery, conducting a review of the material on the subject matter to be studied in the *Al-'Arabiyyah Baina Yadaik* book, *Al-Munawwir* dictionary, Contemporary dictionary,

*Al-Ma'any* dictionary, and Indonesian-Arabic dictionary, determining elements and equipment in making the framework needed in the development of the dictionary, and creating or drafting a word root-based digital dictionary design for *shorof* mastery. The detail steps were First step, the goal of success in using a word root-based digital dictionary for *shorof* mastery is to facilitate students' understanding in improving *shorof* mastery and increasing interest in learning Arabic. The digital dictionary to be developed was expected to be the best solution to make it easier to find the meaning of *mufradat* in Arabic text. This dictionary also was equipped with practices to train active and effective self-learning and with some material related to daily activity to ease students' understanding.

Second step review of the material on the subject matter is in the form of determining the material which later be used as material for making word root-based digital dictionary for *shorof* mastery and preparing various vocabulary or *mufradat* and their meanings in the form of *tashrif ishtilahi* start form *wazan fi'il tsulatsi mujarrad, fi'il tsulatsi mazid, fi'il ruba'i mujarrad, dan fi'il ruba'i mazid* which will be included in the word root-based digital dictionary for *shorof* mastery. Content or vocabulary arrangement for the digital dictionary used by referring to or taking from *Al-'Arabiyah Baina Yadaik* book from volume 1 to volume 4, *Al-Munawwir* dictionary, Contemporary dictionary, *Al-Ma'any* dictionary, Indonesian-Arabic dictionary, and various sources on the internet. However, only 5 *mufradat* or vocabularies searched for which used in each *wazan* and even then the vocabularies sought which related to daily activities to facilitate students' understanding. Then, the presentation of digital dictionary material or material that is interesting, easy to understand, increasing students' activeness and interest in both students and college students in learning Arabic, and can be stimulated by *shorof* knowledge so that they can easily accept the correct and correct meaning of Arabic vocabulary.

(c) The equipment needed in making a word root-based digital dictionary for *shorof* mastery is laptop along with the Figma application, which is a web-based application for designing *UI* and *UX* used to create applications. Figma is needed to design or create design as well as prototype of digital dictionary applications, such as making design shape, vector graphic, cropping or cutting some images, writing design, and combining several elements or parts such as shape, line, text, image, color, and other Figma features.

(d) The word root-based digital dictionary for *shorof* mastery has design consisting of several displays, namely 1) icon and preface, 2) instructions for use, 3) dictionary, 4) exercises, 5) references, and 6) developer's bio.

The details of the word root-based digital dictionary product design for *shorof* mastery are:



- a. Icon, used as the initial display before entering some views.
- b. Preface, containing a brief, concise, and clear introduction or overview of the work.
- c. Instructions for use, containing direction or guideline that provide clear and concise instructions to digital dictionary users to make it easier to understand.
- d. Dictionary, containing word search interface that helps one to recognize new words and a *wazan* list that contains vocabulary included in the search interface.
- e. Exercises, containing exercises to point or choose correct word, starting from finding the root, *fi'il madli*, *fi'il mudlori*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman/akan*, and *isim alat*.
- f. Reference, containing source or reference, the material used in developing a word root-based digital dictionary for *shorof* mastery.
- g. Developer, containing information about developer's brief personal data of word root-based digital dictionary for *shorof* mastery.

The digital dictionary is designed as good as possible using images, relevant writing, and design that attracts students interest and in addition to vector graphics that are already available in Figma, there are some images in digital dictionary that are developed in browser and taken from internet such as pngwing.com, freepik.com, piqsels.com, shutterstock.com, and edited. Those images are hoped to be an allure or enchantment to the student see the product.

### **Development**

The result of product development in this stage is a word root-based digital dictionary for *shorof* mastery. This developed product is in the form of product development, content development, and dictionary systematic.

### **Digital dictionary product development**

The image design on the digital dictionary icon used as the symbol and identity of the word root-based digital dictionary for *shorof* mastery.



**Figure 2.** Dictionary Icon

The dictionary icon in Figure 2 was created and designed using Microsoft Excel 2019 in the form of kufi khat Arabic calligraphy which entitled *Qamus Al-'Afaf*, as the name of this developed digital dictionary entitled Al-'Afaf dictionary because the developer's name of this digital dictionary is 'Afaf. The *qaamus* inscription on the kufi khat Arabic calligraphy is orange and the Al-'Afaf inscription

on the kufi Arabic calligraphy is brown. To make easier to read and understand, under the symbol is written in latin script in the form of the word Al-'Afaf dictionary using the Inter font in the Figma application. The number of displays in this digital dictionary consist of 6 initial views, those are a) preface, b) instructions, c) dictionary, d) exercises, e) references, and f) developers.



**Figure 3.** Dictionary initial display

In Figure 3, the dictionary initial display explained about the initial view before entering multiple views. The Display details of the word root-based digital dictionary product design for *shorof* mastery are: Preface, containing a brief, concise, and clear introduction or overview of the work.



**Figure 4.** Preface display

The preface display in Figure 4 contained 1 display that can be scrolled vertically and contain a brief, concise, and clear preface or general view as an introduction to the work or a thank you words for the completion of the contents of this digital dictionary. instructions for use, containing direction or guideline that provide clear and concise instructions to digital dictionary users to make it easier to understand.



**Figure 5.** Instructions for use display

The instructions for use in Figure 5 contained several displays included direction or guideline providing instructions clearly and briefly to the user of digital dictionary to make it easier to understand. The next part is dictionary, containing word search interface that helps one to recognize new words and a *wazan* list that contains vocabulary included in the search interface.



**Figure 6.** Dictionary View

The dictionary view in Figure 6 contained several displays a) the initial view for dictionary searches, that is search for a word that helps a person getting to know new words and *wazan* list, b) display for searching vocabulary or *mufradat* which is searched for dictionaries that can be scrolled vertically, c) *wazan* list display containing any vocabulary contained in dictionary searches that can be scrolled vertically and horizontally. The next part is exercises, containing exercises to point or choose correct word, starting from finding the root, *fi'il madli*, *fi'il mudlori*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman/akan*, and *isim alat*.



Figure 7. Exercise display

The exercises display in Figure 7 contained several displays that can be scrolled vertically, that is initial display for what exercises will be given and the content display from initial display of the exercise which contains of pointing practice or choosing the correct word, starting from looking for the word root, *fi'il madli*, *fi'il mudlori*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman/makan*, and *isim alat*. The next part is reference, containing source or reference the material used in developing a word root-based digital dictionary for *shorof* mastery. After reference is part which containing information about developer's brief personal data of word root-based digital dictionary for *shorof* mastery.



Figure 8. References view and Developer Biodata Display

The reference in Figure 8 explained about reference sources or reference materials used in developing word root-based digital dictionary for *shorof* mastery. The developer in Figure 8 explained about the developer's brief personal data of the digital dictionary word root-based for *shorof* mastery. The last part is digital dictionary content development. Number of vocabularies contained in this dictionary is 691 words.



**Figure 9.** Dictionary content display

The dictionary contain in Figure 9 explained about all vocabularies have their meanings and explanations of *sighot* or a form of a word arranged based on *tashrif ishtilahi*, from *sighot* or in the form of *fi'il madhi*, *fi'il mudlori'*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman*, *isim makan*, and *isim alat*, while the searched vocabulary is given a different color. Each *wazan* consists of 5 *mauzun* or *mufradat*, starts from *wazan fi'il tsulatsi mujarrad*, *fi'il tsulatsi mazid*, *fi'il ruba'i mujarrad*, *dan fi'il ruba'i mazid*, even then look for related vocabulary related daily activities to make it easier for students to understand. The font used to write Arabic *khat* is Scheherazade New font size 32-35, while for the latin text uses the Inter font type size 11-18. These two types of fonts are deliberately used by researchers because they are considered relevant, more attractive, clear, and easy to read.

The systematic of 'Word Root-Based Digital Dictionary for *Shorof* Mastery' is designed with *nuthqior* articulation model that is a digital dictionary vocabulary arrangement model based on the sound of the first letter of a word, not on *judzur al-kalimat* (root word or basics root). Hence, by using the *nuthqi* or articulation model, it is considered easy for students who want to learn this digital dictionary without having to struggle thinking about finding the root of a word first because in the dictionary search, on the display of the word that has been searched there is an explanation or the form of a word. By having this, students can learn the root word, the change of each *sighot* or form of a word and coupled with the existence of exercises for *shorof* mastery, starting from searching for the root word, looking for *fi'il madhi*, *fi'il mudlori'*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman*, *isim makan*, and *isim alat*.

The next stage is to conduct field test or product test in terms of display or functionality to 12 people, who are six students and six college students from Al-Khoirot Islamic Boarding School in Malang by giving response questionnaires and tests related to development product. The questionnaire sheet consists of 10 questions to obtain the validity and feasibility value of the product that has been

developed. At this stage (evaluation), two stages are carried out, there are formative and summative evaluation. Formative evaluation is an evaluation at the end of each development step. While the summative evaluation is at the end of the completion of all stages. The subjects in the study are 12 people, six students and six college students from the Al-Khoirot Malang Islamic Boarding School. Scale of 5 indicates that this development product is very feasible or very valid. Scale of 4 indicates that the product is viable or valid. Scale of 3 indicates that the product is quite viable or valid. Scale of 2 indicates that the product is less viable or valid. Scale of 1 indicates that this development product is very poorly viable or valid.

Based on the students' and college students' assessment, a score of 94.7% was obtained which is included in the valid category and is suitable for use based on the criteria for the level of validity stated by Arikunto (2018). From the result above, the researchers concluded that by using this digital dictionary, students and college students access its benefits according to their needs, especially making it easier for students to know the wazan of each word, determine the root of each word and determine the meaning of words. This digital dictionary is also very efficient because this dictionary can be downloaded on mobile phones. It is also very effective because it can be used any time and students are able to learn independently wherever they are in accordance with the times.

Dictionary can be interpreted as a reference used by students and teachers when they have difficulty understanding vocabulary, words, and terms in reading or listening to other people's statements, especially in the language used by previous people in previous times (Bahruddin, 2020). In learning a foreign language, dictionary is a very important supporting book (Fathanah et al., 2021). Dictionary is a collection of vocabulary that is equipped with meaning and equipped with other explanations that aims to clarify information related to the words contained in the list (Busro, 2016).

Based on the number of languages that used in dictionaries can be classified into three, there are first, the *Ekalingual* Dictionary (monolingual) which presents only one language such as *mu'jam Al-Wasith*. The second is a bilingual dictionary that presents two languages such as the Arabic-Indonesian *Al-Munawwir* dictionary. The third is a multilingual dictionary such as the Arabic-Indonesian-English dictionary (Kosem & Lew, 2019; Moh. Matsna HS, 2016; van der Merwe, 2016). From the classification, the dictionary is classified as a bilingual dictionary. It is proven by the two languages, Arabic and Indonesian, used in this dictionary. Dictionaries have an important role in explaining the meaning of language (Ambarwati & Mandasari, 2020) in terms of word pronunciation, accuracy of *hijaiyah* letters, searching for root words, providing morphological and syntactic information (*sharaf-nahwu*) such as in terms of its *wazan fi'il*,

*tadzkir ta'nits, mufrad tatsniyah* and *jama'*. Moreover, the functions of dictionary also to provide information on the use of words (contextual) both historically, their fame, their theme, frequency of use and other information outside the aspects of language (Khemakhem et al., 2016). These functions are very needed in learning Arabic, especially for non-Arabian.

Mustaufiy dan Sadat (2020) said that "dictionary is the "heart" of language studies, since it is almost impossible to learn a foreign language without the use of dictionaries. Arabic dictionaries are useful to read religious book (*kitab kuning*) in Arabic, and communicate with people who speak Arabic. Dictionaries are important tools used to understand words, sentences, and even structure of the sentence that are difficult to understand, because each discipline knowledge has special terms (Dj & Ashari, 2021; Taufiqurrochman, 2019).

The development of word root-based digital dictionary for *shorof* mastery is carried out in several stages. The first stage is to identify Arabic learning activities using dictionaries, obtain, and collect all information related to the needs of students in learning Arabic using word root-based dictionaries. In addition, it also identifies the state of the Arabic dictionary used at the Al-Khoirot Islamic Boarding School in Malang. This stage is used as the main basis for the identification and availability of dictionary to support learning.

The dictionary developed is in digital form, due to various technological advances in terms of finding learning resources in cyberspace, especially in supporting learning, the dictionary is not only in printed form, but can be in digital form which can be accessed on various media, including: smartphones, tablets, laptops, and so on (Ahmad Arifin, 2021). Fitriani et al (2019) said that Dictionaries can be accessed anywhere with the development of web technology. Digital dictionaries can be accessed through computers, laptops, and mobile phones. It makes easier for learners in the learning process such as looking for unknown foreign vocabulary without bringing a dictionary in book form. In addition, digital dictionary is one of the options for users to solve problems encountered when not knowing new vocabulary. The dictionary contains a lot of vocabulary and can be used even if it is not connected to the internet (Zahrah et al., 2021). Digital dictionaries are more accessible, diverse, complete, inexpensive, can be updated and improved, and can be developed by anyone and at any time, both by a company and an individual (Taufiqurrochman & Suci, 2018).

The next stage was product planning by setting goals for the success of learners in using word root-based digital dictionaries for *shorof* mastery, conducting material reviews on the subject matter to be studied in the book Al-'Arabiyah Baina Yadaik, Al-Munawwir dictionary, Contemporary dictionary, Al-Ma'any dictionary, and Indonesian Arabic dictionary, determining elements and equipment in creating the necessary framework in the development of

dictionaries, and create or draft a digital dictionary design word root-based digital dictionary for *shorof* mastery. The third stage is product development word root-based digital dictionary for *shorof* mastery. This developed product included product development, dictionary content development, and dictionary systematics. The development of a digital dictionary product consists of a dictionary icon and related number of displays consisting of 6 initial displays, there are preface, instructions for use, dictionary, exercises, references, and developers.

Related to the development of digital dictionary content, in general, digital dictionaries only display the form or display of the word being searched for without additional material and explanations directly related to the root of a word being sought, such as explanations. *sighot* or the form of a word arranged according to *tashrif ishtilahi*, starting from *sighot* or the form of *fi'il madhi*, *fi'il mudlori'*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman*, *isim makan*, and *isim alat*, so that most likely the learner can only recognize and know only the word being searched while from the other side, the material as a whole in the word being sought is unknown. Therefore, this digital dictionary is developed by the display that there are many types of words and explanations of *sighot* or forms of a word arranged according to the order in *tashrif ishtilahi*, ranging from *sighot* or the form *fi'il madhi*, *fi'il mudlori'*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman*, *isim makan*, *isim alat*, and there is a meaning of those. In addition, there are exercises for *shorof* mastery, starting from finding the root of the word, looking for *fi'il madhi*, *fi'il mudlori'*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman*, *isim makan*, and *isim alat*, and additional material related to *fi'il tsulatsi mujarrad*, *fi'il tsulatsi mazid*, *fi'il ruba'i mujarrad*, and *fi'il ruba'i mazid*.

The purpose of *shorof* or morphology system is based on the history of the development of the Arabic dictionary in Indonesia, it is stated that its preparation began with the morphological system which is still used today. The advantages are the details, the functions and benefits of dictionaries are fulfilled, and it helps learners in learning the basic of *shorof* (morphology) knowledge (Taufiqurrochman, 2019). The scholars state that *nahwu* was the source of various knowledge and *shorof* as second source. *Shorof* is described as the second source of various knowledge because it produced to word forms and is seen as an important part or element in the Arabic language. People who study *shorof* knowledge consider that it is a non-negotiable necessity. For this reason, the science of *shorof* can find out the roots of words and their use in any changes in meaning. In addition, it can also maximize or improve students' understanding in writing, reading, and understanding the study of the religion book (*kitab kuning*), as well as speaking Arabic (Siti Nursyamsiyah, 2021).



The field test was carried out with a total of 12 people, there are six students and six college students from the Al-Khoirot Islamic Boarding School. The field test results were obtained from the students' questionnaire and calculated using a formula from Arikunto (2018). In the questionnaire, it was found that the statements given by students and college students received varying criteria. On average, they gave a score of 5, with very feasible or very valid criteria and a score of 4, with feasible or valid criteria. Based on the assessment according to students and college students, a score of 94.7% was obtained which is included in the valid category and is suitable for use based on the criteria for the level of validity stated by Arikunto (2018). So, from these results the use of root-based digital dictionary media is able to have a good impact on the process of mastering *shorof*. In line with this, Damira Jantassova (2018) states that the use of digital dictionary can provide learners with the opportunity to learn foreign languages individually, increase the speed of searching for foreign words, utilize multimedia means for vocabulary when studying, etc.

## CONCLUSIONS

Based on the results of the research and discussion above, it is can conclude that the development of word root-based digital dictionary for *shorof* mastery provide positive impact to the students and college students. This digital dictionary provides information about the knowledge of *shorof*, which is the study of morphological rules for various different word forms according to the groupings in morphology. Various kinds of basic difficulties faced by students as Arabic learners can be resolved easily, quickly, and efficiently by using a digital dictionary that has various facilities in it. Among the eases perceived by the learner is the ease in 1) determining the root of each word; 2) understanding the additional letters present in each word; 3) determining the changes starting from *fi'il madli*, *fi'il mudlori*, *masdar*, *isim fa'il*, *isim maf'ul*, *fi'il amar*, *isim zaman/makan*, and *isim alat*; 4) determining the meaning of the word or searching for the Arabic meaning to Indonesia. Based on the results of research and development of a word root-based digital dictionary for *shorof* mastery, it can be concluded that this digital dictionary is suitable for use as a medium for learning Arabic. This is proven by the results of field test with a score of 94.7% conducted by 12 people who are six students and six college students from the Al-Khoirot Islamic Boarding School. For future researchers, the output of this digital dictionary can be expanded or further developed with broader material.

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