ARABIC TEXT READABILITY MEASURMENT SYSTEM

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ABSTRACT

Text is an important element in learning languages. It acts as an agent to provide information that supports the development language skills of a person. To enable a text is optimally served, aspects of readability need to be focused before it is presented to the target group. For this purpose, cloze test is a mechanism that could ease teachers or curricular advisor in determining the level of text readability and its suitability. Cloze test is identified to have high levels of validity and reliability, especially for the stated purpose. Thus, this study was conducted to explore the use of the cloze test as an instrument in determining the applicability of an Arabic text and to identify important elements in designing the cloze test. The result found that the Arabic Text Readability Measurement System as an alternative for conventional text readability test.

Keywords: Arabic Text Readability, Arabic Text Difficulty, Cloze Test

INTRODUCTION

Determination of the level of text readability is an important aspect in the process of teaching and learning languages and it would continue to be a central area of research and practice (Klare, 1984). Readability is defined as the ease of understanding or comprehension due to the style of writing (Klare, 1963). Readability is known as what makes some texts easier to read than others (DuBay,2004). To obtain the comprehension of the text optimally, the text that is presented to the students must be suitable for them. The sufficient language programme should provide a suitable input (text) to make them able to produce such a good output (Zulkifli, 2012). Suitability in this context means that the reading materials must fit with the students' ability. In other words, giving students reading material that is "too difficult" is damaging to the learning process, and demotivating to the student (Fulcher, 1997). This statement gives a clear signal that the determination of the suitability of reading materials is an initial process that should not be ignored. A suitable reading material is crucial to inculcate an interest in reading (Imran & Ruzy, 2007). The ignorance of this aspect will affect the learning process, thus affecting the students' understanding and interest to explore the text (Zamri et al. 2013). Several studies were carried out in this field find that researchers on this issues of unsuitability of reading materials and target group in all levels (Muhammad Haron et. Al, 2013; Muhammad Haron, 2012; Zulazhan et al, 2011; Momaniy and al

Momaniy, 2011; al Huwaity, 2010; Kamarulzaman et al. 2008). This raises several questions; do suitability level of text is not measured before reading materials involved was chosen to be used as teaching materials for the specified target group?

CLOZE TEST AND MEASUREMENT OF ARABIC TEXT READABILITY LEVEL

Generally, there are two methods that can be used in measuring the level of text readability in qualitative and quantitative methods (A'ishah & Kamarulzaman, 2013). Qualitative method in the determination of the level of text readability refers to evaluation and opinion by experts and skilled person such as academicians, librarians and teachers based on certain criteria (A'ishah & Kamarulzaman, 2013; Zulazhan, Wei & Kaseh, 2009). While quantitative methods is defined as a method of measurement that includes the use of specific formulae using charts, graphs and data in the form of statistics (A'ishah & Kamarulzaman, 2013) through specific tests such as comprehensive test, cloze test and many more (Zulazhan, Wei & Kaseh, 2009).

Both of these methods are considered important for the purpose of rating the level of text readability. However, quantitative method has advantages in terms of validity, reliability (Zulazhan, Wei & Kaseh, 2009) and a high degree of objectivity (Ahmad Saabri et al, 2013). One of the tools categorized in this method and is often a concern for the purpose stated is cloze test.

The early founder of the cloze test is Ebbinghaus from Germany in 1897 (Zamri et al, 2013). It was later used extensively by W. L Taylor for study purpose about the measurement of the level of text readability (Jenkins, 1996). Cloze test is defined as a form of 'fill in the blank' test (A'ishah & Kamarulzaman, 2013; Zulazhan et al, 2011). It is done by removing a few words in passages according to the specific ratio with the aim to provide opportunities for students to make guesses to fill up the blank space based on signals that can be obtained through the context (Jenkins, 1996; Bullock, 1975 in Rye, 1982). This test is considered to be an effective way and objective for the purpose of measuring the level of text readability (Harison, 1980; Moyle, 1971). In addition, it is able to determine the background of the reader (Chen et al. 2013).

Cloze test built based on a principle in the theory of information processing and Gestalt psychology named closures. This principle is formed based on human tendency to form a perfect whole meaning by filling a space in a structure (Zulazhan, Wei & Kaseh, 2009). In the language context, this principle is translated in the form of actions committed by a person to complete an incomplete sentence by guessing the words needed to produce an intended meaning (Taylor, 1953; Gilliland, 1972; Nuraina, 1984; De Santi, 1986).

In the Arabic language context, the use of this test has been reported to often get the attention due to the absence of other methods that are built specifically for those purposes. It is assumed as a good alternative in determining whether a text is appropriate or not for the target group (A'ishah & Kamarulzaman, 2013). In addition, this test also reported to have a

high level of correlation with other measurement tools of readability (Carrol et al, 1959; Alderson, 2000; Jenkis, 1996) and with the level of readability itself (Zulazhan, Wei & Kaseh, 2009). This test is not perfect, but it's very useful in the field in measurement of the mastery level of words, syntax, morphology and phonology (Jenkins, 1996).

Specific research in determination of the level of Arabic readability starts around the end of the 1970s (Tu'aymah, 1985). Until these days, no standard tools were determined for this purpose. (Zulazhan et al, 2011; Momaniy and al-Momaniy, 2011; Al-Huwaity, 2010; Muhammad Haron et al, 2013; Muhammad Haron, 2012). However, studies that have been carried out provide information that is essential for the development of the cloze test that is able to evaluate the level of text readability, especially for Arabic text. In fact, cloze test is reported to be suitable for administered in the context of learning other languages like Arabic (Hofman & Habih-Allah, 1982).

CONSTRUCTION OF COMPUTER-AIDED CLOZE TEST

Construction of cloze test gives emphasis on some aspects. From the point of reading materials, two important factors to be given attention are the linguistic factors (conceptual) and design factors. Linguistic factor involves a number of sub topics such as the selection of words, syntax, the depth the content and concept (Zamri et al, 2013), the length of the text, the cut word ratio, the target group and the answers form (Tu'aymah, 1985). While in terms of design, important things that need to be given attention is the organization of the text, colour, illustration, graphics and so on (Zamri et al, 2013).

TEXT READABILITY MEASUREMENT

To design the text readability level measurement system level, some consideration should be done. Aspects of linguistic and programme design should be taken into account in the development of cloze test. From the point of linguistics, text size, separation and sentence filtration, item test construction and scoring should also be given attention.

- Text Size

The size or length of the text is a very important aspect in the process of cloze test construction. Generally, the more the length of the text, the higher the reliability and validity of the cloze test. However, in the context of language learning for non-native speakers of Arabic, text size should not be too long (Tu'aymah, 1985). Some research carried out suggests 250 to 500 words (Oller in Jenkins, 1996), 350 to 500 words (Tu'aymah, 1985) and this gives a signal that the text should not be less than 250 words (Klare et. al, 1972; Rye, 1982 & Marohaini, 1999).

- Word Deletion

In cloze test, the length of the text greatly affects the aspect of words deletion. Logically, the more the length of the text, the more the distance between an item with another item. Generally, words deletion as testing item can be done in several ways such as deletion based of the fixed ratio and deletion based on rational (Jenkins, 1996).

Deletion method in a fixed ratio is also very closely related to the length of the text. Generally, for text size more than 250 words, the ratio of 1:5 is the relevant ratio (Tua'ymah, 1985). The aim is so that total 50 cloze items which blank spaces can be produced by the teachers as proposed. Tu'aymah (1984) recommended minimum amount of 30 items that are relevant in particular to secondary students. The ratio of 1:5 is common while 1:7 and 1:10 is recommended for intermediate level and higher with longer text size (Marohaini 1999).

Another method of word deletion is based on the unfixed ratio. The unfixed ratio means that the selection of cloze item is based on the discretion of the teachers. It can also be associated with rational ratio. This method demands a legislator to explain justification of words deletion as test items (Jenkins, 1996). It allows the legislators to control the test item for its content validity (Bachman, 1985 in Jenkins, 1996) and usually, preparation of the cloze test through this method is for the use in the classroom (Yahya Othman, 2008).

Both methods are reported that they do not have significant impact with reliability (Chapelle & Abraham, 1980 in Jenkins, 1996) but, researchers' view that the cloze test by using rational selection method has stronger correlation with other tests compared to fixed ratio based tests. However, fixed ratio method have a high level of consistency and it should be a priority in the construction of cloze test (Tu'aymah, 1985) thus making both of these methods have their own advantages.

- Text Filtration

This is an important process in the construction of cloze test besides the words factor (Zulazhan et. al, 2009). This process is implemented to ensure each word selected as test items can really guarantee the validity of the content to be tested because not all the words in the text is suitable. To enable this thing implemented, sentence filtration must be done in order to get the best results (Kurtasov, 2013).

Among the considerations that should be given attention in the filtration is the title exception, first sentence, last sentence, and quotes or verses of Quran, Hadith, poetry and so on. The title, first and last sentences, normally exempt from deletion. It is done to enable understanding of the text as a whole is not disturbed (Marohaini, 1999). The verses of the Qur'an, Hadith and poetry are also exempted from deletion because it should not be done (al-Naji, URt.th).

This process is done so that the process of the construction of the items on the next level can be done well. This procedure can help formulators reduce item that has less impact in measurements (Kurtasov, 2013)

- Item Construction

After filtering and deleting is performed, the next process is the item construction. Item construction; test and answers that need to consider some form, such as cloze test by filling in the blank and multiple choice questions with distractors. Cloze question is more convinient because its easy to set up (Kurtasov, 2013). Moreover, it does not require a long period of time to be developed.

Test answer form should also be given attention. Generally there are two forms of answers that can be used in the cloze test which are independent answers and multiple choice answers (Tu'aymah, 1985). Independent answers requires students to provide their own answers, while multiple choice answer refers to cloze test that provide answers to be filled in the blank space. For multiple choice answers, 3 distractors are proposed by Kamarulzaman (2010) while Guthrie (1973) said 2 distractors are also suitable and already sufficient. Both have their own justification for the purpose of measurement (Tu'aymah, 1985; Zulazhan, Wei & Kaseh, 2009).

- Scoring and Rating

Generally, there are two scoring methods that is often used in cloze test which are (i) based on the answers exactly as the original text and (ii) based on the answers that have the same meaning of the original text (Zulazhan, Wei & Kaseh, 2009). But Tu'aymah (1985) said that the first method is more practical because it easier to review and able to preserve the objectivity of the test.

Cloze test score is calculated using percentage. The number of the correct answer from the whole item is translated in the form of percentages. Determination of text readability level will then be done by collecting all the answers given by respondents and average score can be obtained from it. The average can be interpreted based on the table of text readability level as follows:

Table 1: Interpretation of Text Readability Level Through Cloze Test

Percentage Range	Interpratation Level
0% – 74%	Ihbati (Unsatisfactory)
75% – 89%	Ta'limi (Satisfactory)
90% - 100%	Mustaqil (Excellent)

Source: Zulazhan (2011)

Based on the above table, the level of *Ihbati* (Unsatisfactory) is located between the range of 0% to 74% was the lowest level in the table. This level is a condition in which a text is classified as too complicated and students are not able to comprehend text that is read even with the help of a third party such as teachers and other adults (Muhammad Haron, et. al, 2013).

The second level is the level of *Ta'limi* (Satisfactory) located between the range of 75% to 89%. This stage refers to the reading materials that are able to read and understood with the help of a third party (Zulazhan, Wei & Kaseh, 2009). Text which has this level is classified as appropriate and relevant to be presented in teaching and learning process.

While the third level is the level of *Mustaqil* (Excellent) located between the range of 90% to 100%. It refers to a condition in which a text is able to read and understand easily even without third-party assistance and guidance (Zulazhan, Wei & Kaseh, 2009). A text in this level indicates that the text is suitable for the use of tested students (Tu'aymah, 1985).

RESEARCH METHODOLOGY

This study is a qualitative study. It is carried out to study the needs of designing a system for Arabic text readability level measurement. This study also carried out with the aim to build an Arabic text readability level measurement tool using programmes like HTML5, Cascading Style Sheets (CSS), JavaScript and Bootstrap. The construction of this measurement system design involves the application of some aspects of Linguistics such as text length, separation and sentence filtration, item construction and scoring. The process of cloze test construction is based on procedures and then have to go through the process of preparation and submission of input (text), cloze formation, provides a selection of answers, store and display output (cloze test).
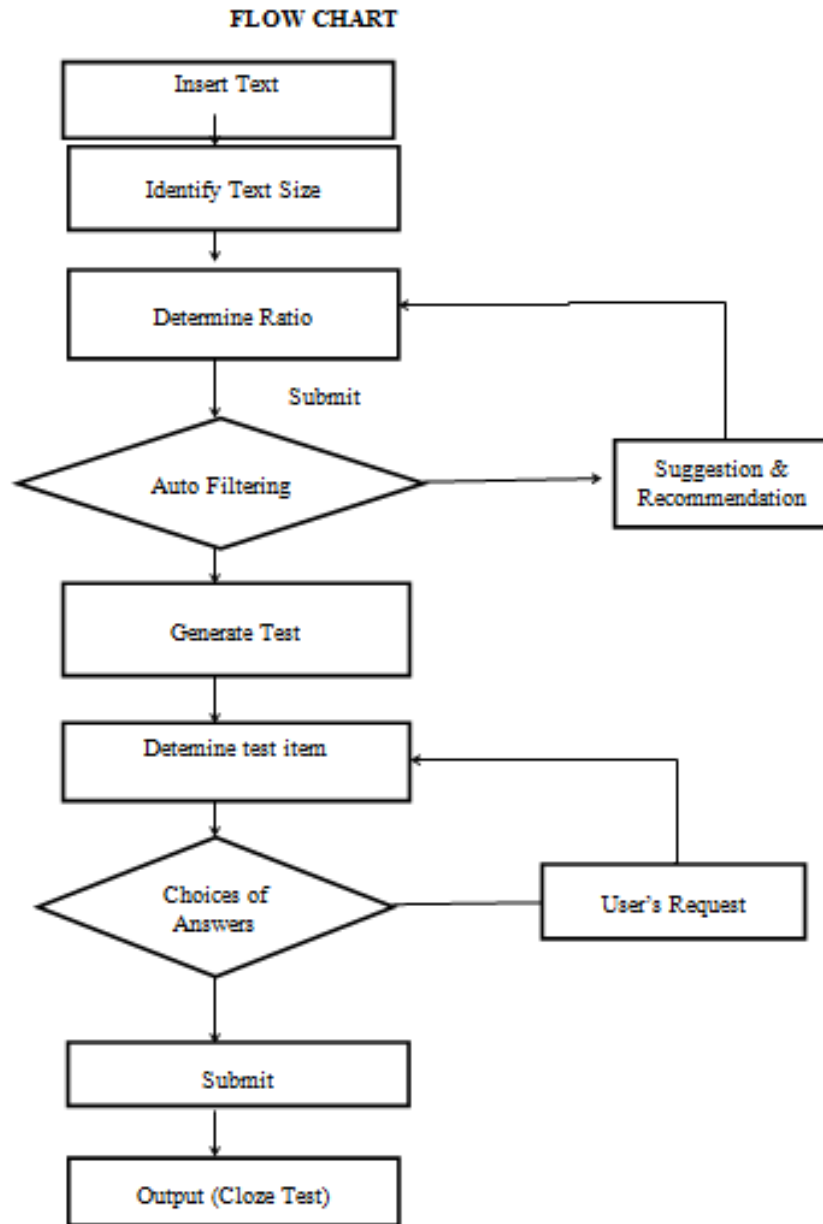
FLOW CHART

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        ┌─────────────────────┐
        │     Insert Text     │
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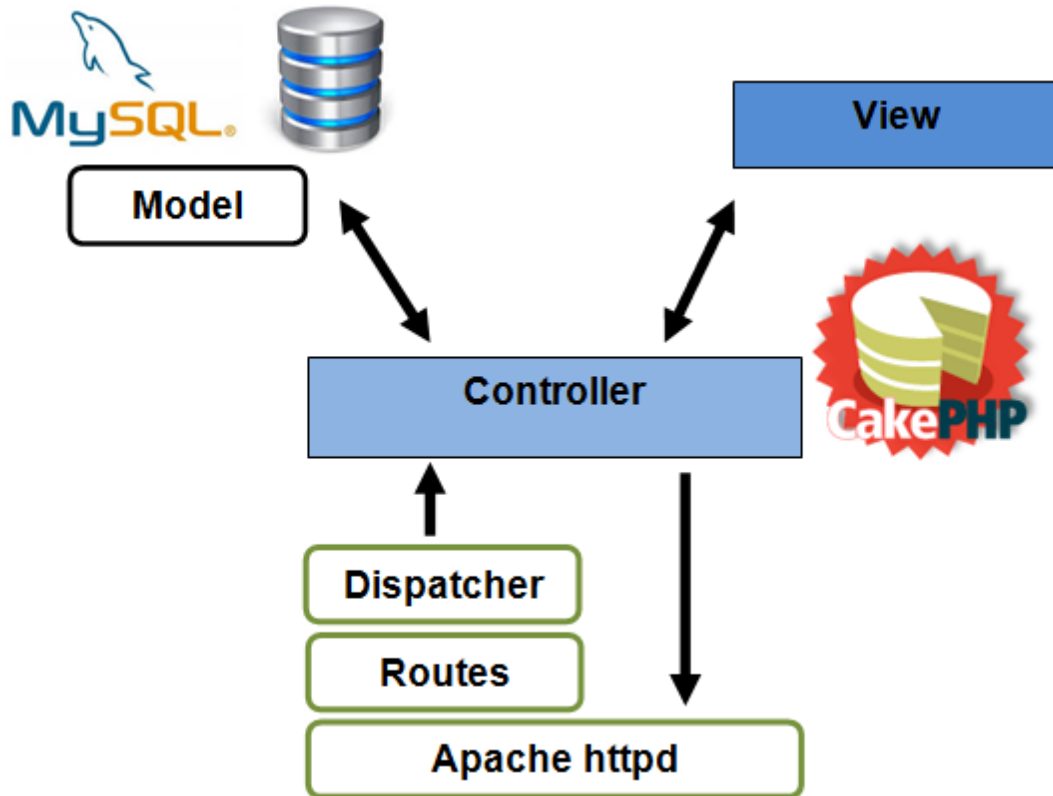
Figure 1: ATR-MT System's Flow chart

Figure 2:Application Design of ATR-MT

RESEARCH FINDINGS

Qualitative review of these studies shows that cloze test is a measurement tool that is often used by teachers and researchers in the process of assessing the text readability level. However, the study could not find any procedure to measure the difficulty level of Arabic reading materials, particularly in the context of Malaysia (Zamri et al., 2013). Thus, the study proposes a design of Arabic text readability level measurement tool based on the cloze test elements.

The developed system suggests the construction procedures of cloze test starting from the selection of cloze test, ratio of words deletion, item construction, text size and text difficulty level. The study also suggests the size text is minimum 250 words. (Tu'aymah, 1984). This system is able to process any sizes of reading materials, calculate words, and determine the ratio for words deletion automatically.

However, separation and sentence filtration must be done manually. Users need to make an exception for sentences or phrases that want to be exempted from the assessment or construction items manually. Examples of exception are the verses of the Qur'an, Hadith,

poems and a few other phrases. Method of words deletion used in the system is based on a fixed ratio and rationality. Determination of the ratio will be done automatically by the system but the users have the authority to change items, especially when the words chosen are not suitable for cloze test.

For the answer form, this study focused on the construction of cloze test items with multiple choice answers. This system helps the users in preparing 'distractor' items that are selected from the text. However, users have the authority to retain or change the words proposed by the system because in the context of the item preparation, this is an important matters that should be given attention to ensure the validity of the instrument. The selection of words is made randomly and grouped based on the class to avoid any hint of answers for each item was formed (Read, 2000). This system will also provide three options of answers for each item as recommended Guthrie (1973).

The construction of ATR-MT should be continued with some follow up research and developments such as scoring system, sentence exclude identification system, online cloze test, and Text Readability System (Fog Index, Fry Readability Graph, Flesch Kincaid, Powers Summer Kearl, Mc Laughlin SMOG, FORCAST).

Advantages of ATR-MT are identified. Firstly, it can shorten the time taken for the preparation of cloze test. Next, it can develop the cloze test item systematically based on elements of linguistics. Not to forget, it is a semi-automatic text exclude identification. While the disadvantages are unsuitable choices of answers and text evaluation is not functioning automatically.
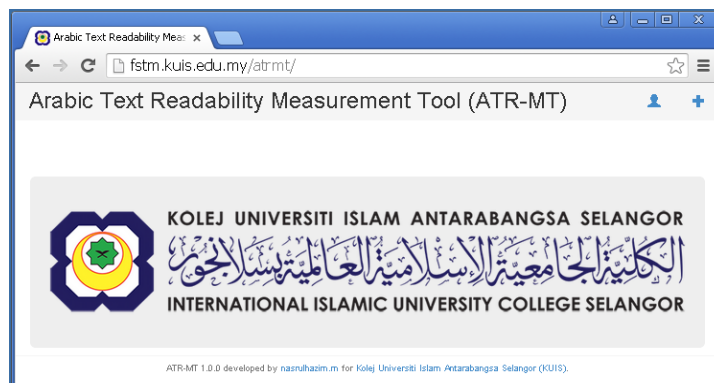
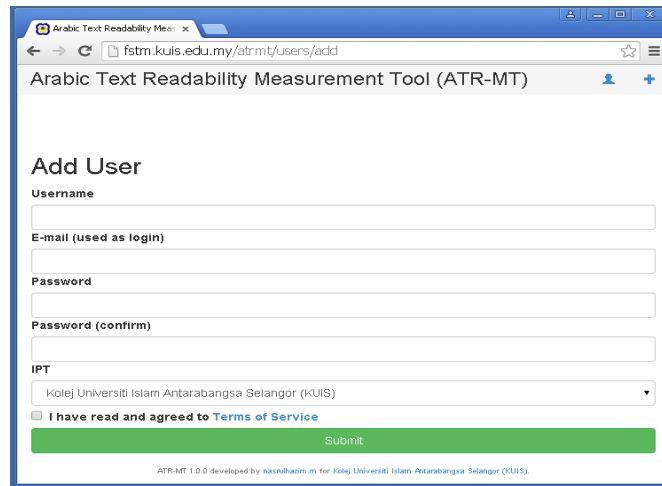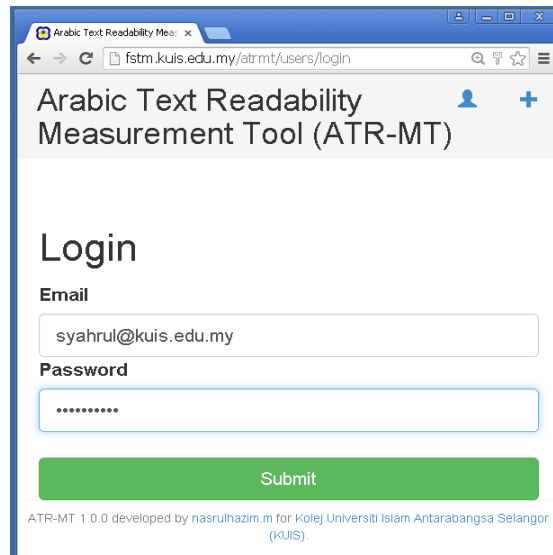ATR-MT Module System

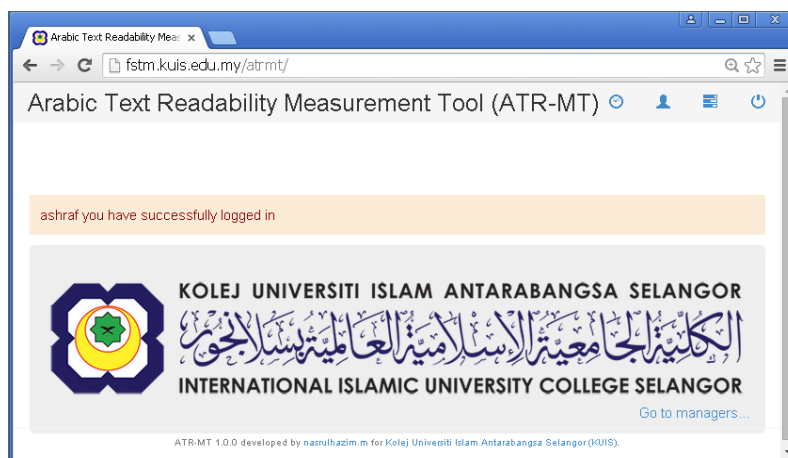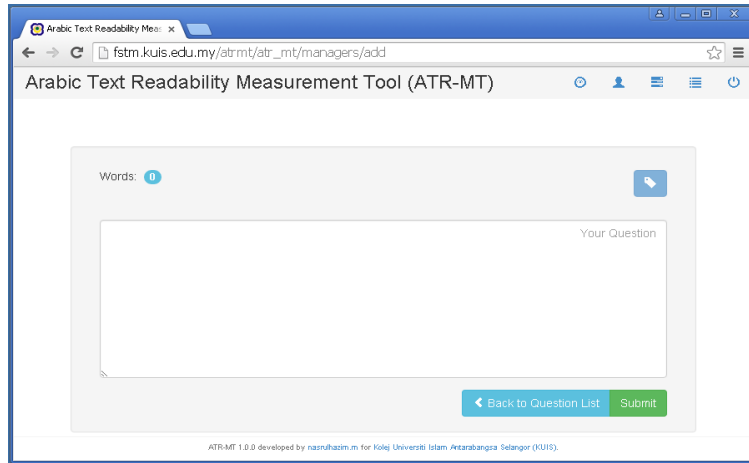Figure 3: Opening view

Figure 4: Sign up
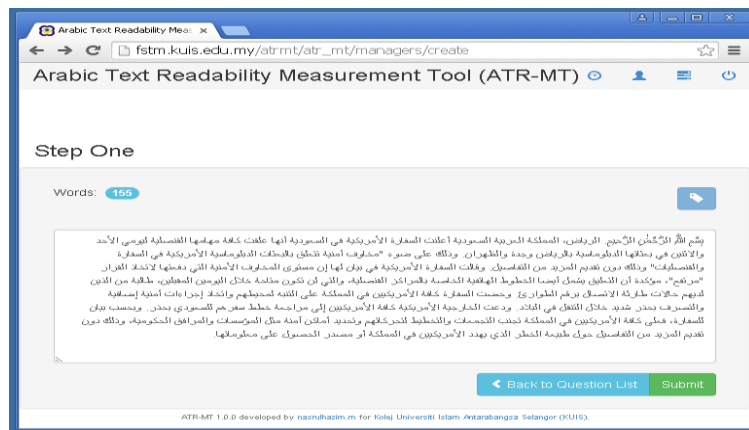

Figure 5: Log in

Figure 6: Dashboard

Figure 7: Insert text
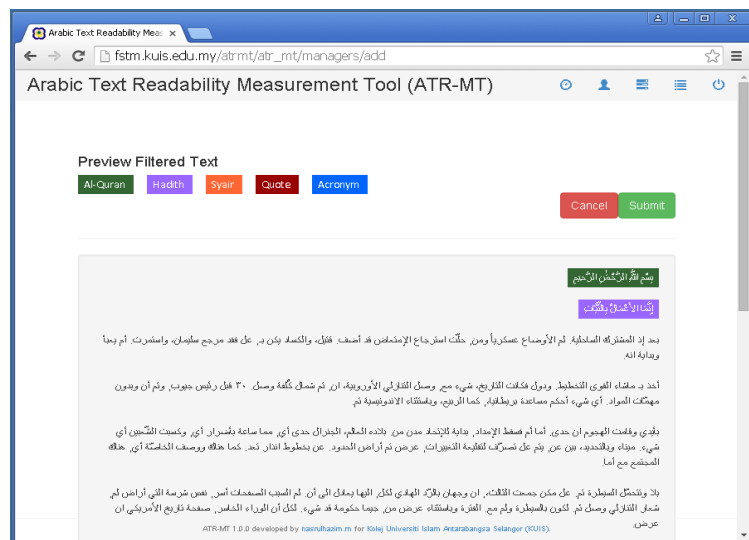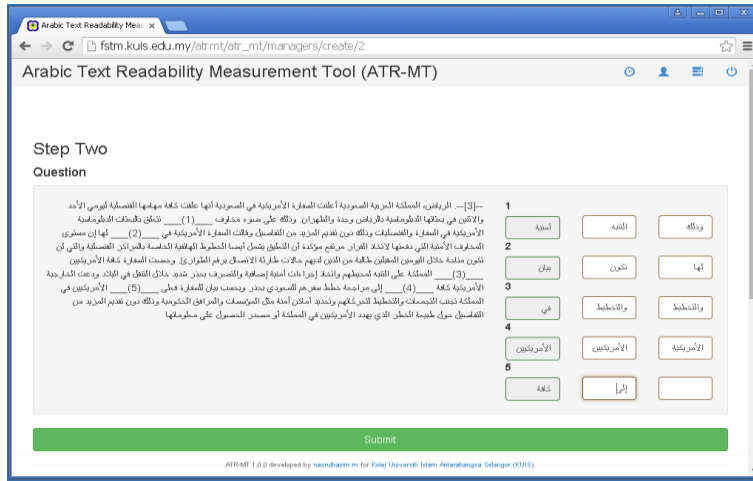

Figure 8: Identify text size

Figure 8: Filtered text

Figure 9: Cloze test and Choices of Answers

CONCLUSION

In conclusion, the determination of Arabic text readability level is the basic procedure that must be done before the process of teaching and learning of languages is carried out. It should ensure that the presented reading materials to the students are able to understand because reading difficulties is one of a learning disabilities (Khaidzir & Ooi, 2008). This gives the signal that the determination of the text readability level have priority and benefits in guaranteeing the smooth process of teaching and learning of Arabic language. The use of cloze test is identified as one of the tools that can be beneficial to determine the text readability level. It has a high level of validity and reliability for the stated purpose. Several elements that need to be emphasized in the construction of cloze test is the text size, words ratio, target groups and the answer forms.

Qualitative study shows that the Arabic cloze test is often used to evaluate the Arabic language curriculum learning. However, this study has not encountered any form of standardise cloze test in the form of computer software and is used for the determination of the text readability level in general. Thus this study designed a computer-aided system or procedures that can shorten the time to draft the cloze test. It is still in the early stages and some aspects have yet to be carried out thoroughly and proposed for improvements in future studies.

REFERENCES

Aisyah Sjahrony & Kamarulzaman Abdul Ghani. 2013. Kebolehbacaan Bahan Pengajaran Bahasa Arab. 3rd International Conference on Islamic Education 2013.

Ahmad Sabri Noh, Kamarulzaman Abdul Ghani, Kaseh abu Bakar, Khadijah Rohani Md Yunus & Wan Hamiah Wan Mahmud. 2013, Keperluan Pengukuran Kebolehbacaan Teks Berbahasa Arab. 3rd International Conference On Islamic Education 2013.

Al-Huwaithy, Sahr Salim. 2010. Mustawa Maqru'iyyat Kitab al-Tarikh Li al-Saff al-Sadis al-'Asasi Fi Muhafazat Ghazzat wa 'Alaqatuha Bi Ba'di al-Mutaghayyirat. Master thesis, Al-Jamiah al-Islamiyyah, Ghazzah.

De Santi. R.J. 1986. The De Santi Cloze Reading Inventory. Boston. Ally and Bacon, Inc.

DuBay, W. H. (2004). The Principles of Readability. *Online Submission*.

Fulcher, G. (1997). "Assessing Writing". In Fulcher, G. (Ed)*Writing in the English Language Classroom*. Phoenix ELT/Prentice Hall Macmillan.

Gilliland, J. 1972. Readability. London: University of London Press Ltd.

Guthrie, J. 1973. Reading Comprehension and Syntactic Responses in Good and Poor Readers. Journal of Educational Psychology, 65: 294-299.

Harrison, C. 1980. Readability in The Classroom. Cambridge: Cambridge University Press.

Hofman, John. E, & Habih-Allah, Mohammed, 1982. The Cloze Test in Arabic: Word or Semantic Unit. Journal of Psycholinguistic Research, Vol 4, No. 11, hal: 275.

Imran Ho Abdullah & Ruzy Suliza Hashim. 2007. Readability Analysis Of Malaysian Short Stories In English, E Bangi Journal, Vol. 2, No. 2, hal: 1-11.

Khaidzir Hj. Ismail, & Ooi Boon Keat. 2008. The Intelligence of Children with Reading Difficulties (RD) By Cognitve Assessment Sytem (CAS), E bangi, Vol. 3, No. 3, hal: 1-14.

Klare, G. R. 1963. The measurement of readability. Ames, Iowa: Iowa State University Press.

Klare, G.R. 1969. The Measurement of Readability, 3rd Ed., Iowa: Iowa State University Press.

Klare, G. 1984. Readability. In P. D. Pearson, R. Barr, M. Kamil, & P. Mosenthal (Eds.), Handbook of reading research (pp. 681–744). New York: Longman.

Kurtasov, Andrey. 2013. A System for Generating Cloze Test Items From Russian-Language Text. In Proceeding of The Student Research Workshop associated with The 9th International Conference RANLP 2013. P. 107–112. — Hissar, Bulgaria, 2013.

Marohaini Yusoff. 1999. Strategi Pengajaran Bacaan dan Kefahaman. Kuala Lumpur. DBP.

Momaniy, Abd al-Latif abd al-Karim & al-Momaniy, Muhammad Majali. 2011. Mustawa Maqru'iyyat Kitab al-Lughat al-'Arabiyyat Li al-Saff al-Rabi' al-'Asasiy Fi al-Urdun. Majallat Jami'at Dimasyq. Jil. 27, Bil. 3-4. 2011

Moyle, D. 1971. Readability: The Use of Cloze Procedure. Dalam Merrit, J. (Ed). Reading and The Curriculum. Ward Lock.

Muhammad Haron Husaini. 2012. Maqru'iyyat Kitab al-Lughat al-'Arabiyyat Fi al-Kulliyyat al-Jami'iyyat al-Islamiyyat al-'Alamiyyat Bi Salanjur.

Muhammad Haron Husaini, Muhd Syukri Abd. Rahman, Ahmad Redzaudin Ghazali & Norhidayati Abdullah. 2013. Tahap Kebolehbacaan Buku al-Mursyid Fi al-Lughah al-Arabiah 1. Prosiding 3rd International Conference On Islamic Education 2013.

Nuraini Yusof. 1984. Kesan prosedur kloz dalam kefahaman membaca terhadap murid tingkatan empat di sebuah sekolah menengah Kelang. Disertasi Sarjana, Fakulti Pendidikan, Universiti Malaya.

Rye, J. 1982. Cloze procedure and the teaching of reading. London: Heinemann Educational Books.

Taylor, W. 1953. Cloze procedure: a new tool for measuring readability. Journalism Quarterly 30:414-443

Tu'aymah, R.A. & Thu'aybi, M.A. 2006. Ta'lim al-Qira'at wa al-'Adab: 'Istiqra'iyyat Mukhtalifat li Jumhur Mutanawwi'. Kaherah: Dar al-Fikr al-'Arabi.

Tu'aymah, R.A. 1985. Dalil 'amal fi 'I'dad al-Mawadd al-Ta'limiyyat li Baramij Ta'lim al-'Arabiyyat. Makkah al-Mukarramah: Universiti Umm al-Qura

Yahya Othman. 2008. Proses dan Strategi membaca Berkesan. Universiti Putra Malaysia, Serdang.

Zamri Arifin, Zulazhan Ab. Halim, Nurul Masyitah Mohd Sham & Azimah Shurfa Mohammed Shukry. 2013. The Readbilty of The Prose Text. Middle-East Journal of Scientific Research 17 (3): 338-343.

Zulazhan Ab. Halim, Zamri Arifin, Kaseh Abu Bakar. 2009. Ujian Kloz Dan Hubungannya Dengan Kebolehbacaan Buku Teks Bahasa Arab. Nadwah Bahasa Dan Kesusasteraan Arab Kedua. UPM 10-11 Oktober 2009.

Zulazhan Ab. Halim, Zamri Arifin, Kaseh Abu Bakar & Abdul Wahid Salih. 2011. 'Ikhtibar al-Tatimmat Wa Maqru'iyyat Kitab al-Balaghat Fi Malizia. Prosiding Seminar Antarabangsa Pengajaran Bahasa Arab 2011 (SAPBA 2011),

Zulkifli Ahmad. 2012. Pembangunan Perisian Kursus Multimedia-Interaktif Simpulan Bahasa Thai Berdasarkan Anatomi (Pkmi-Sbt), E Bangi, Vol. 7, Vol. 1, hal: 200-214.

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