

Validity and Reliability of Generalized Anxiety Disorder-7 (GAD-7) Instrument Among Students in Malaysia

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Abstract – This research aims to assess validity and reliability of Generalized Anxiety Disorder-7 (GAD-7) in Malay version within students. The scale was translated from GAD-7, developed by Spitzer et. al (2006). GAD-7 has been used to measure the symptoms of anxiety in line with the characters in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR). Seven experts evaluated this instrument before it was distributed to the respondents. Subsequently, a pilot study involving 327 students aged 16 and 17 in two states in Malaysia, namely Negeri Sembilan and Selangor, was conducted to obtain the reliability value of the study instrument using Statistical Package for Social Science (SPSS) version 26.0. The results showed that GAD-7 has a high content validity index (CVI) based on expert assessors, which is 0.90. The study findings also show that GAD-7 has a high-reliability value, with Cronbach's Alpha value of $\alpha=0.87$. In conclusion, the Malay version of the GAD-7 instrument can be used to identify anxiety among school students because it high validity and reliability values.

Keywords – GAD-7, Anxiety, Students, Validity, Reliability

I. INTRODUCTION

All countries in the world show an increasing rate of mental health disorders (World Mental Health Organization, 2022). Recently, on average, one in eight people in the world has experienced mental health disorders, and the most common disorders are anxiety and depression (World Mental Health Organization, 2022). Recent statistics show that anxiety disorder is the highest mental disorder in the world, affecting 301 million people in 2019, and on average, 4% of the world's population experiences anxiety disorders (World Mental Health Organization, 2023).

In Malaysia, statistics on mental health issues also show an increase, especially among children and teenagers. The 2019 National Survey of Health and Mobility report found that a total of 424,000 children in Malaysia suffer from mental health disorders (Public Health Institute, 2020). This finding is reinforced by the 2022 National Survey of Health and Morbidity report, which found that one in eight teenagers in Malaysia had

thought about suicide while one in 10 teenagers had tried to commit suicide (Public Health Institute, 2022).

Realizing that mental health issues among teenagers are increasingly worrying, the Malaysian Ministry of Education has taken proactive steps through directives in KPM.600-17/1/22 JLD.6 (34) dated 16 October 2022, which obliges all educational institutions under the Ministry of Malaysian Education is required to implement Healthy Mind Screening using instruments such as the student's emotional needs checklist, Patient Health Questionnaire (PHQ-9) and General Anxiety Disorder (GAD-7) (Ministry of Education Malaysia, 2022). This screening aims to identify students experiencing emotional, psychological, and mental problems after the COVID-19 pandemic and enable students to get early help from Guidance and Counselling Teachers (Ministry of Education Malaysia, 2022).

One of the questionnaires used in the Healthy Mind Screening is Generalized Anxiety Disorder-7 (GAD-7) (Ministry of Education Malaysia, 2022). Generalized Anxiety Disorder (GAD) is excessive worry about an event or activity. Individuals diagnosed with General Anxiety Disorder face difficulties in controlling their anxiety and will remain in a state of anxiety until it disturbs their attention (Cotiga et al., 2023). Meanwhile, Generalized Anxiety Disorder-7 (GAD-7) is a set of questionnaires developed to measure the degree of anxiety disorder in a person (Spitzer et al., 2006). The results of the study developed initially by Spitzer, Kronke, Williams, and Low on 2740 adult patients in health clinics in the United States found that GAD-7 has a high-reliability value, which is Cronbach's Alpha value $\alpha=0.92$ (Spritzer et al., 2006).

GAD-7 is a very popular questionnaire in mental health because the number of items in GAD-7 is few, and it is easy to use (Budikayanti et al., 2019). GAD-7 is simple and compact, GAD-7 has been translated into various languages around the world such as South Africa (Kigozi et al., 2019; Marlow et al., 2023), Hong Kong (Ip et al., 2022), Norway (Brattmyr et al., 2022), China (Gong et al., 2022; Zhang et al., 2021), Taiwan (Shih et al., 2022), Utopia (Manzar et al., 2021), Bangladesh (Dhira et al., 2021), Columbia (Monterrosa-Blanco et al., 2021), America (Byrd-Bredbenner et al., 2021; Zhong et al., 2015), United Kingdom (Shah et al., 2021), Iran (Fattah et al., 2021), Kenya (Nyongesa et al., 2020), Norway (Johnson et al., 2019), Indonesia (Budikayanti et al., 2019; Idiani et al., 2022), Iran (Omani-Samani et al., 2018), Portugal (Bártolo et al., 2017; Sousa et al., 2015), Singapore (Lam et al., 2017), Korea (Seo et al., 2014), Turkey (Konkan et al., 2013), Spain (Galindo-Vázquez et al., 2023; Martínez -Vázquez et al., 2022), Latvia (Vrublevska et al., 2022), India (De Man et al., 2021), Saudi Arabia (Manzar et al., 2021) and England (Stochl et al., 2020). However, in order to use the GAD-7 to

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measure the level of anxiety among school students in Malaysia, validity and reliability testing should be conducted first on this instrument.

II. PROBLEM STATEMENT

The researcher found that there were several past studies in Malaysia that successfully translated the GAD-7 into Malay using the back-to-back translation method. However, from the analysis of literature conducted, the researcher found that studies on the use of the GAD-7 instrument in Malaysia only focused on its use among adults aged 18 and above. For example, Sherina et al. (2012) studied the use of the GAD-7 among women receiving treatment at health clinics, while Sy-Cherng Woon (2020) examined the use of the GAD-7 among elderly individuals aged 60 and above. Pheh et al. (2023) studied the use of the GAD-7 among university students aged 18 and above. Therefore, the researcher found a research gap regarding the use of the GAD-7 instrument among school students in Malaysia, which has not been conducted yet. Meanwhile, outside the country, several researchers have successfully demonstrated that the GAD-7 has high reliability when administered to school students, such as studies in Hong Kong (Ip et al., 2022), Portugal (Bártolo et al., 2017), Latvia (Vrublevska et al., 2022), and Africa (Marlow et al., 2023).

Furthermore, previous instrument development studies on the GAD-7 in Malaysia did not outline a clear formula for obtaining the instrument's validity score. Although many early studies outlined methods to obtain Cronbach's Alpha reliability scores, the researcher found that few instrument development studies explained the formula for obtaining the validity score of an instrument. According to Ramlee et al. (2021), the validity process is crucial for assessing the accuracy of words and sentences in each item. Moreover, Omarsdottir et al. (2023) emphasized that when there are changes to the study subjects, there is a need to re-establish the validity of an instrument. This is because any changes to words or phrases in items should be reassessed for validity by expert panels, and cognitive interviews should be conducted to ensure that respondents truly understand the meaning of each item stated. Therefore, this study will explain the formula for obtaining the validity score of the instrument using the Item Content Validation (I-CVI) and Item Content Validation (I-CVI) formula (Polit & Beck, 2006).

III. LITERATURE REVIEW

Referring to past literature studies, the researcher has analyzed using the Systematic Literature Review (SLR) method. According to Hayrol Azril et al. (2021), systematic literature review aims to comprehensively search for and synthesize relevant studies using a structured, transparent design that allows procedures in past studies to serve as guidelines in every step and process of the current study. In conducting this SLR method, Hayrol Azril et al. (2021) suggest using the PICo Mnemonic method, which refers to P (Population or Problem), i (Interest), and Co (Context). In this study, the

researcher will undertake three processes: Identification, Screening, and Eligibility. Through the identification process, the researcher uses several keywords such as validity and reliability of GAD-7, and subsequently, the researcher has utilized screening techniques in databases such as Scopus, Research gate, Google Scholar, and ProQuest.

TABLE I: SYSTEMATIC LITERATURE REVIEW (SLR) ANALYSIS OF GAD-7 RELIABILITY VALUE WHICH HAS BEEN TRANSLATED INTO VARIOUS LANGUAGES AROUND THE WORLD

Researchers	Country	N (n)	Sample	Age	(α)	SD
Marlow et. al (2023)	South Africa	302	Students	10-19	.78	5.05
Galindo-Vazques et. al (2023)	Spain	163	Cancer patients	19-79	.89	5.69
Omarsdottir et. al (2023)	Iceland	226	Anxiety patients	18-65	.89	4.78
Cotiga et. al (2023)	Romania	747	Hospital patients	14-65	.92	5.68
Pheh et. al (2023)	Malaysia	1,272	University student	18-22	.76	3.69
Shih et. al (2022)	Taiwan	107	Hospital patients	20-62	.93	-n/a
Indiani (2022)	Indonesia	1,020	Ministry of Health	20-60	.88	11.4
Gong et. al (2022)	China	30,823	Patients with early labour symptoms	20-50	.89	3.99
Vrubleska (2022)	Latvia	1459	Healthcare clinic patients	18-65	.87	5.1
Martinez-Vazquez (2022)	Spain	170	University students	21-24	.90	7.03
Brattmyr et. al (2022)	Norway	831	Psychiatric clinic patients	18-72	.81	9.99
De man et. al (2021)	India	1,209	Diabetic patients	30-60	.76	7.5
Manzar et. al (2021)	Saudi Arabia	270	University students	18-20	.81	-n/a
Byrd-Bredbenner (2021)	America	4,128	University Students	18-26	.85	5.80
Shah et. al (2021)	United Kingdom	127	Hospital patients	18-29	.74	5.4

Cronbach's Alpha value $\alpha \geq .50$

Table 1 illustrates the analysis of the Systematic Literature Review (SLR) of the reliability of GAD-7 translated into various languages worldwide. Initially, a total of 45 articles were identified, but the reviewers made assessments to select only the most recent 15 articles related to the validity and reliability of GAD-7. The reviewers found that GAD-7 has a high reliability Cronbach's Alpha range of values between .74 and .93.

IV. METHOD

Participation

This study randomly selected 327 high school students in Negeri Sembilan and Selangor Malaysia as a case study. According to In (2017), 30 study samples are

sufficient for a pilot study. However, it is suggested that a total of 50 study subjects be taken to avoid the issue of withdrawal of study subjects. Data was collected using the GAD-7 questionnaire distributed face-to-face in their schools. Data was collected on January 5, 2024, in Negeri Sembilan, while on January 17, 2024, in Selangor.

Research Instrument

The Generalized Anxiety Disorder-7 (GAD-7) questionnaire was developed by Spitzer, Kroenke, Williams, and Lowe in 2006. Initially, the GAD-7 contained 13 items that refer to anxiety symptoms, such as the criteria listed in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (Spitzer et al., 2006). However, after this questionnaire was distributed to 1184 patients and correlated with the Beck Depression Inventory (BDI), only seven items were retained from the original 13 items because only these seven items have high validity and reliability coefficients. In addition, these seven items are easy to understand and suitable for use on various study populations, not only suitable for a specific population (Spitzer et al., 2006).

TABLE II: ITEMS IN GENERALIZED ANXIETY DISORDER-7 (GAD-7)

Item	Item GAD-7	Anxiety criteria according to DSM-IV-TR
1	How often do you feel restless, anxious, edge? Berapa kerap anda rasa resah, gelisah atau tegang?	Anxiety
2	How often you not being to stop or control worrying? Berapa kerap anda tidak dapat mengawal kebimbangan?	Unable to stop worrying
3	How often do you worrying too much about different things? Berapa kerap anda terlalu risau mengenai pelbagai perkara dalam hidup?	Excessive anxiety
4	How often do you have been trouble relaxing? Berapa kerap anda rasa sukar untuk bertenang?	Feeling restless
5	How often are you being so restless that it is hard to sit still? Berapa kerap anda terlalu resah gelisah sehingga anda rasa sukar untuk duduk diam?	It is hard to keep calm
6	How often do you becoming easily annoyed or irritable? Berapa kerap anda rasa cepat marah dan rasa kesal?	Easy to rinse
7	How often do you feeling afraid as if something awful might happen? Berapa kerap anda rasa terlalu risau kemungkinan sesuatu yang buruk akan terjadi?	The fear that something terrible will happen

Adapted from Spitzer et. al (2006)

Table 2 shows the items in GAD-7. The items developed in GAD-7 refer to several criteria in the DSM-IV-TR manual, which are 1) anxiety, 2) inability to stop worrying about oneself, 3) excessive worry, 4) feeling restless, 5) difficulty in calming down, 6) easy to feel rims 7) fear, that something terrible will happen. Study subjects will be asked how often they felt bothered by

each of the seven symptoms of anxiety in the past two weeks (Gong et al., 2023).

TABLE III: FOUR LIKERT SCALE SCORE

Statement	Score
Never	0
A few days	1
More than a week	2
Almost everyday	3

Table 3 shows the 4-point Likert scale evaluation score used. This questionnaire uses a four-point Likert scale, which is 0,1,2 and 3. Four categories are represented for each score, which is 0: never, score 1: a few days, score 3: more than a week, and score 4: almost every day.

TABLE IV: THE LEVEL OF ANXIETY ACCORDING TO THE TOTAL SCORE

Statement	Score
Minimal concern	0-4
Moderate anxiety	5-9
High anxiety	10-14
Severe anxiety	15-21

Table 4 shows the level of anxiety according to the total score. The total score is calculated by adding all the scores obtained for each item answered. The range of scores obtained is 0 to 21. Scores can be categorized into four levels, namely 0-4 (minimal anxiety), 5-9 (moderate anxiety), 10-14 (high anxiety), and scores 15-21 (severe anxiety) (Pheh et. al 2023).

Ethics

Before this questionnaire was distributed, the researcher underwent the Human Research Ethics Online Workshop (RMIC) Series 3/2023 course organized by Sultan Idris University of Education and conducted on 19 September 2023 for four hours. Next, the researcher obtained permission in advance from the Malaysian Ministry of Education through the Educational Research Application System (ERAS) on the website <https://eras.moe.gov.my> before distributing the questionnaire to school students. The online application form was completed on 27 September 2023, and the researcher received a conditional letter of permission to conduct the study on 10 October 2023 through a reference letter [Ref: KPM.600-3/2/3-eras (17685)].

Statistical Testing

Descriptive statistics will be presented as percentages, mean \pm , and standard deviation. The researcher used the IBM Statistical Package for the Social Science (SPSS, Version 26) to analysis Cronbach's Alpha data.

Validity of the GAD-7

The content validity of the GAD-7 will be assessed by a seven-expert panel consisting of academics

with over ten years of expertise in the field of mental health, experts in the construction of psychometric instruments, and teachers who are experts in guidance and counselling (Guru Cemerlang). Based on their suggestions and views, some words in each item will be refined and modified according to the cognitive level of school students. This is because the GAD-7 was initially developed to assess the level of anxiety among adults aged 18 to 95 years only. Through this content validity process, we will ensure that the objective of this study is achieved.

Reliability of the GAD-7

The following process is that the items in GAD-7 will be evaluated by Cronbach's Alpha reliability coefficient. A value ≥ 0.7 is an acceptable reliability value, while a value below ≤ 0.5 indicates an unacceptable level of correlation.

V. FINDINGS

Instrument validity

A panel of seven experts evaluated the content validity of this questionnaire instrument. According to Muhamad Saiful Bahri (2019), to obtain content validity from a panel of experts, the number of panels that are often suggested is a total of six people. The selection of the proposed panel should have experience in the field being studied, involving six to 10 but at most ten panelists. In this study, a total of seven expert panels with over ten years of experience were appointed consisting of a lecturer in the field of mental health from Universiti Pendidikan Sultan Idris (UPSI), an outstanding lecturer (Guidance and counselling) from the Aminuddin Baki Institute (IAB), an officer of the Psychology and Counselling Division (BPSK), Ministry of Education Malaysia and four Outstanding Teachers (Guidance and Counselling). The selection of this panel of experts is intended to assess the extent to which the items in the instrument are appropriate in terms of language, content, and format. Further, the researcher has modified each item in the GAD-7 instrument according to the recommendations and views of the expert panel, assisted by the evaluation of the supervising lecturer. Long sentences in items.

These have been summarized, and examples in sentences that do not fit modern life have been modified but retain the same meaning. All seven items are still maintained as the original items. In order to determine the validity value from the expert panel, the Content Validation Index (CVI) formula was used, taking into account the average appropriateness of the experts' evaluations. There are two phases to get the CVI value. First, the researcher used the Item Content Validation Index (I-CVI) formula.

After that, the researcher used the Content Validation Index (CVI) formula to determine the overall validity value. Each expert panel was given a complete set of questionnaires containing the background of the questionnaire, research objectives, and a validity

assessment form. The expert panel was asked to rate each item using a 10-point Likert scale, ranging from 1 (very low) to 10 (very high).

The evaluation score for each item was added and then divided by the total score value to obtain the I-CVI value. Further, the amount of I-CVI obtained from each expert panel is added and divided by the number of appointed experts. The following is the formula to obtain the CVI value (Polit & Beck, 2006):

$$\text{Item Content Validation (I-CVI)} = \frac{\text{The total score of each expert}}{\text{The total score}}$$

$$\text{Content Validation Indeks (CVI)} = \frac{\text{The total score of each expert}}{\text{The total score}}$$

SCORES GIVEN BY EACH EXPERT PANEL

Item	Panel 1	Panel 2	Panel 3	Panel 4	Panel 5	Panel 6	Panel 7
GAD 1	9	8	10	9	9	9	8
GAD 2	9	8	10	9	8	9	10
GAD 3	9	10	10	9	9	9	8
GAD 4	9	7	10	7	10	9	8
GAD 5	9	9	10	9	8	9	10
GAD 6	9	7	10	4	7	8	8
GAD 7	9	9	10	9	9	9	10
Total Score	63	58	70	63	60	62	62
Real Score	70	70	70	70	70	70	70
Value I-CVI	0.90	0.83	1.00	0.90	0.86	0.89	0.89

Table 5 shows the GAD-7 content validity assessment scores from each expert panel. As a result of the evaluation of each expert, the I-CVI can be calculated by dividing the total score of each expert by the total actual score. Based on Table 5, the highest overall score given is Panel 3 with a value of 1.0, followed by Panel 1 and Panel 4 with a value of 0.9, Panel 6 and Panel 7 with a value of 0.89, Panel 5 with a value of 0.86 and the lowest score from Panel 2 with a value of 0.83

TABLE 6: CONTENT VALIDITY INDEX RESULTS BASED ON EXPERT PANEL EVALUATION.

	n		I-CVI						
GAD-7	7	1	2	3	4	5	6	7	CVI
		0.90	0.83	1.00	0.9	0.86	0.89	0.89	0.90

Table 6 shows that the average Content Validity Index (I-CVI) of the GAD-7 instrument is 0.90. According to Muhamad Saiful Bahri (2019), content validity is said to have a good validity value of at least 0.83 if six to eight expert panels are involved. Therefore,

it can be concluded that the Malay language version of the GAD-7 instrument has excellent validity and is suitable for measuring the level of anxiety among school students.

Instrument reliability

According to Ramlee et al. (2021), reliability refers to the consistency of an answer or score provided by an instrument despite its being used several times. To ensure that an instrument is stable and can predict and produce accurate and unquestionable findings, reliability analysis should be carried out (Hamidah et al., 2014). In this study, the researcher used the Statistical Package for Social Science (SPSS) version 26.0 to measure item reliability using Cronbach's Alpha. Cronbach's Alpha value can be interpreted as a correlation coefficient with a value ranging from zero (0) to one (1) (Zuriani Hanim & Muhammad Izzat, 2021). The findings of this pilot study can then be compared with the Table of Reliability Values.

TABLE 7 RELIABILITY VALUES AND RELIABILITY LEVELS OF AN INSTRUMENT

Reliability coefficient	Level of reliability
.90 and above	Very good
.80-.89	Good
.60-.79	Medium
.40-.59	Doubtful
.00-.39	Denied

Table 7 shows a table of reliability values and reliability levels of an instrument. According to Sidek (2005), the value of the reliability coefficient of a measurement tool that is considered acceptable is above .60, while the value of the reliability coefficient of a high measurement tool is 0.90. In this study, the reliability value will be evaluated using Cronbach's Alpha value. According to Ramlee et al. (2021), the minimum value of .65 is sufficient, but if Cronbach's Alpha value exceeds .70, it is better.

TABLE 8: RELIABILITY TEST ANALYSIS AND CORRELATION COEFFICIENT VALUES BETWEEN GAD-7 ITEMS

Bil	Item	Value of correlation coefficient between items	Alfa Cronbach
1	Anxiety	.421-.577	.855
2	Unable to stop	.439-.577	.856
3	Concern	.441-.527	.855
4	Excessive anxiety	.491-.614	.852
5	Feeling restless	.425-.614	.856
6	It is hard to keep calm	.421-.491	.865
7	Easy to rinse	.482-.595	.853
	General Anxiety Disorder-7 (GAD-7)	.421-.614	.874

Table 8 shows the Alpha Cronbach GAD-7 reliability coefficient, which is .874. The highest

Cronbach's Alpha reliability coefficient value between each item is the easy feeling of worry item is .865, followed by the item of not being able to stop worrying and having challenges calming down at .856, followed by the item of anxiety and excessive worry is .855, the item of fearing something terrible will happen is .853 and the lowest is the anxiety item .852. This finding clearly shows that the value of Cronbach's Alpha coefficient for each item in this research instrument is good and has high reliability, above $\alpha \geq 0.70$.

In addition, the researcher also examined the value of the correlation coefficient between items in GAD-7. According to Ramlee et al. (2021), the correlation value for items below .3 should be dropped because these items do not have a reasonable correlation value with the scale value. However, if the correlation value between items is more significant than .3, the item can be retained because it has met the validity criteria. Table 8 shows that the correlation coefficient between the items is in the range of .421 to .614. This proves that the correlation value between items is good because it exceeds .3. This finding proves that the value of the correlation coefficient between the items in the Malay version of GAD-7 must be maintained because they have a strong relationship.

VI. DISCUSSION

In this study, the primary purpose is to measure the validity and reliability of the items in the GAD-7 questionnaire instrument, which is used to measure the level of anxiety among students in Malaysia. This instrument has been adapted, modified, and re-purified into Malay from the General Anxiety Disorder-7 (GAD-7) developed by Spitzer, Kronke, William, and Lowe (2006) to measure anxiety symptoms according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR),

This study is a pilot study in the form of a case study and only involves 372 study subjects involving students in Malaysia, namely in Negeri Sembilan and Selangor. The reliability analysis results found that the Alpha Cronbach reliability coefficient value for the GAD-7 instrument is .87. In addition, the GAD-7 content validity analysis was evaluated by seven expert panels consisting of academics with expertise in the field of mental health. The study's results using the Content Validation Index (CVI) of the GAD-7 instrument are very good, which is 0.90. This shows that the questionnaire instrument has high validity and reliability, and all the items have good inter-item correlation values.

This study's findings align with the preliminary study of the construction, validity, and reliability of the GAD-7 developed by Spitzer, Kronke, William, and Lowe (2006). Spitzer et al. al (2006) found that the Alpha Cronbach GAD-7 reliability coefficient was high, with a value of $\alpha \geq 0.92$. The results of the test-retest study to measure the validity of the GAD-7 content also showed a high validity value of 0.90, the same as the validity value in this study. Because GAD-7 has been found to have high validity and reliability and is simple and compact,

many researchers have translated GAD-7 into their native languages.

The studies also found that GAD-7 has an excellent Cronbach's Alpha reliability value despite being translated into many different languages by researchers worldwide. For example, Shih et al. al (2022) in Taiwan found that the GAD-7 has a reliability value of $\alpha \geq .93$, Cotiga et al. (2023) in Romania found that GAD-7 has a reliability value of $\alpha \geq .92$, Martinez-Vazquez (2022) in Spain found GAD-7 has a reliability value $\alpha \geq .90$, Gong et al. (2022) in China found that GAD-7 has a reliability value of $\alpha \geq .89$, Omarsdottir et al. (2023) in Iceland found that GAD-7 has a reliability value of $\alpha \geq .89$, Indiana (2022) in Indonesia found that GAD-7 has a reliability value of $\alpha \geq .88$ and Vrubleška (2022) in Latvia found a reliability value of $\alpha \geq .87$. The results of this study are also in line with the findings of studies abroad because the researchers found that the Malay version of GAD-7 has an excellent reliability value $\alpha \geq .87$.

In addition, the findings of this study can also answer the question of the extent to which GAD-7 is suitable to be used to measure anxiety among school students. In an earlier study conducted by Spitzer et al. (2006), the selection of study subjects consisted of health clinic patients aged 18 to 95 years. Further studies in Malaysia (Sy-Cherng Woon, 2020) and abroad also focus a lot on the use of GAD-7 in health clinics and hospitals to measure the level of anxiety among patients (Brattmyr et al., 2022; De Man et al., 2021; Galindo-Vázquez et al., 2023; Gong et al., 2022; Omarsdottir et al., 2023; Shah et al., 2021; Shih et al., 2022).

Although there have been several studies using the GAD-7 on students, most of the study subjects are university students who have exceeded the age of 18 (Byrd-Bredbenner et al., 2021; Manzar et al., 2021; Martínez-Vázquez et al., 2022; Pheh et al., 2023). Therefore, this study has succeeded in filling the gap in Malaysia because no studies in Malaysia examine the validity and reliability of the use of GAD-7 among school students. The results of this study prove that the Malay version of GAD-7 is suitable for school students and even has a good Cronbach's Alpha value of .87. This finding is in line with recent studies abroad, which found that the GAD-7 is not only suitable for measuring the level of anxiety in adults but is also suitable for measuring the level of anxiety in school students under the age of 18 (Marlow et al., 2023).

VII. CONCLUSION (OR LIMITATION OR SUGGESTION FOR FURTHER STUDIES)

As a conclusion, the GAD-7 instrument has high validity and reliability values, namely 0.90 for validity and .87 for Cronbach's Alpha reliability value. Therefore, this instrument is suitable for widespread use in assessing anxiety levels among students in Malaysia. However, the items used should refer to the findings of this study because there are changes in sentence structure in each item suggested by the expert panel. It is hoped that this study can serve as a reference model for developing more instruments with high validity and reliability.

This study has several limitations, namely that the study respondents consisted only of high school students. Therefore, it is suggested that further studies be conducted to test the suitability of using GAD-7 among primary school students. Post-COVID-19 pandemic has shown an extraordinary increase in mental health issues among Malaysian children (Institut Kesihatan Umum, 2020, 2022). Therefore, further studies need to focus on developing suitable questionnaires for use among primary school students. Cognitive level of primary school students is not the same as that of teenagers. Therefore, the validity of GAD-7 should be established before being used on them.

Furthermore, it is recommended that further studies focus on the development of anxiety management module. Most guidance and counselling teachers do not have specific modules to address anxiety. Moreover, not all counsellors have expertise in mental health issues. The provided modules should also be thoroughly evaluated for their validity and reliability so that they are truly effective and capable of assisting students in managing anxiety. According to the World Mental Health Organization Report (2022), to reduce global mental health statistics, it is no longer necessary to focus on patients who have proven mental disorders. Instead, the best treatment is to develop early prevention programs at the school level.

REFERENCES

- Bártolo, A., Monteiro, S., & Pereira, A. (2017). Factor structure and construct validity of the Generalized Anxiety Disorder 7-item (GAD-7) among Portuguese college students. *Cadernos de Saude Publica*, 33(9), 1–12. <https://doi.org/10.1590/0102-311X00212716>
- Brattmyr, M., Lindberg, M. S., Solem, S., Hjemdal, O., & Havnen, A. (2022). Factor structure, measurement invariance, and concurrent validity of the Patient Health Questionnaire-9 and the Generalized Anxiety Disorder scale-7 in a Norwegian psychiatric outpatient sample. *BMC Psychiatry*, 22(1), 1–11. <https://doi.org/10.1186/s12888-022-04101-z>
- Budikayanti, A., Larasari, A., Malik, K., Syeban, Z., Indrawati, L. A., & Octaviana, F. (2019). Screening of Generalized Anxiety Disorder in Patients with Epilepsy: Using a Valid and Reliable Indonesian Version of Generalized Anxiety Disorder-7 (GAD-7). *Neurology Research International*, 2019. <https://doi.org/10.1155/2019/5902610>
- Byrd-Bredbenner, C., Eck, K., & Quick, V. (2021). GAD-7, GAD-2, and GAD-mini: Psychometric properties and norms of university students in the United States. *General Hospital Psychiatry*, 69(January), 61–66.
- De Man, J., Absetz, P., Sathish, T., Desloge, A., Haregu, T., Oldenburg, B., Johnson, L. C. M., Thankappan, K. R., & Williams, E. D. (2021). Are the PHQ-9 and GAD-7 Suitable for Use in India? A Psychometric Analysis. *Frontiers in*

- Psychology, 12(May), 1–14.
- Dhira, T. A., Rahman, M. A., Sarker, A. R., & Mehareen, J. (2021). Validity and reliability of the Generalized Anxiety Disorder-7 (GAD-7) among university students of Bangladesh. *PLoS ONE*, 16(12 December), 1–16. <https://doi.org/10.1371/journal.pone.0261590>
- Fattah, A., Ebadi, A., Borumand, N., Saeedi, A., Darbani, M., Setayesh, S., Mohammadi, G., & Babakhanian, M. (2021). Generalized Anxiety Disorder 7-Item Scale and Templer's Death Anxiety Scale in Iranian Inpatients with COVID-19: Evaluation of Psychometric Properties and Diagnostic Accuracy. *Middle East Journal of Rehabilitation and Health Studies*, 8(4). <https://doi.org/10.5812/MEJRH.111377>
- Galindo-Vázquez, O., Núñez Gómez, P., Vidal Millán, S., Bargalló Rocha, E., Lerma, A., Sánchez Contreras, Y., & Álvarez Gómez, R. M. (2023). Psychometric evidence of the Patient Health Questionnaire (PHQ-9) and Generalized Anxiety Scale (GAD-7) in patients with genetic counseling in Oncology. *Psicooncologia*, 20(2), 267–281.
- Gong, L. L., Xie, X. L., Liu, S. T., Hu, W. H., Niu, Y. J., Sun, Y., Liu, J. S., & Xia, X. (2022). Reliability and validity of generalized anxiety disorder 7-item scale in early pregnant women. *Reproductive and Developmental Medicine*, 6(4), 249–253.
- Hamidah, Y., Jamal, Y., & Khalip, M. (2014). *Research Methodology: Educational Management*. Universiti Pendidikan Sultan Idris.
- Hayrol Azril, M. S., Asnarulkhadi, A. S., & Syafila, K. (2021). Speaking of the devil: a systematic literature review on community preparedness for earthquakes. *Natural Hazards*, 108(3), 2393–2419. <https://doi.org/10.1007/s11069-021-04797-4>
- Idiani, S., Herawati, M. H., Mubasyiroh, R., Indrawati, L., Yunita, I., Sitorus, N., & Isfandari, S. (2022). Reliability of the General Anxiety Disorder -7 Questionnaire for Non-Healthcare Workers. 298–305. <https://doi.org/10.26911/icpheidemiology.fp.08.2021.07>
- In, J. (2017). Introduction of a pilot study. *Korean Journal of Anesthesiology*, 70(6), 601–605.
- Ip, H., Suen, Y. N., Hui, C. L. M., Wong, S. M. Y., Chan, S. K. W., Lee, E. H. M., Wong, M. T. H., & Chen, E. Y. H. (2022). Assessing anxiety among adolescents in Hong Kong: psychometric properties and validity of the Generalised Anxiety Disorder-7 (GAD-7) in an epidemiological community sample. *BMC Psychiatry*, 22(1), 1–11.
- Johnson, S. U., Ulvenes, P. G., Øktdalen, T., & Hoffart, A. (2019). Psychometric properties of the GAD-7 in a heterogeneous psychiatric sample. *Frontiers in Psychology*, 10(JULY), 1–8. <https://doi.org/10.3389/fpsyg.2019.01713>
- Kigozi, G., Africa, S., Kigozi, G., Province, F. S., & Commons, C. (2019). onstruct ali it an relia ilit of the eneralise an iet isor er scale in a sa le of tu erculosis atients in the ree State ro ince South Africa. 1–6.
- Konkan, R., Şenormanci, Ö., Güçlü, O., Aydin, E., & Sungur, M. Z. (2013). Validity and reliability study for the Turkish adaptation of the generalized anxiety disorder-7 (GAD-7) scale. *Noropsikiyatri Arsivi*, 50(1), 53–58. <https://doi.org/10.4274/npa.y6308>
- Lam, A. Y. R., Xin, X., Tan, W. B., Gardner, D. S. L., & Goh, S. Y. (2017). Psychometric validation of the hypoglycemia fear survey-II (HFS-II) in Singapore. *BMJ Open Diabetes Research and Care*, 5(1), 1–9. <https://doi.org/10.1136/bmjdcrc-2016-000329>
- Manzar, M. D., Alghadir, A. H., Anwer, S., Alqahtani, M., Salahuddin, M., Addo, H. A., Jifar, W. W., & Alasmee, N. A. (2021). Psychometric properties of the general anxiety disorders-7 scale using categorical data methods: A study in a sample of university attending ethiopian young adults. *Neuropsychiatric Disease and Treatment*, 17, 893–903.
- Marlow, M., Skeen, S., Grieve, C. M., Carvajal-Velez, L., Åhs, J. W., Kohrt, B. A., Requejo, J., Stewart, J., Henry, J., Goldstone, D., Kara, T., & Tomlinson, M. (2023). Detecting Depression and Anxiety Among Adolescents in South Africa: Validity of the isiXhosa Patient Health Questionnaire-9 and Generalized Anxiety Disorder-7. *Journal of Adolescent Health*, 72(1), S52–S60. <https://doi.org/10.1016/j.jadohealth.2022.09.013>
- Martínez-Vázquez, S., Martínez-Galiano, J. M., Peinado-Molina, R. A., Gutiérrez-Sánchez, B., & Hernández-Martínez, A. (2022). Validation of General Anxiety Disorder (GAD-7) questionnaire in Spanish nursing students. *PeerJ*, 10, 1–16.
- Ministry of Education Malaysia. (2022). Guidelines for the Implementation of Healthy Mind Academic Calendar for the Academic Session 2022/2023.
- Monterrosa-Blanco, A., Cassiani-Miranda, C. A., Scoppetta, O., & Monterrosa-Castro, A. (2021). Generalized anxiety disorder scale (GAD-7) has adequate psychometric properties in Colombian general practitioners during COVID-19 pandemic. *General Hospital Psychiatry*, 70(February), 147–148. <https://doi.org/10.1016/j.genhosppsych.2021.03.013>
- Muhamad Saiful Bahri, Y. (2019). ABC of Content Validation and Content Validity Index Calculation. *Education in Medicine Journal*, 11(2), 49–54. <https://doi.org/10.21315/eimj2019.11.2.6>
- Nyongesa, M. K., Mwangi, P., Koot, H. M., Cuijpers, P., Newton, C. R. J. C., & Abubakar, A. (2020). The reliability, validity and factorial structure of the Swahili version of the 7-item generalized anxiety disorder scale (GAD-7) among adults living with HIV from Kilifi, Kenya. *Annals of*

- General Psychiatry, 19(1), 1–10.
<https://doi.org/10.1186/s12991-020-00312-4>
- Omani-Samani, R., Maroufizadeh, S., Ghaheri, A., & Navid, B. (2018). Generalized Anxiety Disorder-7 (GAD-7) in people with infertility: A reliability and validity study. *Middle East Fertility Society Journal*, 23(4), 446–449.
<https://doi.org/10.1016/j.mefs.2018.01.013>
- Omarsdottir, H. R., Vesteinsdottir, V., Asgeirsdottir, R. L., Kristjansdottir, H., & Thorsdottir, F. (2023). Can GAD-7 be used reliably to capture anxiety?: approaching evaluation of item quality using IRT. *Nordic Psychology*, 0(0), 1–19.
- Pheh, K. S., Tan, C. S., Lee, K. W., Tay, K. W., Ong, H. T., & Yap, S. F. (2023). Factorial structure, reliability, and construct validity of the Generalized Anxiety Disorder 7-item (GAD-7): Evidence from Malaysia. *PLoS ONE*, 18(5 May), 1–10.
- Polit, D., & Beck, C. T. (2006). Focus on Research Methods Handling Missing Data in Self-Report Measures. *Research in Nursing & Health*, 29, 489–497.
- Public Health Institute (2020). National Health and Morbidity Survey (NHMS) 2019: Non-communicable diseases, Healthcare Demand, and Health Literacy: Key Findings. Ministry of Health Malaysia. (Vol. 1, pp. 1–392).
- Public Health Institute (2022). National Health and Morbidity Survey 2022. Adolescent Health: Key Findings. Ministry of Health Malaysia.
- Ramlee, I., Jamal@Nordin, Y., & Marinah, A. (2021). *Data Analysis and Reporting in Educational Research*. Universiti Pendidikan Sultan Idris
- Seo, J. G., Cho, Y. W., Lee, S. J., Lee, J. J., Kim, J. E., Moon, H. J., & Park, S. P. (2014). Validation of the generalized anxiety disorder-7 in people with epilepsy: A MEPSY study. *Epilepsy and Behavior*, 35, 59–63.
<https://doi.org/10.1016/j.yebeh.2014.04.005>
- Shah, N., Cader, M., Andrews, B., McCabe, R., & Stewart-Brown, S. L. (2021). Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): performance in a clinical sample in relation to PHQ-9 and GAD-7. *Health and Quality of Life Outcomes*, 19(1), 19
- Sherina, M. S., Arroll, B., & Goodyear-Smith, F. (2012). Validation of the GAD-7 (Malay version) among women attending a primary care clinic in Malaysia. *Journal of Primary Health Care*, 4(1), 5–11. <https://doi.org/10.1071/hc12005>
- Shih, Y. C., Chou, C. C., Lu, Y. J., & Yu, H. Y. (2022). Reliability and validity of the traditional Chinese version of the GAD-7 in Taiwanese patients with epilepsy. *Journal of the Formosan Medical Association*, 121(11), 2324–2330.
- Sidek, M. N. (2005). Pengujian & penilaian dalam kaunseling. *Teori & Aplikasi* (p. 95).
- Sousa, T. V., Viveiros, V., Chai, M. V., Vicente, F. L., Jesus, G., Carnot, M. J., Gordo, A. C., & Ferreira, P. L. (2015). Reliability and validity of the Portuguese version of the Generalized Anxiety Disorder (GAD-7) scale. *Health and Quality of Life Outcomes*, 13(1), 1–8.
- Spitzer, R., Kroenke, K., Williams, J., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: The GAD-7. *Archives of Internal Medicine*, 166(10), 1092–1097.
- Stochl, J., Fried, E. I., Fritz, J., Croudace, T. J., Russo, D. A., Knight, C., Jones, P. B., & Perez, J. (2020). On Dimensionality, Measurement Invariance, and Suitability of Sum Scores for the PHQ-9 and the GAD-7. *Assessment*, 29(3), 355–366.
- Sy-Cherng Woon, L. (2020). Factor Structure of The Malay-Version Generalized Anxiety Disorder-7 (GAD-7) Questionnaire among Patients with Diabetes Mellitus. *Medicine & Health*, 15(1), 208–217.
<https://doi.org/10.17576/mh.2020.1501.19>
- Vrublevska, J., Renemane, L., Kivite-Urtane, A., & Rancans, E. (2022). Validation of the generalized anxiety disorder scales (GAD-7 and GAD-2) in primary care settings in Latvia. *Frontiers in Psychiatry*, 13.
<https://doi.org/10.3389/fpsy.2022.972628>
- World Mental Health Organization. (2022). World mental health: transforming mental health for all. In *The BMJ*. <https://doi.org/10.1136/bmj.o1593>
- World Mental Health Organization. (2023). Anxiety Disorder. In *Portal World Health Organization* (Issue September).
- Zhang, C., Wang, T., Zeng, P., Zhao, M., Zhang, G., Zhai, S., Meng, L., Wang, Y., & Liu, D. (2021). Reliability, Validity, and Measurement Invariance of the General Anxiety Disorder Scale Among Chinese Medical University Students. *Frontiers in Psychiatry*, 12(May), 1–11.
- Zhong, Q. Y., Gelaye, B., Zaslavsky, A. M., Fann, J. R., Rondon, M. B., Sánchez, S. E., & Williams, M. A. (2015). Diagnostic validity of the generalized anxiety disorder - 7 (GAD-7) among pregnant women. *PLoS ONE*, 10(4).
- Zuriani Hanim, Z., & Muhammad Izzat, M. (2021). Validity and Reliability of the Transformational Leadership Questionnaire for School Principals. *Ilmi Journal*, 11, 70–80.

Unveiling the Pedagogical Proficiency: Exploring the Critical Thinking Competency Framework of Arabic Language Educators Teaching as a Foreign Language Using Partial Least Squares-Structural Equation Modeling

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Abstract – Recent studies have highlighted the importance of critical thinking skills across various fields, with significant implications for educational curricula. The competence of foreign language educators in possessing the necessary skills, abilities, and competencies is crucial for effective task performance, ultimately impacting student learning outcomes. Guided by a combination theory of competencies proposed by Boyatzis (1982, 2008), Facione (1990) and al-Farabi (1968), this research adopts the 21st century competency model to identify the competency elements of Arabic language educators in Malaysia. This research study aims to explore and identify the existing competency elements of Arabic language educators in secondary school. This quantitative study used a population comprising 286 respondents of Arabic language educators in Malaysia. Partial Least Squares-Structural Equation Modeling (PLS-SEM) is employed for data analysis to explore the relationship between various latent constructs. Exogenous constructs include personal attributes, critical thinking skills, critical thinking dispositions, and environments, while the endogenous construct focuses on the critical thinking competency framework. The construct validity and reliability of the model are evaluated using Internal Consistency Reliability (Cronbach Alpha, Composite Reliability) and Validity (Cross Loading, Fornell Larcker's Criteria, and HTMT Correlation). Indicators that do not meet the PLS-SEM requirements are dropped, resulting in a final set of 102 retained indicators. The evaluation model is then implemented to form a comprehensive framework assessing the interlinked constructs.

Keywords: Arabic Teachers, Foreign Language Educators, Competency Framework, Critical Thinking, PLS-SEM, Secondary School.

I. INTRODUCTION

Education is now widely regarded as a critical component of developing competent societies in the 21st century. One of the most important goals in 21st century education is to empower critical thinking skills. It is said that students not only need intellectual mastery to survive, but also a capability that allows them to think

the empowerment of students' critical thinking skill (Nor & Sihes, 2021). The context of teaching Arabic language in schools is no exception to taking into account the initiatives emphasized in Pelan Pembangunan Pendidikan Malaysia (PPPM) 2013-2025 to empower PAK21 in schools. According to Nik et al. (2016), PAK21 is characterized as a student-centered learning method that focuses on critical thinking skills and active and effective interaction abilities. The effective implementation of PAK21 strategies can enhance student motivation and performance in learning Arabic language. Zakaria and Hussin (2020), proves that the practice of PAK21 in teaching Arabic language attracts students' interest and improves more satisfactory achievements. Furthermore, critical thinking through PAK21 has had a positive impact on the performance of Arabic language teachers. This has also been evidenced through a study conducted by Sahrir et al. (2020) on 30 trainee teachers in the Teaching Arabic as Second Language (TASL) program, which showed that the frequency and percentage levels of Arabic language PAK21 implementation were high. Therefore, the application of the 4C concept, including critical thinking in teaching Arabic language teachers, is highly relevant. The implications of this study prove the importance of empowering critical thinking constructs to ensure teaching activities occur more meaningfully. Therefore, Arabic language educators need to develop teaching competencies oriented towards critical thinking to ensure the agenda of Arabic language education as a foreign language in Malaysia can be realized.

II. PROBLEM STATEMENT

Empowering the critical thinking competencies of Arabic language teachers in teaching has become a necessity in the transformation of the national education system to produce bilingual and high-level thinking students. This matter has been recognized as critical as critical thinking elements are outlined in the Malaysian Education Development Plan 2013-2025 (PPPM) to achieve the desired student aspirations (KPM, 2013). Furthermore, the Arabic language curriculum framework under the Secondary School Standard Curriculum (KSSM) also emphasizes critical thinking specifically in teacher teaching activities in line with the requirements of PAK-21. Despite teachers being aware of the importance of critical thinking in developing the potential of Arabic-speaking students, many of them are reported to struggle to implement critical thinking-oriented teaching in the classroom. This weakness stems from

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critically and develop life skills (Glaze, 2018). Therefore, educational development should be able to accommodate

teachers themselves lacking mastery of critical thinking competencies.

While there are studies focusing on the general development of Arabic language teacher competencies in Malaysia, research related to the critical thinking competencies of teachers in teaching Arabic is limited. This gap clearly indicates a lack of information and empirical data related to the development of theories and models of Arabic language teacher competencies oriented towards critical thinking in teaching. This deficiency hampers teachers' ability to make systematic and critical decisions to solve more complex teaching problems. Therefore, exploration of constructs related to the critical thinking competencies of Arabic language teachers is relevant to address these issues.

In addition, delineating the concept of critical thinking competencies in teaching Arabic language teachers from both Islamic and Western perspectives is also crucial in maximizing the holistic success of Arabic language education in Malaysia. So far, there are no guidelines associated with the development framework of critical thinking competencies for Arabic language teachers in teaching. This is important to explore in depth because contemporary concepts of critical thinking are largely shaped by Western worldviews. Hence, this study explores the concept of developing critical thinking competencies in the context of teaching Arabic language as a guide for teachers to plan how education should be implemented.

Logically, the more experienced an Arabic language teacher is, the more critical their teaching becomes. This also applies to academic qualifications or teacher options, which must be in Arabic language because a good language teacher needs to have comprehensive knowledge of the language they teach. This is in line with research conducted on the issues of Arabic language teaching in Malaysia, which raises questions about the qualifications of teachers. One issue is that teachers who are not Arabic language options or new teachers with less experience contribute to problems in teaching Arabic in Malaysia. Both of these indicators are also seen to affect the level of critical thinking competency of teachers, especially in teaching Arabic. However, there is also discussion showing that teachers are still incompetent even though they have academic qualifications in the field they teach and have achieved a long period of teaching experience. Therefore, both of these factors are worthy of study to see their implications for the development of critical thinking competency in teaching Arabic language teachers in the classroom.

Based on the above discussion, the researcher uses a combined sequential exploratory research design to explore the critical thinking competencies needed by Arabic language teachers in teaching, and subsequently develop an empirical research framework. The implications of the study aim to bridge existing research gaps in theoretical and practical aspects based on the integration of critical thinking competency elements of Arabic language teachers according to Islamic and Western perspectives. Therefore, the framework for critical thinking competency in teaching Arabic language teachers is relevant to be developed to enhance the

success of Arabic language education in Malaysia. This effort indirectly maximizes teachers' understanding of the confusion of critical thinking concepts and their practices in teaching Arabic language in the classroom.

III. LITERATURE REVIEW

Teaching Arabic as a foreign language is a complex task that requires teachers to systematically plan teaching activities. The planning of teaching activities needs to be balanced in cognitive, affective, and social aspects. Complete facilities and competent teaching also enhance the quality of teaching in the classroom. However, Shahmohammadi (2015) indicates that the ongoing issue in Arabic language teaching revolves around the level of teacher competence in teaching practice. Therefore, teacher teaching competencies need to be strengthened comprehensively in terms of knowledge, skills, and personal characteristics.

Competent teachers are those who meet specific qualification standards in their field. Syed Jaafar (2014), categorizes teacher competencies into three main aspects: cognitive, affective, and behavioral. Cognitive competence relates to the teacher's knowledge aspect, i.e., the ability of teachers to develop knowledge to enhance their effectiveness (Siraj & Ibrahim, 2012). Affective competence refers to the ability of teachers to apply knowledge and skills to work effectively. Therefore, teachers need to be competent in cognitive, affective, and psychomotor aspects to enhance the success of teaching. In reality, learning Arabic as a foreign language challenges the capacity of teachers to deliver it effectively in Malaysia. Generally, several difficulties and challenges faced by teachers include curriculum changes and developments, pedagogical skills, varying student abilities, and classroom teaching management and motivation (Abdul Rahman et al., 2019; Miller et al., 1998; Petek & Bedir, 2018). Hence, there arises a debate in the context of language teaching, especially Arabic, about what the actual criteria for a competent Arabic language teacher are. However, each individual surely has different perceptions on this matter based on their own perspectives (Shahmohammadi, 2015). Nevertheless, Hamdan et al. (2019), listed five general competencies that teachers need in teaching Arabic language: pedagogy, curriculum, assessment, professionalism, and language. What about the need for teacher teaching competencies oriented towards critical thinking in the context of Arabic language learning? Therefore, the criteria for critical thinking competency of teachers need to be directly explored in Arabic language teaching activities that are more critically inclined.

In conclusion, Arabic language teachers need to have specific competencies to conduct critically inclined teaching. Richards (2011), explains several criteria required by language teachers such as having good language proficiency, content knowledge, teaching skills, contextual knowledge, language teacher identity, student-centered teaching, pedagogical reasoning skills, theory from practice and community involvement, and professionalism. Therefore, Arabic language teacher competencies based on the importance of PAK-21 need

to emphasize critical thinking constructs specifically in teaching to produce competitive and competent Arabic speakers at a global level in the future.

IV. METHOD

Research Design

This study is a mixed-method study using Sequential Exploratory Design, which has been applied by Creswell and Clark (2017). Borich (1980) stated, needs assessment was utilised to assess the ability and importance of each competency. This assessment model has been also used by Sorensen et al. (2014) to assess the ability and competence in developing needs according to career phases. After going through a pilot study, the instruments used were refined through face validity and content validity by experts.

The pilot study conducted in this study involved 40 Arabic language teachers from secondary schools. The pilot data of the study were analysed using the Rasch Measurement Model. Ineligible items were dropped. The procedure of conducting this study was permitted by Ministry of Education (KPM), Policy Planning and Research Division (EPRD), State Education Department (JPN) and the Head Master of secondary school involved. The online distribution of questionnaires involved the entire population of Arabic language educators in Malaysian secondary schools.

Sample and Data Collection

Respondents in this study consisted of all teachers in Arabic language who served in secondary schools. This study used cluster random sampling from the entire population to answer the questionnaire. It coincides with the opinion by Darusalam and Hussin (2021) that if a researcher takes the entire individual in the population, the study does not use a sample but the population that is the "target population". A good study is a study that uses a population as the study sample or by taking as many samples as possible that are close to the total population (Darusalam & Hussin, 2021). The total sample of this study was 286 respondents. The total population was obtained through the survey procedure through an official letter sent to ministry of education (KPM). However, in the pilot study, the researcher took a total of 40 respondents in the administration of the pilot study.

Study Instrument

This study used one types of items in the research questionnaire. Five-point scale items were selected. The questionnaire consists of five parts, Part A: Demographics Respondents, Part B: Elements of Personal Competence, Part C: Element of Critical Thinking Skill Competence, Part D: Element of Disposition Critical Thinking and, Part E: Element of Environment Interaction. Questions that used multiple-choice items include gender, age, years as an teacher, and educational background. The type of item used in this section is a single choice item where the respondent is

asked to choose using (✓) on the box provided. Whereas to analyze the data from the study respondents for competencies elements items, five-point scale item was used. Respondents were asked to rate themselves according to a 5-point Likert scale. The five-point scale used five scales where each scale was assigned with a corresponding score of 1 = Not Need All, 2 = Slightly No Need, 3 = Moderately Need, 4 = Very True Need, 5 = Completely True Need. The Likert type scale proposed in this study is an appropriate to identify competence need among instructors.

Employing PLS-SEM

This study used SEM to examine the interrelated relationships between various independent variables and simultaneous variables (Hair et al., 2017). The SEM technique uses quantitative data with the assumption of cause-and-effect relationships between variables and constructs in a model (Awang et al., 2018). SEM also provides a systematic technique for validating the relationship between constructs and indicators to test the relationship between constructs with a single model (Hair et al., 2017). In addition, SEM evaluates cause-and-effect relationships between multiple constructs simultaneously (Ahmad, 2017; Tabachnick & Fidell, 2001). The method of data analysis using SEM consisted of two analyses; the measurement framework that connects the construct with the items that measure the construct, and a structural framework that presents the cause-and-effect relationship between constructs in a study where this relationship is built based on theoretical support. These constructs are arranged in a structured model based on the hypotheses expressed in the theoretical framework. In research involving SEM, most researchers agreed on the merits of using a two-analysis approach rather than one analysis (Hair et al., 2017; Kline, 2005; Schumacker & Lomax, 2010; Zarmou et al., 2012). Therefore, this study used PLS-SEM software for quantitative data analysis. The structure of the variables used in this study is shown in Figure 1.

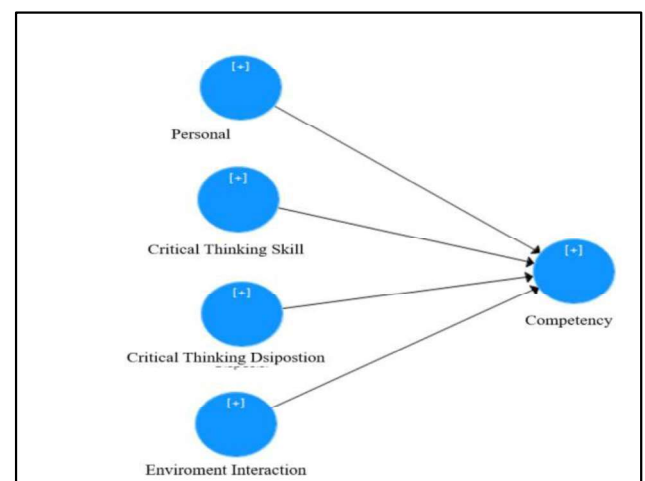


Figure I: The Structure of The Variables

Analysis of Data

To answer the research question, some analyses need to be conducted. The first step in analysing the data is to review the questionnaire form. In this study, of 300 questionnaires received, there were 14 incomplete questionnaires with data outliers. A total of 286 completed questionnaires were processed and entered into SPSS 26 software and then PLS-SEM software for data testing involving missing values, straight-lining, outliers and data distribution normality. At this stage, a normality test needs to be performed on the data upon completion of the review process. This data isolation process uses skewness and kurtosis methods that show a normal data distribution. The conditions for SEM -PLS analysis for skewness and kurtosis values are ranged from 1 to 1, which is the range of data normality distribution required (Kamarudin et al., 2021).

V. FINDINGS

Reflective Measurement Model Analysis

This section discusses the evaluation of the reflective measurement model. Measurement models need to be implemented to obtain reliability values for each indicator and construct studied. The indicator will be removed at this stage if there is a loading value that does not meet the requirements. After meeting the loading value requirements, the Cronbach's Alpha (CA) and Composite Reliability (CR) must be seen to meet the internal consistency or internal consistency reliability. The next stage is the analysis to obtain the value of convergent validity based on factor loading and Average Variance Extracted (AVE). At this stage, there will be a process of indicator removal to enable a further analysis to be carried out.

TABLE 1: THE EVALUATION REPORT OF THE REFLECTIVE MEASUREMENT MODEL BY CONSTRUCT.

Convergent Validity			Internal Consistency Reliability	Discriminant Validity
Construct	Outer Loading	AVE (>0.50)	Composite Reliability (>0.708)	HTMT
Personal		0.705	0.950	HTMT <0.9
Critical Thinking Skill	0.610-0.867	0.739	0.944	Cross loading <1.0
Disposition Critical Thinking		0.771	0.931	
Environment Interaction		0.730	0.915	

Based on the analysis conducted, 2 items were dropped as they did not meet PLS-SEM requirements. The total number of items retained was 102 indicators.

Structural Measurement Model Analysis

To answers the research questions through hypotheses, an analysis of structural models was

conducted. Computational analysis was performed to determine whether or not the construct (Figure.1) directly influences other constructs. Table 2 shows the findings of the structural model analysis.

TABLE II: FINDINGS FROM THE ANALYSIS OF STRUCTURAL MEASUREMENT MODELS

Relationship	β	p	t	Result
Disposition -> Competency	0.400	0.000	51.63	Significant
Skill -> Competency	0.305	0.000	38.12	Significant
Personal -> Competency	0.200	0.000	35.77	Significant
Environment Interaction -> Competency	0.189	0.000	28.82	Significant

Based on Table 2, all hypotheses were accepted. The analysis showed that all hypotheses had the recommended path coefficient values of $\beta = 1$ and 1 and t values > 1.96. The decision to accept and reject this hypothesis was taken based on $p < 0.01$ (Hair et al., 2017).

Competency Framework Construction

Several analyses need to be conducted to form a competency framework. The conditions recommended in the PLS-SEM need to be complied before the following analysis can proceed. After completing the analysis of the measurement model involving internal consistency reliability, convergent validity, and discriminant validity, the evaluation of the structural model can be continued. This structural model aims to form a framework involving the evaluation of constructs linked to each other. Ali (2009), stated that the structural model evaluation (internal model) test results can be assessed by the strength of the model and determined support for the hypotheses tested. Therefore, several steps need to be performed in the structural measurement model. An assessment of the collinearity issue (VIF) should be reported before proceeding to the next test steps. The VIF value in an analysis must have a VIF value < 5. VIF values more significant than five are considered to have collinearity problems. If this situation occurs, some actions need to be taken. However, in this study, all indicators met the conditions recommended by $VIF < 5$. Therefore, this study has no multicollinearity issues.

The subsequent analysis involved the total variance of dependent constructs explained by all independent constructs through R^2 assessment. Hair et al. (2017) categorised the value of R^2 into three values, namely large (0.75), medium (0.50), and small (0.25). While the successful bootstrap analysis indicates that all four exogenous constructs have a significant and positive relationship with the construct of critical thinking competence of Arabic language educators in teaching, with an $R^2 = 1.00$. Furthermore, the study findings also indicate that the SRMR value (0.085) is lower than the cutoff value of 0.1, suggesting a good fit of the research model. This implies that the model adequately represents the observed data, indicating satisfactory model fit and supporting the validity of the study's findings. Table 3 shows the expected accuracy values of the model. Figure 2 shows the results of the PLS test on the full model.

TABLE III: VIF VALUE FOR COLLINEARITY

Construct	VIF
Personal	3.08
Critical Thinking Skill	3.95
Disposition Critical Thinking	4.60
Environmental dxInteraction	3.14

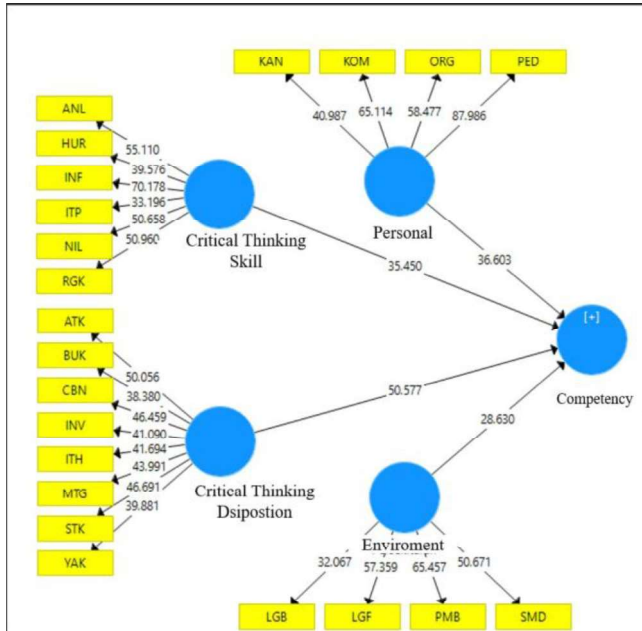


Figure 2. The Competency Framework of Arabic language Instructors.

The figure above shows the competency framework of Arabic language teachers in Malaysian secondary school, which consisted of 4 constructs and 22 subconstruct and 102 indicators.

VI. DISCUSSION

Based on the Bootstrapping procedure conducted, the findings of the study indicate that the construct of critical thinking disposition ($\beta = 0.400$, $t = 51.463$) is the highest contributing factor to the endogenous construct, namely the critical thinking competence of Arabic language teachers, followed by the construct of critical thinking skills ($\beta = 0.305$, $t = 38.127$), personal ($\beta = 0.200$, $t = 35.774$), and environmental interaction ($\beta = 0.189$, $t = 28.827$). The results clearly demonstrate that the critical thinking disposition is the most crucial scale in developing the critical thinking competence of Arabic language teachers in teaching compared to others. This is because humans are not born with critical thinking; instead, it needs to be developed and nurtured naturally by each individual (Djigić et al., 2014). Therefore, the researcher suggests that teachers often demonstrate certain intellectual abilities and tend to use them, but not always in practice. Similarly, there is a lack of sensitivity to use intellectual abilities appropriately in teaching in the classroom. Hence, the critical thinking competence of teachers is directly influenced by the practices, behaviours, and critical attitudes of the teachers in teaching.

In the first-order measurement model, the overall analysis results indicate the outer weight values

for the indicators representing the construct of critical thinking disposition according to the highest hierarchy are analytical, followed by cognitive maturity, systematic, truth-seeking, curiosity, innovative, confidence, and open-mindedness. These findings clearly indicate that the analytical factor greatly influences the capacity of Arabic language teachers' competence to solve problems or situations they encounter. These findings align with Kani Ulger's (2016), which demonstrates that the level of analytical thinking in critical thinking disposition has a significant relationship with thinking skills. Furthermore, Yorganci's (2017), shows a similar trend for analytical and curiosity elements, which are at the highest scale compared to others. This is because, according to the researcher, teachers who exhibit analytical behavior will be able to provide more creative and critical Arabic language teaching and learning activities at any given time. Additionally, teachers also have the ability to analyze, question, and predict the teaching processes being implemented. However, emphasis on all elements of critical thinking disposition tested shows a significant and strong relationship with the improvement of critical thinking competence of Arabic language teachers in teaching. This is because teachers' ability to think critically will encourage active and meaningful intellectual processes in teaching in the classroom.

For the construct of critical thinking skills, the analysis results of the first-order measurement model indicate the outer weight values for each generated indicator according to the highest hierarchy are self-regulation skills, followed by skills in making inferences, analyzing, evaluating, describing, and interpreting. Self-regulation skills are the critical skills that contribute the most to the competence of Arabic language teachers in delivering instruction. This is because self-regulation skills enable teachers to control themselves to make self-corrections if there are errors in justifications. Facione (2015), justifies that individuals with critical thinking need to carefully scrutinize all justifications while applying skills in interpretation, analysis, inference, evaluation, explanation, and self-regulation.

In Arabic language learning, critical thinking underlies all language skills, including reading, writing, speaking, listening, and communication. Students have the opportunity to engage in critical thinking processes directly, enabling them to make observations, distinguish between facts and opinions regarding the continuous information presented, ask good questions, and use strong logic and reasoning. Therefore, teachers need to develop instructional pedagogy with self-regulation learning activities that encourage students' critical thinking abilities to enhance knowledge, skills, and critical attitudes. Students must be taught how to think critically through modeling the teacher's own critical thinking skills explicitly and continuously in teaching.

Although the personal construct ranks third highest, the findings prove that personal factors also contribute to the endogenous construct, namely the critical thinking competence of Arabic language teaching. This is because the personal construct of teachers is a core aspect that needs to be mastered by Arabic language

teachers in teaching critically (Koster et al., 2005). By considering the outer weight values for each generated indicator for the personal construct, the researcher can identify which elements and indicators need to be emphasized. Therefore, the indicators generated in order of highest priority are communication followed by pedagogy, organization, and content. This clearly demonstrates that communication is an essential element that cannot be separated in language learning, in line with the curriculum's aspiration to enhance students' ability to communicate in Arabic. Similarly, competent language teachers are those who are capable of mastering language and communication skills in delivering it.

Furthermore, Arabic language teachers also need to have in-depth knowledge of the language they teach and know how to deliver instruction effectively. In line with the study by Atoh et al. (2014), which states that Arabic language proficiency among students depends on three main factors: teachers, students, and environment. The teacher factor refers to the scholarly aspect of the teacher and the methodology practiced in teaching activities. The researcher believes that many teachers can master the content of the curriculum, but they find it challenging to translate it effectively into teaching. Therefore, all elements of personal competence tested contribute strongly to the development of Arabic language teaching competence oriented towards critical thinking in the classroom.

The construct of environmental interaction is the last to contribute as a complement to the endogenous construct of Arabic language teaching critical thinking competence. This clearly demonstrates that the environmental factor is one that cannot be overlooked in Arabic language teaching as a medium of communication. However, the environmental factor in Arabic language teaching still receives insufficient attention (Abdul Ghani et al., 2018; Zaini et al., 2019). Based on the analysis of the first-level measurement model, the indicators that provide the highest outer weight values for the construct of environmental interaction are student disposition, followed by the Arabic language, logic and language, and cross-disciplinary knowledge. These findings are consistent with the study by Atoh et al. (2014), which shows that the role of an Arabic language teacher is not limited to teaching alone but extends to understanding the learning environment by paying full attention to students' reactions and responses inside or outside the classroom. Additionally, teachers need to constantly approach weak students by providing critically appropriate guidance according to their abilities and capabilities. Therefore, emphasis on environmental interaction elements in Arabic language teaching, whether involving activities in the classroom or outside, needs to be enhanced. Failure to transform the culture of the Arabic language environment can hinder the achievement of the objectives of curriculum implementation.

In conclusion, the discussions in this section refer to the relationship and contribution of indicators and constructs of the study to the development of critical thinking competence in Arabic language teaching among educators. In reality, what matters most is the dedication

and effort of the teachers themselves to choose the best delivery methods in Arabic language teaching that are most easily understood by students in the classroom. Therefore, encouragement of critical thinking is considered one of the main tasks of Arabic language teachers that can be done through various methods to achieve the outlined objectives. Thus, this study successfully demonstrates the significant relationship and positive contribution among the constructs of personal competence, critical thinking skills, critical thinking disposition, and environmental interaction to the development of a competency framework model for critical thinking in Arabic language teaching among educators in Malaysia.

VII. CONCLUSION (OR LIMITATION OR SUGGESTION FOR FURTHER STUDIES)

This paper aims to produce a competency framework of Arabic language teaching educators in Malaysian secondary schools. This study has identified significant competency elements. In addition, this study has examined the constraints that affect the achievement of teaching competencies. Based on the data obtained, the indicators needed by competent Arabic language instructors have been identified. The findings of this study are seen to contribute new results, especially in the field of Arabic language education in secondary schools in Malaysia. This study's findings can also be considered to be a new finding. In addition, from the aspect of competence, the indicators required by the teaching staff have been identified. The final findings of this study using PLS-SEM have found 4 constructs and 22 sub constructs with 102 indicators to indicate the competence of the teaching Arabic as a foreign language.

The finding analyzes the relationship and contribution of the constructs to the critical thinking competency of Arabic language educators, thus developing a corresponding framework model. The most significant contribution of this study is the development of a framework for the critical thinking competency of Arabic language teaching that is capable of making accurate predictions regarding the critical thinking competency elements that Arabic language teachers in Malaysia need to possess. The results of this study represent a new output in the context of developing Arabic language teacher competencies oriented towards critical thinking in teaching in Malaysia, compared to previous studies that only tested the constructs of teacher competencies in general. The framework model generated is a visual manifestation of themes generalized from exploration with experts based on Modern and Islamic theories that complement each other. This framework also provides basic data and relevant analysis for further studies to develop Arabic language teacher critical thinking competencies holistically in the future. Therefore, a successful model of a critical thinking competency framework for Arabic language teaching has been produced to fill the gaps that have not been explored in the Arabic language education in Malaysia. This framework also serves as a useful guide and reference for

all parties interested in framing the development of Arabic language teacher professionalism in Malaysia. Therefore, continuous research is needed. The researcher hopes that the findings of this study can benefit researchers and educators interested in conducting new research or continuing existing studies related to Arabic language education in Malaysia. In addition, the analysis conducted has demonstrated that this competency framework is relevant and met the recommended requirements.

Recommendation

The results of this study have produced an element of competence required by Arabic language educators in carrying out the teaching process. Indirectly, this competency framework describes the elements that need to be present and mastered by the teaching staff. Developing a competency framework in an organisation will be better with the right encouragement, direction, supervision, and intervention. In future studies, this competency framework can be used by adding more in-depth specifications for describing the competencies of language instructors. This study can also be used as a platform for future research that aims to examine Arabic language instructors' level of individual competence in the workplace. For future studies, it is proposed that the personal competencies of the instructors are assessed by looking at how the instructors carry out daily tasks by demonstrating skills or attributes in their tasks. Apart from that, the constraints faced also affect the achievement of the competencies of the teaching staff. The constraints faced by the teaching staff have been only discussed at the exploring and identifying stages. There should be studies related to the factors that hinder the achievement of competencies by considering relevant theories and models. It is necessary to conduct other studies by giving an in-depth focus on the constraints faced by the teaching staff. Subsequent studies may also explore other study samples using this competency framework as the basis for further studies. These are some of the recommendations for future research that could be made to ascertain plans for future development.

Limitations

This research exclusively concentrated on the competency aspects needed by Arabic language educators in Malaysian secondary schools. Additionally, it solely investigated a specific group, namely Arabic language teachers. Moreover, it adopted a mixed-methods approach, incorporating qualitative methods. Future studies should broaden their scope by conducting comprehensive interviews with experts from secondary schools, universities, and language education and training departments. It is anticipated that numerous research endeavors will be undertaken concerning Arabic language education as a foreign language in Malaysia.

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REFERENCES

- Abdul Ghani, M. T., & Wan Daud, W. A. A. (2018). Bahasa arab untuk pendidikan awal kanak-kanak: Satu kajian analisis keperluan. *Jurnal Pendidikan Awal Kanak-Kanak*, 7, 70–82. <https://ejournal.upsi.edu.my/journal/JPAK>
- Abdul Rahman, A., Shafie, Z. M., Hashimee, M., Wazir, A., & Sayed, M. (2019). Tahap kompetensi guru bahasa Arab di SABK di Malaysia: Satu dimensi. *Jurnal Melayu*, 18(2), 231–243.
- Ali, A. (2019). *Aplikasi asas SmartPLS dalam kajian sains sosial* [Basic application of SmartPLS in social science studies] (2nd ed.). Penerbit UMT.
- Atoh, N., Ramli, S. H., & Hamat, M. Z. A., (2014). Guru bahasa Arab yang berkualiti: Satu tinjauan awal. Prosiding Seminar Pengajaran & Pembelajaran Bahasa Arab 2014.
- Awang, Z., Hui, L. S., & Zainudin, N. F. S. (2018). *Simple approach SEM* (1st ed.). MPWS Rich Resources.
- Borich, G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education*, 31(3), 39–42. <https://doi.org/10.1177/002248718003100310>
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications, Inc.
- Darusalam, G., & Hussin, S. (2021). *Metodologi penyelidikan dalam pendidikan* [Research methodology in education] (3rd ed.). Penerbit Universiti Malaya.
- Djigić, G., Stojiljković, S., & Dosković, M. (2014). Basic personality dimensions and teachers' self-efficacy. *Procedia - Social and Behavioral Sciences*, 112, 593–602. <https://doi.org/10.1016/j.sbspro.2014.01.1206>
- Facione, P. A. (2015). Critical thinking: What it is and why it counts. *Insight Assessment*, 5 (1), 1–30.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modelling (PLS-SEM)* (2nd ed.). Sage Publication. <https://doi.org/10.15358/9783800653614>
- Nor, H. M., & Sihes, A. J. (2021). Critical Thinking Skills in Education: A Systematic Literature Review. *International Journal of Academic Research in Business and Social Sciences*, 11(11), 198 – 201.
- Kamarudin, N. Y., Ashari, Z. H. M., Yaacob, R., &

- Kosnin, A. M. (2021). *Analisis data kaedah SEM SmartPLS aplikasi asas dan langkah demi langkah* [Data analysis of SEM SmartPLS basic and step-by-step application methods] (1st ed.). Penerbit Universiti Teknologi Malaysia.
- Kline, R. B. (2005). *Principles and practice of structural equation modeling* (2nd ed.). Guilford Press.
- Koster, B., Brekelmans, M., Korthagen, F., & Wubbels, T. (2005). Quality requirements for teacher educators. *Teaching and Teacher Education*, 21(2), 157–176. <https://doi.org/10.1016/j.tate.2004.12.004>
- Miller, J. W., McKenna, M. C., & McKenna, B. A. (1998). A comparison of alternatively and traditionally prepared teachers. *Journal of Teacher Education*, 49(3), 165–176.
- Petek, E., & Bedir, H. (2018). An adaptable teacher education framework for critical thinking in language teaching. *Thinking Skills and Creativity*, 28, 56–72. <https://doi.org/10.1016/j.tsc.2018.02.008>
- Richards, Jack C. (2011). Exploring teacher competence in language teaching. *The Language Teacher*, 35(4), 3. <https://doi.org/10.37546/jaltlt35.4-2>
- Saedah Siraj, & Ibrahim, M. S. (2012). *Pendidikan bertaraf dunia Pembentukan insan seimbang Perpaduan negara Pemupukan budaya ilmu Merealisasikan wawasan 2020 Pendemokrasian pendidikan Pembelajaran sepanjang hayat Tenaga kerja K- ekonomi Penekanan kepada sains dan teknologi*.
- Sahrir, M. S., Osman, N., & Muhammad, I. S. (2020). Aplikasi ‘Konsep 4C’ pembelajaran abad ke-21 dalam kalangan guru pelajar sarjana mod pengajian pendidikan bahasa Arab cuti sekolah UIAM. *E-Jurnal Bahasa Dan Linguistik (e-JBL)*, 2(1), 12–22.
- Shahmohammadi, N. (2015). Competent teacher characters from students point of view. *Procedia - Social and Behavioral Sciences*, 205, 242–246. <https://doi.org/10.1016/j.sbspro.2015.09.067>
- Sorensen, T. J., Lambert, M. D., & McKim, A. J. (2014). Examining Oregon agriculture teachers’ professional development needs by career phase. *Journal of Agricultural Education*, 55(5), 140–154. <https://doi.org/10.5032/jae.2014.05140>
- Tabachnick, B., & Fidell, L. (2001). *Using multivariate statistics*. MA Pearson.
- Yorganci, S. (2017). *The Effects of Podcasting on vocational school students’ critical thinking dispositions for a Mathematics course*. [Paper Presented]. The International Conference on Humanities and Educational Research.
- Zaini, A. R., Zakaria, N., Hamdan, H., Ghazali, M. R., & Ismail, M. R. (2019). Pengajaran bahasa Arab di Malaysia: Permasalahan dan cabaran. *Jurnal Pengajian Islam*, 12(1), 47–57.
- Zakaria, Z., & Hussin, T. H. A. T. (2020). Strategi PAK21 subjek bahasa Arab di kalangan guru pelatih Universiti Pendidikan Sultan Idris di sekolah menengah. *International Journal of Modern Education*, 2(5), 9–18.
- Zarpou, T., Saprikis, V., Markos, A., & Valachopoulou, M. (2012). Modeling users’ acceptance of mobile services. *Electronic Commerce Research*, 12(2), 225–248. <https://doi.org/10.1007/s10660-012-9092-x>