PROCEEDINGS
Kalijaga International Conference on Education 2026
Faculty of Tarbiyah and Teacher Training, UIN Sunan Kalijaga
Innovation Toward Education: Shaping the Future of Learning
15 September 2026 | Convention Hall, UIN Sunan Kalijaga, Yogyakarta

CONFERENCE PAPER • KICE 2026 • YOGYAKARTA, INDONESIA

Development of Tajweed Diagnostic Test (TDT) to Asses Misconceptions Related to Tajweed

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Proceedings of the Kalijaga International Conference on Education 2026

Abstract. To date, no studies on Tajweed have used diagnostic tests. This study proposes a diagnostic instrument known as a three-tier test to investigate misconceptions about Tajweed. This research aims twofold: (1) to develop and validate a diagnostic test on the Tajweed concept and (2) to identify the misconceptions of Indonesian students through this test. The study, however, sheds new light on the subject because it involves an analytical approach that capitalises on students' self-confidence. This test is based on knowledge related to Tajweed, included in the Indonesian tertiary curriculum and Islamic religious knowledge. Results of document analysis and interviews were used to construct proportional knowledge that later transformed into open questions to identify Tajweed concepts frequently misunderstood. The developed Tajweed Diagnostic Test (TDT) was distributed to 307 undergraduate students. The validity of TDT was assessed through qualitative and quantitative techniques. The test attains a high Cronbach's alpha reliability coefficient and point-biserial correlation. Thus, this test produces a valid score and precisely measures students' comprehension of Tajweed. The examination reveals that most students experience Tajweed misconception on al-madd al-waajib al-muttashil, al-madd al-‘aarid lis sukoon, makhaarij al-huruuf, and al-iqlaab.

Keywords: Three-tier test; misconceptions; Tajweed, Qur’anic learning.

INTRODUCTION

Tajweed is the fundamental rule in reciting Al-Qur’an. The comprehension of Tajweed allows someone to correctly and fluently recite Al-Qur’an. Some studies reveal that college students demonstrate less and even poor reciting Al-Qur’an [1]. The possible cause of that problem is low Tajweed comprehension [2]. However, the methods and instruments of assessment in learning the recitation of the Qur'an can still be limited, for example, in the form of checklists [3] and surveys [4]. This is a challenge because this instrument makes it difficult for teachers to distinguish between students who do not understand and those who experience misconceptions. At the university level, almost all students have received recitation teaching at the previous level [5] so what needs to be investigated is not knowledge at the elementary and secondary school levels but misconceptions and not. This diagnostic effort is significant to help lecturers identify the leading causes that make students still have difficulty reading the Qur'an and help students learn quickly and efficiently at a reasonably mature age.

In addition, although many studies on Tajweed’s learning and performance measurement [3],[4],[5], no study concerns Tajweed's misconception. Therefore, this research focuses on developing an instrument that diagnoses college students’ Tajweed misconceptions. This research contributes to the literature review on misconception and Al-Qur’an recitation learning. Besides, the forged instrument can assess students' understanding and misconceptions of Tajweed.

Most lecturers consider college students to have initial concepts and knowledge before joining the learning process [6],[7],[8]. Those concepts are possibly different from the proper rules of the Al-Qur'an recitation. This issue should be quickly resolved since it affects students' new knowledge formulated in the classroom learning process [9],[10]. Many terms refer to the conception [11],[12], but generally, the misconception is the most frequently used term, including in this article. The misconception is a cognitive structure that is difficult to transform and affects students' scientific conceptual understanding [6] due to formal science education [13]. Another definition of misconception is an inaccurate belief, usually formed by experience or knowledge of an object [14],[15]. Tajweed misconceptions in this study refer to wrong Tajweed knowledge and a firm belief that what is understood is true.

During Al-Qur'an recitation learning, lecturers mostly use interview techniques and traditional multiple-choice tests to diagnose students' misconceptions. This combination minimises their weaknesses [16],[17]. Its benefits are undeniable, but interviews consume time and complicate lecturers in generating generalisations from the results [18],[19],[20]. Contrarily, the multiple-choice test cannot reveal why students select a particular answer, so a two-tier test is developed [21] for assessments to reveal student understanding [17]. However, a two-tier test cannot differentiate students with low scores due to a lack of knowledge or misconception and those who attain high scores because of robust concept comprehension or randomly choosing the answer. Thus, a three-tier diagnostic test is developed [22], [23],[20]. The three-tier test provides a response certainty index, where students are asked to show their response certainty [24]. This index complement deficiency of a two-tier test [25]. This research is based on a combination of two-tier and response indexes.

Three-tier test offers some benefits, including accommodating a large sample and allowing broader and more precise results generalisation [26],[27]. For its validity, this test uses the correlation of both tier scores (answers to content questions and the reasons) and level of confidence, along with an estimation of false positive and false negative percentages to identify the construct validity [28],[20]. In other words, the three-tier test assesses misconception with the highest accuracy.

Research Objectives and Research Questions

This study aims to develop a valid and reliable three-tier diagnostic test to identify misconceptions; because this instrument is related to the concept of recitation, we named this test the Tajweed Diagnostic Test (TDT). In addition, this research should encourage Al-Qur'an recitation teachers as part of Islamic education. In line with these objectives, the research questions are:

Is the developed TDT valid and reliable for measuring students' understanding of Tajweed?

How is students' misconception prevalence of Tajweed?

METHODS

Research Design

TDT was developed through a modified version of Treagust [21] and Suwono et al. [29], with four main phases. This procedure is a methodological framework to construct TDT to investigate undergraduate students' misconceptions of basic Tajweed.

Constructing Tajweed Concepts

Document analysis and a clinical interview were conducted to identify the concept limitation. The document analysis was performed by investigating students' learning results and concept limitations on the curriculum, syllabus, semester learning plan, and the Al-Qur'an learning book for tutors and students. The analysis involved two experts in the Islamic education field from the Department of Arabic and an experienced Al-Qur'an recitation tutor of Universitas Negeri Malang. Additionally, the interview was conducted to investigate the learning result's misconception but not recognised by the tutor. In this interview, the students were given two random verses from Al-Qur'an and asked to identify the Tajweed rule. The verses were selected or adopted from the tutor report books on students' difficulties with Tajweed.

Identifying Proportional Knowledge of the Tajweed Concept

The constructed knowledge was later used to develop proportional knowledge statements as a fundamental Tajweed concept for undergraduate students. Two professors in the Islamic education field from the Department of Arabic were asked to review Tajweed's concept and proportional knowledge. As presented in Table 1, the results show three main points of Tajweed's basic concepts divided into nine subconcepts, with 14 statements of commensurate knowledge as the summary of assessment and expert concession that determines the validity and content suitability. The selection of this scope is based on the learning material applied at the university and refers to several previous primary sources [30],[3].

Table 1. Proportional Knowledge of the Tajweed Concept

Package	Scope	Concept	Definition	Item Number
1	Rules of makhaarij al-huroof and qalqalah	Makhaarij al-huroof	This is the place where the letter is articulated once it is pronounced.	4
1	Rules of makhaarij al-huroof and qalqalah	Lesser qalqalah	The qalqalah is in the middle of a word, or the qalqalah with a genuine sukoon. This qalqalah is read through reflecting the voice from the makharij al-huroof by considerably not strong reflection.	11
1	Rules of makhaarij al-huroof and qalqalah	Greater qalqalah	This qalqalah is at the end of a word, or we stop on that word. This qalqalah is read by reflecting the sound from the makhaarij al-huroof with a robust reflection.	8
2	Rules of noon sakinah and tanween	Izhar	This means pronouncing every letter explicitly and visible from its makhaarij al-huroof without humming sound.	2, 5
2	Rules of noon sakinah and tanween	Idghaam bi la ghunnah	It happens if noon saakinah or tanween meet the idghaam bila ghunnah letter (‘lam’ and ‘ra’). It is read by completely eradicating the ‘nn’ sound, strictly pronouncing the ‘lam’ or ‘ra’ with no humming sound.	9
2	Rules of noon sakinah and tanween	Iqlaab	The noon sakinah or tanween rule, if they meet the iqlab letter, is read as iqlab rules, followed by a humming sound.	13, 1
2	Rules of noon sakinah and tanween	Ikhfa’	Ikhfa’ represents the articulation of ikhfa’ letters followed by noon sakinah or tanween. This is read through light nasal sound with hidden ‘n’ sound from the noon sakinah or tanween.	6, 3, 7
3	Rules of mudod, the lengthening sound of one of the madd letters	Al-madd al-‘arid lil sukoon	It is a temporary prolongation that occurs only at the end of the ayah. It happens due to encountering madd’s letters with sukoon at the end of the sentence.	12, 14
3	Rules of mudod, the lengthening sound of one of the madd letters	Al-madd al-waajib al-mutasil	It is the obligatory prolongation because there is a madd letter in a sentence with hamzah.	10

Identifying Undergraduate Students’ Fundamental Concept

The interview and document analysis were developed into statements of proportional knowledge and used as the groundwork for formulating the open questions, mainly from the tutor report. The items were constructed more qualitatively to assess undergraduate students’ concepts and misconceptions. The questions were developed by avoiding a quantitative feature of a test, such as determining the number of Tajweed rules in verse. The moulded open questions were later given to Al-Qur’an recitation tutor in the Department of Arabic, Universitas Negeri Malang, to know if the items were suitable for the student’s level and to assess the misconception.

Constructing a Tajweed Diagnostic Test

The open questions that had been prepared were distributed to 100 second-year undergraduate students who had taken Islamic education courses and were declared to have passed learning to read and write the Qur'an. The responses to every item were analysed to identify their difficulty and misconceptions about Tajweed. The identified misconceptions were labelled as categories, and their frequency was counted. The three categories with the highest rate were used as distracters. In short, similar students' responses toward an item were combined to formulate a category. Therefore, each item has three distracters that lead to misconceptions and one correct answer.

The obtained open questions and categories were re-arranged into 14 multiple-choice questions that involve three-level items to assess students' understanding of basic Tajweed. The first level contains content questions, while the second level consists of reasons for answers to the first level. In contrast, the third level focuses on confidence by providing certainty, sure or not sure, on the answers to the previous levels.

Further, to reveal the Tajweed diagnostic test's content validity, the initial draft was given to two Al-Qur'an recitation tutors and a professor from the Islamic education field to be evaluated. The evaluation covers whether the second element is consistent with the first element, suitable for the student's level, and covers all identified misconceptions. Besides, Arabic and Indonesian experts evaluated language accuracy and correctness to be easily understood. Finally, after some revisions were carried out, the final version of TDT was distributed to 189 undergraduate students.

Source of Data

All first-level students who have taken Islamic education courses at Universitas Negeri Malang are the most accessible population. This project was approved by The Research Committee of the Universitas Negeri Malang, Indonesia, with a Certificate of Approval Number. The Research Committee certified that the study protocol was in compliance with the Declaration of Helsinki. We confirm that informed consent was obtained voluntarily from all participants. The first year was chosen because it is considered to have a strong enough retention to respond to the diagnostic tests that are being developed. This university is one of the first to require its students to learn to read the Qur'an or tajwid. In addition, this campus has a student activity unit with a direction of movement to develop and explore student talents in the field of the Qur'an and is known as an activity unit that excels at the national level. Thus, this research location was purposively selected. Three hundred seven students from 18 to 21 years old underwent Al-Qur'an recitation learning and took the TDT test. Female students dominated the number of samples by 67 percent. The Al-Qur'an recitation learning was conducted in 16 weeks, with 32 lecture hours. The students were informed that the test aims to identify their misconceptions and not affect their scores. Therefore, they were not obligated to fill in their names to assure anonymity.

Data Analysis

The data collection was carried out from March to June 2023. The students were given 45 minutes to finish the TDT. After the answers from 307 students were obtained, the rational analysis was conducted using Microsoft Office Excel for Windows (item in the column and the students in the row). The item evaluation was carried out using the answer key. Determining the misconception features and other variables was adopted from [31]. In summary, the diagram of determining student groupings on understanding, misconceptions, and not understanding is presented in Figure 1.

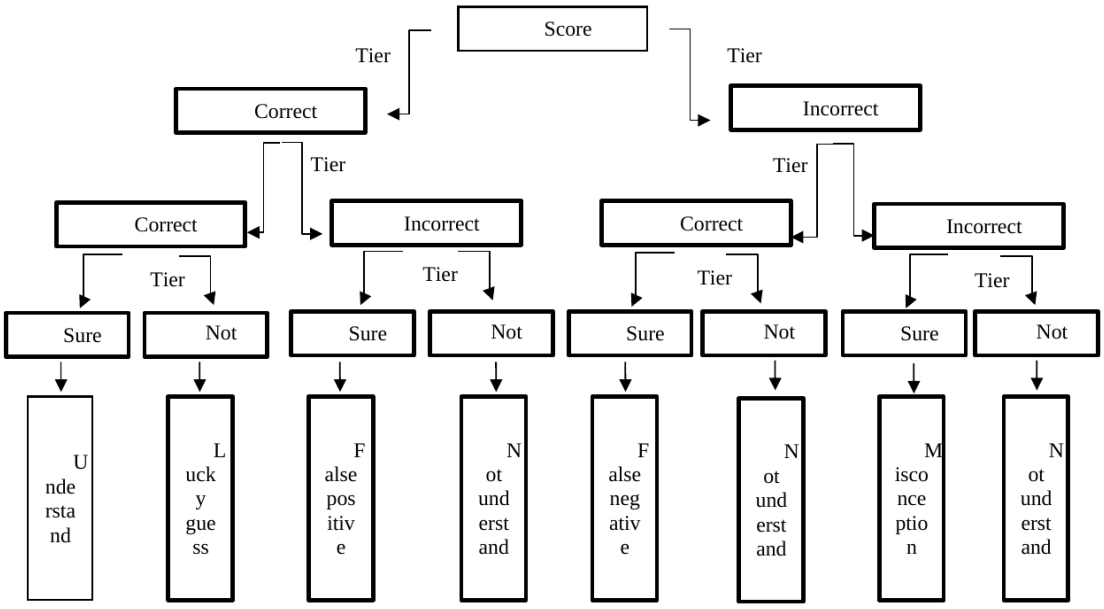


Figure 1. Diagram of Coding Procedure

RESULTS AND DISCUSSION

In this study, four categories were used to identify students' understanding, namely content questions or first-tier (FT), questions and reasons or both tier (BT), third alternative (content, motivations, and self-confidence), or all-tier (AT), along with confidence level or third tier (TT). Three categories explain the incorrect response: misconception, lucky guess, and lack of knowledge. Misconception (M) represents the answer to content and reason, or one does not match the high confidence level. The classification of misconception includes misconception on content answer only (M-FT), the misconception on content and reason (M-BT), and misconception on three alternatives (M-AT). Besides, false positives and negatives were used to identify inconsistencies between students' answers and reasons. False-positive means students give the correct answer with the wrong explanation, while false-negative covers students' incorrect answer with the right reason. If the students provide incorrect answers and reasons or have low confidence, he is categorised as having a lack of knowledge (LK). In contrast, if the students give the correct answer and wrong reason with a low confidence level, he is classified as a lucky guess (LG).

Descriptive Statistic

A student is categorised as having a good concept or scientific knowledge (SK) understanding if he provides the correct answer and reason with a high confidence level [20],[24],[31]. This became the foundation for descriptive analysis using AT scores. As presented in Table 2, the descriptive analysis results revealed that the student's average score is 9.17 from 14.00, with the lowest score of 0.00 and the highest score of 14.00. This result shows that students' AT achievement is satisfying (65.5 per cent). According to the students' maximum score, there are 31 students with the correct answer and a high confidence level in all test items. Thus, the skewness and kurtosis value are accepted to prove normal univariate distribution.

Table 2. Descriptive Statistic for AT Score Statistik

Parameter	n	M	SD
Number of items	14		
Number of participants	307		
Mean/maximum possible	14.00	9.17	3.91
Minimum	0.00		
Maximum	14.00		
Range	14.00		
Standard skewness	-0.77		
Standard kurtosis	-0.34		
Cronbach's alpha	0.87		
Difficulty indices		0.66	0.15
0.30-0.39	1		
0.41-0.49	2		

Parameter	n	M	SD
0.50-0.59	1		
0.60-0.69	3		
0.70-0.79	4		
0.80-0.89	3		
Point–biserial coefficients		0.62	0.06
0.41-0.49	1		
0.50-0.59	2		
0.60-0.69	9		
0.70-0.79	2		

Calculating the instrument's Cronbach alpha coefficient (α) obtains a score of 0.87. This score is classified as excellent for a test based on criteria [32]. Further, the difficulty level of all items in the instrument was also calculated. The analysis results discover that the item difficulty level ranges between 0.30 – 0.90, with an average of 0.66. according to criteria from [33], all items have moderate difficulty for undergraduate students.

Lastly, estimating the biserial point correlation coefficient shows that all items are above the threshold of 0.30 [26]. The average coefficient value of all things is considerably high at 0.62. This result shows that all items have high discriminating power. In other words, the items can differentiate students with high and low knowledge. Items with a high discriminatory index are free from ambiguity and precisely measure the learning results [34].

Validity Evidence

A primary method to verify the instrument's construct validity is correlating BT and TT. An excellent performance item exhibits a significant correlation between those two, so students with a higher score have higher confidence [35]. The research results demonstrate a positive and robust correlation between those points, with an r-value of r = 0.41 and p = 0.000. Even with a coefficient of less than 0.5, the significant correlation is sufficient to prove. Moreover, it corresponds with the large sample's expected results [36].

In conclusion, items in the instrument function correctly. For example, the correlation between BT and TT is displayed through a scattergram (Figure 1). Generally, the chart increases following the correct answers on both tiers. Besides, some students obtain low scores with high self-confidence [36]. This result demonstrates that some students randomly guessed the correct answers, deteriorating the correlation coefficient [20].

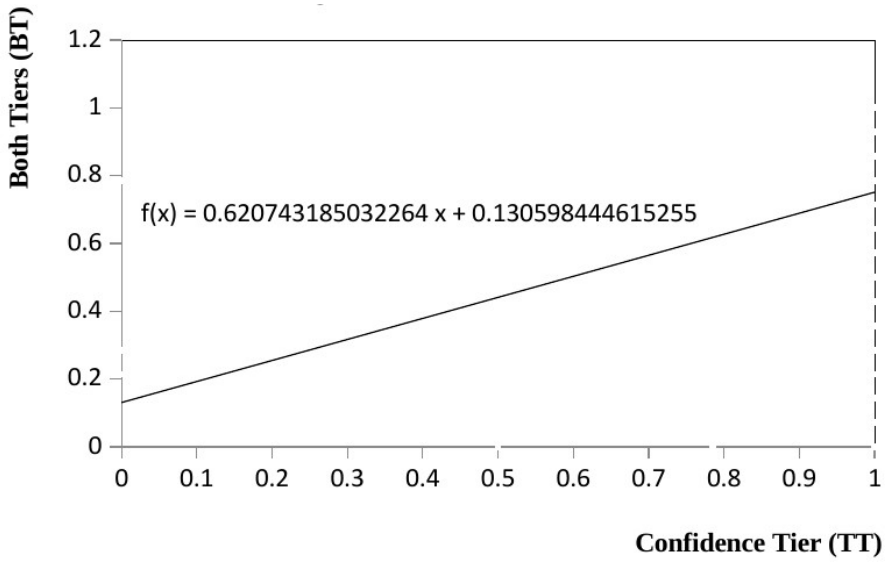


Figure 1. Correlation Between Both-Tiers (BT) and Third-Tier (TT) Scores

The content validity was also verified by calculating the percentage of a false positive and false negative, as Hestenes & Halloun [28] suggested. The recommended threshold for the false negative is less than 10 percent of the average [31). In this research, the average false positive and false negative percentages are 5.28 percent and 6.03 percent, respectively. The obtained false positive is lower than the false negative, even though the proportion of false-positive is arduous to curtail [28],[20] . On a more detailed investigation of each item, item no 3 presents the highest false negative of 10.42 percent. This score can be correlated to students' carelessness in answering the question [28]. However, this percentage is still around 10 percent; thus, it presents no

validity issue. The results reveal that all items on the instrument have high and apparent content validity and no problem assessing students' misconceptions.

Students' Understanding of Tajweed

Students' comprehension of Tajweed was explored by comparing the percentage of correct answers manifested by FT, BT, AT, and TT. The details of the results are illustrated in Table 3.

Table 3. The proportion of students' correct responses

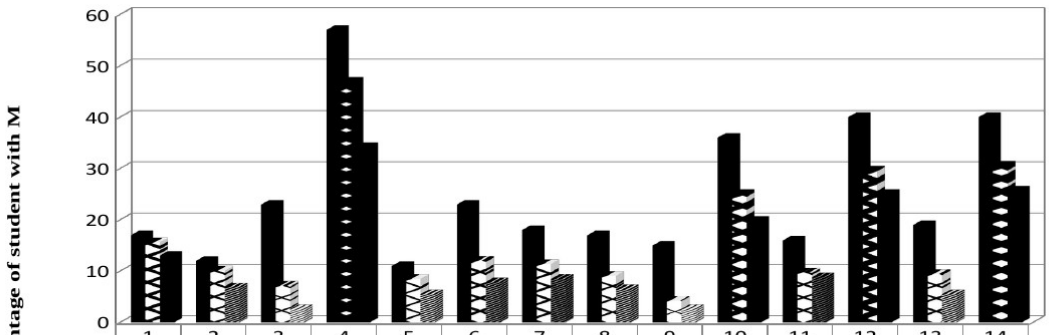
Items	**% of correct responses**	**% of correct responses**	**% of correct responses**	**% of**
Items	First Tier	Both Tier	All Tier	Three Tier
I1	82.74	82.08	79.80	94.14
I2	87.95	83.39	79.80	92.51
I3	76.87	73.00	68.40	84.04
I4	42.67	35.80	33.55	77.52
I5	88.60	86.32	83.71	92.83
I6	76.87	67.43	64.17	89.58
I7	81.43	68.40	65.15	89.60
I8	83.39	73.90	71.99	93.49
I9	85.34	81.11	78.50	92.18
I10	63.84	55.05	51.80	86.60
I11	84.04	74.27	72.30	94.14
I12	59.61	50.81	47.56	84.36
I13	81.11	75.57	72.60	89.90
I14	60.26	50.49	47.90	87.30
Mean	75.34	68.40	65.50	89.16

As displayed in Table 3, the correct response average score based on AT (65.50 percent) shows that almost 3 out of 4 students possess a great conceptual understanding (SK). The lowest and highest AT scores are attained by items number 14 (33.55 percent) and 15 (83.17), respectively. If the rates of average correct scores are compared, the scores slowly depreciate as the level escalates. Providing a correct answer on item content is more straightforward than presenting reasons with high confidence for that answer [31]. In other words, this result substantiates that students quickly complete the content questions. Still, they encounter challenges in giving reasons and confidence levels.

The difference between FT and BT percentages is around 7 percent. From that number, about 5 percent represents students with false positives (correct content answers with wrong reason and high confidence level). The remaining percentage symbolises students who give incorrect answers on the second level with a low confidence level; these students are classified as needing more knowledge. Additionally, the separate FT and AT percentage is around 9 per cent, linked to LG, LK, and M. This difference exhibits that only one of 10 students identified no exact reasons with a high confidence level. On the other hand, the distinction between BT and AT is low (around 3 per cent). This percentage covers students who guessed the answers or had quiet confidence. If we review, the self-confidence (TT) rate is 89.16 per cent. This percentage demonstrates students with exceptionally high self-confidence. However, only 65 per cent of students can adequately complete the items. Thus, 25 per cent of students are indicated to need clarification.

Prevalence of Students' Misconception

The prevalence of misconception was investigated by calculating the percentage of M-FT, M-BT, and M-AT on each item, as illustrated in Figure 2.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14
M-FT	17	12	23	57	11	23	18	17	15	36	16	40	19	40
M-BT	15.635179153094568	10.097719869706812	7.1661237785016343	46.905537459283436	8.4690553263826398	12.052117465743698	11.406514726387298	9.1205211726387298	4.2345276872955642	25.081433224755706	9.7719869706812404	29.641693811074918	9.4462540716612124	30.618892508143433
M-AT	13.029315960912152	6.8403908794788273	2.6058631921824104	34.201954397394136	5.5374592833876762	7.8175895765472312	8.4690553745928338	6.5146579804560261	2.6058631921824104	19.869706840390879	8.7947882736156351	25.081433224755706	5.5374592833876762	25.732899022801302

Figure 2. Analysis of Misconceptions by Tiers

According to Figure 2, all percentages of M-FT are above 10 percent. However, this amount continuously and significantly decreases once examined, along with the reason (M-BT) and confidence level (M-AT). The gradual reduction of misconception percentage indicates that a three-tier test accurately identifies Tajweed's misconception. Students with high confidence in their answers can be labeled SK. Further, the students who experience misunderstandings can be differentiated from those with limited knowledge.

In this research, students' misconception prevalence implementation is based on a 10 percent threshold from the M-AT sample. In other words, the percentage below that threshold is assumed to result from the error margin [22],[27]. Therefore, in this research, the students have misconceptions about five items (I1, I4, I10, I12, and I14).

Students needed clarification on item number I4 with FT (57 percent), BT (47 percent), and AT (34 percent). The question on this item refers to materials on the first package on makhaarij al-huroof. Therefore, students must master the letter's articulation to get the correct answer for this item. The presented question asks students to detect the makhaarij al-huroof of م (mim) and ن (nun) with tashdid or sukoon. Most students chose option C (48 per cent), which is from the mouth, and reason C (46 per cent) since it belongs to the al-khayshoom (the nasal) letter. According to the chosen distractors, students were deluded mainly by articulating the 'mim' letter with no tashdid or sukoon, which is articulated from two lips (upper and lower lips) since it belongs to the al-shafataan letter. Therefore, the correct answer for this item should be in the nasal base (option a). The second most chosen distractor is d, from mouth and throat cavity with reason B (41 per cent) al-lisan letter. Most students were deluded by the 'nun' letter with no sukoon articulated from the tip of the tongue after 'lam,' a deeper to the base of the tongue and located in the roof of the mouth (soft palate).

Item I10, I12, and I14 obtained a misconception percentage of 20 percent. These items represent materials in the third package on the madd rules. Question no I10 covers the material of al-madd al-wajib al-muttashil. At the same time, item I12 1st I14 includes al-madd al-'aarid li al-sukoon material. Students must decide whether the letter should be read prolongingly to provide proper answers to these items. On the al-madd al-wajib al-muttasil concept, the letter should be articulated with prolongation since it contains an al-madd al-tabe'e letter in a sentence with hamza. In contrast, al-madd al-'aarid li al-sukoon should be read with extension since al-madd al-tabe'e letter meets a letter with sukoon at the end of a sentence. The questions presented in these three items have the same pattern: students are provided with parts of verses and asked to decide on the Tajweed rule.

On item no I10, the most chosen distracter is C (24 percent) al-madd al-ja'ez al-munfasil, with reason C, which is the al-madd al-tabe'e faces hamza in another sentence (18). Both al-madd al-wajib al-muttasil and al-madd al-'aarid li al-sukoon appear from al-madd al-tabe'e and hamza. The difference is in the location of the letters and the hamza. In al-madd al-wajib al-muttasil, the hamza is located in one word, while in al-madd al-ja'ez al-munfasil, the hamza is situated in different words. Most of the incorrect answers are possibly caused by students' difficulties in identifying hamza in one or more words or their failure to understand the hamza form.

On item numbers I12 and I14, the results have the same pattern. The most chosen distractor on that item is A (26 percent) al-madd al-tabe'e, with the reason of A that is ي sukoon after letter with kasrah (32 percent) and و sukoon after dhammah (34 percent). Both al-madd al-tabe'e and al-madd al-'aarid li al-sukoon have the same

diacritic. However, in al-madd al-‘aarid li al-sukoon, it is located in the waqf, while in al-madd al-tabe’e, it is located in the middle. Students probably faced challenges in deciding al-madd al-tabe’e letter that meets letters with kasrah, fathah, and dhammah in one word or sentence.

Besides, item no I1 obtains the closest percentage to the error margin threshold, 13 percent. The question is from the second package about the noon sakinah and tanween on the concept of Iqlaab. To give the correct answer, students have to master the rules of iqlab (once the noon sakinah or tanween meets the ‘ba’ letter) and the way to pronounce it. The most chosen distractor is C (12 percent), two letters with reasons of A (13 percent), and two letters of ب and م (13 percent). This misconception is possibly caused by the iqlab rules to articulate letters, where the upper and lower lips are closed, and a humming sound. The ‘mim’ and ‘ba’ letter have the same makhaarij al-huroof. They are articulated from the encounter of lower and upper lips. Besides, iqlab rules in Al-Qur'an are marked by a small ‘mim’ letter (م), above the letter, between noon sakinah or tanween sith ‘ba.’ From this similarity, students may assume that iqlab letters are ‘mim’ and ‘ba.’

CONCLUSION

This research goal was to develop, evaluate the quality of, and implement an instrument to diagnose misconceptions about Tajweed experienced by Indonesian undergraduate students. The results of this study demonstrate that the device obtains a high Cronbach's alpha reliability coefficient, moderate item difficulty, sufficient point-biserial correlation coefficient, statistically significant BT and TT correlation, and percentage of false-negative far below the threshold. Furthermore, those results show that the instrument is valid and reliable in identifying students’ understanding and misconceptions. Tajweed misconception on al-madd al-waajib al-muttashil (I10), al-madd al-‘aarid lis sukoon (I12 and I14), makhaarij al-huruuf (I4), and al-iqlaab (I1).

The results of this research are consistent with previous studies on three-tier tests in other fields. Thus, a three-tier instrument identifies misconceptions and differentiates students with a lack of knowledge [22],[37]. Further, a three-tier instrument provides more reliable feedback due to the confidence index (TT) that discriminates between students with excellent understanding (SK) and those who guess the answer (LG). In short, this three-tier test is an effective and efficient assessment instrument to estimate the percentage of students with excellent comprehension and those who encounter misconceptions. Furthermore, this identification offers critical feedback for lecturers in finding the right strategy to reduce misconceptions or lack of knowledge [24], [37],[38].

This solution seems precise for the Tajweed topic of developing a new effective strategy. Many works of literature explain factors that cause misconceptions, including environment, partner, learning media, textbook, and learning process [39],[40],[41],[42]. However, this research's closest factor is a less effective and proper learning strategy. Students have learned Tajweed at primary or high school levels at previous education levels. Besides, in the five items where most students are indicated to experience misconception, almost all obtain a lack of knowledge (LK) the percentage of more than 10 percent. In item no I4, the rate even reaches 20 percent. Thus, it supports the statement that the Tajweed learning gained by students is less effective.

Generally, this research recommends that a three-tier test be applied as a more excellent and accurate instrument than a traditional multiple-choice test in diagnosing misconceptions, as implemented in collective Tajweed learning. As with other test instruments, this instrument can monitor the student’s learning progress on Tajweed in the pretest and posttest. In other words, this instrument can also be utilised to measure the effectiveness of Tajweed and Al-Qur’an recitation learning.

The researchers suggest that future researchers escalate the sample size, widen the research into a larger and higher Tajweed content, and consider self-confidence levels. The confidence options in this research are limited to two, yes, and no. Thus, the item can be revised in the future with three, five, or seven TT options, like a Likert scale, and separated TT for each part (FT and BT). Another validity and reliability test should be conducted to implement students with different characteristics or levels. Later, the results of that test can be compared with the results in this research.

Data Availability and Research Ethics Approval

The data used to support the study's findings can be obtained from the corresponding author upon request. Ethical approval was obtained from the Institute for Research and Community Service, Universitas Negeri Malang (State University of Malang) through certificate number KEPK/ 046 / UM/ VI/ 2025.

Funding Statement

This work was supported by the PNBP Research Grant of Universitas Negeri Malang year 2025.

ACKNOWLEDGMENTS

We thank the Institute of Research and Community Services, Universitas Negeri Malang, for funding this study. We are also thankful to all the participants who followed in the Tajweed class.

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