The Prevalence of Students' Guesswork in Multiple-Choice, Matching Items, and True-False Test Formats: Implications for Academic Performance in Tertiary Institutions in Tanzania

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Abstract
This study examines the prevalence of guessing impact on performance in multiple-choice (MC), matching items (MI), and true-false (TF) test forms among Tanzania's university students. Since educational tests increasingly rely on objective test forms, the impact of guessing on test scores and student performance is worth understanding. In a correlational research design, data were collected from 121 participants from various programs in three institutions of higher learning in the Dodoma region. Data were collected using questionnaires designed to quantify students' guessing behaviour and perceived effects on examination performance. Data analysis using the Statistical Package for the Social Sciences (SPSS) revealed that 76% of students indicated guessing during examinations, and only 24% said they never did. The analysis also uncovered a statistically significant weak negative correlation (rs = -0.281, p = 0.002) between students' confidence in guessing and their belief about its impact on examination marks. This means that students who are more confident in their guessing strategies are less likely to view guessing as detrimental to their performance. The findings also indicate that guessing can threaten the validity of test outcomes such that correct answers do not accurately represent students' actual knowledge. It therefore implies that in this research, instructors should employ tactics that minimise guesswork behaviours.

Keywords: *Guesswork, Multiple-Choice, Matching Items, True-False, Test Formats, Academic Performance, Tertiary Institutions*

Introduction

The study focuses on the use of multiple-choice (MC) matching items (MI) and True-False (TF) questions, which are viewed as objective response test items. Multiple-choice (MC) questions are a popular closed-ended format in educational environments (Brassil & Couch, 2019; Couch et al., 2018). True-False (TF) questions, by contrast, are a multiple-response format that maintains the question stem and response option framework of multiple-

choice (MC) questions (Couch et al., 2018). However, TF questions require students to respond to each option separately as true or false rather than selecting one of the correct options (Brassil & Couch, 2019; Golvardi Yazdi et al., 2021; Hubbard et al., 2017; Moballegh & Barati, 2012). Multiple-choice and true-false type is generally used in the evaluation of learning and are used to evaluate outcomes of knowledge, recollection, comprehension, and usage (Golvardi Yazdi et al., 2021; Moballegh & Barati, 2012; Soeharto et al., 2019). True-false and multiple-choice assessments are more probable in nature since good answers can occur by combining knowledge and educated guessing, while incorrect responses could be a result of unintentional error or deeply rooted delusions (Abu-Ghazalah et al., 2023; McKenna, 2019; Soho, 2020; Ubulom et al., 2012).

The detrimental nature of guessing in examinations is characterised by formulating opinions that lack sufficient bases, evidence, reasoning, and critical thinking (Agulyansky, 2024; Jonge, 2023; Guthrie, Zhang & Chen, 2020; Shafiyeva, 2021) as this practice poses a significant challenge, it directly affects students' ratings (Evanick, 2023; Soho, 2020). Students providing a correct response without knowledge of the content may result from guessing, partial knowledge, or a combination of both (Abu-Ghazalah et al., 2023; Golvardi Yazdi et al., 2021). An incorrect answer may be due to guessing, misinformation, or other factors unrelated to the intended construct, such as poor item design or human error (Soho, 2020). Students are unable to address specific questions within the final moments of a test and resort to providing random answers to the remaining questions to garner some correct responses (Evanick, 2023; Golvardi Yazdi et al., 2021; Soho, 2020). Furthermore, Yazdi et al. (2021) observed that students employ two strategies when guessing answers: blind guessing, where they randomly select an option in the hope that it is correct and informed guessing, where they use partial knowledge to arrive at an answer that they believe to be correct to some extent. Students can answer multiple-choice and true/false questions incorrectly, even if they possess some level of knowledge, and it is emphasised that the correct answer is not always a reflection of a good understanding (Jonge, 2023; Roediger & Marsh, 2005; Soho, 2020). Teachers need to design and administer educational tests, and in doing so, there is a necessity for strategies to minimise the influence of guessing on students' performance (Brassil & Couch, 2019; Couch et al., 2018).

Empirical evidence supports that guessing in true-false (TF) and multiple-choice (MC) matching items (MI) has been investigated extensively, with most scholars focusing on the tendency of students to guess while taking

these tests (Abu-Ghazalah et al., 2023; Akyol et al., 2022; Brassil & Couch, 2019; Maguya, 2022; McKenna, 2019). Therefore, the study examined the prevalence and impact of guessing on performance for multiple-choice (MC), matching items (MI), and true-false (TF) test items among students in higher education institutions in Tanzania.

Statement of the problem

Multiple-choice (MC), True-False (TF), and Matching Items (MI) are universally accepted as normal forms of objective-type questions utilised in the assessment of students at various levels of education. Such question formats are primarily designed to assess students' knowledge, comprehension, and, in some cases, application of concepts. These are normally preferred because of their efficiency, objective marking, and wide coverage of content. Still, despite their intended functions, a serious problem arose in the reality of using such test formats: many students tend to guess when filling out such questions, particularly where they do not have enough mastery or confidence concerning the topic of the question. Interestingly, guessing appears to be a reasonably effective strategy for the majority of students, enabling them to score passing or even high grades without necessarily demonstrating actual mastery of content. This phenomenon is raising serious questions about the validity and authenticity of test scores, as they may not necessarily reflect students' academic ability or learning outcomes. Therefore, the purpose of this study was to investigate the prevalence of guesswork among tertiary-level students in responding to multiple-choice, true-false, and matching item questions and to what degree guesswork affects their overall performance in the examination.

Literature Review

Literature suggests that various factors aside from item quality and random error have the ability to influence student test scores (Thorndike, 1971; 1991; Bloom et al., 1984; Bloom, 1956). One of the most famous factors is test-wiseness, the clever behaviour that enables students to respond correctly even without mastery of the tested content. Researchers define test-wiseness as the skill that allows students to select the correct answer to a test question even when they do not know the correct answer (Bailey et al., 2022; Chittooran, 2018; Evans, 2015). These researchers point out that adaptive behaviour encompasses strategies such as the recognition of distractors, observing frequent answer patterns, or using partial knowledge to rule out implausible options. Chittooran (2018), Cohen (2012), Nagy et al. (2019) and Roberson (2020) elaborate that the strategies are capable of increasing scores on multiple-choice tests but produce random error and decrease reliability. Other

studies link guessing strategies to inflated scores and increased measurement error (Lesage et al., 2013; Lindner et al., 2019; Royal & Stockdale, 2017; Soho, 2020). Studies show that scores from a student who got lucky and guessed his or her way to a high score are meaningless and invalid (Espinosa & Gardeazabal, 2010; Foley, 2016; Frey et al., 2005; Jensen et al., 2018; The University of Kansas, 2024). Other studies suggested that educated guesses are not illegal; however, students should have some knowledge of the content, which allows them to narrow their answer options to a few reasonable alternatives (Dodeen, 2009; Haladyna et al., 2002; Mountstevens, 2020; The University of Kansas, 2024; Wainer, 2011). According to Guo & Ercikan (2020), low engagement occurs when students exhibit rapid response behaviour, such as quickly guessing at answers or randomly or systematically selecting responses without expending effort to arrive at a correct response. Other studies have suggested that guessing my elevated scores compromises both the reliability and validity of test score use and interpretation, and affects the estimated performance (Guo & Ercikan, 2020; Svetina Valdivia et al., 2023; Wise, 2017).

The theoretical ground for this rationale lies in the Test-Taking Strategies Theory, as discussed by Crews (2010), Kashkouli et al. (2015), and TUNÇ and Şenel (2021). This theory claims that pupils employ cognitive devices like time control, elimination methods, and answer regulation to achieve optimal test performance irrespective of actual content information (Crews, 2010; Kashkouli et al., 2015; TUNÇ & Şenel, 2021). Theoretically, Test-taking strategies focus on students' use of many techniques during the test, such as guessing when not sure of the answers (Peng et al., 2014; Rice et al., 2011; TUNÇ & Şenel, 2021). Studies show that test-taking strategies are thought processes which help students perform better on exams, independent of content knowledge (Dodeen, 2015; Dodeen et al., 2014; Peng et al., 2014; TUNÇ & Şenel, 2021). As noted by Dodeen et al. (2014), some of the strategies incorporated are time management, survey questions, and handling hard or multiple-choice questions. Researchers have described the test as assessing students' advancement in academic endeavours (Adom et al., 2020; Murphy et al., 2023; Schustack & Friedman, 2005). From a broader point of view, scholars like Adom et al. (2020), Brodowicz (2024), Ketworrachai and Sappapan (2022), and Murphy et al. (2023) describe tests as an official testing tool used to measure and quantify the capacity of test-takers in educational settings. However, TUNÇ and Şenel (2021), Akbulut (2024), and Ketworrachai and Sappapan (2022) also mention that whenever non-content strategies exert considerable influence on scores, the assessment role of tests is undermined. Moreover, when students employ several different strategies

fitted to different items, their scores and the test's validity might be influenced (French et al., 2024; Lipnevich et al., 2023; TUNÇ & Şenel, 2021).

Furthermore, posited that test-taking strategies include students' application of information, techniques, and methods to address test questions, in combination with their cognitive abilities, to attain success in examinations. Lewandowski et al. (2013) add that test-taking strategies have increased students' examination scores. Peng et al. (2014) argue that using test-taking strategies can help prevent students with disabilities from falling behind their peers because they lack these strategies. Fakhil and Sawai (2021) add that using test-taking strategies does not necessarily indicate a student's deficiency in course competence. However, it provides an opportunity to arrive at the correct answer for certain types of questions where guessing is possible. Wise (2017) update that guessing behaviour provides fast responses that cannot be based on a meaningful effort to solve a given task. According to McFadden and Finney (2023) and Wise and Kuhfeld (2020, 2021), students reduce their performance throughout a test, even when their responses do not reflect rapid guessing behaviour. Other studies suggest that guessing behaviour is highly correlated across different sections of a test in MT, FT and MI and that the test takers who switch at some point in the test to faster response behaviour tend to maintain this type of behaviour until the end of the test (Abu-Ghazalah et al., 2023; Berman et al., 2020; Lindner et al., 2019; Wise & Kong, 2009). However, a key limitation of previous studies is the failure to consider how response patterns and question scores impact students' academic performance.

Research Methodology

The study used a correlational research design to explain the relationship between two or more variables without attempting to influence them (Fraenkel & Wallen, 2006). According to Fraenkel and Wallen (2006), correlation research designs use statistical tests to measure the degree of association between variables. The study was conducted in the Dodoma region of Tanzania, the country's capital city. The study's participants were certificate, diploma, and bachelor's degree students from the selected institutions enrolled in the business administration, local government, education, procurement, and tourism programs. Higher learning institutions and students were randomly selected. A total of 121 participants were randomly sampled to participate in the study.

The data were collected using an online questionnaire. The questionnaire measures frequency of guessing in MC and TF formats, reasons for guessing, and perceived impact on test performance. Responses were measured in terms of strongly disagree, disagree, agree, and strongly agree. The information collected was coded and loaded into statistical packages, i.e., version 25 of Statistical Package for the Social Sciences (SPSS), for analysis. Descriptive statistics were calculated to offer summaries of data, e.g., measures of frequencies and percentages, which provided general descriptions of respondent demographics and guess behaviour. To identify differences in average scores on MC/TF questions based on various levels of guessing frequency among students, the Kruskal-Wallis H Test was used. The Mann-Whitney U Test was also used to identify differences in average scores on MC/TF questions between male and female students. Spearman's Rank-Order Correlation coefficient was also employed to examine if there was a relationship between student confidence in guessing and the perception that guessing improves one's performance in exams.

Ethical consideration

The researcher followed the research ethics by first obtaining clearance letters from relevant authorities. Second, participants were assured of confidentiality during and after the data collection and analysis period. Thirdly, students' registration numbers and the institutions they belong to remain anonymous during data presentation and analysis.

Results and Discussions

The study results are presented on sub-themes that reflect the study objectives, which investigated the prevalence of guesswork among Tertiary students in responding to multiple-choice, true-false, and matching item questions, and the extent to which guesswork influences their overall examination performance.

Variables descriptions

The sample comprised 121 respondents, with a relatively balanced gender distribution: 54.5% were female (n = 66) and 45.5% were male (n = 55) (see Table 1). This demographic breakdown provides a solid foundation for interpreting subsequent findings. In terms of guessing behaviour, as presented in Table 2, a substantial majority of respondents (76%) reported that they had guessed on multiple-choice or true-false questions during their end-of-semester exams. In contrast, only 24% indicated that they had never guessed. Moreover, when examining the frequency with which students engaged in guessing, 29.8% reported that they always answered based on their knowledge, 21.5% almost always answered based on their knowledge,

30.6% occasionally guessed when unsure, and 18.2% frequently resorted to guessing. These results underscore the variability in test-taking strategies among students as detailed in Tables 1 and 2.

Table 1: Demographics

Gender	Frequency	Percent (%)
Female	66	54.5
Male	55	45.5
Total	121	100

Prevalence of guesswork among Tertiary students in responding to objective questions

The tendency for tertiary students to guess when answering objective questions is widely recognised across all educational levels. The study revealed that students in higher education often resort to guessing on objective tests when they lack certainty about the correct answer, as summarised in Table 2.

Table 2: Guessing Behaviour

	Category	Frequency	Percent
Have you ever guessed on multiple-choice or true-false questions?	No	29	24
	Yes	92	76
How frequently do you guess answers?	Always answer based on knowledge	36	29.8
	Almost always answer based on knowledge	26	21.5
	Occasionally guess	37	30.6
	Frequently guess	22	18.2

Academic performance and the perceived impact of guessing on examination scores are summarised in Table 3. The findings indicate that (55.4%) of respondents achieved scores above 10/20%, while 34.7% scored between 5 and 10/20%, 8.3% obtained a perfect score of 20/20%, and only 1.7% scored below 5/20%. Notably, when asked whether guessing affects exam scores, 52.1% of respondents agreed and 18.2% strongly agreed, suggesting that over 70% of students perceive guessing as having a negative impact on their performance, as detailed in Table 3. These findings are consistent with the work of Rios et al. (2022), who conducted a meta-analysis on rapid guessing in low-stakes cognitive assessments and found that an average of 28.3% of examinees engaged in rapid guessing, negatively distorting aggregated test scores by 0.13 standard deviations.

Table 3: Performance and Scores

	Category	Frequency	Per cent
What is your average score in multiple-choice or True-False Questions?	Below 5/20%	2	1.7
	Between 5–10/20%	42	34.7
	Above 10/20%	67	55.4
	20/20%	10	8.3
Guessing affects exam scores	Strongly Disagree	8	6.6
	Disagree	28	23.1
	Agree	63	52.1
	Strongly Agree	22	18.2

On the other hand, the respondents were asked about their confidence levels when guessing. The result indicates that (40.5%) of respondents reported having no confidence in their guesses, 33.1% indicated having little confidence, and 25.6% expressed some confidence; only 0.8% felt quite confident. These findings point to a general lack of assurance in the outcomes of their guessing strategies as detailed in Table 4. These results are in line with Kleman (2020), who found that students often lack confidence in their guesses, with a majority reporting little to no confidence.

Table 4: Confidence Levels

	Category	Frequency	Per cent
How confident do you feel when guessing?	No confidence	49	40.5
	A little confidence	40	33.1
	Some confidence	31	25.6
	Quite confident	1	0.8

Likewise, the perception of respondents regarding guessing was measured as detailed in Table 5. The results show that the majority of respondents (67.8%) agreed that guessing can sometimes lead to correct answers, with an additional 11.6% strongly agreeing. In contrast, opinions on whether guessing is a sign of poor preparation were more varied, with 35.5% agreeing, 33.9% disagreeing, and 19.0% strongly disagreeing. This divergence suggests that while many students acknowledge a potential benefit of guessing under certain conditions, they remain divided on its implications for overall preparedness. As described by Betts et al. (2009), students scored higher and left fewer questions unanswered when there was no correction for guessing.

Table 5: Perceptions of Guessing

	Category	Frequency	Per cent
Guessing can sometimes lead to correct answers	Strongly Disagree	9	7.4
	Disagree	16	13.2
	Agree	82	67.8
	Strongly Agree	14	11.6
Guessing is a sign of poor preparation	Strongly Disagree	23	19
	Disagree	41	33.9
	Agree	43	35.5
	Strongly Agree	14	11.6

The study went further to measure the external factors influencing guessing behaviour among students, as summarised in Table 6. The results reveal that question difficulty plays a significant role, with 51.2% of respondents agreeing and 24.8% strongly agreeing that it influences their decision to guess. Similarly, time shortage was noted as a factor by 38.0% of respondents, with an additional 10.7% strongly agreeing. However, perceptions about the clarity of examination instructions were mixed; only 36.4% agreed that clear instruction reduces the need for guessing, while 41.3% disagreed and 14.9% strongly disagreed, indicating that the effectiveness of examination instructions in mitigating guessing may be inconsistent. These findings concur with Bansilal et al. (2019), who found that difficulty questions significantly impact guessing, with students more likely to guess on harder items.

Table 6: External Factors Influencing Guessing

	Category	Frequency	Per cent
Question difficulty influences guessing	Strongly Disagree	10	8.3
	Disagree	19	15.7
	Agree	62	51.2
	Strongly Agree	30	24.8
Time shortage influences guessing	Strongly Disagree	17	14
	Disagree	45	37.2
	Agree	46	38
	Strongly Agree	13	10.7
Instructions reduce the need for guessing	Strongly Disagree	18	14.9
	Disagree	50	41.3
	Agree	44	36.4
	Strongly Agree	9	7.4

Lastly, beliefs about guessing were measured, and the results indicate that the majority of respondents (76.0%) do not believe that guessing is an important skill in their field of study, with only 24.0% affirming its importance. However, the overall descriptive statistics provide a comprehensive overview of the sample's characteristics, guessing behaviours, performance outcomes, confidence levels, and perceptions regarding guessing. The findings show that while guessing is a prevalent test-taking strategy among students, there is considerable variation in the frequency of guessing and the associated confidence levels. Additionally, external factors such as question difficulty and time constraints appear to exert a significant influence on guessing behaviour, even though clear instructions do not consistently mitigate this tendency. These insights form the groundwork for subsequent inferential analyses aimed at exploring the relationships among these variables and their implications for educational assessment practices, as detailed in Table 7. These findings are contrary to Fraidan (2024), who found that guessing strategies differ based on language proficiency, with higher-proficiency students employing educated guessing using linguistic insights, while lower-proficiency students rely on simpler heuristics.

Table 7: Beliefs about Guessing

	Category	Frequency	Per cent
Do you believe that guessing is an important skill?	No	92	76
	Yes	29	24

Association between Gender and Guessing Behaviour

The study examined whether gender is associated with students' likelihood of guessing on multiple-choice or true-false exam questions; a chi-square test of independence was conducted. The crosstabulation results (see Table 8) show that among the 66 female respondents, 52 (78.8%) reported having guessed on an examination, while 14 (21.2%) indicated they had never guessed. Among the 55 male respondents, 40 (72.7%) reported having guessed, while 15 (27.3%) had not.

Table 8: Crosstabulation of gender and guessing behaviour

Gender	**Have You Ever Guessed?** (No)	**Have You Ever Guessed?** (Yes)	Total
Female	14 (21.2%)	52 (78.8%)	66
Male	15 (27.3%)	40 (72.7%)	55
Total	29 (24.0%)	92 (76.0%)	121

The chi-square test results (see Table 9) indicate that the relationship between gender and guessing behaviour was not statistically significant, $\chi^2(1, N =$

121) = 0.605, p = 0.437. Fisher's Exact Test (p = 0.523) and the likelihood ratio (p = 0.438) similarly suggest no significant association between these variables. Cramér's V and Phi coefficient values (both = 0.071, p = 0.437) indicate a very weak relationship between gender and guessing behaviour.

These results suggest that gender does not significantly influence whether a student engages in guessing on multiple-choice or true-false examination questions. Both male and female students report similar tendencies toward guessing, implying that other factors, such as test-taking strategies, examination difficulty, or time constraints, may play an important role in influencing guessing behaviour. Contrary to Fraidan (2024), who found gender differences in guessing behaviour where female students demonstrated more cautious approaches compared to the impulsive strategies of male students.

Table 9: Chi-Square Test Results

Test	Value	df	Sig. (p-value)
Pearson Chi-Square	0.605	1	0.437
Continuity Correction	0.318	1	0.573
Likelihood Ratio	0.603	1	0.438
Fisher's Exact Test	-	-	0.523
Cramér's V	.071	-	0.437

Comparison of Average Multiple-Choice and True-False Exam Scores by Sex

A Mann-Whitney U test was conducted to determine whether there were differences in average scores on multiple-choice or true-false (MC/TF) questions during end-semester exams between male and female students, based on a sample of 121 participants from higher learning institutions in Tanzania (66 females, 55 males). The results indicated that males had a higher mean rank (64.66) compared to females (57.95), with a Mann-Whitney U statistic of 1613.50 and a Wilcoxon W statistic of 3824.50. The test yielded a z-score of -1.182 and a two-tailed asymptotic significance of $p = .237$. This p-value exceeds the conventional alpha level of .05, indicating no statistically significant difference in average MC/TF scores between male and female students. The nonsignificance here means that sex does not make a significant impact on performance in these types of questions, so guessing behaviour, preparation, or test-taking style might have an equally influential impact on performance by gender. The finding is in line with the evidence suggesting external variables like difficulty of questions or time given can overpower demographic variability in MC/TF exam performance (Yazdi et al., 2021). However, the ordinal nature of the score data (e.g., "Below 5/20%," "Above 10/20%") and limited sample size might limit the test power

in detecting weak differences, making additional exploration worthwhile using more variables or a larger sample.

Association between Guessing Frequency and Confidence in Multiple-Choice and True-False End-of-Semester Examinations

A Spearman's rank-order correlation was conducted to establish the correlation between the frequency at which students guess on multiple-choice or true-false (MC/TF) questions on end-of-semester examinations and their level of confidence in their guesses using a sample of 121 students from Tanzania's institutions of higher learning. Based on Table 10, the analysis yielded a correlation coefficient of rs = 0.050 and a two-tailed significance value of p = 0.585. This result indicates a very weak positive correlation between frequency of guessing and confidence, which is not statistically significant at the conventional alpha level of.05. Thus, there is no evidence of a significant monotonic relationship between the frequency of guessing by students and their confidence in guessing, suggesting that these two variables do not systematically co-vary. This lack of correlation implies that students' guess options can be driven by motivations other than confidence, e.g., external pressures like time or question difficulty, as indicated in prior work (Yazdi et al., 2021). For instance, some students will guess more frequently under strategic choice or situational pressure than in confidence of accuracy in their guesses. In contrast, others will access knowledge independently of confidence levels. This finding aligns with the test-taking strategies theory (Dodeen, 2015), favouring diverse determinants of guessing behaviour over confidence, such as risk tolerance or familiarity with exam formats. The absence of a strong correlation indicates the necessity of further exploration of variables, including perceived difficulty or preparation, that can better explain guessing actions in this context.

Table 10: Spearman's Rank-Order Correlation between Guessing Frequency and Confidence

	How Confident Do You Feel?
How Frequently Do You Guess?	0.050
Sig. (2-tailed)	0.585
N	121

Relationship between Confidence in Guessing and Perceived Impact on Multiple-Choice and True-False Examination Scores

Spearman's rank-order correlation was conducted to examine whether or not the confidence of students in guessing on multiple-choice or true-false (MC/TF) questions is related to whether or not they think guessing affects their scores on these examinations, based on a sample of 121 students from Tanzanian tertiary learning institutions. The results exhibited a statistically

significant, weak negative correlation, rs = -0.281, p = 0.002 (two-tailed), which implies that when belief in guessing increases, the belief that guessing influences exam scores diminishes, and vice versa. This suggests that more confident guessers, perhaps due to test-taking technique or some acquaintance, are less likely to see guessing as something that will harm their performance, whereas less confident guessers may see it as a risk to their grades. The significance at the 0.01 level ($p < 0.01$) confirms the reliability of this relationship within the sample. However, the weak strength of the correlation (rs = -0.281) implies that other factors, such as question difficulty or preparation, may also influence perceptions of guessing's impact. This finding aligns with test-taking strategies theory (Dodeen, 2015), which posits that cognitive skills like confidence in guessing can shape students' exam experiences, and supports prior research noting the distinction between informed and blind guessing (Yazdi et al., 2021). However, the ordinal nature of the data limits causal inferences, and further multivariate analyses, such as regression, could clarify the broader context of these perceptions.

Differences in Multiple-Choice and True-False Exam Scores by Guessing Frequency

A Kruskal-Wallis H test was conducted to assess whether average scores on multiple-choice or true-false (MC/TF) questions during end-semester exams differed across four levels of guessing frequency among 121 students from higher learning institutions in Tanzania. The groups were defined by responses to "How frequently do you guess the answers in multiple-choice or true-false questions during an end-of-semester exam?": "I always answer based on my knowledge" (n = 36), "I almost always answer based on my knowledge" (n = 26), "I guess occasionally, when I am not sure of the answer" (n = 37), and "I frequently guess when I don't know the answer" (n = 22). The results revealed mean ranks of 75.79, 62.10, 51.05, and 52.23, respectively, with a Kruskal-Wallis H statistic of 13.682, $df = 3$, and an asymptotic significance of $p = .003$. This p-value, significant at the .05 level, indicates a statistically significant difference in average MC/TF scores across the guessing frequency groups. Specifically, students who "always answer based on knowledge" had the highest mean rank (75.79), suggesting better performance, while those who guess more often (e.g., "occasionally" or "frequently") had lower ranks (51.05 and 52.23), implying lower scores. This finding suggests that reliance on knowledge rather than guessing is associated with higher MC/TF performance, aligning with research indicating that guessing introduces random error and reduces score reliability (Soho, 2020). However, the similar mean ranks between "occasional" and "frequent" guessers suggest that the extent of guessing may not linearly degrade

performance beyond a certain point, possibly due to informed guessing strategies (Yazdi et al., 2021). Post-hoc pairwise comparisons could further clarify which specific group differences drive this effect.

Table 11: Mean Ranks and Kruskal-Wallis Test Statistics for Average Multiple-Choice and True-False Exam Scores by Guessing Frequency

Guessing Frequency	*N*	Mean Rank
I always answer based on my knowledge	36	75.79
I almost always answer based on my knowledge	26	62.10
I guess occasionally, when I am not sure of the answer	37	51.05
I frequently guess when I don't know the answer	22	52.23
Test Statistics		
Kruskal-Wallis *H*		13.682
df		3
p		.003

Note. $N = 121$.

The grouping variable is "How frequently do you guess the answers in multiple-choice or true-false questions during an end-semester exam?" *p* represents the asymptotic significance (2-tailed).

Conclusion

This study examined the prevalence and impact of guessing behaviour on students' academic performance in multiple-choice (MC), matching items (MI), and true-false (TF) examinations among higher learning institutions in Dodoma, Tanzania. The findings show the complexities of guessing strategies used by students and their subsequent effect on test performance. As detailed in the findings, the majority of students 76%, admit to having guessed on MC or TF questions at some point. This finding aligns with previous research showing the prevalence of guesswork in assessments, which can distort the true representation of a student's knowledge and competence. Although the correlation analysis indicated a very weak relationship between guessing frequency and the confidence students reported in their answers, external factors such as time pressure, question difficulty, and inadequate preparation may drive guessing behaviour more than self-perceived confidence contributes to that guessing. On the other hand, the Kruskal-Walli's test demonstrated statistically significant differences in average MC/TF scores among different guessing frequency groups showing that students who consistently answered questions based on knowledge outperformed those who relied on guessing, Interestingly, the analysis suggests that the impact of guessing on performance may not always

be linear; informed guessing strategies can moderate the adverse effects associated with random guessing.

Recommendations

The study recommends that educators design assessments that minimise ambiguity, incorporating a mix of question formats that require critical thinking. Lecturers should offer test preparation workshops to help students develop effective test-taking strategies. Additionally, educators should incorporate formative assessments alongside summative evaluations to enhance student understanding and reduce the reliance on guessing. Finally, higher education management should organise workshops for educators aimed at improving their ability to create high-quality and well-structured test items, which can significantly boost educational outcomes in institutions and increase students' confidence in their knowledge.

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