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Self-Awareness and Mathematics Achievement among Ordinary Level Secondary School Students under the Competency-Based Curriculum in Mbarara City

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The study explored the relationship between self-awareness and academic achievement in mathematics among ordinary-level secondary school students in Mbarara city, Uganda. A quantitative research approach using a cross-sectional design was adopted. A sample of 235 ordinary level students randomly selected from both private and public secondary schools participated in the study. Data on self-awareness was collected using the self-awareness scale developed by Scheier and Carver (1985), while academic achievement was measured using standardised end-of-term mathematics scores. Descriptive statistics and the Pearson product moment correlation coefficient were used to analyse the data. The findings revealed a moderate positive correlation ($r = .543$, $p \leq .01$) between self-awareness and mathematics achievement among ordinary level secondary school students in Mbarara city. The study concludes that fostering self-awareness is a valuable intervention in enhancing achievement in mathematics. Recommendations for future research include conducting longitudinal studies on self-awareness among college and university students.

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INTRODUCTION

Low academic achievement in mathematics among ordinary level students within the framework of the competency-based curriculum (CBC) in Uganda has raised significant concern (Emuria, 2023). Data from the Uganda National Examinations Board revealed that 58 % of secondary schools in Mbarara city scored below a credit in mathematics (UNEB, 2023). This persistent underachievement in mathematics has raised serious concerns among educators, policymakers, and parents in the region. The decline in mathematics achievement in Mbarara city is partly attributed to insufficient self-awareness because globally, research emphasises the importance of self-awareness in academic success (Musinguzi et al., 2024). Self-awareness has been identified as a crucial determinant of academic success, as it helps students build resilience, manage stress, and develop strategies to enhance their learning (Mwangi & Ndungu, 2025).

In a study conducted in the United Kingdom, Brown (2022) found a significant correlation between students' levels of self-awareness and their performance in mathematics among secondary school students. The research revealed that students with higher self-awareness were more likely to engage in metacognitive strategies such as self-monitoring, goal setting, and self-assessment, all of which positively influenced their mathematical problem-solving abilities. Similarly, in Germany, Zimmerman (2002) explored the relationship between self-regulated learning, of which self-awareness is a foundational element and academic achievement in mathematics. The findings indicated that students who could accurately evaluate their learning needs and adjust their strategies accordingly performed significantly better in mathematics assessments. A study conducted by Zhang and Bian (2021) involving high school

students in China demonstrated that self-awareness significantly predicted academic success in mathematics. Likewise, Shen et al. (2021) conducted a study in Taiwan that explored the mediating role of self-awareness in the relationship between emotional regulation and mathematics achievement. The results showed that students with strong self-awareness skills were better able to manage anxiety and maintain focus during mathematics exams, leading to higher scores. In Hong Kong, Tam et al. (2023) examined the impact of a school-based self-awareness training program on mathematics achievement. Their quasi-experimental study showed that students who underwent the training demonstrated improved performance in mathematics assessments compared to a control group.

In western Africa, particularly in Nigeria, studies have found that self-awareness and self-esteem significantly predicts mathematics performance among secondary school students (Obi & Ugwu, 2022). Similarly, in Anambra State, Nigeria, self-awareness was identified as a strong predictor of mathematics achievement, particularly among adolescents (Ezeaku et al., 2023). These studies reinforce the argument that fostering self-awareness is essential for improving academic performance, especially in mathematics. Within the East African region, a study conducted by Habumugisha et al. (2025) in Rwanda revealed that self-awareness improves academic performance. Similarly, a study by Musinguzi et al. (2024) in Uganda found that students with higher self-awareness displayed increased motivation and persistence, which translated into better academic outcomes. Therefore, an intervention aimed at enhancing self-awareness could play a crucial role in improving Mathematics Achievement under the Competency-Based Curriculum in Mbarara City Secondary Schools. Conceptually, this study focused on self-

awareness as an independent variable and academic achievement in mathematics as a dependent variable. Self-awareness is defined as the conscious knowledge of one's emotions, thoughts, motives, and behaviours, and involves recognising their impact on others (Brown, 2022). It encompasses facets such as private self-awareness and public self-awareness. In this study, self-awareness was operationalised as academic achievement, in contrast, which refers to the extent to which students meet educational goals through outcomes such as grades, standardised tests, and successful course completion (Khan et al., 2022). In this study, academic achievement was operationalised as the students' final grades in mathematics, as indicated by their performance in end-of-term examinations. These grades were categorised into different levels, with a credit being the benchmark for acceptable achievement.

The study was grounded in the self-awareness theory developed by Shelley and Robert (1972). The theory posits that self-awareness is a psychological state in which individuals direct their attention inward to evaluate and compare their behaviour with internal standards and values. When individuals become self-aware, they actively engage in self-evaluation, leading them to regulate their thoughts, feelings, and actions to align with perceived personal or societal standards.

Problem Statement

Mathematics plays a critical role in academic success, serving as a foundational subject that enhances logical reasoning, problem-solving abilities, and analytical thinking (Mullis et al., 2020)

Despite efforts put in by the government of Uganda, like the CBC, reports from the Uganda National Examinations Board (UNEBC) indicate that failure rates in mathematics in Mbarara city continue to increase, with less than 35% of students achieving credit passes at the O-Level in recent years (UNEBC, 2023). While several studies have explored the impact of instructional methods and teacher

competency on student performance, there is limited research examining the role of psychological attributes, such as self-awareness, on mathematics achievement (Rajab, 2023). Little is known about how self-awareness affects mathematics achievement within the CBC framework in Ugandan secondary schools. This study sought to investigate the extent to which self-awareness contributes to academic achievement in mathematics among ordinary level secondary school students in Mbarara City Secondary Schools.

Research Objective

To determine the relationship between self-awareness and academic achievement in mathematics among ordinary level secondary school students in Mbarara City Secondary Schools

Hypothesis

H₀ There is no significant relationship between self-awareness and academic achievement in mathematics among ordinary level secondary school students in Mbarara City Secondary Schools.

METHODS

This study utilised a quantitative approach using a cross-sectional research design. The study was conducted in Mbarara City secondary schools due to its dynamic educational landscape, which includes both public and private secondary schools, as well as single-sex, co-educational, boarding, and day institutions. The total population was 1,245 O-Level students in Mbarara City Education Office (2023). A sample size of 235 students was determined using Krejcie and Morgan's (1970) sample size determination table. Simple random sampling was used to select students for participation in the study. Lists of eligible students were obtained from the head teachers of six secondary schools (Mbarara High School, Maryhill High School, Allied High School, St. Paul's S.S.S. Biharwe, St. Joseph Vocational School and Welden High School). These schools were selected to ensure a balanced representation across school types and to

capture the varied academic environments that may influence students' self-awareness and academic performance. Inclusion criteria was: being enrolled in O-Level classes, being present during the data collection period, and providing informed assent alongside school consent. Exclusion criteria: Students enrolled in A-Level and those who did not provide consent.

Data was collected using a structured questionnaire divided into three sections: demographic information, self-awareness assessment, and academic achievement records. The Self-awareness Scale developed by Scheier and Carver (1985) was used to measure self-awareness. This scale consists of 22 items that assess three key dimensions: private self-consciousness, public self-consciousness, and social anxiety, using a 5-point Likert scale (1 = "Not at all like me" to 5 = "A lot like me"). This scale is a validated instrument with high internal consistency, with Cronbach's alpha coefficients of 0.85. Mathematics achievement was measured using standardised end-of-term mathematics test scores, which were obtained from students' class teachers and cross-verified with official school records.

Prior to data collection, ethical clearance was obtained from BSU-REC-2024-369. Further approval was secured from the Mbarara city education officer, and the researcher was formally introduced to the participating schools by the

respective head teachers. Students received detailed explanations of the study's objectives and were given informed assent forms, while school administrators consented on behalf of parents. Participation was voluntary, and all data collected were treated with strict confidentiality and anonymity in accordance with standard ethical guidelines. Questionnaires were distributed and completed over a one-week period. Class teachers assisted in coordinating the distribution and collection of the completed forms, which were then securely stored and entered into a database for analysis. Data was analysed using IBM SPSS Version 26.0. Descriptive statistics were used to summarise the demographic data. To assess the relationship between self-awareness and academic achievement in mathematics, the Pearson product-moment correlation coefficient was computed. This statistical test was appropriate for examining the strength and direction of the linear relationship between two continuous variables (Zhang & Bian, 2021).

FINDINGS

Respondents' Demographic Characteristics

A total of 235 students from O-Level secondary schools in Mbarara City participated in the study. Table 1 summarises the demographic characteristics of the respondents, categorised by gender and age.

Table 1: Distribution of Respondents by Gender and Age

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	102	43.4
	Female	133	56.6
Age	13 years	3	1.3
	14 years	14	6.0
	15 years	38	16.2
	16 years	53	22.6
	17 years	73	31.1
	18 years	33	14.0
	19 years	12	5.1

Variable	Category	Frequency (n)	Percentage (%)
	20 years	6	2.6
	22 years	3	1.3
	Total	235	100.0

Source: *Primary data, 2024*

The majority of respondents were female (56.6%), while males constituted 43.4%. The mean age of the participants was 17 years, with a standard deviation (SD) of 2 years, indicating that most participants were in mid-adolescence, an appropriate developmental stage for examining self-awareness. The age range was diverse, with a notable percentage of students between 16 and 17 years,

which are key ages for identity formation and self-reflection, aligning with the focus of the study.

To determine the relationship between self-awareness and academic achievement in mathematics, a Pearson product-moment correlation analysis was conducted. The results are presented in

Table 2: Pearson Correlation between Self-Awareness and Academic Achievement

Variable	SA	SM	IR	SEL	AA
Self-Awareness (SA)	1				
Study Motivation (SM)	.612**	1			
Internal Regulation (IR)	.589**	.631**	1		
Self-Efficacy in Learning (SEL)	.566**	.603**	.618**	1	
Academic Achievement (AA)	.543**	.557**	.529**	.512**	1

Note: N = 235. $p < .01$ (2-tailed).

SA = Self-Awareness, SM = Study Motivation, IR = Internal Regulation, SEL = Self-Efficacy in Learning, AA = Academic Achievement

The analysis revealed a moderate positive correlation between self-awareness (SA) and academic achievement (AA) in mathematics ($r = .543$, $p < .01$). This indicates that students with higher levels of self-awareness tend to perform better in mathematics.

Furthermore, all components of self-awareness—study motivation (SM), internal regulation (IR), and self-efficacy in learning (SEL)—also showed significant positive correlations with academic achievement ($p < .01$). These results suggest that different aspects of self-awareness contribute meaningfully to students' performance in mathematics. Specifically, study motivation had the strongest positive correlation with academic achievement ($r = .557$, $p < .01$), followed by internal

regulation ($r = .529$, $p < .01$) and self-efficacy in learning ($r = .512$, $p < .01$).

DISCUSSION

The findings of this study reveal a moderate positive correlation between self-awareness and academic achievement in mathematics among ordinary level secondary school students in Mbarara City secondary schools ($r = .543$, $p < .01$), supporting the view that students with higher levels of self-awareness tend to perform better academically. This is consistent with existing literature that underscores the importance of self-awareness in enhancing learning outcomes. Shen et al. (2021) and Tam et al. (2023) found that students with greater self-awareness are more likely to regulate their learning through goal-setting, self-monitoring, and seeking help behaviours that contribute significantly to academic success.

Further analysis of the study identified strong correlations between the three dimensions of self-awareness, study motivation ($r = .557, p < .01$), internal regulation ($r = .529, p < .01$), and self-efficacy in learning ($r = .512, p < .01$) and mathematics achievement. These results support the findings of Alamer (2023), who emphasised that intrinsic motivation, the ability to regulate learning, and a strong belief in one's academic capabilities are crucial for educational attainment. According to Zimmerman (2021), self-regulated learners are more effective in adapting strategies to improve performance because they are aware of their academic strengths and weaknesses.

These findings can also be interpreted through Bloom's Taxonomy of Educational Objectives, which categorises learning into hierarchical cognitive levels: remembering, understanding, applying, analysing, evaluating, and creating (Anderson & Krathwohl, 2001). Self-awareness facilitates progression through these levels by helping learners identify knowledge gaps, apply learned concepts, and reflect critically on their performance. The Competency-Based Curriculum (CBC) adopted in Uganda emphasises similar goals, prioritising independent learning, problem-solving, and creative thinking skills that are reinforced by the components of self-awareness identified in this study.

Self-Awareness theory, as proposed by Duval and Wicklund (1972), provides a psychological framework for understanding these results. The theory posits that when individuals focus attention on themselves, they compare their current behaviours to internal standards and are motivated to reduce any discrepancies through behavioural change. In this study, students who scored high in self-awareness demonstrated greater ability to engage in goal-directed academic behaviours such as time management, focused study, and persistence, particularly in the demanding subject of mathematics.

CONCLUSION

The study established a moderate positive correlation between self-awareness and academic achievement in mathematics among secondary school students in Mbarara City. The findings emphasise that students who demonstrate higher levels of self-awareness through study motivation, internal regulation, and self-efficacy tend to perform better academically. This relationship is supported by both Bloom's Taxonomy and Self-Awareness Theory. Bloom's framework highlights the cognitive processes facilitated by self-awareness, while Self-Awareness Theory explains the internal self-regulatory mechanisms that drive goal-oriented academic behaviours. Within the context of Uganda's Competency-Based Curriculum (CBC), the study reinforces the importance of self-awareness as a foundational skill that enhances learner autonomy, reflection, and academic performance.

Recommendations

- Schools should intentionally incorporate self-awareness development into the curriculum through structured activities such as reflective journaling, goal-setting exercises, and self-assessment tools to help learners identify strengths, weaknesses, and learning preferences.
- Professional development programs should train teachers on how to foster self-awareness in students by encouraging metacognitive strategies, providing constructive feedback, and creating a classroom environment that supports student reflection and autonomy.
- Teachers should employ formative assessments not only to evaluate student progress but also to prompt learners to reflect on their understanding and performance. This feedback mechanism can guide students in adjusting their learning strategies.

- Schools should implement programs that promote academic motivation and self-belief, such as mentorship schemes or academic coaching sessions, where students can set achievable goals and track their progress over time.
- Instructional strategies should be designed to engage students across all levels of Bloom's Taxonomy. Emphasising higher-order thinking skills like evaluating and creating will challenge students to become more reflective and self-aware in their learning processes.

REFERENCES

- Brown, J. (2022). Understanding the self: Emotional intelligence and self-regulation in learning environments. *Journal of Psychological Research*, 34(2), 122–134.
- Duval, S., & Wicklund, R. A. (1972). *A theory of objective self-awareness*. Academic Press.
- Emuria, T. (2023). Challenges facing the implementation of the competency based curriculum in the teaching and learning of mathematics in selected secondary schools in Tororo District (Master's dissertation, Busitema University). Retrieved from <https://ir.busitema.ac.ug/handle/20.500.12283/3797>
- Ezeaku, A. I., Okoro, P., & Nnamani, U. (2023). *Integrating ICT in modern classrooms*. Nigerian Educational Publishers.
- Habumugisha, J., Bazina, M., & Mvunabandi, D. (2025). An exploration of teachers' perspectives regarding global citizenship education: Case of selected Rwandan secondary schools. *African Journal of Empirical Research*, 6(1), 148–157. <https://doi.org/10.51867/ajernet.6.1.15>
- Khan, M. A., Yousaf, S., & Latif, N. (2022). *Digital learning post-pandemic: A global perspective*. Routledge.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610.
- Mbarara City Education Office. (2023). *Annual education performance report*. Uganda Ministry of Education.
- Mullis, I. V. S., Martin, M. O., Foy, P., & Drucker, K. T. (2020). *TIMSS 2019 International results in mathematics and science*. TIMSS & PIRLS International Study Center.
- Musinguzi, D., Aheisibwe, I., & Ahabwe, J. (2024). *Educational reforms in Uganda: A contemporary review*. Fountain Publishers.
- Mwangi, J. K., & Ndungu, L. M. (2025). *Curriculum innovation and teacher development in Kenya*. Nairobi University Press.
- Obi, C. C., & Ugwu, D. O. (2022). *Learner-centered pedagogies in Nigerian schools*. Lagos Educational Publishers.
- Rajab, A. M. (2023). Identifying psychological factors that improve mathematics achievement in Grade 9 pupils from Gauteng (Doctoral dissertation, University of Pretoria).
- Scheier, M. F., & Carver, C. S. (1985). The self-consciousness scale: A revised version for use with general populations. *Journal of Personality and Social Psychology*, 48(4), 1091–1097.
- Shelley, C., & Robert, J. (1972). *Cognitive development in adolescence*. Harper & Row.
- Shen, Y., Li, H., & Wu, Z. (2021). *Artificial intelligence in education: Emerging trends and applications*. Springer.
- Tam, M., Lee, J., & Wong, K. (2023). Measuring self-awareness and self-regulation in adolescents: A review of psychometric tools. *Contemporary Educational Psychology*, 73, 102178.

UNEB. (2023). *Uganda National Examinations Board annual report*. Uganda National Examinations Board.

Zhang, Y., & Bian, L. (2021). Statistical methods in educational research: An overview. *Journal of Educational Statistics and Research*, 5(1), 13

Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory into Practice*, 41(2), 64–70.
https://doi.org/10.1207/s15430421tip4102_2