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Availability of teaching materials and teachers' preparedness in the implementation of the lower secondary curriculum in government-aided schools in Mbarara city, South. A descriptive survey study.

Samuel Muramuzi*, Dr. Enock Barigye, Rev. Dr. Judith Arinaitwe
Bishop Stuart University

Abstract

Background
The successful implementation of the Lower Secondary Curriculum in government-aided schools depends heavily on the availability and effective use of relevant teaching and learning materials. The study aimed at investigating the availability and accessibility of teaching materials in the preparedness of the teachers in the implementation of the Lower Secondary Curriculum in Government Aided schools in Mbarara City South, Uganda.

Methodology
This study employed a descriptive survey research design, targeting participants including city inspectors of schools, teachers, headteachers, and directors of studies, with a sample size of 199. Data was collected using questionnaires and interview guides, analyzed using SPSS for descriptive statistics, and presented thematically.

Results
199 respondents participated in this study, among teachers, 65 (53.7%) were male, while 56 (46.3%) were female, majority of headteachers (n = 4, 66.7%) and directors of studies (n = 4, 66.7%) were male, with only 2 females (33.3%) in each of these roles. The findings reported the availability of teaching materials in implementing the Lower Secondary Curriculum in government-aided schools in Mbarara City South (mean score = 3.90), majority of respondents agreed with the statement that teaching materials are sufficient for every learner, where 44 (36.4%) strongly agreed, 43 (35.5%) agreed, and 3 (2.5%) did not give a response. More than half of the respondents, 62 (51.2%), agreed that the computer laboratory was well equipped, while 27 (22.3%) strongly agreed. However, 19 (15.7%) remained undecided, and only 13 (10.8%) disagreed. Qualitative insights reported the need for increased government funding, retooling of teachers, and infrastructural improvements.

Conclusion
The systemic challenges, such as inadequate resources and overcrowding, affect curriculum implementation.

Recommendation
Stakeholders should prioritize the provision of adequate teaching materials to support effective curriculum adoption and improve education quality.

Keywords: *Teaching Materials, Teachers' Preparedness, Lower Secondary Curriculum, Government-Aided Schools, Mbarara City*
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Corresponding author: *Samuel Muramuzi**
Email: ***muramuzisamuel3@gmail.com***
Bishop Stuart University

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Background of the study

Teaching and learning materials enable a student to easily conceptualize the learning objectives in order to make the learning environment more exciting, interactive, and interesting (Ordu, 2021). In countries such as Japan, the USA, and European countries, learning has been transformed into a more learner-centered activity where various teaching materials are provided to enhance learning (Nae, 2018). In Turkey, teachers are encouraged to always come up with innovative instructional material during preparation for the learning process to eliminate obstacles that might limit the degree to which the learning competences are achieved (Gizir & Aydin, 2019) These include models that resemble real objects and real materials like phones, computers, books, and laboratory equipment. Worldwide, according to (UNESCO (2015), the world's demands are changing over time, which requires curriculum reviews to keep up with new world orders.

The availability of teaching materials and teachers' preparedness were critical variables in the successful implementation of the lower secondary curriculum in government-aided schools in Mbarara City South. According to the Uganda National Examinations Board (UNEB) Report (2022), only 45% of schools in Uganda had adequate teaching materials to effectively implement the new lower secondary curriculum, with rural and peri-urban schools facing the most significant shortages. The availability of instructional resources, including textbooks, laboratory equipment, ICT tools, and other teaching aids, directly impacts the effectiveness of lesson delivery and student engagement (MoES, 2023).

This study was based on instructional design theory, which is a set of design theories that pertain to various aspects of the creation, implementation, and evaluation of educational programs and materials (Carr-Chellman, 2009). Instructional design theory is a framework that guides the creation of effective educational experiences. One notable proponent is David Merrill, who proposed the First Principles of Instruction (2002), which emphasized that learning is most effective when it is problem-centered and involves activation of prior knowledge, demonstration, application, and integration. Other theorists, such as Robert Gagné, introduced the Nine Events of Instruction, which outline a step-by-step process to facilitate learning. Carr-Chellman (2009) discusses various instructional design theories that focus on learner engagement, technology integration, and systemic approaches to education, emphasizing the need for adaptable and inclusive learning environments.

In this study, teacher preparedness includes professional training, availability of teaching resources, and instructional strategies used to implement the curriculum effectively. The availability of teaching materials, such as textbooks, laboratory equipment, and digital resources, plays a crucial role in enhancing curriculum implementation. Adequate teaching materials ensure that teachers can effectively deliver lessons, engage students in interactive learning, and meet curriculum objectives. However, limited access to essential materials can hinder effective instruction, leading to disparities in learning outcomes across different schools (UNESCO, 2015).

The study aimed at investigating the availability and accessibility of teaching materials in the preparedness of the teachers in the implementation of the Lower Secondary Curriculum in Government Aided schools in Mbarara City South, Uganda.

Methodology

Research design

This study utilized a descriptive survey research design. According to Kumar (2011), descriptive research aims to depict the characteristics of a selected phenomenon by collecting data without manipulating variables. This design was well-suited to this study as it yielded a substantial amount of high-quality information.

Study area

The study was conducted in Mbarara City, focusing on the availability of learning materials in government-aided schools within Mbarara City South, Western Uganda. Mbarara City South is located in the Western Region of Uganda. It comprised three divisions: Kakoba, Nyamitanga, and Nyakayojo. Situated approximately 270 kilometres southwest of Kampala, Uganda's capital, the city is positioned at coordinates 00°36'48" S, 30°39'30"E (Latitude: -0.6132, Longitude: 30.6582), with an average elevation of about 1,147 meters (3,763 feet) above sea level.

Mbarara City South, as part of the larger Mbarara City, presented a strategic location for studying the availability of learning materials in government-aided schools due to several compelling reasons. First, Mbarara City is among the largest cities in Uganda, making it a significant urban center with diverse educational institutions. The administrative area was home to numerous government-aided schools, offering a representative sample for understanding the challenges and opportunities related to teaching materials as provided by the government (Mbarara Municipal Educational Report, 2017).

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Target population

The study targeted population was the city inspector of schools, head teachers, Directors of Studies, and teachers teaching in the lower secondary curriculum in government-aided secondary schools in Mbarara City South. The target population was finite and existed within a specific timeframe. According to Patton (2002), it is essential to clearly define the characteristics that the researcher intends to investigate by establishing a precise working definition of the target population.

Inclusion and exclusion criteria

Inclusion criteria

The study included Mbarara City; the city inspector of schools, head teachers, directors of studies, and teachers of Government Aided schools who were implementing the Lower Secondary Curriculum in Mbarara City South. This inclusion was necessary because these participants were directly involved in the implementation of the new curriculum and had firsthand experience with the availability and use of teaching materials. Their insights and responses were crucial in understanding how well-prepared teachers were in delivering the curriculum and what challenges they faced.

Exclusion criteria

The study excluded teachers who were not selected, though in Mbarara City South, Western Uganda. The study also excluded teachers, especially those who were teaching in A' Level, who were not implementing the Lower Secondary School Curriculum in the selected schools. These exclusions were justified because the study specifically focused on the Lower Secondary Curriculum, and teachers handling' A-Level students were not directly engaged in its implementation. Including them would have introduced irrelevant data that could skew the findings and reduce the study's validity and reliability.

Sample selection

The principal investigator purposively selected government-aided secondary schools in Mbarara City South, which included: Mbarara Secondary School, Nyamitanga Secondary School, Maryhill High School, Nyakayojo Secondary School, St. Peter's Secondary School, Katukuru, and Mbarara Army Boarding Secondary School. City Inspector of Schools, head teachers, and directors of studies involved in implementing the Lower Secondary Curriculum were also selected using a purposive sampling technique. Selection criteria were based on the researcher's understanding of the population and the research objectives (Connaway, 2007). Asenahabi (2019) argues that researchers should select elements that possess the necessary information relevant to the study objectives, with clear criteria for their selection.

Headteachers were purposively selected because they bear the responsibility for both the academic performance and the administrative functions of their schools. They play a pivotal role in initiating motivational programs and acquiring essential resources that enhance academic performance. Directors of studies were also purposively selected due to their critical role as academic coordinators and primary advisors to head teachers on academic matters. Their oversight of curriculum implementation equips them with comprehensive knowledge regarding access to learning resources in their respective schools.

Teachers were selected using a stratified sampling technique where schools were stratified in the study area.

Sample size determination

The study utilized a target population of 373. These included: 01 City inspector of schools, 06 head teachers, 06 directors of studies, and 360 teachers. This sample size was determined using Morgan and Krejcie (1970).

Sample Size

Therefore, 01 City inspector of schools, 06 head teachers, 06 directors of studies, and 186 subject teachers, as indicated in Table 1.

Sample determination of the formula for Headteachers and Directors of Studies.

n= $\frac{\mathcal{X}^2 \times N \times P(1-P)}{ME^2 \times (N-1) + \mathcal{X}^2 P(1-P)}$ at a 95% confidence interval (Krejcie, R.V., & Morgan, 1970)

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Sample size

Table 1 shows the sample size

Participants Category	Target Population	Sample Size	Sampling Techniques
City inspector of schools	01	01	Purposive sampling
Head Teachers	06	06	Purposive sampling technique
Director of Studies	06	06	Purposive sampling technique
Teachers	360	186	Stratified sampling technique
Total	373	199	

Data sources

Both primary and secondary data were used because they both provided reliable data and insight into the study phenomenon.

Primary data

This was directly obtained data from the participants of the study. This data was obtained using primary data collection methods, which were the questionnaire method and interview method, which were administered to selected participants of the study. This data helped the researcher build a reliable analysis of the study variables to come up with decisive conclusions and recommendations for the study.

Data collection methods

Questionnaire method

A questionnaire is a data collection method where a set of questions related to the researcher's subject of interest is completed by participants (Mugenda & Mugenda, 2004). For this study, the questionnaire was designed based on the research objectives and questions. It included concise and clear sentences, comprising both closed-ended and open-ended questions. Closed-ended questions facilitated easy responses from study participants, particularly teachers implementing the lower secondary education curriculum. On the other hand, open-ended questions allowed study participants to express their opinions freely on the phenomenon being studied.

Interview method

According to Kathari (2004), interviews involve presenting oral stimuli and receiving oral responses, making it a method to gather firsthand and reliable data. Face-to-face interviews were conducted with City Inspectors of Schools, Directors of Studies, and Head Teachers to obtain immediate feedback and use probing techniques to gather specific information about the study problem. This method also enabled the researcher to establish rapport with participants, ensuring high response rates and the opportunity to clarify ambiguous answers or seek further details.

Data collection tools

The researcher utilized both questionnaires and interview guides as instruments for data collection.

Questionnaire

A questionnaire is a structured research tool consisting of a series of questions or prompts designed to gather information from participants (Statistical Society of London, 1838). In this study, the questionnaire was administered mainly to teachers implementing the lower secondary curriculum. It featured both closed-ended questions, where participants selected answers from provided options, and open-ended questions, which allowed for more detailed and subjective responses. Closed-ended questions ensured confidentiality and encouraged honest responses, especially to sensitive topics, while providing participants with the opportunity to consult documents for accurate information.

Interview guide

An interview guide consists of open-ended questions used by researchers to collect information directly from participants through a conversation (Monk, 2010). This method allowed for deeper exploration of the study problem and observation of nonverbal cues. Conducting face-to-face interviews facilitated probing for additional information, flexibility in questioning, and clarification of ideas where needed. Oral interviews were essential for gathering primary data from City Inspectors of Schools, Directors of Studies, and Head Teachers.

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Data collection procedure

Upon approval from the Ethics Research Committee (REC), the researcher was given an introduction letter by DGRI, further sought administrative clearance from the City inspector of schools, and finally from the respective Head teachers. The researcher explained to the study participants the purpose of the study, the benefits and risks, and their willingness to participate or withdraw from the study without any penalties and any other ethical considerations. Participants who consented were enrolled in the study by a purposive and simple random sampling method.

Data quality control

Validity of research instruments

To establish the content validity of the research instruments, the researcher sought input from experts in research methodology within the Faculty of Education, Arts, and Media Studies at Bishop Stuart University. This consultation process ensured that the questionnaires were developed to gather information that was valid and relevant. Pilot testing further validated the questionnaire before full-scale data collection.

The content validity index (CVI) was used to calculate the validity of the questionnaire. CVI = Items selected appropriate / Total number of items. 44 items out of 50 were selected as relevant. Hence, 50/ 54 = 0.93. The instrument was therefore considered valid because the computed CVI of 0.93 was more than 0.7 as recommended by Amin (2004).

Reliability of research instruments

Reliability refers to the consistency and dependability of the research instruments in producing similar results under consistent conditions (Kerlinger, 2003). In this study, reliability was enhanced through the use of triangulation, a method that strengthens the credibility of findings in quantitative survey research (Theodoridis & Kraemer, 2004; Mugenda & Mugenda, 2013). A pilot study was conducted with head teachers, directors of studies, and selected teachers implementing the Lower Secondary Curriculum in Mbarara City South, western Uganda. This pilot study aimed to assess the reliability of the questionnaires.

Data analysis

The researcher recorded, sorted, edited, coded, and accessed the data that was collected. All the collected data was checked for completeness, accuracy, and uniformity. The qualitative data were collected and arranged systematically according to themes and coded accordingly. The data was tabulated to show the relationships; frequency distribution tables and percentages were used during quantitative data analysis. All these were achieved by computer packages; Microsoft Excel for tabulation of data and SPSS ver.23 for descriptive statistics and correlation to test the relationship between independent and dependent variables.

Ethical considerations

The researcher sought permission from the Bishop Stuart University Research and Ethics Committee (BSU-REC-2024-411) after clearance from the Faculty of Education, Arts and Media Studies, before going to the field. The study was also cleared by the Uganda National Council for Science and Technology (UNSCT), the office of the City Inspector of Schools, and the office of the head teachers of selected schools. A work plan for the tasks was done and laid out. Sampling was done so that schools where research was to be conducted were identified. The investigator then printed enough copies of the research instruments and familiarized themselves with the locale of the study by visiting areas where research was to be conducted, and then commenced data collection. Headteachers and Directors of Studies were assured of anonymity where numbers were used to label data instead of their names. Information given by the participants was treated with confidentiality by maintaining participants' rights and privacy even after the research. The researcher made it clear to them that the information was purely for academic purposes and their participation was voluntary, and any decision to withdraw or decline any information whatsoever at any time was respected. Finally, informed consent was sought from the participants through a written request that was attached to the research instruments.

Results

Response rate

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Table 2 shows the response rate

Participants Category	Target Population	Sample Size	Respondents turned up	Response Rate
City inspector of schools	01	01	01	100%
Head Teachers	06	06	06	100%
Director of Studies	06	06	06	100%
Teachers	360	186	121	65.0%
Total	373	199	134	67.3%

Source: Primary Data, 2024

The response rate is the ratio of the actual number of respondents to the target population. Out of 199 respondents, 134 responded positively to the study. The response rate was thus computed as 134/199*100 = 67.3%. Babbie (2007) and Mugenda & Mugenda (2003) agree that a response rate above 60% is considered acceptable for most research studies. For instance, Babbie (2007) suggests that a response rate of 50% is adequate, 60% is good, and 70% is very good for most social science research. Similarly, Mugenda and Mugenda (2003) posit that a response rate of 50% is sufficient for analysis, while a rate above 70% is excellent. Therefore, the response rate of 67.3% in this study falls within the acceptable range for reliable analysis. This was due to a few teachers teaching the Lower Secondary Curriculum in the selected government-aided schools.

Presentation of demographic information

The questionnaires were administered to a sample size of 121 Teachers. Interviews were conducted with 13 key informants who were the Inspector of schools (1), head teachers (6), and Directors of studies (6). The researcher, from the demographic information, sought to investigate gender, number of years in teaching, and teaching load deemed important and pertinent to the study.

Gender distribution of respondents

Table 3 shows the Gender distribution of Respondents

Gender	Category of respondents						Total Freq	Total Percent
	Teachers		Headteachers		Directors of Studies			
	Freq	Percent	Freq	Percent	Freq	Percent		
Male	65	53.7	4	66.7	4	66.7	73	54.9
Female	56	46.3	2	33.3	2	33.3	60	45.1
Total	121	100.0	6	100	6	100	133	100

Source: Primary Data, 2024

The results in Table 3 indicate the gender distribution among teachers, headteachers, and directors of studies. Overall, male respondents (n = 73, 54.9%) outnumber female respondents (n = 60, 45.1%). Among teachers, 65 (53.7%) are male, while 56 (46.3%) are female. Similarly, the majority of headteachers (n = 4, 66.7%) and directors of studies (n = 4, 66.7%) are male, with only 2 females (33.3%) in each of these roles.

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Original Article

Table 4 shows the number of years participants have spent teaching

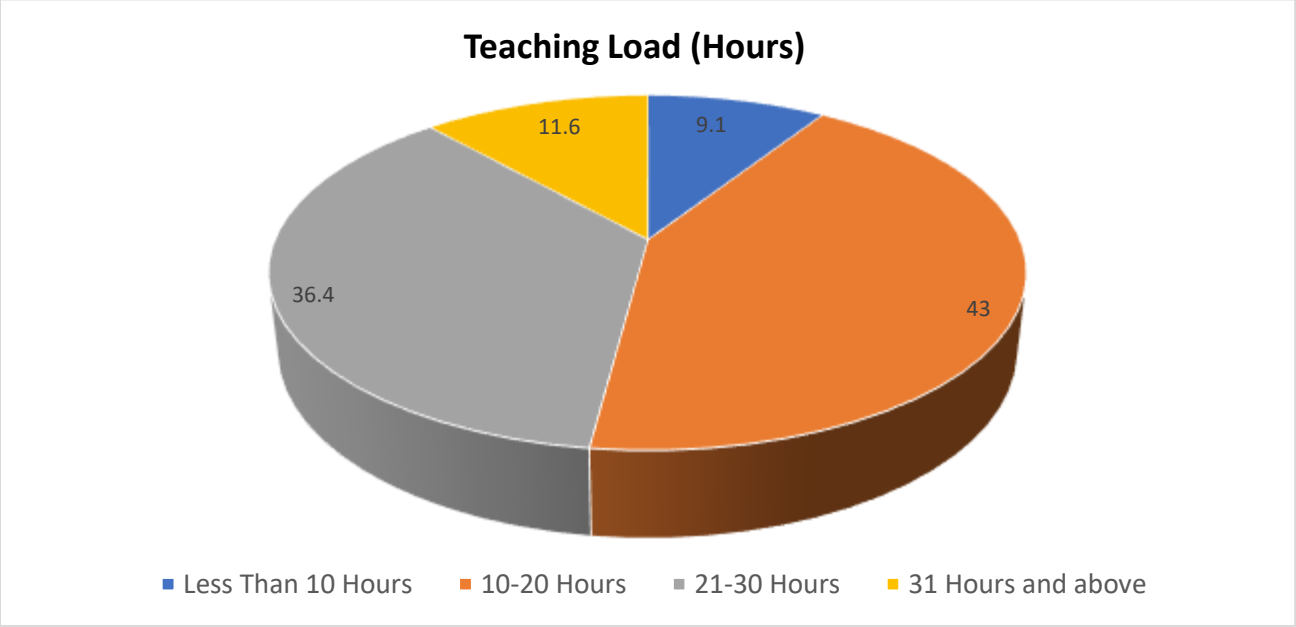
Number of years in teaching	Category of respondents						Total Freq	Total Percent
	Teachers		Headteachers		Directors of Studies			
	Freq	Percent	Freq	Percent	Freq	Percent		
Less than 5 Years	12	9.9	0	0	0	0	12	9.0
5-10 Years	63	52.1	0	0	1	16.7	64	48.1
11-15 Years	37	30.6	0	0	3	50	40	30.1
16 Years above	9	7.4	6	100	2	33.3	17	12.8
Total	121	100.0	6	100	6	100	133	100

Source: Primary Data, 2024

The results in Table 4 revealed that teachers had the highest representation in the study (n = 121, 91.0%), followed by headteachers (n = 6, 4.5%) and directors of studies (n = 6, 4.5%). The majority of participants had 5–10 years of teaching experience (n = 64, 48.1%), with teachers (n = 63, 52.1%) being the dominant group in this category. Participants with 11–15 years of experience constituted 30.1% (n = 40), including 37 teachers (30.6%) and three directors of studies (50.0%). Those with less than 5 years in teaching accounted for 9.0% (n = 12), all of whom were teachers. Lastly, 12.8% (n = 17) had more than 16 years of experience, comprising nine teachers (7.4%), six headteachers (100.0%), and two directors of studies (33.3%).

Teaching load by participants in hours

Figure 1 shows the Teaching Load by Participants in Hours.



Source: Primary Data, 2024

Findings in Figure 1 of the study showed that the majority of respondents, 52(43.0%), reported teaching between 10 and 20 hours per week, followed by 44(36.4%) who indicated a teaching load of 21 to 30 hours per week. Less

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Original Article

than a quarter of the respondents 14(11.6%) had teaching loads exceeding 31 hours per week, while only 9.1% taught less than 10 hours per week. This distribution suggests that most educators have moderate teaching loads, with a significant portion teaching between 10 and 30 hours per week, and relatively fewer carrying exceptionally low or high workloads.

Available and accessible teaching materials that support the implementation of the Lower Secondary Curriculum in government-aided schools in Mbarara City South.

Table 5 shows the Availability of Teaching Materials that support the Implementation of the Lower Secondary Curriculum in Government Aided Schools in Mbarara City South (n=121 teachers)

Items (for learning materials)	Strongly disagree	Disagree	Undecided	Agree	Strongly Agree	Mean	Std dev
Teaching materials are enough for every learner	1(0.8%)	11(9.1%)	19(15.7%)	43(35.5%)	44(36.4%)	3.90	1.165
The computer laboratory is well equipped	3(2.5%)	10(8.3%)	19(15.7%)	62(51.2%)	27(22.3%)	3.83	0.955
Learners have access to the computer laboratory at any time	1(0.8%)	14(11.6%)	18(14.9%)	50(41.3%)	38(31.4%)	3.91	1.000
Science laboratories are well equipped for the requirement of learning process.	0(0%)	12(9.9%)	15(12.9%)	39(32.2%)	55(45.5%)	4.13	0.983
Teaching materials are used as indicated in the teaching syllabus	4(3.3%)	10(8.3%)	15(12.4%)	63(52.1%)	29(24.0%)	3.85	0.989
Teachers innovate alternative teaching materials	4(3.3%)	12(9.9%)	18(14.9%)	60(49.6%)	27(22.3%)	3.78	1.012
Average mean						3.90	

Source: Primary Data, 2024

The findings in Table 5 show that the majority of respondents agreed with the statement that teaching materials are sufficient for every learner, where 44 (36.4%) strongly agreed, 43 (35.5%) agreed, and 3 (2.5%) did not give a response. The combined percentage of agreement was 71.9%, indicating a generally positive response to the availability of teaching materials. The mean score for this item is 3.90, with a standard deviation of 1.165, reflecting a moderately strong agreement with the statement.

Results in Table 5 revealed that slightly more than half of the respondents, 62 (51.2%), agreed that the computer laboratory was well equipped, while 27 (22.3%) strongly agreed. However, 19 (15.7%) remained undecided, and only 13 (10.8%) disagreed. The mean score of 3.83 (with a standard deviation of 0.955) suggests general agreement but some uncertainty among respondents about the adequacy of the computer laboratory's equipment.

The findings showed that access to the computer laboratory was another area where most respondents, 38 (31.4%), strongly agreed, and 50 (41.3%) agreed, with a combined agreement percentage of 72.7%. However, few respondents 18(14.9%) were undecided, 14(11.6%) disagreed and 1(0.8%) strongly disagreed. The mean score of 3.91 signifies that learners generally have access, and the standard deviation of 1.000 reflects moderate variability in responses.

Results show that the majority, 94(77.7%), agreed with the statement that science laboratories are well equipped for the requirements of the learning process, with 55 (45.5%) strongly agreeing and 39 (32.2%) agreeing. However, 12(9.9%) disagreed and 15(12.9%) were undecided. The mean score of 4.13 and a standard deviation of 0.983 suggest that the respondents believed the science laboratories meet the requirements for the learning process.

A total of 63 (52.1%) respondents agreed and 29 (24.0%) strongly agreed that teaching materials were used as indicated in the syllabus. While, 15(12.4%) were being undecided, disagreed 10(8.3%) and strongly disagreed

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Original Article

4(3.3%). The combined agreement percentage is 76.1%, with a mean of 3.85 and a standard deviation of 0.989, suggesting general agreement with the use of teaching materials according to the syllabus.
The findings revealed that regarding teachers' innovation of alternative teaching materials, 60 (49.6%) agreed and 27 (22.3%) strongly agreed, resulting in 87(71.9%) in agreement. However, strongly disagreed 4(3.3%) and disagreed 10(8.3%) results in 14(11.6%) in disagreement, while 15(12.4%) being undecided. The mean score of 3.85 reflects agreement, and the standard deviation of 0.989 shows moderate variation in responses.

Results in Table 5 reported that the majority agreed, 60(49.6%), followed by 27(22.3%) who strongly agreed that teachers innovate alternative teaching materials. However, the minority 18(14.9%) were undecided, 12(9.9%) disagreed and only 4(3.3%) strongly disagreed. The mean score of 3.78 signifies agreement, and the standard deviation of 1.012 indicates moderate variability. Respondents overwhelmingly agreed with the statement that availability of learning resources influences the preparedness of teachers, as 55 (45.4%) strongly agreed and 60 (49.6%) agreed, yielding a combined agreement of 95%. This reflects that the availability of learning resources plays a significant role in teachers' preparedness. The mean score of 4.40, with a very low standard deviation of 0.586, suggests strong consensus on this point.

In qualitative analysis, participants (teachers) described the availability of teaching materials in their schools as follows;
Many participants highlighted the insufficiency of teaching materials in their schools. One participant remarked, *"teaching materials are not enough to cater for all students in the learning process"* (Participant 23), a sentiment echoed by more than half of the participants. Similarly, participant 28 stated, *"teaching materials like computers, projectors are lacking"* (Participant 28). Others described the availability of resources as minimal, with participants saying, *"Not all teaching materials are readily available"* (Participant 21).

While some materials are available, many participants noted challenges with access. For instance, more than half of the participants explained, *"computers are available, but not all students can access them because there are too few"* (55.9% of participants). Other participants added, *"the student-to-material ratio is not balanced, making it difficult for every student to benefit from the available resources"* (Participant 36).

Participants also highlighted specific shortages in essential resources. One participant stated, *"The computer laboratory has too few computers, and not all students can use them. In the science laboratory, chemicals sometimes run out before all practical lessons are covered. Materials like test tubes and conical flasks break, and replacements take time or are not provided at all"* (Participant 7). Another participant noted, *"Materials like chalk and dusters are available, but computers, science laboratory apparatus, and textbooks are not sufficient for every student to access"* (Participant 62).
While the majority of participants identified significant shortages, some noted that certain materials were sufficiently available. One participant explained, *"The majority of teaching materials, like textbooks for the new lower curriculum, the internet, and projectors, are available. The choice of suitable teaching aids depends on the lesson's requirements to make it attractive and child-centred"* (Slightly less than a quarter of participants (24.6%)).

Possible solutions to the challenges for the betterment of the teaching and learning process

In qualitative analysis, teachers identified solutions to address the factors hindering the implementation of the new lower secondary school curriculum. Their responses are grouped into thematic areas below:
Participants highlighted the need for the government to increase budgetary support to schools. One participant emphasized that, "*the government should add to the budget"* (participant 62), while others suggested that "*the government should increase the budget for teachers to purchase materials* (Participant, 118). Similarly, participant 121 noted that "*more funding from the government is needed to facilitate better learning in the new curriculum*" (participants, 121).

The availability of adequate teaching resources was a recurring theme. One participant stated that "*there should be provision of more textbooks*" (Participant 22), while others suggested that "*the government should ensure the provision of more teaching and learning materials in all government-aided schools*" (Participant 36). Additionally, it was proposed that "*the school management committee should purchase teaching materials in addition to what is provided by the government*" (participant 7).

Participants emphasized the need for ongoing teacher training to enhance their familiarity with the new

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curriculum. It was suggested that "*training more teachers about the Lower Secondary Curriculum is important*" (Participant 29). Another participant recommended "*carrying out more workshops by new curriculum trainees to secondary schools*" (Participants, 68).

Participants also underscored the importance of broader institutional support. According to one participant, "*The government should support schools by increasing the material budget*" (participant 7). Similarly, another participant mentioned that "*donors should also be engaged to provide additional support to implement the curriculum*" (participant, 70).

During interviews with Directors of Studies, the following responses were revealed;
Participants emphasized the need to address the issue of inadequate classrooms and other facilities. One participant suggested, *"The government should construct new structures, especially classrooms, to accommodate the new teaching setup"* (Director of Studies, School D). Another highlighted the potential of teaching outdoors, stating, *"teaching under trees in the compound can temporarily address the lack of classrooms"* (Director of Studies, School A). To tackle the shortage of teaching materials, one participant recommended, *"schools should generate local funds to buy textbooks"* (Director of Studies, School E), while another proposed group discussions as a way to mitigate the inadequacy of textbooks, saying, *"group discussions can be organized to share limited learning resources*" (Director of Studies, School E).

To manage overcrowding and resource shortages, several participants advocated for shift-based approaches. One participant stated, *"Teaching in shifts can help address the issue of overcrowded classrooms"* (Director of Studies, School A), and another added, *"Examinations can also be conducted in shifts to optimize available resources"* (Director of Studies, School A). The use of shifts was also suggested to address the lack of computers, with one participant noting, *"implementing shifts can alleviate the problem of inadequate computers"* (Director of Studies, School E).

Continuous professional development was seen as essential for improving teacher preparedness. One participant remarked, *"The government should continue to train teachers within their working schools to enhance their skills"* (Director of Studies, School B). Another emphasized the need for ongoing training, saying, *"external and internal continuous capacity building should continue"* (Director of Studies, School D). Sensitization programs were also recommended, with one participant suggesting, *"sensitization efforts should encourage teachers to desist from part-timing and focus on their primary roles"* (Director of Studies, School D). Additionally, teacher motivation was highlighted as a critical factor, with one participant recommending, *"Enhancing teacher salaries, particularly for arts teachers, can boost morale and productivity"* (Director of Studies, School E).

Participants underscored the need for increased financial support from the government. One stated, *"The government should increase funding for school facilities to address resource shortages"* (Director of Studies, School E). Another emphasized the role of schools in resource mobilization, noting, *"Schools should take initiatives to generate local funds for essential resources like textbooks*" (Director of Studies, School E).

To foster a positive learning environment and effective curriculum implementation, one participant suggested, *"Continuous guidance and counselling sessions should be conducted for teachers and learners to support curriculum implementation"* (Director of Studies, School F). These sessions were seen as a way to address both academic and personal challenges faced by educators and students.
During interviews, headteachers responded to strategies to enhance the availability of teaching materials in schools. Their responses are as follows:

Participants emphasized the importance of privately sourcing teaching materials to bridge the gap left by limited government supplies. One headteacher explained that *"private sourcing, such as buying textbooks from stationery shops, can help supplement the materials provided by the Ministry"* (Headteacher, School A). Similarly, another headteacher stated that *"purchasing books from bookshops can complement those supplied by the government"* (Headteacher, School C).

Workshops were identified as a vital strategy for empowering teachers. One headteacher suggested that *"having workshops in school to train more teachers can improve their ability to deliver lessons effectively, even with limited materials"* (Headteacher, School A).
Participants also highlighted innovative ways to maximize the use of available resources. One headteacher proposed that *"learners should be grouped when studying to ensure that the few available materials are used effectively*" (Headteacher, School B). Another headteacher added that *"the use of groups enables all*

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Original Article

learners to benefit from limited teaching materials" (Headteacher, School D).

To tackle the shortage of computers, one headteacher suggested that *"since computers are not enough computers, examinations should be conducted in shifts to ensure all students can participate"* (Headteacher, School B). Another noted the need to *"purchase some computers to address the gaps in ICT resources"* (Headteacher, School E).

The issue of teacher shortages was also addressed. One headteacher proposed that *"hiring non-payment teachers to fill the teaching gap can help sustain the teaching process"* (Headteacher, School C). Additionally, it was recommended that *"using PTA wages to motivate the teachers who are demotivated by their current conditions can improve their performance*" (Headteacher, School C).

Participants called for increased support from the government to address the challenges comprehensively. A headteacher emphasized the importance of *"requesting the government, through the Ministry of Education, to provide more teaching materials to schools"* (Headteacher, School E).

Discussion

The availability of materials that support the implementation of the Lower Secondary Curriculum in government-aided schools in Mbarara City South

The findings from this study revealed that teaching materials, including textbooks, laboratories, and ICT tools, play a pivotal role in implementing the Lower Secondary Curriculum in Mbarara City South. A significant majority (71.9%) of respondents agreed that teaching materials are sufficient for every learner, with a mean score of 3.90 and a standard deviation of 1.165. This aligns with studies by Mupa and Chinooneka (2015), who emphasized the availability of textbooks as a critical predictor of teacher effectiveness. However, qualitative data highlighted gaps, with participants reporting inadequate teaching materials for large class sizes, echoing UNESCO (2007) findings on the resource constraints in Ugandan schools. The disparity between quantitative and qualitative findings suggests that while resources may exist, their distribution or accessibility remains a challenge.

Regarding ICT integration, the study found that 72.7% of respondents affirmed the availability of computer laboratories, with a mean score of 3.91. This finding corroborates Omondi (2018), who highlighted ICT's transformative potential in curriculum implementation. However, qualitative responses from participants indicated that limited computers and high student-to-computer ratios hinder access, mirroring challenges reported by Andema et al. (2023) about the high cost and limited availability of ICT resources in Uganda. The integration of ICT in education remains a priority, but requires targeted investments to ensure equitable access.

The findings also showed strong agreement (77.7%) that science laboratories are well-equipped, with a mean score of 4.13. This is consistent with ROSE (2019), who noted the importance of laboratory resources in practical, learner-centered approaches. Yet, participants identified specific shortages, such as chemicals and apparatus, as barriers to comprehensive practical lessons. This inconsistency points to the need for regular maintenance and replenishment of laboratory supplies, aligning with recommendations by Mandukwini (2016) on sustainable resource allocation. Also, the use of teaching materials as indicated in the syllabus was affirmed by 76.1% of respondents. This strong agreement aligns with research by Mwita and Onyango (2022), which underscores the importance of utilizing prescribed materials for effective curriculum implementation. However, qualitative responses revealed instances of non-compliance with syllabus guidelines due to resource limitations. This reflects challenges noted by Cobbold (2017) regarding deviations from curriculum guidelines in resource-constrained environments.

Finally, the study highlighted innovative practices by teachers, with 71.9% agreeing on the use of alternative teaching materials, as reflected in a mean score of 3.78. This aligns with Gizir and Aydin (2019), who advocated for teacher innovation to overcome resource shortages. Similarly, the results were consistent with the findings of Gabriel Lengoiboni (2013), who emphasized the need for teachers to innovate in resource-limited settings. However, qualitative data suggested that innovation often stems from necessity rather than institutional support, underscoring the need for policies that promote and fund teacher-led initiatives. The findings reinforce the conclusion by Mwita and Onyango (2022) that resource adequacy directly correlates with effective curriculum implementation. Similarly, despite these efforts, qualitative feedback suggested that innovations are often constrained by financial and technical support. Participants proposed solutions, including increased government funding and continuous teacher training, to address these challenges effectively.

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Original Article

Conclusion

Based on the findings, teaching materials, including textbooks, laboratories, and ICT tools like computers, are pivotal in implementing the Lower Secondary Curriculum in Mbarara City South. While respondents indicated the sufficiency of resources, challenges such as limited computers and high student-to-computer ratios persist.

Based on the results, it is concluded that while teachers in government-aided schools in Mbarara City South demonstrate commendable preparedness in utilizing teaching materials for implementing the Lower Secondary Curriculum, systemic challenges such as inadequate infrastructure, overcrowded classrooms, and insufficient teaching aids hinder full effectiveness.

It is concluded that the availability of teaching materials significantly enhances teachers' preparedness in implementing the Lower Secondary Curriculum, as evidenced by a strong positive correlation ($r = 0.660$, $p < 0.01$).

Recommendation

It is recommended that schools and stakeholders increase investment in ICT infrastructure, enhance teacher training on innovative material usage, and ensure equitable distribution of resources to optimize curriculum implementation and improve learner outcomes.

Based on the study findings, it is recommended that the Ministry of Education and other stakeholders invest in sustained professional development programs, improve school infrastructure, and ensure the provision of adequate teaching resources to enhance teachers' capacity and support competency-based education effectively.

It is recommended that stakeholders prioritize the provision of adequate teaching materials to support effective curriculum adoption and improve education quality.

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List of abbreviations

AYP Annual Yearly Progress
ICT Information Communication Technology
MoE&S Ministry of Education and Sports
NCDC National Curriculum Development Centre
NCE National Council Executive
NCHE National Council for Higher Education
NMTEDRP National Mid-and Long-term Education Development and Reform Plan
S/S Secondary Schools
UCE Uganda Certificate of Education
UNEB Uganda National Examinations Board
UNESCO United Nations Educational, Scientific, and Cultural Organization
USE Universal Secondary Education

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Conflict of interest

The author declares no conflict of interest.

Author contributions

Samuel Muramuzi was the student of the research.
Dr. Enock Barigye supervised the research project.
Rev. Dr. Judith Arinaitwe supervised the research project.

Data availability

Data is available upon request.

Informed consent

All the participants consented to the study.

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Original Article

Author biography

Samuel Muramuzi holds a Master's Degree in Education Management, Planning, and Administration from Bishop Stuart University.
Dr. Enock Barigye is a lecturer at Bishop Stuart University.
Rev. Dr. Judith Arinaitwe is a lecturer at Bishop Stuart University.

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