

EFFECT OF THE SCOPE OF THE INFORMATION LITERACY CURRICULUM ON ACADEMIC PERFORMANCE AMONG UNIVERSITY STUDENTS IN THE NAIROBI METROPOLITAN AREA

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ABSTRACT

A comprehensive information literacy curriculum should enable university students to identify information needs, retrieve relevant resources, evaluate credibility, cite evidence correctly and use information ethically. This study evaluated the effect of the scope of information literacy curriculum on academic performance among university students in the Nairobi Metropolitan Area. The study adopted a positivist orientation and a concurrent triangulation mixed-methods design embedded in a descriptive survey. The target population comprised approximately 142,000 undergraduate students, nine university librarians and nine academic registrars from nine public and private universities. A student sample of 399 was obtained by systematic simple random sampling, and a purposive census was used to obtain all 18 key informants. Questionnaires, interview and document reviews were used for data collection. Thirty-five of the 305 usable student responses were obtained, representing 76.4% of the students. Reliability of the curriculum-scope scale was good, with Cronbach's alpha = 0.942; the construct validity was good, with an average loading of 0.860 and a minimum loading of 0.749; the sampling adequacy of the scale was very good, with KMO = 0.889. The range of competency for students' awareness of a formal information literacy curriculum was 8.5% (3.87 to 4.10). There was weak but significant correlation between curriculum scope and academic performance ($r = 0.127$, $p = .026$). Regression model was significant, $F(1, 303) = 4.990$, $p = .026$, and accounted for only 1.6% of the variance in performance. Academic performance increased by 0.213 units for every one-unit increase in scope of curriculum, with a beta coefficient of 0.127 and a p of .026. Curriculum breadth is necessary but insufficient; thus practical delivery, visibility, disciplinary integration and assessment determine whether information literacy content improves performance.

Keywords: academic performance; curriculum scope; information literacy curriculum; information retrieval; university students

INTRODUCTION

The expansion of digital information has made information literacy a central graduate competency. Thus, University students need to formulate information problem, choose the right search tools, find relevant information sources, assess the evidence, collate information, cite appropriately and ethically, and use information. These competencies enhance independent learning, research, critical thinking, and quality of academic work [1,2,3].

An information literacy curriculum is structured to enable these competencies to be taught and measured. It covers identification of information needs, searching databases and libraries, evaluating sources, citing and referencing, ethical usage, digital and media literacy, critical reflection and appraisal of online information. Thus, the scope of the curriculum is not only about the breadth of skills taught but also whether students have the opportunity to learn these skills in real-life and discipline-relevant contexts.

Kenyan Universities employ different strategies to sensitize students to the dangers of cyberbullying such as during orientation sessions, communication-skills units, librarian-led workshops, orientation guides online, and curriculum-based instruction. Multiple delivery modes means that there are multiple access points to information literacy instruction across academic podia.

Ideally, information literacy curricula should be made visible, comprehensive, and be increasingly embedded in university academic programmes. The skills should be used in assignments, tests, research projects and other evaluative academic activities.

The students' information needs, librarians' teaching practices and online guides and information literacy training strategies have been described in previous studies conducted in Kenya and other countries. However, a number of these studies focused on a limited institutional setting or a limited population of disciplines and/or used a non-probability sampling, or failed to include academic performance as an outcome. Thus, there was little evidence on the impact of the extent of information literacy curriculum at different universities in Nairobi Metropolitan area on students' academic performance. This study attempted to fill

the contextual, conceptual and methodological gap. The purpose of the study was to evaluate the effect of the scope of the information literacy curriculum on academic performance among university students in the Nairobi Metropolitan area, Kenya. The study asked: What is the scope of information literacy curricula among universities in the Nairobi Metropolitan area? The alternative hypothesis stated that the scope of information literacy curriculum has a significant effect on academic performance.

LITERATURE REVIEW

Theoretical Review: Socio-cultural Learning Theory

The article is guided by Vygotsky's Socio-cultural Learning Theory, which explains learning as a socially and culturally constructed process. Cognitive development is an interactive process with lecturers, librarians, fellow students and instruments used in the learning environment. The Zone of Proximal Development is the difference between what participants can do on their own and what they can do with the support of other more knowledgeable participants [4].

The theory is important to curriculum scope because information literacy is not an ability that can be taught by merely stating a set of skills in a curriculum. Students learn skills with coaching, teaching, discussion, feedback, and then applying the skills in relevant academic activities. Academic achievement, therefore, may not be strongly affected by a curriculum that provides a wide array of skills without scaffolding and the application of those skills to the discipline. On the other hand, integration of information literacy content with the language, evidence standards and research practices of particular disciplines can be achieved with librarians' support. The theory's strong emphasis on social interaction may understate individual motivation and unequal access to digital resources. The study therefore examined both students' reported competencies and institutional evidence on how curricula were developed, integrated and delivered.

Empirical Review

Ankamah et al. (2021) ^[5] examined information literacy among medical students at the University of Ghana and found that students needed information primarily for assignments, project work and learning new subject matter, with books, e-books and journals serving as major sources. The study was useful in identifying core information needs but used a narrow disciplinary context and non-probability sampling, limiting generalization to the wider Kenyan university sector.

Moin Ud Din et al. (2022) ^[6] investigated librarians' perceptions, practices and barriers in university libraries in Islamabad. Although Librarians recognized the importance of information literacy and generally considered themselves capable of teaching it, institutional barriers affected delivery. Stelah et al. (2022) ^[7] observed that the Catholic University of Eastern Africa used written materials, one-to-one instruction, demonstrations, orientation, seminars and workshops to teach information literacy. However, the study did not link these strategies to academic performance.

Elsewhere Masinde et al. (2024) ^[8] examined the conceptualization and practice of information literacy pedagogy in seven Kenyan universities and found that online guides and manuals did not cover all dimensions of information literacy. The study demonstrated that the breadth and coherence of curriculum content can vary significantly, but it did not examine academic performance as the dependent variable. In yet another study Waltz et al. (2020) ^[3] observed that information literacy competencies can be mapped within professional curricula, supporting the need for explicit and discipline-sensitive curriculum design.

The empirical evidence therefore established the value of information literacy content and instruction but left three gaps namely The contextual gap on the need for multi-university evidence from the Nairobi Metropolitan area, The conceptual gap on the omission of academic performance from several curriculum studies and methodological gap on the need to combine probability-based student data with qualitative and documentary evidence on curriculum implementation.

METHODOLOGY

Research Philosophy

The study was guided by the positivist research philosophy, which treats reality as capable of systematic examination through observation, measurement and empirical evidence. The positivism was appropriate because it translated information literacy and academic performance into measurable indicators, and then employed statistical analysis to establish the strength, direction and significance of the relationships. This approach was an evidence based, structured, objective interpretation, not based on the researcher's opinion [9,10].

Research Design

A concurrent triangulation mixed methods design within a descriptive survey was used. Qualitative and quantitative data was collected and analyzed separately and integrated at the interpretation stage. The quantitative strand involved students' perception and examined the relationship between the focal information literacy variable and academic performance. The qualitative strand involved three university librarians and three academic registrars of universities in interviews to elucidate institutional policies, curriculum practices and experiences of implementing these practices. Triangulation added to the credibility by comparing the findings from students, institutional officers and documentary sources [11,10].

Study area

The study was conducted in nine selected public and private universities within the Nairobi Metropolitan area, Kenya. The selected metropolitan setting had high concentration of universities with established information literacy initiatives, diverse student populations, digital learning environments and library systems. The selected institutions provided appropriate setting for examining the relationship between information literacy and undergraduate academic performance.

Target Population

The target population comprised approximately 142,000 undergraduate students in the nine universities, together with nine university librarians and nine academic registrars. Undergraduate students were the primary unit of observation because they were direct beneficiaries of information literacy initiatives. Librarians and registrars were included as key informants because of their responsibility for information literacy delivery, institutional policy, curricula and academic records. The student population comprised approximately 62,000 second-year, 41,000 third-year and 39,000 fourth-year students.

Sampling Technique and Sample Size

Systematic simple random sampling was used to select undergraduate students from official enrolment lists. After a random starting point was identified, students were selected at regular intervals, thereby reducing selection bias and giving eligible students an equal chance of inclusion. Yamane's (1967) ^[12] formula, $n = N/(1 + Ne^2)$, was applied to the population of 142,000 at a 5% margin of error, producing a sample of 399 students. The samples obtained gave 175 second year students, 116 third year students and 108 fourth year students. In a purposive sample, all 18 key informants were identified due to the small size of the group, its accessibility and its institutional expertise ^[13].

Research Instruments

Four instruments were employed; namely a structured questionnaire for undergraduate students, an interview guide for university librarians and academic registrars, curriculum review checklist and document review checklist. A five-point Likert scale (1=No extent, 5=Very great extent) was used to gather demographic, predictor and academic-performance information. The interview guide provided context information on institutional policies, curriculum integration and programme delivery. The curriculum checklist evaluated information literacy breadth and the information literacy fusion. The document template included pertinent information literacy policy, curriculum and academic-record evidence. Multiple instruments were used to provide methodological triangulation.

Questionnaire for Undergraduate Students

The structured questionnaire collected standardized quantitative data from undergraduate students. Its objective-specific section contained statements measuring the independent variable, while the academic-performance section measured achievement, research and information skills, quality of academic work and learning outcomes. Closed-ended items facilitated consistent coding and statistical comparison across institutions.

Interview Guide for University Librarians and Academic Registrars

The semi-structured interview guide elicited institutional explanations concerning policy development, curriculum integration, programme delivery, staff roles, student participation and the perceived relationship between information literacy and academic performance. Open-ended questions enabled key informants to clarify differences in implementation strategies across universities.

Curriculum Review Checklist

The curriculum review checklist examined whether information literacy content was formally documented, the competencies covered the delivery approach, the level of integration into academic programmes and the extent to which content reflected emerging information needs.

Document Review Template

The document review template was used to capture institutional policies, information literacy curricula and academic-performance records. Academic records covered the 2020-2024 period and included degree classifications and graduation indicators, thereby supplementing self-reported student evidence.

Pilot Study

A pilot study involving 40 undergraduate students from a university with characteristics comparable to participating institutions was conducted before the main survey. Pilot participants were excluded from the final study. The pilot assessed clarity, relevance, sequencing and the time required to complete the questionnaire. Ambiguous language was

removed and instruments were improved as a result of feedback prior to the main data collection exercise.

The Research Instruments are considered valid.

Content validity was determined by examining questionnaires by supervisors and research experts for relevance, clarity and adequacy of the items in reference to the goal of the study and the conceptual framework. Principal Component Analysis was used to examine whether the items on the scale for each group were constructed to measure the same construct. For the factor loadings, values higher than 0.50 were considered acceptable [14,15,16] and the Kaiser-Meyer-Olkin measure was used to determine whether the data was appropriate for factor analysis.

The research instruments used in this study were reliable.

Cronbach's alpha was used to assess internal consistency. A coefficient of 0.70 or higher was deemed acceptable, values greater than 0.80 were rated as good and greater than 0.90 as excellent. Reliability of the scales used to measure the focus predictor and academic performance were validated from the pilot results [17, 15].

Table 1. Pilot reliability and validity results

Construct	Items	Cronbach's alpha	Average loading	Minimum loading	KMO
Scope of IL curriculum	7	0.942	0.860	0.749	0.889
Academic performance	13	0.852	0.814	0.550	0.671

All coefficients met the acceptance criteria used in the thesis.

Data Collection Procedure

Two trained research assistants assisted with administration of questionnaires after receiving institutional and regulatory approvals. The assistants were trained on the aims of the study, administration of the instruments, confidentiality, informed consent and consensual participation. Personal interviews were arranged with the librarians and academic registrars. The interviews were conducted in English to ensure uniformity, while secondary data was

gathered using the curriculum and document review tools. Data was assessed and verified for completeness, coded and securely stored prior to analysis.

Data Processing and Analysis

Quantitative data was coded and analyzed using SPSS Version 22. Frequencies, percentages, means and standard deviations described curriculum awareness and information literacy competencies. Principal Component Analysis assessed whether the curriculum indicators represented a coherent construct. Pearson correlation was used to examine the relationship between curriculum scope and academic performance. Simple linear regression and ANOVA were used to test the alternative hypothesis using $Y = \beta_0 + \beta_1 X_1 + \text{error}$, where Y represented academic performance and X_1 represented the scope of the information literacy curriculum. Multicollinearity, linearity, normality and autocorrelation diagnostics were examined before regression. Interview and curriculum-review evidence was coded thematically and integrated with quantitative results.

Operationalization of Variables

Table 2. Operationalization of the article variables

Variable	Indicators	Measurement	Analysis
Scope of information literacy curriculum (independent)	Information-needs identification; information access and retrieval; evaluation; citation and ethical use; critical analysis; reliability of online information.	Five-point Likert scale from no extent (1) to very great extent (5), plus curriculum-review evidence.	Frequencies, percentages, mean, standard deviation, PCA, correlation, regression and content analysis.
Academic performance (dependent)	Academic achievement; research and information skills; quality of academic work; learning outcomes.	Five-point Likert scale and institutional academic records.	Descriptive statistics, correlation and regression.

Ethical Considerations

Ethical clearance was obtained from the National Commission for Science, Technology and Innovation, and permission obtained from participating universities. The purpose and procedures used in the study were explained to participants, and only those who voluntarily consented were included. Respondents could withdraw at any time. Names were not recorded on questionnaires, confidentiality was maintained, and collected information was used solely for academic research.

Results

Response Rate and Sample Characteristics

Of the 399 student questionnaires administered, 305 were returned and were found usable, giving a response rate of 76.4%. All 18 interview schedules administered to the nine university librarians and nine academic registrars were completed, giving 100% key-informant response rate. Student response exceeded the 70% level treated in the thesis as very good and was adequate for statistical analysis.

Table 3. Response rate

Data source	Target	Usable responses	Response rate
Student questionnaires	399	305	76.4%
Key-informant interviews	18	18	100.0%

Student sample included 167 respondents (54.8%) from public universities and 138 (45.2%) from private universities. Male students comprised 60.3% and female students 39.7%. 41% respondents were aged 21-22 years, followed by those below 20 years (23%) and those aged 23-24 years (22%). Second-year students contributed 140 responses, third-year students 91 and fourth-year students 74. The distribution provided evidence from different institutional types and stages of undergraduate study.

Awareness and Descriptive Results for Curriculum Scope

Only 26 respondents (8.5%) reported awareness of an information literacy curriculum in their universities, while 279 (91.5%) were not aware of it. This low visibility contrasted with students' high self-assessments of specific information literacy competencies.

Table 4. Descriptive statistics for the scope of the information literacy curriculum

Curriculum competency	Great/very great extent	Mean	SD
Clearly defines information needs before a research task	72.1%	3.90	1.12
Finds information using databases, search engines and library tools	78.4%	4.10	1.02
Evaluates credibility and relevance of sources	67.5%	3.87	1.05
Cites sources correctly using the required style	68.2%	3.88	1.08
Analyzes information before accepting or using it	71.4%	3.99	1.11
Assesses reliability of social-media and online information	72.4%	3.95	1.08

Information retrieval recorded the highest mean ($M = 4.10$, $SD = 1.02$), followed by analyzing information before use ($M = 3.99$, $SD = 1.11$). Evaluation of credibility and relevance of sources recorded the lowest mean ($M = 3.87$, $SD = 1.05$), although it remained positive. The overall pattern indicated that students perceived themselves as capable of searching, evaluating, analyzing and ethically using information, even though most did not recognize a formal curriculum.

Factor Analysis

Curriculum indicators loaded between 0.523 and 0.852. Evaluation of source credibility and relevance produced the highest loading, followed by database and library-tool searching and critical analysis. The overall rating of curriculum scope produced the lowest loading, suggesting that specific competencies were more meaningful to students than the abstract idea of a formal curriculum.

Table 5. Factor loadings for curriculum scope

Indicator	Loading
Finds information using databases, search engines and library tools	0.842
Evaluates credibility and relevance of sources	0.852
Analyzes information before accepting or using it	0.838
Assesses reliability of social-media and online information	0.827
Clearly defines information needs before a research task	0.794
Cites sources correctly using the required style	0.785
Overall rating of the scope of university IL curricula	0.523

Diagnostic Tests

Table 6. Diagnostic results

Test	Statistic	Decision
Multicollinearity	Tolerance = 0.661; VIF = 1.512	No multicollinearity concern.
Linearity	$r = 0.127$; $p = .026$	A weak but significant positive linear relationship was present.
Normality	K-S = 2.081; $p < .001$	Normality was rejected; interpretation considered the large sample and graphical assessment.
Autocorrelation	Durbin-Watson = 1.808	Residual independence was acceptable.

Tolerance exceeded 0.10 and VIF was below 5, while the Durbin-Watson statistic was close to 2. The Kolmogorov-Smirnov test indicated non-normality. Regression was interpreted with caution and in light of the relatively large sample and graphical assessment of residual behavior.

Hypothesis Testing

Correlation Analysis

The scope of the information literacy curriculum had a weak positive and statistically significant relationship with academic performance ($r = 0.127$, $p = .026$, $n = 305$). The result indicated that broader curriculum scope was associated with a small improvement in academic performance.

Regression Model Summary and ANOVA

Table 7. Model summary

R	R ²	Adjusted R ²	Standard error
0.127	0.016	0.013	0.867

Table 8. Analysis of variance

Source	Sum of squares	df	Mean square	F	p
Regression	3.750	1	3.750	4.990	.026
Residual	227.729	303	0.752	-	-
Total	231.479	304	-	-	-

The model produced $R = 0.127$ and $R^2 = 0.016$. Curriculum scope therefore explained 1.6% of the variation in academic performance. Although the explanatory contribution was small, ANOVA results confirmed that the model was statistically significant, $F(1, 303) = 4.990$, $p = .026$.

Regression Coefficients and Hypothesis Decision

Table 9. Regression coefficients

Term	B	SE	Beta	t	p
Constant	3.010	0.331	-	9.085	< .001
Curriculum scope	0.213	0.095	0.127	2.234	.026

$$\text{Academic performance} = 3.010 + 0.213(\text{Curriculum scope})$$

A one-unit increase in curriculum scope predicted a 0.213-unit increase in academic performance ($B = 0.213$, $\beta = 0.127$, $t = 2.234$, $p = .026$). The null hypothesis was rejected. The statistically significant result supported the alternative hypothesis, but the weak standardized coefficient and low R^2 showed that curriculum scope alone had limited practical explanatory power.

Qualitative Findings

Interviews revealed considerable variation in curriculum development and integration. Jomo Kenyatta University of Agriculture and Technology, Kenyatta University and the University of Nairobi reported curricula that addressed emerging information needs, digital technologies, research competencies and ethical information use. In some universities curricula were in

place and in others they were awaiting institutional approval. A few institutions still used to offer the library session as a separate unit to the curriculum.

Overall, curriculum content tended to focus on finding, accessing, assessing, organizing appropriately citing and using the scholarly information. Some curricula, however, continued to be library oriented and were not necessarily linked to the learning outcomes of the disciplines, according to key informants. Faculty attendance of orientation, classroom instruction workshops and user-education sessions provided by the librarians was poor. There was a greater link between information literacy and assignments, research, and academic integrity where librarians worked with faculty.

DISCUSSION

Results of this study indicate that students possessed relatively strong information literacy competencies, yet most were unaware of a formal curriculum. This contrast implies that skills can be learned from a variety of activities, including orientation, library work/schools, communication skills courses, and specific academic work, but that they are not seen by students as a part of a coherent programme. This interpretation is confirmed by the low factor loading for the overall curriculum-scope rating, wherein students indicated greater response to the specific abilities than to the name of the institution as an information literacy curriculum.

There was a weak positive relationship with academic performance that lends support to Socio-cultural Learning Theory. The learning value of curriculum in an interactional, scaffolding, feedback and authentic academic practice is more. Thus, a wide curriculum is not a guarantee of delivery of the competencies consistently. This is why scope of curriculum was statistically significant but only explained 1.6% of the variation in performance. The result is consistent with previous observations of 4^[5], that identified the practical importance of accessing appropriate academic sources, and with those that emphasized librarians' instructional role and the barriers affecting delivery ^[6]. Results also support previous observations ^[7], that universities employ multiple instructional strategies. This study extends

these studies by connecting curriculum scope to academic performance and by showing that content breadth alone produces only a modest effect.

Masinde et al. (2024)^[8] observed that guides and manuals did not cover all dimensions of information literacy in the Kenyan universities they examined. Results of this study suggest that even where students report competencies across several dimensions, a curriculum's effectiveness depends on visibility, integration and disciplinary relevance. A curriculum should therefore be evaluated not only by the number of topics covered but also by the sequence of learning, instructional time, faculty involvement, practical application and assessment of competency outcomes.

The strongest reported competency concerned information retrieval, while source evaluation produced the lowest mean despite having the highest factor loading. This pattern is important in an environment characterized by social media, misinformation and artificial intelligence. Thus, students may be confident in finding information while still requiring deeper support in determining information credibility, relevance, authorship, evidential quality and ethical application.

CONCLUSIONS

The study concludes that the scope of the information literacy curriculum has a positive and statistically significant but weak effect on academic performance among university students in the Nairobi Metropolitan area. Students reported strong competencies in searching, analyzing, citing and evaluating information, but awareness of a formal curriculum was low. Curriculum breadth is therefore necessary but insufficient. Its contribution to academic performance depends on whether content is visible, practically delivered, progressively sequenced, assessed and integrated into discipline-specific academic work. Universities should shift from fragmented information literacy activities toward a coherent curriculum jointly owned by libraries and academic departments.

RECOMMENDATIONS

There is need for Universities to develop clearly articulated information literacy curricula that progresses across academic levels and cover information-needs identification, source evaluation, correct citation, academic integrity, ethical use and responsible use of artificial intelligence.

The curriculae should be embedded within discipline-specific courses and assessed through authentic academic tasks. Librarians and academic staff should jointly design learning activities, rubrics and assignments so that information literacy is reinforced within the evidence practices of each discipline.

Universities should increase curriculum visibility by communicating learning outcomes to students, timetabling instruction and making information literacy a recognizable component of programme documentation. Orientation sessions should introduce curriculae but should not substitute for progressive instruction and assessment.

Greater attention should be given to critical source evaluation, online misinformation, social-media content and artificial intelligence-generated information. Continuous professional development and adequate digital infrastructure are necessary to keep curriculum content and teaching methods current.

Further research should use longitudinal or experimental designs to determine whether changes in curriculum content and delivery produce measurable improvements in GPA, research quality and course completion. Comparative studies should also examine discipline oriented differences and include universities outside the Nairobi Metropolitan area.

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