



Metacognitive Reading Strategies and English Academic Comprehension: A Conceptual Framework for Nigerian LIS Education

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Abstract

This is a conceptual paper based on a critical synthesis of the literature; it reports no empirical findings. Library and Information Science (LIS) undergraduates in Nigeria must read demanding academic texts in English, a second language for most of them, and as future information professionals they must interpret and appraise information, not merely locate it. Nigerian LIS scholarship has concentrated on information and digital literacy, while the reading processes on which these competencies depend have received less attention. Drawing on metacognition theory, cognitive load theory and research on metacognitive reading strategies, the paper proposes a framework for strengthening English academic comprehension among Nigerian LIS undergraduates. The framework groups strategies as global, problem-solving and support strategies, and links them to a cycle of planning, monitoring and repair, and support and evaluation, taught within regular LIS courses rather than as a separate skills course. It specifies inputs, an instructional process, expected outcomes and moderating conditions; provides operational definitions and measures for comprehension, strategy use, support strategies, cognitive load and transfer; and proposes an instructional dosage, lecturer training and fidelity checks. An illustrative unit shows how the framework can be applied to reading a journal article. Five propositions are derived for empirical testing. The paper concludes, tentatively, that embedding metacognitive strategy instruction in LIS courses is a promising route to critical reading, but that its effects must be established empirically.

Keywords: metacognitive reading strategies; reading comprehension; conceptual framework; library and information science education; Nigerian universities.

1. Introduction

University students encounter a great deal of academic information, yet access does not guarantee comprehension. Students must decide how to approach a text, what matters in it, when their understanding has broken down and what to do when meaning is unclear. Reading at university is therefore more than decoding; it involves actively regulating comprehension (Mokhtari & Reichard, 2002).

This is especially true for students of Library and Information Science (LIS). LIS education stresses identifying information needs, locating relevant sources, evaluating information and using it appropriately, and information literacy frameworks emphasise critical engagement with information rather than retrieval alone (Association of College and Research Libraries [ACRL], 2016). Finding a good source is only the first step: the student must then understand its argument, separate claims from supporting detail, evaluate the evidence and relate the information to an academic purpose. Effective use of information thus depends partly on effective academic reading.

The relationship matters particularly in Nigeria, where English is the main language of university teaching and reading, although most students live in multilingual environments (Bamgbose, 1995). Nigerian LIS research has examined information literacy, digital information literacy, research competence and the use of electronic resources (Alex-Nmecha & Ejitaga, 2023; Anunobi & Ukwoma, 2016; Makinde et al., 2025; Udoh et al., 2020). This work has greatly improved understanding of how students find and use information, but the studies reviewed pay little attention to the metacognitive processes by which LIS students regulate their comprehension of the texts they retrieve.

Metacognition offers a way of examining this problem. Flavell (1979) described it as knowledge about one's own cognition and the monitoring of cognitive activity. Applied to reading, it directs attention not only to the strategies readers possess but to their awareness of when and why to use them: setting a purpose, previewing a text, monitoring understanding, slowing down or rereading, taking notes and consulting reference aids. Mokhtari and Reichard (2002) group such strategies into global, problem-solving and support strategies, and Mokhtari and Sheorey (2002) applied the same grouping to readers of English as a second language.

Existing evidence gives grounds to explore this approach but not to assume that particular strategies will improve comprehension. Studies in different settings have reported varied patterns of strategy awareness and use (Abd Halim et al., 2022; Dardjito, 2019; Do & Phan, 2021), and, crucially, high self-reported strategy use is not the same as strong comprehension. The gap addressed here is therefore specific: no framework in the literature reviewed shows how metacognitive reading strategies could be embedded in the ordinary academic work of Nigerian LIS students, how that instruction would relate to established LIS learning outcomes, and what relationships could then be tested.

The paper has three purposes: to examine the theory and evidence linking metacognitive reading to LIS education; to propose an instructional framework that embeds planning, monitoring, repair and evaluation in existing LIS activities; and to derive testable propositions, with operational definitions and measures, to guide empirical research.

1.1 Nature of the Paper and Literature Synthesis

This paper is a critical synthesis, not a systematic review, and no data were collected or analysed. Literature was selected according to

four criteria. First, relevance: each source had to address at least one of four strands, namely metacognition and metacognitive reading, cognitive load, strategy instruction in second language reading, or information literacy and LIS education in Nigeria. Second, type: priority was given to peer-reviewed empirical studies, foundational theoretical works and professional frameworks. Third, context: Nigerian and African studies, and studies of university students reading in a second or foreign language, were sought wherever available. Fourth, verifiability: every source was checked against its original publication details, and sources that could not be confirmed were excluded. The sources were synthesised thematically, by identifying what each strand establishes, where the strands connect and where evidence is missing or inconsistent. Because the review was not systematic, the gap it identifies is stated as a gap in the literature reviewed, not as a claim about all published research.

1.2 Procedure for Constructing the Framework and Deriving Propositions

The framework was built in four steps. First, the instructional problem was defined from the Nigerian LIS literature: research emphasises retrieval and information literacy, while the regulation of reading receives little attention. Second, the three strategy categories of Mokhtari and Reichard (2002) were adopted as the organising structure and mapped onto a teaching cycle of planning, monitoring and repair, and support and evaluation. Third, comprehension was divided into literal, inferential and critical levels and aligned with the strategies (Table 2). Fourth, the conditions that the literature identifies as affecting strategy use and comprehension, such as English proficiency, text difficulty and access to reading aids, were specified as moderators. Each proposition was then derived by stating, as a testable relationship, one link in the framework: between strategy use and comprehension (Proposition 1), between resources and support

strategies (Proposition 2), between instruction and levels of comprehension (Proposition 3), between cognitive load and the benefit of instruction (Proposition 4), and between embedded instruction and transfer (Proposition 5).

2. Discussion

2.1 Metacognition and Reading

Metacognition is the main theoretical basis for understanding how readers regulate their engagement with academic texts. Readers do not approach every text in the same way: reading a journal article for a literature review demands a different approach from reading a textbook chapter to grasp an unfamiliar concept. Strategic readers set a purpose, draw on prior knowledge and decide where to concentrate. As they read, they monitor whether the text makes sense, and when understanding breaks down they reread, slow down, look for clues in the context or consult another source. Metacognition thus involves both awareness and regulation.

Table 1 summarises the three strategy categories. Global strategies manage reading as a whole, problem-solving strategies respond to local difficulty, and support strategies draw on external aids (Mokhtari & Reichard, 2002). The categories capture decisions LIS students make routinely: how to approach a text, how to proceed through a difficult technical passage and when to use an external aid.

These categories do not imply that reported strategy use leads to better comprehension. The instruments used to study them mostly measure readers' awareness and perceived use of strategies, and students may report frequent use of a strategy without using it effectively. Mokhtari et al. (2018) examined the measurement properties of a revised inventory across groups of students, which carries an important implication: an instrument validated in one setting should not be assumed to work in

the same way among Nigerian LIS undergraduates without first examining its properties in that population.

Table 1. Categories of metacognitive reading strategies and their relevance to LIS reading

Category	Description	Examples	Relevance to LIS reading
Global strategies	Planned, whole-text approaches that set up the reading	Having a purpose in mind; previewing the text; using prior knowledge	Approaching journal articles, standards and reports with a clear purpose
Problem-solving strategies	Localised actions taken when understanding breaks down	Rereading difficult passages; adjusting reading speed; visualising information	Working through dense technical passages on cataloguing, systems and management
Support strategies	External aids that supplement understanding	Taking notes; summarising; using dictionaries and other references	Building disciplinary vocabulary and recording evidence for evaluation

Source: Adapted from Mokhtari and Reichard (2002).

2.2 Reading in a Second Language and Cognitive Load

Metacognition explains how readers control comprehension, but not why control matters especially when students read demanding texts in a second language. Cognitive load theory adds that working memory is limited and that learning suffers when a task's demands exceed the learner's resources (Sweller et al., 2019). Reading an unfamiliar LIS article may require a student to process complex sentences, link ideas across paragraphs, interpret specialised vocabulary, recall disciplinary knowledge and weigh an argument at the same time. For readers of English as a second language, difficulties with vocabulary and syntax can consume resources that would otherwise go to integrating ideas and assessing evidence.

On this view, metacognitive strategies may help readers use limited resources better: monitoring can detect a breakdown before misunderstandings accumulate, a glossary can

resolve a problem that would otherwise disrupt comprehension, and a clear purpose can prevent wasted attention. However, cognitive load theory does not show that the strategy cycle proposed here reduces load among Nigerian LIS students. The framework therefore treats reduced load as a theoretically derived expectation, stated as Proposition 4, not as an established effect.

2.3 Metacognitive Strategies and Reading Comprehension: Previous Studies

The empirical evidence supports the relevance of metacognitive strategies but is too inconsistent to show that greater awareness always brings better comprehension. Ahmadi et al. (2013) reviewed evidence on the importance of strategy awareness, and Abd Halim et al. (2022) found a positive correlation between awareness of reading strategies and comprehension among Malaysian students, with problem-solving strategies the most preferred. By contrast, Dardjito (2019) found no significant relationship between metacognitive

awareness and academic English reading comprehension among first-year Indonesian university students, whose self-reported awareness was high while their comprehension was low. Do and Phan (2021) and Deliany and Cahyono (2020) reported further variation in awareness and strategy use among university students in Vietnam and Indonesia. Taken together, these studies establish metacognitive reading as a legitimate field of inquiry, but they show that strategy preferences, awareness and comprehension do not necessarily move together, and they come from settings where English functions differently from its role in Nigerian universities.

There is also evidence that strategy use responds to instruction. Carrell et al. (1989) found that explicit metacognitive strategy training improved aspects of ESL students' reading, although effects varied with how reading was measured and with learner characteristics. The study's significance here is the principle it illustrates: strategic reading is not a fixed trait but can be modelled and practised. For LIS education, this suggests that strategy instruction is likely to be most useful when it is tied to the disciplinary texts and information problems students already meet.

2.4 Academic Reading in Nigerian Universities and LIS Education

Information literacy has received considerable attention in Nigerian LIS research. Anunobi and Ukwoma (2016) reviewed trends, challenges and opportunities for information literacy in Nigerian universities, and Anyaoku (2016) examined how librarians in three federal universities in South East Nigeria understand information literacy. Among students, Makinde

et al. (2025) found poor information literacy among LIS undergraduates in South West Nigeria, Alex-Nmecha and Ejitagh (2023) evaluated digital information literacy skills, and Udoh et al. (2020) examined digital literacy in the use of electronic resources. Nwanekezie and Igbokwe (2022) found weaknesses in information retrieval and limited use of some library resources among the university students studied.

These studies describe how Nigerian students locate, evaluate and use information, but none of those reviewed directly investigated how LIS students understand, monitor and evaluate the texts they retrieve. The gap is therefore not an absence of Nigerian research on information literacy, but limited attention to the regulation of reading within information use. The distinction matters because retrieval does not complete the information process: judging authority, recognising scholarship as a conversation and approaching research as inquiry all require engagement with the substance of texts (ACRL, 2016). The framework therefore does not replace information literacy instruction; it adds metacognitive regulation to the reading through which information literacy is practised.

2.5 The Proposed Framework

The framework embeds metacognitive reading in the regular activities of LIS courses, so that students learn to regulate their reading while working with the disciplinary texts they are already expected to understand. It has five components, shown in Figure 1: theoretical foundations, instructional inputs, an embedded strategy cycle, expected outcomes and moderating conditions.

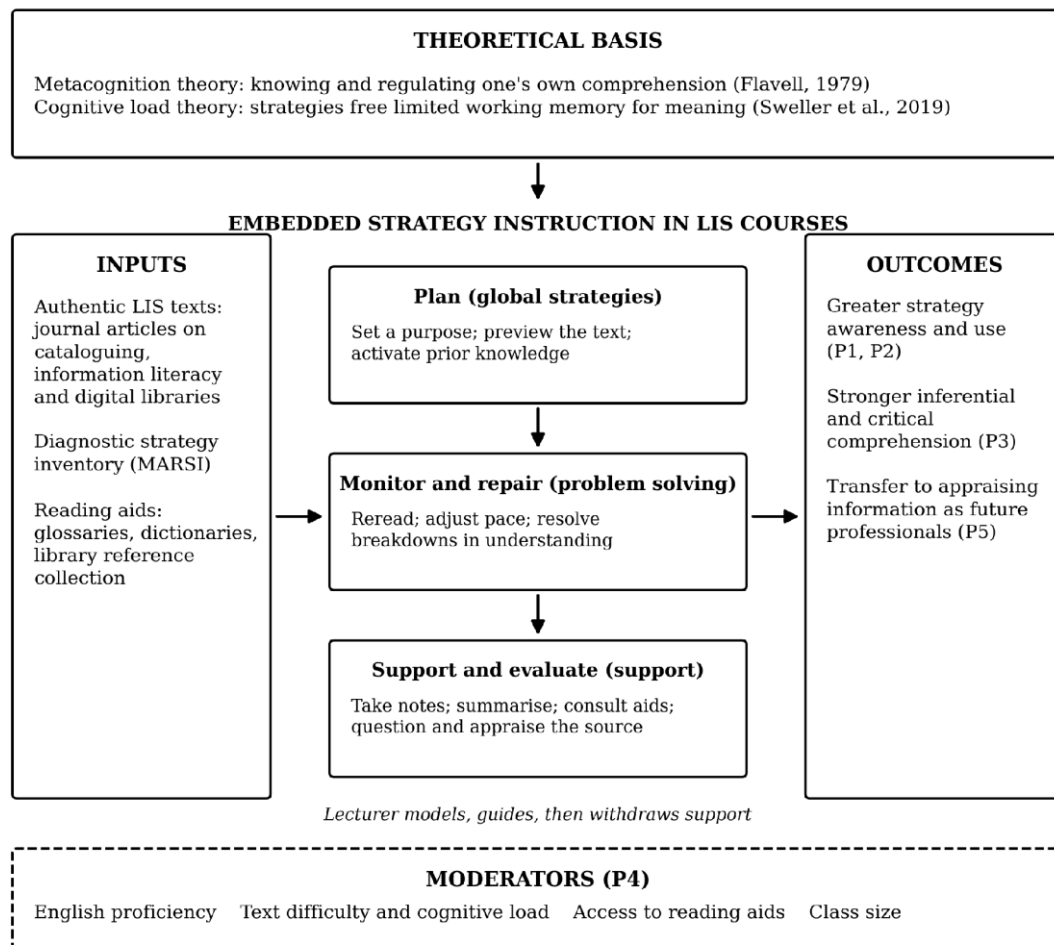


Figure 1. A framework for embedded metacognitive reading strategy instruction in LIS education
Note. Metacognition and cognitive load theory (top) inform a three-stage cycle taught within regular LIS courses (centre), drawing on authentic texts, a diagnostic inventory and reading aids (left), with expected outcomes (right) and moderating conditions (bottom). P1 to P5 refer to the propositions in Section 2.8. Source: Authors' construct.

Metacognition theory and cognitive load theory provide the theoretical basis (Flavell, 1979; Sweller et al., 2019). The inputs are authentic LIS texts, such as journal articles, professional reports, standards and textbook extracts on cataloguing, information literacy, digital libraries and information management; a strategy inventory administered diagnostically to indicate students' reported awareness of strategies (Mokhtari et al., 2018), which is not a measure of comprehension; and reading aids such as dictionaries, glossaries and reference works.

At the core is a cycle of planning, monitoring and repair, and support and evaluation. Students first set a purpose, preview the text and recall relevant knowledge. As they read, they monitor their understanding and identify points of uncertainty, and when necessary, they repair comprehension by slowing down, rereading, examining the context, breaking a difficult passage into parts or reconsidering an interpretation. They use support strategies such as taking notes, summarising and consulting glossaries or references, and they evaluate both the text, including the strength of its argument, its

evidence and its omissions, and their own understanding. The lecturer first models this cycle by thinking aloud while reading a short passage, then guides students' practice, and gradually withdraws support as students take responsibility for their own reading decisions.

The expected outcomes are more deliberate strategy use, stronger comprehension of disciplinary texts, particularly at the inferential and critical levels, and transfer of

critical reading to the evaluation of information in other academic and professional settings. English proficiency, prior knowledge, text difficulty, access to reading aids, class size and lecturer preparation are treated as moderating conditions. Table 2 shows how instruction aligns with the three levels of comprehension, which are interconnected: literal understanding supports inference, and critical evaluation depends on both.

Table 2. Aligning strategy instruction with levels of comprehension in LIS courses

Level of comprehension	Strategy emphasis	Sample activity in an LIS course
Literal: understanding what the text states	Global and support strategies	Preview a journal article on metadata standards and summarise its main claims in a structured note
Inferential: drawing out what the text implies	Problem-solving strategies	Explain what a study's findings imply for a Nigerian university library, using evidence from the text
Critical: evaluating the text and its claims	Support strategies and questioning	Assess the authority, evidence and limitations of two articles that reach different conclusions on the same topic

Source: Authors' construct.

2.6 Operational Definitions and Measures

The propositions can be tested only if their key terms are defined in measurable ways. Table 3 gives working definitions and measures for comprehension, strategy use, support strategies, cognitive load and transfer. Two

principles guide it. First, comprehension is always measured by students' performance on texts, never inferred from self-reported strategy use. Second, reported strategy use (what students say they do) is distinguished from enacted strategy use (what they are observed to do).

Table 3. Operational definitions and proposed measures of the framework's key constructs

Construct	Operational definition	Proposed measure
Reading comprehension	Understanding of an assigned English academic text at the literal, inferential and critical levels, demonstrated in students'	A comprehension test on unseen LIS texts with items at each level, plus a critical summary scored with an analytic rubric; scored by trained raters independently of any self-report

Construct	Operational definition	Proposed measure
	answers and written products	
Reported strategy use	Students' self-reported awareness and frequency of global, problem-solving and support strategies	A strategy inventory, after its structure and reliability have been examined among Nigerian LIS students (Mokhtari et al., 2018)
Enacted strategy use	Strategies students are observed to use while reading	Think-aloud protocols with a subsample, annotations on texts and reading logs, coded by category
Support strategies	Use of external aids, such as notes, summaries, dictionaries, glossaries and references, to aid understanding	Support subscale of the inventory, plus observed use of aids in annotations and logs, and an audit of students' access to such aids
Cognitive load	The mental effort a reading task demands of the student	A single-item rating of mental effort after each text (Paas, 1992), with text difficulty indexed by features such as vocabulary density and sentence complexity
Transfer	Unprompted application of strategies and critical reading to unfamiliar texts and tasks outside the course in which instruction took place	A source evaluation task set in another course or during industrial training, without prompts about strategies, scored with the same rubric as the critical summary

Source: Authors' construct.

2.7 An Illustrative Unit

The framework can be applied in a regular LIS course without a separate reading skills course. Consider a two-period unit in an information literacy course built around one journal article on a topic in the course, using printed copies where electronic access is unreliable. In the first period, the lecturer sets a purpose, for example to determine what the study says about students' use of electronic information resources and whether its conclusions are supported by the evidence. Students preview the title, abstract and headings and note what they already know. The lecturer then reads a short extract aloud and makes each reading decision audible: recognising an unfamiliar term, noticing that a

sentence has not been understood, rereading it, examining the context and deciding whether a glossary is needed. The aim is to reveal the decision-making process rather than to model a single correct way of reading. Students then continue in pairs, marking difficult passages and noting how they tried to restore understanding.

In the second period, students answer questions at the literal, inferential and critical levels. Literal questions check that the argument and findings have been understood; inferential questions ask students to explain implications; critical questions ask them to consider authorship, evidence, method, limitations and whether the conclusions are justified. A final task links reading to information literacy by

asking students to judge the article's credibility and usefulness for a stated information need, and a follow-up assignment asks each student for a short critical summary identifying the central claim, one significant implication and at least one limitation.

2.8 Propositions

The following propositions are derived from the framework by the procedure described in Section 1.2. Their key terms are defined in Table 3.

Proposition 1. Among Nigerian LIS undergraduates, greater enacted use of metacognitive reading strategies will be associated with stronger comprehension of English academic texts, with global and problem-solving strategies showing stronger associations than support strategies.

Proposition 2. Use of support strategies will depend on access to reading aids, so that low use of such strategies will partly reflect limited access to dictionaries, glossaries and reference materials rather than a lack of value in the strategies themselves.

Proposition 3. Embedded strategy instruction will improve inferential and critical comprehension more than literal comprehension, since the higher levels depend most on planning, monitoring and evaluation.

Proposition 4. The benefit of strategy instruction will be greatest for texts that impose higher cognitive load and for students with lower English proficiency.

Proposition 5. Strategy instruction embedded in LIS courses will transfer to the evaluation of information in other courses and in professional practice more readily than instruction delivered as a separate skills course.

2.9 Implementation in Nigerian Universities

The framework should work in real Nigerian LIS programmes, without assuming small classes, continuous internet access or plentiful reading materials. Think-aloud

modelling can be done with a whole class, while practice takes place in pairs or small groups, and brief written responses and selected group reports reduce the need for every student to report orally. Group work should not be taken as evidence that every student is using the strategies, so individual written tasks remain necessary for assessing comprehension. University libraries can help by selecting readings at graded levels of difficulty, preparing discipline-specific glossaries and promoting relevant reference materials, in print as well as electronic form. Printed materials allow instruction to continue when electricity or connectivity fails, a real constraint, since irregular power supply has been shown to limit information technology use in a Nigerian university library (Nwanekezie, 2022). Assessment should also reward the reading being taught: if examinations mainly reward recall, students have little reason to practise inferential and critical reading, so critical summaries, comparisons of sources and evaluations of evidence should form part of course assessment.

2.10 Instructional Dosage, Lecturer Training and Fidelity

For the framework to be tested fairly, its intensity and delivery must be specified. As a starting point for evaluation, the following arrangements are proposed; they are hypotheses to be refined by research, not established requirements. For dosage, strategy instruction would be embedded in at least two LIS courses over one semester, with about 20 to 30 minutes of explicit modelling and guided practice in each weekly class across a 12- to 13-week semester, giving roughly five to six hours of explicit instruction in addition to the reading students already do. For lecturer training, participating lecturers would attend a two-day workshop covering the strategy categories, think-aloud modelling, writing questions at the three levels and using the rubric, followed by a practice session with feedback and a mid-semester review meeting. For fidelity, an

observer would use a short checklist in at least two lessons per course to record whether the core elements occurred, namely setting a purpose, think-aloud modelling, guided practice, questions at all three levels and a critical summary task; lecturers would keep brief logs of the time spent; and a sample of student annotations would be examined. Reporting fidelity alongside outcomes would allow researchers to distinguish a framework that does not work from one that was not delivered as intended.

2.11 Agenda for Empirical Testing

No single study can test all five propositions, so different designs suit different relationships. Correlational studies can examine Proposition 1, provided that comprehension is measured independently of what students report, using the performance measures in Table 3, and that inventories are first validated in the target population (Mokhtari et al., 2018). The importance of this separation is shown by Dardjito's (2019) finding of high self-reported awareness alongside low comprehension.

Intervention studies offer stronger evidence of the effects of instruction (Propositions 3 and 4). Intact classes could receive embedded instruction or a comparison condition, with comprehension measured before and after instruction and again after a delay to test retention; where students are clustered within classes or universities, the analysis should account for this structure (Creswell & Creswell, 2023). Think-aloud protocols, reading logs and interviews with students, lecturers and librarians would show how students actually read and why implementation varies.

Transfer (Proposition 5) must be tested beyond the LIS course in which instruction takes place. Near transfer could be assessed with an unfamiliar text and source evaluation task in a different LIS course, and far transfer with a comparable task set in a general studies course or during industrial training, in both cases

without prompts about which strategies to use. Comparing students taught through embedded instruction with students taught through a separate skills course would test the comparative claim in the proposition. Finally, studies should include public and private universities, different regions, a range of class sizes and different levels of library provision, so that they show not only whether the framework works but for whom and under what conditions.

2.12 Limitations

The framework rests on a critical synthesis rather than a systematic review, so relevant studies, particularly unpublished Nigerian theses and local journal articles, may have been missed. Much of the evidence on metacognitive reading comes from Asian settings where English is a foreign language, and its relevance to Nigerian LIS students is an assumption to be tested. The propositions, the operational definitions in Table 3 and the dosage, training and fidelity arrangements in Section 2.10 are proposals that have not been evaluated.

3. Conclusion and Recommendations

This paper examined how metacognitive reading strategy instruction might strengthen Nigerian LIS undergraduates' comprehension of academic English texts. The literature reviewed shows substantial Nigerian research on information literacy, digital literacy and information retrieval, but little attention to how LIS students regulate their comprehension of the texts they find. Since retrieval does not guarantee comprehension, interpretation or critical evaluation, the paper argues that this aspect of information use deserves attention, and it proposes a framework that embeds global, problem-solving and support strategies in the ordinary work of LIS courses, with defined outcomes and a plan for testing them.

The following recommendations are offered tentatively, pending empirical evidence. LIS departments may consider piloting

embedded strategy instruction in one or two courses that involve substantial academic reading, using the dosage and fidelity arrangements proposed in Section 2.10. Lecturers taking part in such pilots should be supported with training in think-aloud modelling, diagnosing comprehension difficulties and gradually transferring responsibility to students. University libraries may support pilots by providing glossaries, dictionaries and graded readings in print as well as electronic form. Assessment in pilot courses should include interpretation, critical summaries and evaluation of evidence alongside recall. Above all, the framework and its five propositions should be tested empirically before any wider adoption. The paper does not claim that metacognitive strategy instruction has been shown to solve the reading difficulties of Nigerian LIS students; it claims that reading regulation is a plausible and educationally important link between locating information and using it well, and it offers a basis for testing that link.

Statement on the Use of Artificial Intelligence Tools

The authors used AI tools in preparing this manuscript. It was used for language refinement and consistency checking. No AI tool was used as a source of scholarly evidence, and no data were generated or analysed, since this is a conceptual paper. The authors take full responsibility for the accuracy, originality and integrity of the manuscript. No AI tool is listed as an author.

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