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VOCABULARY-EMBEDDED LIBRARY MAKERSPACE ACTIVITIES AND LIBRARY ENGAGEMENT AMONG UPPER-PRIMARY PUPILS OF SELECTED PRIVATE SCHOOLS IN LAGOS STATE, NIGERIA: A NARRATIVE REVIEW

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Abstract

This paper examines the potential of library makerspaces to support literacy development and strengthen library engagement among young learners, with particular attention to academic vocabulary, reading and library patronage. The paper adopts a literature-based and conceptual approach, drawing on existing scholarship on library makerspaces, literacy learning, vocabulary development, learner engagement and the emerging Nigerian makerspace experience. Its scope covers the educational functions of library makerspaces, the relationship between making and reading, the role of purposeful vocabulary development in maker activities, factors influencing library engagement and patronage, and the opportunities and challenges associated with makerspace development in Nigerian school libraries. The literature indicates that makerspaces can provide active, collaborative and experiential learning environments in which learners encounter information, communicate ideas, solve problems and create tangible or digital products. The evidence also suggests that the literacy benefits of makerspaces are more likely to emerge when making activities are deliberately connected to reading materials, vocabulary, discussion, writing and reflection rather than treated as technology-centred activities. However, evidence linking makerspaces specifically to academic vocabulary development and sustained library patronage remains limited, particularly within Nigerian school libraries. The paper therefore recommends the integration of literacy objectives into makerspace programming, development of librarians' professional competencies, provision of

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appropriate infrastructure and materials, inclusive programme design, collaboration between librarians and teachers, and stronger institutional support for makerspace initiatives. The paper concludes that library makerspaces can extend the educational role of school libraries when they are deliberately designed as inclusive spaces for reading, information use, communication, creativity and knowledge construction rather than as collections of technological equipment alone.

Keywords: library makerspaces, literacy development, academic vocabulary, reading engagement, library patronage, school libraries, Nigeria

Introduction

In recent years, library makerspaces have emerged as contemporary learning environments where children can interact with information, technology, creativity, problem-solving, and collaborative production. In contrast to traditional library services that provide access primarily to printed and/or digital resources, makerspaces offer opportunities to transition between consuming information and producing knowledge. This evolution of library spaces has led researchers to expand conversations around their educational roles and the skills required of librarians who facilitate such participatory experiences (Kim *et al*., 2022; Willett, 2018). However, much more needs to be done if we want to fully appreciate the educational value of makerspaces beyond providing access to computers, 3D printers, robotics equipment, or craft supplies. More significantly, their utility depends largely on how they are designed, facilitated, and aligned with specific learning objectives.

Research has linked makerspaces to benefits involving creativity, problem solving, technological competence, identity development, collaboration, and information practices

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(Crawford Barniskis, 2023; Kim *et al*., 2022; Moorefield-Lang, 2018). However, much of this work relies on descriptive or qualitative methods rather than empirical analysis. Furthermore, assessing makerspace outcomes poses unique challenges since participants' experience various results simultaneously, making it impossible to isolate what learners have specifically learned (Cun *et al*., 2019; Min *et al*., 2024). An essential question is the connection between making and literacy. For example, participating in making activities involves tasks requiring people to read instructions, find information, interpret texts, communicate ideas, discuss procedures, and share design choices (Liu & Hsieh, 2023). Thus, there is great potential to create literacy-rich environments by consciously integrating reading and information uses into activities. Although some school-libraries scholarship explores connections among makerspaces, STEAM activities, and curricular integration (Baldwin, 2020; Pflughaupt, 2020), literacy outcomes remain relatively understudied. Perhaps most critically, academic vocabulary, which reflects the language used in higher education contexts, is an overlooked yet vital component of connecting makerspaces to literacy. Learners participating in maker activities encounter words associated with design, materials, measurement, processes, explanation and evaluation. When such vocabulary is introduced through relevant texts and subsequently used during making, discussion and reflection, learners may encounter opportunities for contextualized language development. Lege (2023) highlights the potential of making to support situated vocabulary acquisition, while Stewart *et al*. (2023) demonstrate that the relationship

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between maker activities and academic writing requires careful empirical consideration rather than automatic assumptions about literacy gains.

Finally, there is the aspect of library engagement and patronage. A makerspace might drive learners' attendance at the library owing to the novelty of the offered activities, but this does not guarantee enhanced engagement with reading or other types of library resources (e.g. by voluntarily reading books, participating in library programmes, interacting with collections, showing eagerness to return etc.). Research into participation shows that those who have never before used the library can encounter various obstacles when faced with a novel space such as makerspaces which may seem alienatingly unfamiliar or specifically intended for those with prior confidence (Melo & Rodney, 2023). In the Nigerian context, several works document interest in makerspaces, as well as some problems related to introducing makerspaces in school libraries (Adebayo *et al*., 2019; Bamigbola, 2022), yet more research is needed concerning the link between making, literacy development, and engagement with libraries.

Keshinro and Oyewole (2021) investigated predictors of makerspace utilisation by secondaryschool pupils in Ibadan; Omosebi and Bakare (2022) discuss the phenomenon of makerspaces as an emerging category of library inclusion. However, as we note earlier, the body of work on library makerspaces is quite limited in terms of examining the connections between making, literacy development, and library engagement among youth learners. We examine here what the relevant literature tells us about library makerspaces and how they relate to literacy and library engagement, focusing in particular on aspects relating to

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academic vocabulary, reading and library usage. Instead of proposing or detailing an empirical study of a proposed intervention, our goal is rather to explore and consider available scholarly works, with an eye to potential implications for the practice of schools-libraries in Nigeria.

Library Makerspaces as Contemporary Learning Environments

The emergence of library makerspaces has ushered in a transformation in the nature of libraries themselves. Moving away from traditional roles as places for accessing information alone, library makerspaces foster participative engagement, allowing learners to explore digital fabrication, electronics, coding, robotics, crafts, design and more. This provides opportunities for experimentation, enabling individuals to learn through cycles of designing, testing, modifying and explaining. However, research suggests there are key considerations to bear in mind when conceptualizing library makerspaces. In particular, the work of Einarsson & Hertzum (2020) highlights the significance of scaffolding and facilitation within these contexts, while Parekh & Gee (2019) illuminate how children's maker practices have a distinct social and exploratory element. The role of librarians extends beyond facilitating access to the necessary materials; supporting the learning process involves aiding in the identification of information and understanding of tasks, collaboration with others and reflection upon products created.

Assessing the impact of makerspaces also presents challenges. Cun *et al*. (2019) assert that outcomes from makerspace experiences are multidimensional requiring

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assessment techniques capable of capturing various manifestations of learning. Similarly, Min *et al.* (2024) designed a maker-literacy assessment framework acknowledging the complex nature of assessing children's maker learning. These findings point to the necessity of having clear-cut learning objectives for effective makerspace programming, without this, it would be naïve to assume mere participation translates into positive educational outcomes.

Makerspaces, Reading and Literacy Development

Making has been identified as having a close relationship to literacy due to its information rich nature. 'Children must engage in literacy processes such as reading, searching for information, comparing possible solutions, interpreting diagrams, and communicating their ideas' (Lamb & Dalglish 2020, p. 376). In this way, the opportunity to make can serve as an authentic reason to engage in literacy learning. This presents many opportunities for integration of making in school-library spaces given that libraries have access to both print and digital resources that can be related to making activities. Baldwin (2020) provides some examples of how makerspace programming can integrate with art, literacy and STEAM learning. Pflughaupt's work on integrating makerspaces within school-libraries also highlights that 'literacy is one of the multiple ways in which makerspaces may be integrated into school-library programmes' (Pflughaupt 2020).

While there are clear links to literacy outcomes through makerspace activities, the two areas should still be considered as conditional upon each other. The mere presence of

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maker equipment in the library does not ensure that learners will develop literacy skills when they participate in makerspace activities. Rather, these literacy aims need to be purposefully built into the activity design. For instance, providing relevant reading materials prior to engaging with a task can give them background knowledge. Introducing vocabulary prior to engagement can aid understanding. Discussing what has been found during the process gives learners the chance to explore information. And, finally, giving them the opportunity to explain their finished project using either oral or written methods encourages further literacy practice. It would appear then that integrating makerspace activities into school-libraries is very much about supporting literacy by offering additional contexts where people can learn to read and write better. One aspect that emerges in the research conducted into maker learning is that most forms of learning tend to be collaborative (Parekh and Gee 2019), and Einarsson and Hertzum (2020) describe the necessity of scaffolding. As learners interact and collaborate, discussion, asking questions and explaining all offer excellent opportunities for using language meaningfully.

Academic Vocabulary Development through Making

The purpose of academic vocabulary is to enable learners to understand, explain and communicate disciplinary and educational concepts. Maker activities offer rich opportunities to develop academic vocabulary by providing real-life contexts where such words gain practical significance. Terms like prototype, structure, modify, measure, mechanism, balance and evidence become more meaningful to learners who are able to engage with these terms as they tackle authentic challenges. This aligns well with Lege's

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(2023) notion of "situated vocabulary acquisition". The idea here is that encountering and using vocabulary embedded in meaningful activities will make it easier to link to ideas and actions. While maker activities provide multiple opportunities for encountering and reinforcing such words, whether through reading, demonstration, discussion or construction, there's no reason from the existing literature to assume that all maker spaces are necessarily enhancing academic vocabulary.

For instance, Stewart and colleagues' (2023) study into maker activities and academic writing in a middle-school science classroom highlights the need to evaluate literacy outcomes carefully before assuming positive effects. So how do we plan to ensure our own makerspaces deliver on the potential? Firstly, identify relevant academic vocabulary. Then, introduce those words via appropriately selected texts and encourage usage throughout the making experience. Finally, offer learners the opportunity to explain and reflect on what they have created. This could involve both written reflection as well as oral sharing and dialogue around different aspects of the product and its creation.

Library Engagement, Patronage and Inclusion

In doing this, they may change how the library is perceived amongst the community. That is, while libraries have always been linked to reading and accessing information, makerspaces shift focus towards participation, experimentation and social learning. This kind of programming might attract those who haven't found themselves drawn to traditional library activities before. However, just because someone physically attends does

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not mean they engage. It's important to make this distinction between engagement and patronage, both concepts can play an integral role in measuring success when reviewing a makerspace programme. Engagement can manifest itself in many ways, including but not limited to enjoyment of reading, participation in library activities, interactions with the various resources, desire to come back again, and voluntarily using a range of library services on offer. On the other hand, patronage refers to visits made, items borrowed, participating in programmes and frequent usage of certain resources.

The inclusion aspect should also be considered, as Melo & Rodney (2023) highlight the fact that first time makerspace users can sometimes feel like an outsider / intruder within the environment, suggesting we shouldn't assume all members will automatically want to engage if given the opportunity. As such clear orientation, welcoming facilitation and access to materials at differing competency levels should be put into place. Similarly, allowing children to have input regarding programme design was highlighted by Lee *et al* (2024), who illustrated how valuable it is to involve children in the process of co-designing library makerspaces, reinforcing their position as key contributors, rather than passive recipients.

Theoretical Perspectives and the Learning Process in Makerspaces

A constructionism theoretical approach offers one possible lens from which we may understand the nature of makerspace learning. This theory focuses on the creation of knowledge by constructing meaningful artefacts (Adebayo *et al*., 2019), which seems very

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relevant to making activity within schools (Parekh & Gee, 2019). As I thought about this, I considered what connections could be made between a makerspace environment and vocabulary learning, given such a focus on making things. So perhaps I could frame the potential links as follows: there will be times where learners are likely to encounter vocabulary contained in texts they are working with (e.g. written instructions); then later they might encounter the same words again as they carry out making activities; after which they may talk about those vocabularies with others (perhaps when discussing the work they have done); and finally they would utilise that vocabulary to communicate about their final product. This all sounds familiar, but perhaps using a constructionist lens encourages us to think more about the connection between learning and doing.

Sociocultural theory considers interactions, the role of language and scaffolding in facilitating learning (Pijls *et al*., 2022; see also Einarsson & Hertzum, 2020). Both of these approaches highlight how important activities, coaching and scaffolding are when thinking about how to shape and support the learners' experience in a makerspace. So far my consideration has been focused primarily on the making aspects of makerspaces. But clearly, makerspaces are much more than just people interacting with technology or materials; it's also very much a social process too, in which people interact together, negotiating the meaning behind various choices and responses. In short, I need to ensure that I incorporate into my vision some elements related to the sociocultural aspect of learning. The combination of both theories suggests that if we want our makerspaces to become more literacy oriented, we need to make sure that we integrate elements relating

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to texts, vocabulary, making, discussion and reflection. And importantly, we need to ensure that the librarian/teacher takes up the role of facilitator to provide suitable resources and scaffolding whilst allowing enough autonomy for the learner to try out ideas, explore and create.

Library Makerspaces in the Nigerian School-Library Context

Adebayo et al., 2019 explored the rationale and challenges involved in setting up such spaces in Nigerian school libraries, emphasizing the importance of taking into consideration infrastructural, resource-based and professional aspects associated with this endeavor. Bamigbola's study, 2022 focused attention on implementing challenges while examining the introduction of makerspaces, stressing beyond merely procuring technological equipment. Keshinro and Oyewole 2021 provides evidence about using school-libraries makerspaces amongst secondary school-students located at Ibadan, Nigeria. This paper demonstrates that examining makerspace utilization can take place inside the Nigerian school-library scenario yet fails to report about literacy results obtained through these means amidst younger age cohorts. Omosebi & Bakare 2022 have attempted to address how current Nigerian librarianship climate sees emergence of makerspaces which serve potential opportunities for being an innovative form of library inclusion.

Thereby, from reviewing Nigerian publications it could be observed that Nigerian literature has established grounds necessary to contemplate existence of makerspaces as

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an upcoming library provision though limited evidences are presented regarding particular contributions made towards academic lexicon development, enhanced readings participation and continued user involvement by younger school libraries users. Funding, equiping, power supply, availability of physical area, maintenance requirements and training needs represent some hurdles requiring considerations before initiating any programme related to makerspaces. Consequently, given existing limitations in Nigerian education system, attempts must be undertaken to incorporate low cost endeavours including use of recycled material, craft sessions, narrative telling, designing, problem solving tasks and other localised initiatives aimed at stimulating creative processes amongst children.

Implications for Library and Information Science Practice

Firstly, makerspaces must be considered as programmes with an emphasis on their educational role in activities, facilitation and linkages to library resources.

Secondly, professional education for librarians needs to include competencies related to instructional design, digital technologies, facilitation, assessment and collaborative learning, which means providing exposure to makerspace programming and participatory learning methods during library and information science training.

Thirdly, collaboration among librarians and teachers must be encouraged since each brings unique skills, curriculum knowledge and learning goals from the former, and

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information resource proficiency, information literacy and library learning environment mastery from the latter.

Fourthly, programme assessments should be included from the initial stage considering findings by Cun *et al.* (2019); and Min et al. (2024), who found that one-dimensional measures cannot fully capture the complexities of maker learning experiences. Makerspace programme assessments could consider a range of outputs including literacy outcomes, participation levels, resource utilisation patterns and learner perceptions, to name just a few, as diverse parameters to evaluate success.

Lastly, makerspace developments in Nigerian schools need to be driven by indigenous demands and resource availability instead of aiming at technologically sophisticated spaces. Creating learning opportunities through makerspaces which are inclusive of different learners' abilities would allow meaningful connection between information, reading, language, creativity and problem solving.

Recommendations

The following are some of the recommendations based on the literature that we have reviewed above:

1. Integrate literacy objectives within makerspace activities: Makerspace activities must include connections to reading, vocabulary, discussion, writing, and reflection as integral elements of these experiences (Puckett & Rinaldi 2018).

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2. Develop Librarians' makerspace competencies: There's need for library professionals to be supported through continued professional development programs aimed at enhancing their maker pedagogies, facilitation skills, knowledge about digital technologies and how to assess learning outcomes as well as creating more inclusive programs (Owen & Loughran 2019).
3. Strengthen librarian–teacher collaboration: Makerspace programmes should be planned collaboratively between librarians and teachers so that activities align with curriculum/literacy objectives.
4. Prioritise purposeful vocabulary development: Librarians should focus on identifying relevant academic/subject specific vocabu- lary to develop, then provide numerous opportunities for learners to engage with and utilise this vocabulary.
5. Use assessment techniques appropriate for all outcomes: Vocabulary, reading engagement, maker learning, participation, and library use should be evaluated separately.
6. Design for inclusion: Provide orientation with welcoming facilitation and activities designed for varying levels of experience/ability.
7. Involve children in programme design: Give learners opportunity to suggest projects, identify their interests and have input into the development of makerspace activities.

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8. Use locally appropriate and affordable materials: Rather than relying solely on expensive technologies (which may not be possible in all Nigerian school libraries), use locally available materials to develop meaningful design and problem solving activity.

9. Strengthen institutional and financial support. School authorities and other educational agencies should ensure sustained provision of funding to establish appropriate physical spaces, including electricity and connectivity, along with resources for their upkeep and supply of learning materials.

10. Build stronger evidence via future research. Further research into outcomes associated with makerspaces should be encouraged and supported by researchers, especially studies that consider the degree to which they promote measures of literacy, engagement and use of libraries (among Nigerian primary and secondary school learners).

Conclusion

The paper considers how library makerspaces might contribute to supporting the development of literacy among young learners by providing them with authentic reasons to engage with reading, discussing information, using vocabulary and communicating their understanding. Drawing on current literature, we consider how makerspaces can be used to foster creativity, collaboration and problem solving skills along with information use and knowledge construction. While there is much evidence indicating the potential positive

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contribution to literacy outcomes through such makerspace provision, it appears that the literature also provides little indication that makerspaces will necessarily enhance literacy outcomes or sustain increased library use. We therefore conclude that if educational benefit from makerspaces is to be maximised then consideration must be given to the purposes and aims of programmes, skilled facilitators, adequate scaffolding, inclusivity and links made with existing library collection and curriculum objectives.

We suggest that academic vocabulary should be one aspect of makerspace programmes where schools can take advantage of the many opportunities provided for repeated encounters and usage of vocabulary. Finally, in concluding this article, the authors argue that the implementation of makerspaces presents an opportunity for Nigerian School Libraries to develop beyond just offering traditional library services but instead to align with the most up-to-date approaches towards facilitating learning amongst young leaners. This however would require localisation, professional capacity-building, access to sustainable resources and working partnerships developed between school librarians and teachers.

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