

Preparing for the New Phygital Generation as Potential Academic Library Users in South African Higher Education

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Abstract

Context: Higher education and its academic support services, including academic library and information services (LIS), have continuously been challenged by new technological developments, as well as the quest for transformation toward more inclusive education. The rapid and disruptive technological changes imposed by the Fourth Industrial Revolution (4IR) heralded a new entry-level student, coined the “phygital generation.” This new generation of library users is characterised by an ever-expanding digital imprint and a preference for using mobile technology to navigate all aspects of their daily lives, including how they approach their tertiary studies.

Focus: The study interrogates the readiness of information specialists to understand the nature of the phygital generation within a higher education group in South Africa. The changes in information-seeking behaviour are explored with due cognisance of the existing digital exclusions experienced by many South African students.

Methodology: Through the lens of the critical theory paradigm and guided by the conceptualisations of post-digital frameworks, critical digital approaches and metacognitive frameworks, qualitative data were collected during a focus group interview. The non-probability sample was purposively selected, consisting of information specialists of a school within a higher education institution. The transcribed data were coded and thematically analysed.

Key findings: Key findings show a shift in the information-seeking behaviour of new entry-level students. There is a propensity towards using mobile technology. It is evident that LIS staff in this study are not yet mobilised to accommodate this new trend by adapting existing services to be more open to accommodating mobile technology seamlessly. The participants reported that academic writing skills are affected by short messaging styles used in social media. Understanding the nature of the new phygital student and capitalising on the affordances of mobile learning will support student success.

Value: Mobile LIS urgently needs to be formalised and implemented strategically with the needs of the new generation in mind. The need for further institutional reform and innovation is evident. Further research is required on plagiarism trends, copyright infringement and privacy compliance that emerged from the findings of this study.

Keywords: phygital student generation; mobile technology; MLearning; MLIS; critical digital pedagogy; critical librarianship

Introduction

The academic library and information services (LIS) sector is constantly facing new entry-level students, characterised by an ever-expanding digital imprint that shapes and informs their particular information-seeking behaviour and information needs. Over the past decades, research and literature, such as that of Mele et al. (2021), have continuously been stressing the nature of “digital natives,” “millennials,” “generation Z” and others, and the subsequent need to adapt academic library services. In essence, information-seeking behaviour and expectations have changed with each generation. This requires a deep understanding of the changes imposed by the 21st century technological advancements and developments. On a tertiary education level, educational technology and evolving information formats must align with the training and development of information specialists and changes must be incorporated in the future planning of services. Academic libraries cannot embark on these transitions in isolation. A recent Association of Research Libraries report (ACRL 2020) alludes to three areas of concern:

- The academic library’s collaboration with other departments and faculties.
- Adjustments to the structure of academic LIS.
- Reskilling of information specialists.

Many academic information services answered and adapted services to include tailor-made models such as digital learning commons, maker spaces, digitisation centres and virtual research environments (WEF 2015). Bell (2017) warns that adaption to change does not happen automatically, as there is a tendency to become unresponsive to needs for change and adapting to new demands during times of volatility, uncertainty, complexity and ambiguity (VUCA). The author further argues that this is not a trend confined to the LIS sector but has, in fact, become a concept in contemporary leadership (Bell 2017). The question, however, is: Who will effect the change in academic LIS?

Notably, recent technological advancements and adaptations were incorporated meaningfully in all sectors of higher education (Ocholla and Ocholla 2020; WEF 2015). The question must be asked if new developments such as virtual and digital learning and research commons have become household names in some disadvantaged communities and less-resourced HEIs? Such a scenario may lead to further disparities and inequalities for a generation of students that are technology-dependent. It is possible

that the rapid emergence of a new generation of academic library users may have caught some LIS sectors off guard. LIS needs to understand who the phygital generation is and how, especially the utilisation of mobile technology, must be expanded and integrated into LIS to comply with the information needs and expectations of phygital library users.

Introducing a New Generation of Phygital Information Users

The term “phygital” refers to using technology to bridge the digital world with the physical world (Martin and Felix 2020). Smart and mobile technologies are currently enabling this interactivity and experiences for daily needs such as online purchases, travelling, learning, communication as well as library access and use in higher education.

Functioning in the ubiquitous digital world has changed “Generation Z” to the extent that a new generation has emerged. This new generation is completely emerged in blending the physical world with the online. Here, they experience life by seamlessly integrating two worlds via mobile technology and social media. This new term and phenomenon can be described as the phygital generation. Mele et al. (2021) state that this term applies to a new generation of students and potential library users who prefer to navigate all aspects of their world via their smart devices. Reportedly, this generation sees little distinction between the physical and digital worlds and appears to be comfortable in both (see Mele et al. 2021; Mikheev et al. 2021).

The first sectors to respond to the unique needs of the new generation were retail and sales. Realising the needs and the preference for using mobile technology, online purchasing adapted very effectively to this change in behaviour. It could be argued that the phygital student exists in a post-digital world. Jandrić (2020) explains the age of the post-digital as a blurring of lines between the physical and virtual worlds, where the one can no longer exist without the other:

We are increasingly no longer in a world where digital technology and media is separate, virtual, “other” to a “natural” human and social life. (Jandrić 2020, 178)

Framing this Study

The aim of this study was to firstly ascertain if information specialists do indeed observe a new generation emerging, and secondly, what observations in terms of the extent of the information-seeking behaviours are. Do the observations correspond with similar behaviour patterns as reported in research?

The theoretical underpinning of this study comes from the field of information-seeking behaviour as well as critical pedagogy and its derivatives: critical digital pedagogy and critical librarianship. Critical theorists do not merely explore to describe a situation but set out to effect change. Methods to achieve this combine observation and interviewing with approaches that foster conversation and reflection (Mack 2010).

The Importance of Critical Digital Pedagogy

As facilitators and academic partners, information specialists require a deep understanding of relevant pedagogies. This is important for their own development, how they tutor students, as well as in the planning and integration of LIS as part of teaching and learning. Coker (2020) posits that critical pedagogy is closely linked to the concept of the post-digital era. Jandrić (2020) points out this era is characterised by the fact that human competencies are as important as computational and technological functionalities.

Critical pedagogy is an approach to empowering students beyond the oppression of power structures (Rapchak 2021). Morris and Stommel (2017) explain that the essence of critical pedagogy lies more in the deprived effect of not-knowing, as opposed to knowing. This point of view resonates well with the condition of digital exclusion still plaguing many communities. Critical pedagogy was advocated by Freire in 1970 as the education of the oppressed. Comparatively, critical digital pedagogy becomes relevant in the wake of digital exclusion experienced in many developing communities. Freire criticised traditional pedagogies and advocated for a liberating approach named “problem-posing.” Here, tutors, librarians as well as lecturers have the opportunity to form partnerships through interaction with students. Instead of offering one-directional teaching and learning where the academics and academic support staff are in positions of authority, they can become co-constructors of knowledge to prepare for and accommodate a changing learning ecosystem.

Waddle and Clariza (2018) describe a new concept called “critical digital pedagogy.” They stress that critical digital pedagogy necessitates an open and networked educational environment and warns that going about outdated practices of supporting students with repositories of content alone is bound to fail. Waddle and Clariza (2018) stress the importance of foundational knowledge of pedagogies for librarians and information specialists and lament the paucity of available literature on critical digital pedagogy for librarians.

Coker (2020) agrees and argues further that an understanding of critical pedagogy ensures that there is a deeper understanding of the context of digital skillsets needed that will enhance equity of opportunity for future students. Critical teaching of digital tools and information sources can enable students to become creators of new information. The ACRL Framework for Information Literacy for Higher Education (2015) forms tangents with the critical digital pedagogy and can be explained further as authority, process and value:

- Authority is the context and constructs of the source and must be credible and trustworthy.
- The process of creation new knowledge is unique.
- What is the value of the source?

Knox (2019) warns that a post-digital approach makes it virtually impossible to divorce pedagogy from technology. It is paramount to look critically at the digital context and simultaneously acknowledge that it cannot be separated from everyday realities. It must enable academics and information specialists alike to develop a critical understanding of digital spaces in tertiary education. Here too, there is no longer a clear division between what is digital and what it is not.

Critical Librarianship and Critical Pedagogy

Rapchak (2021) connects critical theory with critical librarianship, but laments that it has not been given the attention it deserves. The concept of critical librarianship must be explored further in South African higher education. Drabinski explains:

Critical librarianship acknowledges and then interrogates the structures that produce us as librarians, our spaces as libraries, our patrons as students, faculty, and the public. (Drabinski in ACRL 2020)

Rapchak (2021) echoes this sentiment and points out that a knowledge of critical pedagogy must already have been introduced at the undergraduate level of LIS students to achieve the required equity and issues of social justice when they enter the LIS profession. This knowledge will enable them to critique LIS services and create an awareness of what must change in their facilitation of literacy skills. Librarians and information specialists must apply critical values to digital libraries and open pedagogy. It is important to note that as one of its top trends in academic library services, the ACRL 2020 report has social justice, critical librarianship, and critical digital pedagogy.

Information-seeking Behaviour of the New Generation

Ikoja-Odongo and Mostert (2006) hold that information-seeking behaviour is dependent on the recognition that current knowledge is not sufficient to answer a question or problem at hand. Fourie and Julien (2014) expand that technology has changed the speed of sharing information electronically and is no longer restricted by geographical boundaries. Information specialists must be familiar with all aspects of the information-seeking behaviour of students to be in a position to prepare and answer these needs. Information-seeking behaviour has changed considerably over time, and has evolved during the post-digital era. (Akabani and Fourie 2021; Ikoja-Odongo and Mostert 2006).

Critical Pedagogy, Metacognition and Critical Literacy

King (2011) reminds us that a prerequisite for effective metacognitive development is student motivation and interest. This same interest must be reflected when the mode of information delivery is at play. Coker (2020) adds that most academic staff complain when we are marking assignments in which students refer to low quality websites rather than using prescribed and additional readings available from databases in their libraries, despite the availability of extensive collections of peer-reviewed journals and academic databases. Critical literacy skills will address this problem, as students will firstly

become aware of their own experiences in terms of power relationships and will be able to develop their own critical thinking (Rapchak 2021).

Utilising digital tools for educational purposes requires a skillset beyond the basic skills to operate the tools. Rapchak (2021) elaborates and highlights that students can learn from the academic as much as the academic could learn from the student.

Metacognition and Microlearning

The phygital generation is more comfortable with microcontent rather than lengthy readings.

Microlearning allows for the breakdown of complex topics and delivers new training and reinforcement activities in brief sessions that fit within the daily ... (Dillon 2019)

Learning is optimised when distributed in manageable portions, as opposed to it being delivered in one long continuous session. In its simplest form, metacognition is thinking about thinking. Metacognition implies that students have the ability to monitor their own performance and are equipped to know their information and learning needs.

Metacognition and Metaliteracies

Metaliteracy emphasises four learning domains: cognitive, behavioural, affective, and metacognitive. Although the concept of metaliteracy formed part of the ACRL standards for higher education, many HEIs still focus only on the narrow definition of information literacy being able to:

- Establish what information is needed.
- Successfully access the located information.
- Critically evaluate information and its source.
- Apply selected information in studies.
- Use information purposefully to achieve an educational objective.
- Anticipate and grasp the consequences of using the information legally and sensitively.
- Ensure that both access and use are ethical and legal (adapted from ACRL 2020).

Jacobson and Mackey (2016) state that metaliteracy forms the foundation of a range of literacies including visual literacy, digital literacy and media literacy. As a conceptual framework for information literacy, it enables the construction of networks, and supports lifelong learning and literacy fluency. Metaliteracy combines the cognitive, behavioural, procedural, and motivational and other practices towards more context-specific and context-appropriate practices. Fulkerson, Ariew, and Jacobson (2017) add that metaliteracy focuses on metacognition as well as the realisation that students are indeed creators of information during research and learning.

Mobile LIS and Educational Technology Integration

A library in the palm of your hand ... (Lui and Briggs 2015)

With mobile technology at the centre of the phygital generation's usage and experiences, it is expected that all sectors of society will utilise and deliver using mobile technology in their operations, services and products. This would include studying and using libraries. The nature and impact of mobile technology on the demands of this generation were underestimated in many sectors, of which education and LIS may be part. LIS must pay attention to:

- Changes in LIS patron user behaviour in using mobile technology.
- The need for new literacies—mobile literacy and digital fluency.
- It is all about communication—not one way, but social—getting students to talk to each other about information, access, and the visualising information.

Literature abounds, including the work of Lui and Briggs (2015), Anbu and Kataria (2017) and Gandotra (2019), that mobile phones and smartphones are increasingly utilised by library users to access services on the Internet. Among the emerging technologies, mobile communication technology seems to be growing at a rapid speed. Mobile learning has been accepted as part of academic teaching and learning. These devices include smart phones, tablets, e-book readers, handheld gaming tools and portable music players.

The penetration of mobile connectivity in Africa is higher than internet connectivity (GMSA 2020). This makes mobile devices ideal for facilitating learning. In addition, familiarity with their own devices and technology helps the users in accessing information quickly and does not require orientation and training in accessing library resources (Gandotra 2019). LIS must provide their services through mobile phones, build relationships with users and provide better integrated services to remote users. Mobile services include mobile-friendly websites or apps, mobile-friendly access to the library's catalogue and online databases, text messaging services, e-books, and LIS tutorials available via mobile devices. Lui and Briggs (2015) distinguish these services into two categories: adapted traditional library services to be available with mobile devices, and secondly, services developed specifically for mobile devices.

The Case Study

This paper reports on a case study of a South African HEI that has recently implemented digital learning common for distance students. The aims of the study were to explore: 1) whether changes in information-seeking behaviour towards a preference for using mobile technology have been observed by information specialists; 2) whether they are aware of inequalities and social justice issues among their students; and 3) whether their services accommodate these variables.

Rationale of the Study and the Research Design

The aim of the study that directed this article was to gauge a group of information specialists' recognition and understanding of the information-seeking behaviour of a new generation of academic library users. Informed by recently reported research, and through the lens of metacognitive, information-seeking behaviour and critical digital pedagogies frameworks, a conceptual frame could be constructed to answer the research question.

Qualitative data were collected during a focus group interview. The non-probability sample was purposively selected, consisting of 11 information specialists. The transcribed data were coded and thematically analysed. Focus groups as data collection tools being part of research studies can be described as a form of group interview in the presence of an interviewer or moderator (Bezuidenhout, Davis, and Du Plooy-Cilliers 2021). In focus group studies, the interaction within the group is important to get the desired information on a specific research topic, and the collective views are more important than the individual's view. The qualitative data collected during the focus group interviews were analysed using thematic reflective analysis. Vaismoradi et al. (2016) state that qualitative research, as a group of approaches for the collection and analysis of data, aims to provide an in-depth, socio-contextual and detailed description and interpretation of the research topic.

Thematic analysis is related to phenomenology in that it focuses on the human experience subjectively (Noon 2018). This approach focuses on the participants' perceptions, opinions, feelings and experiences as the object of study. In addition to coding the interview transcript, researcher notes can add to the trustworthiness of the study. Research notes map the analytical process, uncover researchers' perspectives and refine data collection. A limitation of this study is that, although mentioned, the study did not address the legal consequences of applying digital technology in detail.

Presentation and Discussion of Findings

Vaismoradi et al. (2016) state that different types of codes appear in thematic analysis:

- Conceptual code: identifies key elements, domains and dimensions of the study phenomenon.
- Relationship code: identifies links between elements, domains and dimensions.
- Participant perspective code: identifies the participant's positive, negative, or indifference comments about a particular experience.
- Participant characteristic code: identifies unique aspects of the individual.
- Setting code: shows the general characteristics of participants and the place in which the phenomenon has happened.

Table 1 explains the findings in terms of the mentioned code types and provides the context and code themes. Responses are presented verbatim.

Table 1: Summary of selected participant responses as per code type			
Types of coding	Context	Themes	Participants' response
Conceptual code	Key elements of the phenomenon under study	Mobile technology Legal and ethics Academic literacy Information literacy Critical literacy	"I've noticed that students are doing everything with their phones lately" [Participant F] "I had a consultation with an honours group. We used to collaborate [the LMS used by the HEI] for the session and students accessed via their phones" [Participant C] "Students have no concept of copyright ... they scan huge portions of books with their phones" [Participant G] "Although they [students] must complete a compulsory course in the use of computers, they do not seem to have the necessary information literacy skills, and they use the first things they find on the internet" [Participant A] "Students write assignments the way that they use social media, that is a problem ... it is too short ..." [Participant H]
Relationship code	Domain, elements, dimension links	Computer literacy	"I wish that we as information specialists are more involved when students are doing computer literacy modules" [Participant A]
Participant perspective		Digital exclusion Access Information seeking	"One must keep the South African conditions in mind—students complain about data costs when they access library databases on their phones" [Participant D] "Students have become lazy ..." [Participant C] "Students no longer read the emails we send to them, so we need to follow up with WhatsApp messages" [Participant B] "I must agree with [participant C]. I noticed that there was a gradual change, and students do not want to use the lab PCs anymore."
Participant characteristic code		Pedagogy Research literacy	"I believe that the interdisciplinary collaboration will be much better if we, as information specialists, have a better understanding of learning styles and pedagogies. ... Most of us do not have that knowledge" [Participant F] "We also need to be trained in the basics of research ..." [Participant B]
Setting code	The general characteristics are that they were all information specialists in charge of a campus information centre	Social media Media literacy	"We need to make better use of social media ... we need strategies for this ..." [Participant H]

According to the views of most of the participants, there is a shift observed in information-seeking behaviour, and participants feared that LIS staff are not yet mobilised and skilled to accommodate this trend. Participants explained that there is a marked propensity towards using only mobile technology to navigate and access LIS services. The participants reported that they observed that academic writing skills are affected by short-messaging styles used in social media.

Understanding the nature of the new phygital student and capitalising on the affordances of mobile learning will support student success. In addressing the information needs of the phygital library user, academic LIS managers must liaise and collaborate with other educational sectors in HEIs, such as educational technologists, to integrate and consolidate efforts to incorporate technology into academic support services.

In supporting the phygital generation of students, academic LISs must attend to the ACRL report (2020) that describes the following informational, transactional, consultative, and experiential aspects of academic support:

- Informational aspects: Provide students with the correct information at the correct time to assist them in achieving success. Technology may include online catalogues, websites, push technology, SMS notification and others.
- Transactional aspects: Process technology is used for renewing books via a mobile application, for booking a computer or a study area.
- Consultative aspects: Assessment and advice on personal and academic matters. Any technology used to field queries and provide advice meets the consultative function of technology.
- Experiential aspects: Orientation and interactive online webinars in group settings where students can learn collaboratively.

The participants alluded that they still concentrate on “traditional” information literacy facilitation such as referencing and plagiarism workshops, and that more specific components of metaliteracy are either addressed in first-year orientation, or not addressed at all. Information specialists acknowledged that the phygital student prefers shorter information constructs but confessed that there is no strategy to include shorter tutorials with microcontent for microlearning, nor do they make use of social media in a planned and orchestrated way. They stated that their knowledge of mobile learning and microcontent is limited.

Conclusion and Recommendation

The study concluded that information specialists have come to the realisation that they are not geared to accommodate the phygital student. The participants had a clear understanding of the effects of the digital divide but expressed frustration that they felt helpless in changing the situation. Participants displayed an eagerness to get a better understanding of the pedagogies that will assist in addressing the information-seeking behaviour of the phygital student.

Not many frameworks address critical pedagogy of technology as it pertains to information specialists in higher education, and this has been a neglected area of research in LIS and information-seeking behaviour studies.

Information specialists are required to understand the essence of critical librarianship, metacognition and metaliteracies to be equipped for planning and offering information services to the phygital generation. The need for further institutional reform and innovation is evident from the findings of this study. Further research is required into the use of mobile technology and information behaviour to explore plagiarism trends, copyright infringement and POPIA compliance, which emerged from the findings of this study.

While the awareness of the need to change must be driven by LIS professionals, the change must be supported by tertiary governance. In this regard, VUCA has become a concept in contemporary leadership (Bell 2017). Metaliterate individuals function successfully in an uncertain and highly variable information environment (Fulkerson et al. 2017). Metaliterate students would be able to navigate and flourish in the VUCA environment.

The South African phygital student must be seen against the backdrop of an existing dilemma of the digital divide among other inequalities and social justice problems. Recent examples of critical librarianship and social justice at work in libraries span research and user services to areas of collections and technical services. However, Waddell and Clariza (2018) lament that the critical use of technology in academic libraries towards the empowerment of the student is not yet receiving due cognisance as it should. This is confirmed by the findings of this study.

While there are many instances where librarians and information specialists are applying and incorporating best practices and the values of digital libraries, the strategic focus of mobile technology is absent in many cases and is merely an afterthought in existing products and educational technology. Much more needs to be done to use mobile technology towards better inclusivity and effective learning design, with specific reference to LIS facilitation and training programmes. The tangents of critical digital pedagogy and critical librarianship must be explored further. It must become strategic foci in HEIs to capitalise on the affordances of mobile technology and the needs-driven incorporation of digital tools.

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