

DIGITAL LITERACY PRACTICES: CURATION AND ANNOTATION ASSOCIATED WITH E-TEXTBOOKS

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Abstract

E-textbooks have gained prominence in recent years due to their advanced digital features and accessibility. This evolution has led to innovative digital literacy practices, notably curation and annotation, aimed at enhancing student comprehension of engineering concepts. These practices offer three-fold benefits: they mitigate information overload and provide a systematic learning framework for students. This is crucial in fields like engineering where contextual understanding enhances the practical application of theoretical concepts. By integrating supplementary resources and multimedia elements, e-textbooks provide a richer, more immersive learning experience. This study, focusing on these affordances in e-textbooks, utilised qualitative data from interviews with 12 first-year engineering students at a university of technology. Findings indicate that these new literacy practices hold significant potential for improving student understanding of engineering concepts. The study underscores the need for further exploration into the use of digital tools in education, highlighting their transformative potential in shaping future learning of students.

Keywords: e-textbooks, curation, annotation, digital literacy practices, reading

Introduction

Digital literacy, the competency to use technology effectively and confidently, is fundamental in today's technological landscape. As we delve deeper into the digital age, proficiency in harnessing digital tools – computers, tablets, software and the Internet – is paramount. With the progression of modern education, e-textbooks have

emerged as pivotal tools for students, offering an interactive dimension beyond traditional books. They allow students not only to highlight and make notes but also to personalise their learning through curation and annotation. Despite the prevalence of e-textbooks, there remains a gap in research concerning their digital literacy affordances.

South African universities of technology (UoTs) have acknowledged the importance of equipping engineering students with both knowledge and technological access to digital learning tools. Yet there is a paucity of data on student interactions with e-textbooks. Engineering curricula demand students to not just consume but critically evaluate digital content, using it to construct persuasive arguments. The intricate nature of engineering tasks necessitates additional guidance and in-class support for these students. E-textbooks, in this context, should offer adaptive assistance as students grapple with intricate concepts.

E-textbook capabilities extend to features like curation and digital annotation (Chen & Tsay, 2017). Curation aids students in sifting through and organising digital content, enabling them to prioritise essential information. Annotation allows for reflective note-making, assisting students in understanding and connecting diverse ideas. Such practices enhance comprehension and retention, equipping students with skills that transcend the classroom and prove invaluable in their future endeavours.

The aim of this study is to explore in depth the affordances of e-textbooks, specifically annotation and curation; to contribute this new knowledge to the existent scientific body of knowledge; and to offer e-textbook as a tool for use by future students to better comprehend digital learning material and to make connections between various ideas.

Literature Review

"A multimodal text has created the combination of image, sound (including speech and music) gesture and movement, and writing or print, communicated through paper, the screen, face to face meetings, performative spaces" (Bearne, 2009 p.158)

It can be argued that all texts are multimodal (Andrews, 2001). When we read a novel, for example, we may imagine events and actions in our mind's eye, even experience voice, taste or smell as we read (Bearne, 2009). When reading a picture book, we may equally engage other senses, particularly touch (Mackey, 2002), as part of the reading experience. Multimodal texts (communication), representing diverse forms of communication such as the media landscape, are considered the norm with which we engage daily in private and professional life. Our routine interactions with websites, blogs and YouTube videos, as well as printed texts and journals, involve the frequent use of smartphones, tablets and computers by both lecturers and students. This engagement often extends beyond traditional pen-and-paper methods, encompassing the creation of digital texts, photos, videos and audio messages (Kretschmar et al., 2013; Rzyankina et al., 2024).

The reading transformation from a paper book to an e-textbook is mentioned variously by many researchers from the 1900s when the Internet and PDF were invented. Reading from a paper is print-centric communication and implies a relationship existing mainly between reader and text. It typically happens in isolation or over a distance for the purpose of gaining information and mastering content (McLean, 2020; Sackstein, Spark, & Jenkins, 2015).

Research on situated literacies, as expounded by scholars such as Barton, Hamilton and Ivanič (2000), Millard and Marsh (2000) and Bearne (2009), underscores the principle that no text exists independently of the social, cultural, economic and political milieus in which it is created. This viewpoint asserts that literacy is not merely a skill but a constellation of culturally evolved practices deeply embedded in specific cultural spaces. In an era where young people are constantly immersed in and interacting with multifaceted texts, it is crucial for them to develop the ability to engage with these texts in a critical and analytical manner, particularly for understanding complex concepts.

However, while acknowledging the diverse literacy backgrounds and experiences of students, as highlighted by Guillory (2023), there is a concurrent necessity to acquaint students with the types of texts that are traditionally valued and prioritised in academic settings. It is essential to strike a balance: giving due importance to students' own situated literacy experiences while also exposing them to conventional forms of texts that dominate classroom learning. This approach to literacy education, which values students' unique backgrounds as much as it does conventional academic texts, demands a thoughtful and analytically constructive attitude from educators. It requires a comprehensive re-evaluation of the content and methodologies employed in literacy teaching, emphasising the importance of critical thinking and the transformative power that such critical engagement with texts can bring. Guillory (2023) aptly points out that the essence of teaching lies in the delicate balance between respecting what students already know and challenging them to expand their horizons.

However, as the realms of representation and communication continually evolve, so too must the boundaries of literacy education. The dynamic interplay between readers, texts and educational institutions necessitates a continuous reassessment of how we facilitate student acquisition of the forms of literacy that are esteemed in academic and professional spheres. In this rapidly changing landscape, educators must remain adaptable, updating their teaching strategies to ensure that students are equipped with the literacies that are not only prestigious but also relevant in the contemporary world (Rzyankina & Simpson, 2022).

With greater availability and accessibility of digital technology, literacy has taken a digital turn. The digital screen now takes a central place in public communications and increasingly in educational settings, changing the ways in which reading and writing are understood. Reading on the screen means using varied, and different, reading pathways and processes to reading continuous print (Holsanova, Rahm & Holmqvist, 2006; Kress, 2003; Tinmaz et al., 2022).

As lecturers, we expect students to transition seamlessly between different modes. For this, it is essential to establish a comprehensive vocabulary that captures the various dimensions of texts; this encompasses elements such as movement, sound, dynamics and the implicit aspects inherent in both visual and verbal print texts. This necessitates a deep understanding of representational modes, which include means of meaning-making like speech, writing, images, gestures, music, sound and simulations. Additionally, it is imperative to be familiar with both traditional and emerging media for disseminating these meanings, such as books, magazines, computer screens, social media posts and vlogs (like those on Instagram and Twitter), videos (with the use of filters and masks), films, stories (found on platforms like Instagram and TikTok) and radio. To achieve this, we must examine the unique affordances of each mode and medium – understanding what each facilitates or restricts – and grasp the inherent logic of texts. This refers to text cohesion that ensures coherence, as elaborated by Bearne and Kress (2001).

Digital annotation is a crucial instrument for our digital times. It empowers users to instantly attach remarks, feedback and additional digital insight to electronic documents. This functionality aids in processing the immense digital data we encounter daily. Annotations enhance the structure, legibility and comprehension of documents, assisting users in monitoring their activities and swiftly identifying pertinent details. Moreover, digital annotation fosters teamwork, simplifying the exchange of thoughts and the collective effort on tasks. The utility of digital annotation in today's world is undeniable and warrants universal adoption. When juxtaposed with traditional paper-based annotations, the digital method stands out. Digital annotations are more streamlined, permitting immediate additions without the need for printouts. They also promise greater security by archiving notes on protected servers instead of physical paper. Collaborative tasks benefit from the ease of sharing and joint access. Plus, the convenience of accessing annotations from any web-connected device surpasses traditional methods.

Given the dilatory nature of the publishing process and limitations of storage, traditional paper books in the modern world do not allow for sufficiently fast access

to information and constitute only one of many possible resources for studying. In the contemporary world, the information we receive and the process of searching is much faster than experienced before. Moreover, fake news, untrustworthy websites and the circulation of extremist propaganda suggest the need for a new kind of critical reading (Luke, 2018). Any learning requires the acquisition of knowledge, and today, knowledge is accessible through a variety of resources and platforms, not only books that are prescribed. Students can choose to learn from a variety of platforms and resources, then use those tools to evaluate their comprehension and meaning and confirm what they have learned. On one hand, by choosing and navigating the text, students have control over their learning. On the other hand, not all students are adept at evaluating and curating materials to identify those that are most reliable and connect with the reader in terms of comprehension and authorial style. In order to assimilate the information and comprehend the concepts, the reader must also develop new literacy skills of critical reading to recognise fake news, untrustworthy websites and the circulation of extremist propaganda (Luke, 2018; Tinmaz et al., 2022).

Research comparing print and digital mediums often centres on memory retention (Matraf, Hashim & Hussain, 2021). Generally, findings suggest that students recall more from paper-based readings. However, this might stem from a lack of efficient reading techniques in digital environments. Digital annotations in e-textbooks present a transformative approach to learning. They enable students to highlight, comment, bookmark and even share insights, streamlining their learning process. Moreover, students can access multimedia resources like videos, audio and quizzes, enhancing comprehension. The crux of digital annotation is its customisation, enabling students to emphasise relevant content, fostering deeper engagement. Sharing notes also promotes collaborative learning, making digital annotation an essential tool for maximising educational experiences.

Digital curation in e-textbooks is a significant boon for learners. It empowers them to tailor content to their preferences, ensuring a more personalised educational journey. Such curation enables swift topic searches, helps with content organisation, and

ensures students remain abreast of current academic advancements. The highlight of digital curation is its adaptability, allowing students to access and focus on pertinent content while maintaining organisation. This tailored learning approach grants students autonomy, enhancing engagement with materials.

However, research based on interviews and observations reveals a discrepancy: students are not fully utilising the capabilities of e-textbooks. This highlights the prevailing challenge: understanding the reluctance of students toward e-textbooks and their rationale minimal use of e-textbooks.

Theoretical Framework

The foundational philosophy for this study's application of mediated discourse analysis (MDA) (Scollon, 1998; 2001; 2014) is rooted in the cultural-historical activity theory (CHAT). Developed by theorists such as Vygotsky (1980) and Leont'ev (1974), CHAT argues that cultural artifacts and historical backdrops profoundly shape human activities. Leveraging this perspective, MDA stands out as an effective methodology for qualitative investigations. Its advantage is its ability to unpack the subtleties present in intricate learning situations.

In research domains, it is typical to be inundated with vast amounts of observational data, especially when examining the complexities of real-life contexts. Navigating this sheer volume requires a strategic method like MDA. By centring on discourse as an intermediary, MDA aids in drawing significant conclusions from abundant data, ensuring comprehensive interpretation of the observed phenomena.

MDA's incorporation in this study was not merely coincidental. It was chosen for its expertise in tackling queries surrounding societal actions. Within this present research scope, societal engagements are predominantly mediated via e-textbook content. Reading, therefore, is more than an individual act; it connects the individual with the larger community. As participants traverse this digital landscape, they utilise specific digital literacy techniques. Deciphering these methods and their associated discourse is essential to understanding modern learning settings.

Methodology

This research adopted a qualitative strategy, taking cues from the seminal work of Lincoln and Guba (1985). This method was preferred to delve deep into participant experiences, yielding insights that are likely more detailed than those from quantitative approaches (Flick, 2018).

Case Study Design

In line with Yin's guidelines (2003; 2009), this investigation was organised as a singular case study, comprising two interconnected analytical units. Each unit, while unique, related to the other, facilitating a comparative study of the central theme. The primary sample involved chemical engineering students from the Faculty of Chemical Engineering and the secondary sample encompassed nautical science students from the Department of Maritime Studies. Both samples collected from the same university of technology.

Participant Selection and Data Collection

From the two aforementioned departments, 12 first-year engineering students were purposively selected for participation, ensuring a balanced representation with six students from each department. The criteria for selection were student willingness to participate and their provision of informed consent, ensuring the ethical integrity of the research. Upon securing student agreements and signed consent forms, a series of interactions were initiated. The researcher conducted individual interviews with the participants, aiming to understand their experiences, perceptions and challenges related to reading digital physics e-textbooks. Additionally, observations were made as they engaged with these e-textbooks, providing a holistic view of their reading habits, strategies and potential areas of struggle. In combining both interviews and observations (Flick, 2018), this study was designed to capture a comprehensive picture of participant experiences, shedding light on the nuances of digital textbook usage among budding engineers in two distinct academic disciplines.

Data Analysis

Before moving data transcripts into ATLAS.ti, the researchers did automatic transcription via Otter.ai software and corrected manually where meaning and spelling were incorrect due to accent and pronunciation of the diverse participants (Smit, 2002; Friese, 2019). Then, data analysis occurred in ATLAS.ti software in two cycles: first, researchers coded inductively and after that, I coded the same data deductively using theoretical concepts from MDA. Interviews comprised the qualitative data analysed through MDA (Scollon, 1998; 2001; 2014) procedures.

The MDA procedures include three steps of data analysis. *The first step* is engaging with nexus of practices. The analysis of data does not constitute discrete processes: the researchers analyses (parts of) the data during the process of gathering data, which in turn allows the researcher to assess what other kinds of data might be useful. Following Scollon (1998), the researchers kept in mind that this step constitutes *how* the students engage in digital and social literacy practices. *In the second step*, researchers navigated the nexus of practice. In this study, MDA applied as the researchers engaged with data from the audio and visual recordings. This allowed a more detailed analysis of not just phonological and grammatical aspects of language but also the non-verbal and contextualised language use of the participants. *The third step* comprises changing the nexus of practice. By engaging with data, the researchers may produce a positive social change in practices. In other words, researchers explored how the nexus of practice has already changed over the course of the research and how the relationship between the researchers and participants has changed. In this study, this approach was applied by the findings of the study and for writing recommendations for future investigation.

Ethics

A letter of invitation was given to all registered students explaining the requirements for student participation and the research purpose. Those students who volunteered to be part of this study signed an informed consent form and returned it to the researcher for record-keeping purposes. As this study involved human participants,

the research design was deliberately crafted to ensure that the research did not pose any risks to any participants, the researcher, the departments or the institution. The researcher indicated to participants that there were no correct answers to interview questions. Participants were allowed to withdraw consent freely and discontinue participation in the study at any time without prejudice to the participant. Finally, participants were given pseudonyms to ensure no bias in the data and full confidentiality (Mertens, 2018; Dewey & Tufts, 2022).

Data Analysis and Discussion

This section delves into two pivotal facets of digital literacy in the realm of e-textbooks: curation and annotation. Both elements play a significant role in how students interact with digital content, so understanding their nuances can provide educators with insights on how best to guide their students in the digital age.

Curating

This section discusses digital curation as a reading strategy and explores why it is important to train students on how to read a digital text and curate the information. The plethora of available information and resources can confuse or even misguide a student, but digital curation can guide student choices, as seen in this admission from student 13: *I don't just watch videos that are random. I watch videos which are in the e-textbook then I note down.* This student expresses a desire access all the idea presentation options in an e-textbook from a single location where students may read text, view videos and annotate.

It was evident that students do not know how to check the information; for example, student 13 has full trust that Google provides accurate answers: *Because it's well known that Google gives accurate answers.* However, other students experienced problems with many of the available resources; selecting the correct one was a challenge.

I get confused. Because sometimes they will explain things. And then I would get it. And then when I watch another video, though, explain. They don't explain it in the same way they do the difference. Let's say that when I watch this topic, they're more

dynamic. So let's say when I go to YouTube and search for it, there will be different platforms on which I can watch this video. So they show different views. I choose when I want to listen first. When I don't understand the first one, I prefer to go to the next one. I will always want the information that I've learned to try to interpret the way they tend to interpret it, but not that I will always listen to the videos and be like, "Okay, what they're saying is correct," because I always ask questions like, "Why?" They're saying this. Why are they doing so? Usually, that's how I understand. (Student 11)

A similar view of uncertainty about curating information was expressed by student 9:

I don't think you can know for sure if it's right. But if you read a sentence from the e-textbook, you will start to get a sense of the meaning. And if you see another description, you can see that there is some correlation if they do mean similar things, just that one you understand more. So I wouldn't just simply go straight to the Internet, but if I do go to the Internet, I go to a well-known website, or a name I've seen before, not just anything.

Some students find that the most trusted resources come from lecturer recommendations. For example, student 3, during the interview discussion, mentioned, *Our lecturer always recommends the e-textbook because he always says that it's better than a paper textbook when it's trusted. So that's why I prefer to read e-textbooks. I was using Google. I just searched for the concepts only.* This learning of this student 3 is based on learning by authority (trust) from the subject lecturer.

With e-textbooks, students were able to view the same topics in a variety of different channels of communication, such as text and media. It is advantageous for students who have lower confidence in reading and who value more visual explanations to find trusted and relevant information in one place, one location. There is a myriad of information and tools available online, but it is still vital to shield students from harmful content. So, locating, evaluating and synthesising information from various Internet resources may be more complex than reading print text (Coiro, 2011). There

are also a number of other factors to take into consideration. In light of the proliferation of radical propaganda, fake news and untrustworthy websites, a fresh approach to critical reading is essential.

Annotation Affordance

Annotation refers to a set of literacy practices, sometimes referred to as 'labelling'. According to Kalir and Garcia (2021a), annotation is an everyday activity because many different types of people add different types of notes to different types of texts. In considering an e-textbook, digital annotation offers many affordances for learning, one of which is that it enables readers and writers to describe the texts in their own words to reflect their personal interpretation. Annotation can also enable access to new meanings and knowledge when students engage with the text. Annotation, however, is one of the emergent affordances of an e-textbook that has not been adequately explored in previous research pertaining to e-textbooks. In this section, researchers discuss annotation affordance as a learning aid when students use an e-textbook.

Annotation facilitates reading and, later, writing about important concepts. The reader of an e-textbook can also collaborate with other readers and texts. One of the chemical engineering students indicated, *Yes... sharing the notes*. A similar view was mentioned by student 11: *I start by reading the text and then note it down by writing on paper*. As such, annotation makes knowledge more accessible for this student. Annotation, therefore, is a process to ensure robust student participation in learning.

E-textbooks enable students to involve particular forms of active engagement with the text through annotation, including commenting, highlighting and even the use of emojis. E-textbooks allow students to annotate digital text, images, videos and audio for the purpose of studying by identifying and categorising concepts. These new ways of annotation open new opportunities for learning. For example, student 10 described the learning process: *I go to diagrams and then read the tips in the text. So, in order for me to read and know what they [the authors of the book] try to put in my mind... I read from tips, and also make notes*. Notes mediate the relationship between reading

and writing. Notes consist of different types of media that communicate through various modes, such as a transcript of the video, symbols of practical examples and images. Student 10 explained the process of study through the following interaction order: diagrams – tips (short summaries) – annotation. In this interaction order, the process of annotation moves from passive to active while engaging with digital text affordances (in the form here of graphical presentations).

Additionally, the e-textbook allowed participants to use comments, including emojis, on the text. The relationship between annotation and comments, both of which are common forms of communication, can provide useful and contextual information about the text and personal expression regarding the text. The usage of emojis in the learning process occurred, for example, by student 1: *Okay, using emojis while reading the book*. This participant used emojis for comments when reading the text and labelling sentences and paragraphs, such as if a paragraph is clear or needs more clarification. In this way, the participant can come back at any time and change the emoji from surprised or sad to happy. Using emoji icons is a fast method for personal expression on the part of the reader about a certain aspect of the text. Emoji use here is about bookmarking places to return to for further study.

Annotation Constructs Meaning

Employing an object like an e-textbook is influenced by context and culture, and the affordances of annotation as a collection of literacy activities have evolved over time to fulfil the demands of students who are simultaneously writers and readers. Reading for meaning, thinking, writing and communicating are all activities that fall under the umbrella of (digital) literacy. Different kinds of text communication are used in e-textbooks. Student 8 employed the video mode in the example below to annotate ideas and comprehend meaning: *I think I watched the video many times to make a note by writing it down. So it will be better for me to understand and write it down*. The same process was mentioned by student 2: *When I'm watching videos on YouTube, I pause the video and take notes. So that's how I do*. Students develop a connection to context and culture through annotation. Students can communicate

with texts, about them and beyond them by annotating them. For the specific purpose of annotating the concept of a video, student 8 watched the video repeatedly.

It was noticed that many students prefer learning by taking notes on paper to construct meaning from their reading. The example of student 3 demonstrates how using an e-textbook for study purposes allows students to assess their comprehension and mastery of new terms and topics: *There might be other words that I don't understand. So I tried to think if I put it in a way that I can understand, I'm trying, by all means, to understand what is written and annotate the text.* The annotation links readers' thoughts to new knowledge and comprehension. Additionally, where students learn vocabulary in a second language, annotation allows access to new meaning and knowledge.

I'm looking at videos. As the video goes on, I'll pause at some point where it gets important information. Then I write it down. Honestly, I believe in just putting things down so that I can clearly understand it. (Student 8)

I prefer writing it down. Then to highlight the text in the copybook. (Student 11)

I prefer to write in a normal copybook. I want to write. (Student 5)

These students comprehend the information by writing; this may be an effective learning strategy, or, as student 5 admitted, simply a learning habit: *My hand needs to be busy.* As observed by the researcher, if policymakers and educators continue to disregard the growing evidence that new skills and strategies may be necessary to read, learn and solve problems with the Internet, our students will not be prepared for the future. In addition, the absence of measures to evaluate online reading comprehension deprives the reading community of the ability to evaluate progress or assist in diagnosing difficulties encountered by some students when reading online.

Annotation Complements Learning

Annotation includes an evolving collection of practices that are sensitive to context and culture. None of the participants employed digital annotation; instead, they all

used annotation in conjunction with reading or viewing videos to study the subject of physics.

Just take my laptop and my notebook. I study to note what I don't understand. And then, after learning, just go back to videos. (Student 1)

In this quote, student 1 notes that annotating a text by hand can clarify conceptual understanding and develop active reading skills. Another example of actively engaging with a text was expressed by student 14: *I usually use my notes, and then I discuss with my friends what I studied.* Student 14 is using annotation as an educational tool in two-way interactions, where learning entails annotation, self-questioning and peer-questioning to ensure knowledge. Individual reading comprehension as well as knowledge recall and retention are supported by annotation.

Even though no participants employed digital annotation, it was interesting to discover that student 14 noticed a difference between hand and digital annotation: *Well, I say I prefer both of digital annotation and writing notes on paper but it's digital, it's faster. But if you write something, it's easy to remember and then choose what to type.*

One student expressed that reading digital text and making notes confused her as she could not select and decide what important information to note. For example, student 11 claimed,

I just like to watch many videos, but that does not help at all. Because some of the videos they make explain it in a different way. And they explain it in the way when you find an American and sometimes look since we don't have the same level, so they speak it in a tricky way. So sometimes I end up having information that I shouldn't even have which is not even important. While I'm studying, it takes a lot of time. So yeah, it's just that I haven't tried any other studying techniques. And so yeah, it's making that difficult... since I just can't take a lot of information, and when you check, most of the information is not all that important.

The decision of what is important in a text and what is not is quite difficult for student 11. The observation from student 11 clarified that reading depends on the purpose, which determines the information to be chosen based on the task at hand. As student 11's anxiety increased, she found it nearly impossible to decide what to select out of

fear of leaving something important out. It takes courage on the part of the reader to decide to take notes rather than copy out large swaths of the reading. It can be challenging to choose the most important information from a chapter because the issue is rarely clear-cut. Student 11's quote above confirmed this as a common difficulty for first-year students. Many first-year students, in fact, found the reading and selection of content to be extremely ambiguous, contradictory and even confusing. Students frequently take notes out of fear of forgetting something vital. According to student 7, *I write all the, all the formulas that are based on this chapter that I need to remember*, because students believe the information will be of use to them. Even this comment from a student has not demonstrated full sets of annotation affordances in e-textbook.

In addition to annotation confusion, some students argued that using annotation with a paper book is better, as indicated by student 9.

I just think it's much easier to study when it's in front of you as if you have two separate things on two separate papers you can order next to each other. In online, you can't, and you have to go to one-by-one tab. When you open this tab, the other tab disappears.

As indicated by students 7, 11 and 14, annotation adds to a range of literacy techniques such as memorisation, writing and conversation. Lecturers should teach students digital annotation techniques as literacy best practices to help them learn more effectively.

All students used annotation or made notes after reading digital text. Annotation is informative and involves learning literacy practices. To annotate means developing a better sense of what readers actually read. However, annotation and learning have a complex, contextual and occasionally unpredictable relationship. Annotation does not always result in more effective, engaging or meaningful learning, and even the presence of annotation does not indicate learning. However, it is important to highlight the benefits and affordances of annotation and discuss how taking notes in a copybook can help students learn. Unfortunately, the social interaction features of e-textbooks, which let students contribute multimodal notes to digital and online

resources for the purposes of information sharing, peer-to-peer contact, collaboration and knowledge generation, were not engaged by participants in this study.

Conclusion

The findings show that annotation constructs and complements the learning process. While the phenomenon of annotation is not new as a literacy practice, digital annotation (Kalir & Garcia, 2021a; 2021b) is relatively new as a learning aid in the educational space. The new literacy studies (NLS) framework has established a process of investigating informal and everyday literacy practices (Goodfellow & Lea, 2013). This framework highlights the importance of studying language and literacy within their natural social context, considering the meanings of different cultural groups. Additionally, NLS emphasises the need for educators, curriculum designers and evaluators to recognise how students bring meaning and practices from their home communities to formal learning settings such as university classrooms.

Curation and annotation are important components in the use of e-textbooks as educational material. By providing students with a structured and organised learning experience, educators can encourage students to focus on the most important information and retain vital material more effectively. Another important finding from this discussion on curation is that students in digital learning environments rely entirely on Google and YouTube, implying that they do not curate the most relevant and trustworthy resources. However, it is hoped this it will be included in first-year student induction and that librarians will reinforce the reasons for carefully identifying resources.

This extensive exploration of the affordances of e-textbooks made evident that understanding and utilising digital literacy practices such as curation and digital annotation are pivotal for optimal student engagement and comprehension. However, a gap remains: many students are unfamiliar with or under-equipped to harness these tools, especially in the South African context. To bridge this gap, a proactive solution would be the introduction of library training for all incoming first-year students, training on the use of e-textbooks but also guidance for navigating

news, databases and other diverse sources of information effectively. Moreover, training on how to engage in digital annotation for learning may potentially improve student understanding of complex engineering concepts.

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