

# The (Re)mediated Reading Experience

*Researching the coexistence and complementarity of printed books and  
digital reading devices*

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## Abstract

With the appearance of digital reading devices, speculations about the end of the printed book emerged (Ballatore & Natale, 2016). Previous studies have tried to address these concerns and approached this phenomenon as a debate between the old and the new version of the book (Martin & Quan-Haase, 2013; van der Velde & Ernst, 2009). This thesis, on the contrary, transcends the belief that digital reading devices will replace printed books. Instead, it focuses on studying the experiences academic users live with these devices by studying the coexistence and complementarity of printed books and digital reading devices. This one, although it had been accepted in previous literature, had not yet been researched. To do so, I addressed the academic segment during the COVID-19 pandemic, as previous literature shows that this global situation has increased the interest in digital reading (Adeyemi, 2020; Parikh et al., 2020). By performing a three-step research approach, this thesis aims to investigate the role of affordances in the reading experience of academic users. Firstly, a survey was distributed to obtain an overview of the current phenomenon and to invite participants to the subsequent step. Secondly, semi-structured interviews were carried out to investigate people's interactions with the devices. Thirdly, the participants from the interviews were invited to a week of reading during which they documented and described in better detail their experiences with these formats. The obtained information was processed and analysed with affordances as a methodological framework. This research design allowed to study the meaning behind the affordances stated by the participants. It was concluded that academic users use printed books, digital reading devices and their affordances to complete their tasks or to enhance their reading experience. Evidence of affordances being simultaneously used was also found, contributing to a better understanding of the neglected phenomenon of coexistence and complementarity between these devices. This finding also uncovers nuances in the debate between printed books and digital reading devices. This thesis promotes a new angle from which future research can examine this phenomenon and research the coexistence of printed books and digital reading devices. To do so, it enhances Remediation Theory and proposes affordances as analytical tools. Additionally, through its methodological approach, this thesis proposes an enhanced data collection process that combines three methods to research the reading experience and investigate users' opinions in a multi-faceted perspective.

**Keywords:** printed book, digital reading device, coexistence, complementarity, Remediation Theory, Affordance Theory, COVID-19 pandemic.

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## List of Abbreviations

<b>PB</b>	Printed Book
<b>DRD</b>	Digital Reading Device
<b>AU</b>	Academic User

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# 1. Introduction

In our current reality, universities, companies, and markets, increasingly recognise the importance of digitising analogue processes or offering an online alternative for traditionally physical practices. Evolutions like the VCR into streaming platforms, cassettes into online music providers or post into email demonstrate this transition (Balbi & Magaudda, 2018). Books, as these media, have also been transformed and reinvented in our technological era. Relevant moments in the book's evolution are the appearance of online libraries, audiobooks, and the emergence of reading devices like Amazon's Kindle, Apple's iPad, or Barnes & Noble's NOOK (Moyer, 2012; Phillips, 2014). Furthermore, digital media transformed the way people access books and interact with texts (Baron, 2015; Matheson, 1995).

This "representation of a medium in another" and the constant flux between old and new media is known as *remediation* (Bolter & Grusin, 1999, p. 44-45). Additionally, *remediation* disrupts different dimensions of the old media, among others the physical and social ones (Bolter & Grusin, 1999). In other words, digital reading challenges printed books and their context. These factors, and the different representations of a medium, is what triggers people to compare them (Bolter & Grusin, 1999). On one hand, digitisation has improved the efficiency of the literature search process, the storage capacity in libraries and the cost reduction of printed texts (Ahmad & Brogan, 2012; Riha & LeMay, 2016). On the other, some people still prefer the printed version due to its material properties such as the paper's smell or its aesthetics (D'Ambra et al., 2019; Macfadyen, 2011). These material and digital properties, and the actions they facilitate, are not only features but also tools through which users create meanings of the devices they engage with. These are also known as affordances (Curinga, 2014; Gibson, 2015; Norman, 1999) and allow to examine the experiences users live through old and new media (Have & Pedersen, 2015; Lister et al., 2009; Macfadyen, 2011).

Previous literature analysed this phenomenon in various ways. For example, some approach it as a debate, suggesting that the printed book and its digital version stand on opposite sides of the spectrum (Ballatore & Natale, 2016). Other studies have approached it with the inquiry and concern that the new format will overrule the other (van der Velde & Ernst, 2009; Zhang & Kudva, 2014). These examinations helped to discover some features and reasons why readers opt to use a format over the other. However, they often study these formats in isolation, tend to simply accept the prevalence of both formats, or "continue to refer to predictions about the end of the book as a rhetorical starting point to introduce their counterargument" (Ballatore & Natale, 2016, p. 2380). This results in the lack of research in the

academic field to understand the coexistence of printed books and digital reading devices, and the consequences this has on their users. Given the fact that both formats are being used, it is relevant to examine users' reading experiences regarding the coexistence of these formats, instead of assuming them in the academic discussion about this phenomenon. In the case of printed and online news, a nuanced approach has been taken to study this phenomenon. This provides a better understanding of the synergy between old and new media and how they can benefit from each other (Nguyen & Western, 2006). Furthermore, this evidence raises the interest to examine the coexistence and complementarity in the case of printed and digital books, leading to a better understanding of this phenomenon.

At the same time, the interest in digital reading increased due to the COVID-19 pandemic. Around the globe, publishers and libraries increase their online publications to fulfil students' demand during the lockdown (Mbambo-Thata, 2020). Furthermore, researchers suggest libraries to provide their users with digital content, which they can access anywhere (Parikh et al., 2020). Parikh et al. (2020) researched library users' behaviour and noted an increase in both the time people spend reading and their eBook interest. Similar cases show that during the lockdown, people mostly read from digital formats (Adeyemi, 2020). Additionally, the advantage of digital texts makes it possible for students, professors, and universities to continue with their educational activities (Jones, 2020). This global pandemic seems to create long-term consequences in terms of remote education in which students and researchers increasingly read from screens and constantly interact with digital devices. Therefore, academic users' reading experiences will possibly be affected as well as their perception and use of both formats, providing an opportunity to research how they manage this coexistence. Hence, filling the research gap which previous studies have left by merely assuming these formats' prevalence, and contributing to a better understanding of reading practices. Furthermore, universities, libraries, and publishers must be aware of the use of both printed and digital tools to keep improving what could be the future of education.

It is with this interest that my master thesis aims to use our current context and re-explore how academic users (AUs) interact with printed books (PBs) and digital reading devices (DRDs)<sup>1</sup>. The academic relevance of this research lies in offering a contemporary analysis of this phenomenon by researching both formats' coexistence and complementarity in a time in which

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<sup>1</sup> Inspired by Macfadyen's (2011) definitions, in this thesis, a *user* is a human agent performing the act of reading; the term *eBook* entails any digital text; and a *digital reading device* (DRD) is used when talking about a device that uses hardware and software and displays the *eBook*. In this research, mobile phones, e-readers, tablets, and laptops are considered DRDs.

a shift in the handling of printed and digital books can be perceived. This thesis attempts to answer the following research question:

- **RQ:** *How do academic users shape their reading experience through the affordances of digital reading devices and the ones of printed books?*

To understand the experiences that users have, I will investigate the physical and/or digital properties of PBs and DRDs. I will draw upon *affordances* as methodological tools to analyse these devices' features. Additionally, previous literature draws attention to the social interactions emerging from the devices' properties (Baron, 2015; Macfadyen, 2011). Considering that *remediation* affects the social context, I will also investigate the social dimension around this phenomenon through the lenses of *affordances*. Consequently, this thesis attempts to answer the following sub-questions:

- **SQ1:** *In what way do the affordances of digital reading devices differ/resemble/enhance the ones of printed books?*
- **SQ2:** *How do affordances trigger social interactions with digital reading devices and with printed books?*

In Chapter 2, I offer a brief introduction to the transition from print to digital reading. In the Theoretical Framework, I connect the concepts of Remediation, Coexistence and Complementarity (Balbi, 2015; Bolter & Grusin, 1999; Nguyen & Western, 2006); and I introduce Affordance Theory (Curinga, 2014; Gibson, 2015; Norman, 1999). In the Methodological Framework, I present *affordances* as analytical tools (Hutchby, 2001) that will guide the research design. Then, I present the findings and highlight the key observations. These are further analysed in Chapter 6, where I discuss them with previous literature and answer my research question and sub-questions. To finalise, I briefly recapitulate the context of this research, its relevance, and the main findings in the conclusion.

## **2. Phenomenon: From Printed to Screen-A Brief History**

The history of the book stretches back to early times in history. However, this thesis focuses on the change initiated by the digitisation of texts. In other words, when books migrated from analogue to digital, enabling users to read from a screen instead of paper. Previous literature show the interest to track when the idea behind the eBook first emerged. Manley & Holley (2012) state this idea can be attributed to Vannevar Bush. In the 1930s, he wrote an essay in which he discusses the researchers' difficulty to organise the vast information they found when

investigating. With this interest, Bush proposed the 'Memex', a personal device that the researcher would use as a library to store books and other files (Bush, 1945). Additionally, Ballatore & Natale (2016), mention Michael Hart as one of the main characters in this timeline. Hart is known by many as the pioneer of the eBook after he founded Project Gutenberg, a digital library that intended to make texts freely downloadable (Grimes, 2011). There are various origins of this idea. Nonetheless, the first digital texts were available in computers, which sizes made it difficult to carry or grab compared to a PB. Hence, one key moment was the introduction of handheld portable devices which offered the reader the possibility to engage with the text comparable to how PBs allow (Ballatore & Natale, 2016).

Macfadyen (2011) talks about the introduction of the first DRDs as the first wave of eBook's adoption. During this time, these gadgets triggered mixed feelings. People were amazed but still sceptical about this new technology and its possibilities. The gap between a PB and a DRD was still broad and other difficulties were perceived such as the price difference between one format to another, and how these digital texts could be implemented in libraries (Ballatore & Natale, 2016; Macfadyen, 2011; Manley & Holley, 2012). The second wave arose with the technological development that offered a closer representation of the PBs in DRDs. Furthermore, a novel scheme for the accessibility and distribution of digital texts emerged. In 2007, Amazon revolutionised the industry by coupling their device, the Kindle, to their bookstore (Macfadyen, 2011). In the following years, other devices were introduced to the market. Some of them followed Amazon's strategy, such as Barnes & Noble's Nook in 2009, while others were developed as multi-purpose devices which enabled their users to read their digital texts among other functions, such as Apple's iPad in 2010 (Baron, 2015). These devices also improved their usability by adopting some of the features which users enjoy from the PB, such as the possibility to add bookmarks, highlight passages, and even to experience a paper-like texture (Bailey, 2019).

Despite their technological progress, these devices have not managed to convince all users. On the contrary, this evolution opened a debate between PBs and DRDs, driving people to develop a preference for one format or another. Academically, this controversy has also been addressed, creating different notions around this topic. Ballatore & Natale (2016) pinpoint three different narratives which have been adopted when discussing this phenomenon (Table 1). The first narrative implies that the PBs will be replaced by the DRDs. Authors sharing this concern view the emergence of DRDs as a negative consequence for the PB. The second narrative treats this evolution as a positive liberation, and the migration to the digital format not only as a natural step but also as "evidence of technological progress" (Ballatore & Natale, 2016, p. 2385).



	<b>Narrative 1 (end of humanism)</b>	<b>Narrative 2 (digital utopia)</b>	<b>Narrative 3 (coexistence)</b>
<b>Print book, codex, paper</b>	Repository of civic and humanist values. Deep reading, sensorial experience. Superseded by digital media (and should not be)	Outdated medium to store and retrieve text. Superseded by digital media (and should be)	Resilient medium that is not likely to be superseded by the other two media
<b>PC, hypertext, screen (1980s–1990s)</b>	Loss of humanist values, superficial reading habits. Dominance of hypertext. Loss of sensorial dimension	Revolution of communications, hypertext as intrinsically superior to codex, liberation of information	Coexistence with print books. Hypertext not suitable in many contexts
<b>E-reader, e-book, e-ink (2000s, 2010s)</b>	Loss of senses, damage to publishing industry. Status of the print book diminished	Increased access to long texts, long tail economy for books	Coexistence with print books. Suitable for linear reading of fiction, less so for study/work on long texts

Table 1: Narratives about the future of the book (Ballatore & Natale, 2016, p. 2383).

The last one, on the contrary, emphasizes that PBs and DRDs alike can coexist. Ballatore & Natale name other authors who embrace this narrative. However, these authors only acknowledge this coexistence and reject the idea that PBs will disappear. At the same time, Ballatore & Natale state that this narrative “has not yet resulted in a complete dismissal of the prophecies about the end of the book” (Ballatore & Natale, 2016, p. 2386). This thesis’ intention is not to dismiss these prophecies. However, it does aim to deviate the from these radical perspectives and moderate this debate by studying the coexistence of PBs and DRDs.

### 3. Theoretical Framework

In this chapter, I incorporate the theoretical framework and relevant previous literature needed for this thesis. Section 3.1 outlines the theoretical concepts required to research the coexistence and possible complementarity between PBs and DRDs. Section 3.2 will feature Affordance Theory which is crucial to examine the physical and digital properties which users interact with when using PBs and DRDs.

#### 3.1 Remediation, Coexistence and Complementarity

Several approaches have been created and adopted to understand the evolving media landscape and the effects this has on users and their experiences. For this thesis, it is necessary to borrow,

construct and compare different notions which will allow to frame this research's inquiry. A solid starting point to study the phenomenon of PBs and DRDs is to understand them in terms of old and new media. Bolter & Grusin (1999) do not think about media's progress as a linear evolution, nor the appearance of a new medium as the erasure of the previous one. Instead, they theorise about the constant flux between old and new media. They state that to understand new media, one would need to examine how this one commemorates or tests its predecessors. Simultaneously, the older media transforms itself to respond to the challenges that the newer versions impose. This synergy and the "representation of one medium in another" is what the authors define as *remediation* (Bolter & Grusin, 1999, p. 45). The authors reflect that remediation happens at different levels. One of them is in which a medium can disappear to represent the older in the most truthfully way. Another type of remediation is in which the new medium, instead of trying to fade into the background, highlights the differences between the old one and itself. This way, the new medium presents itself both as a representation and as an improvement. The third remediation described by the authors consists of the attempt of the new medium to refashion the older completely. Lastly, another way of remediation consists of the threat that the new medium imposes by completely consuming the old one. Furthermore, the authors explain that remediation has an impact beyond media. They consider media as a network in which several dimensions, such as the social, physical, or economical ones, are involved. As such, when a new media restructures the old one, it does not only affect the latter but its whole context.

The work by Bolter & Grusin (1999) enlightens the media landscape and proposes an approach that can be taken to examine traditional and new media. Their theory allows studying PBs and DRDs in terms of oldness and newness. Although these terms are still relevant to study the phenomenon which this thesis aims to research, they do not seem to fully allow to comprehend a media reality in which different media coexist and the interactions these media representations can have. Notions of old and new "appear inadequate to describe the complexity of present and past technological configurations" (Lesage & Natale, 2019, p. 577). Nonetheless, moving away from these notions and proposing new approaches to examine media is challenging. For instance, Scolari (2013), who tries "to break from the sequential-linear and genealogical-branched evolution models", including Bolter & Grusin's (1999), proposes another model to understand media evolution (Scolari, 2013, p. 1419). This model consists of three phases from which media's progression can be analysed: (1) emergence, (2) dominance, and (2) survival/extinction. Although the author intends to expand the theoretical framework, these phases still seem rigid to examine if and how media can interact in more complex relationships. For example, considering this phenomenon, this model could allow understanding (1) the birth

of DRDs or their growth, (2) the competition these devices started with PBs, or (3) if PBs or DRDs accomplished to remain in the media landscape. However, this thesis attempts to research both formats instead of one in isolation. Additionally, it attempts to investigate their coexistence and if these complement each other during the reading experiences of AUs. Therefore, to move forward to an understanding of media coexistence, it is necessary to hold back from considering old and new as strictly separate entities (Magaudda & Minniti, 2019) and to broaden this theoretical framework. To do so and to approach the coexistence between PBs and DRDs, I feature the work by Balbi (2015).

As a starting point, Balbi states that when addressing media, old media has often been neglected. In turn, new media, as the recent one, has been more studied and featured. Acknowledging the above, Balbi theorises the notions of old and new media by firstly recognising them at the same level. Then, he proposes four steps in which both media are in constant flux. The first three steps coincide with Bolter & Grusin's (1999) theory. For example, Balbi's first step indicates that new media imitates the old, which resonates with Bolter & Grusin's concept of borrowing. The second step reflects on when the new media can be classified as new. The author explains that this is partially determined by society as this is the one who interacts with the new medium and perceives the old medium being disrupted. The latter relates to Bolter & Grusin's explanation of the implications of new media on a social dimension. The third step, in which the author indicates that old media adapts to the new, matches Bolter & Grusin's statement that the old media readapts after the challenges the new media brings.

Moreover, despite these similarities, Balbi's fourth step adds a new dimension to the analysis of old and new. This last step describes that when new media do not overrule the old one, both can find their place in the media landscape and continue to exist without competing. The author further elaborates and echoes Coopersmith (2010) by saying that these media can be used in different situations or can even be attributed to specific groups. For example, the old media can be reintroduced as a nostalgia item among niche users. Regardless of the purposes, the author states that old and new media can survive and their "coexistence...may bring about forms of integration as well" (Balbi, 2015, p. 243).

The hitherto theoretical framework has made two important distinctions. Firstly, PBs and DRDs can be examined as old and new media. Furthermore, while it is true that old and new media can compete, they can also interact by representing each other and responding to the challenges they impose. Secondly, by moving away from the notions of old and new as entities in isolation, both PBs and DRDs can coexist and find their place in the media landscape. In other words, if these media find balance, they can cease competition and exist side-by-side. These two

notions, remediation and coexistence, allow understanding how both formats can survive. However, this thesis also hypothesises that both formats can complement each other. Therefore, and to construct how traditional and new media can enhance each other, I introduce previous literature which investigates similar phenomena.

For instance, Nguyen & Western (2006) research the phenomenon of online and printed news and find “that the more people use the Internet for news and information, the more they use traditional mass media for news and information” (Omar, 2011, p. 220). Meaning that, in the case of the news phenomenon, the relationship between old and new media does not need to be pernicious, but it can also be beneficial. Nguyen & Western (2006) reject the idea that new media will displace the traditional one and decide to concentrate on analysing the phenomenon of printed and online news with a different perspective:

“Because they serve human beings in different ways and different contexts, different media forms coexist and complement each other. It is, therefore, imperative to go beyond the medium-centred displacement and replacement mentality to explore the issue from a user-centred perspective, one that takes into account the interactions between media-related needs and the different levels of using available media to fulfill these needs” (Nguyen & Western, 2006, n.p.).

Similarly, Have & Pedersen (2015) examine audiobooks as a remediated form of the PBs. They provide crucial perspectives, as they consider that the experiences granted by the audiobooks do not depend solely on the technological progress they signify, but also on how these are being used and in which contexts. The authors depict a scenario in which a user can read from an electronic device while commuting by train and listen to an audiobook while biking (Have & Pedersen, 2015, "Modes of Reading as Listening", para. 2). As such, these hybrid mediated experiences introduce more complex phenomena which differ from comparing one medium to the other, or from researching if these formats can survive. These scenarios suggest that a similar phenomenon can be possible with our current technological context in the case of PBs and DRDs and, therefore, allow to speculate about a complementary use between old and new. Additionally, these are examples of the effects of the inclusion of new media in everyday life.

Based on previous studies discussed above, there is proof of complementary use between old and new media. Remediation offers a solid approach to examine these formats in terms of old and new, while coexistence allows this thesis to move away from seeing this phenomenon as a debate. In the case of complementarity, the understanding of this notion enables the exploration of situations in which readers can enhance their reading experience by using both formats. The use and combination of these concepts will enable me to analyse both formats,

their place in the media landscape and to study in detail their synergy, contributing to a better understanding of this phenomenon.

### 3.2 Defining Affordances for PBs and DRDs

One of the most asked questions in the debate between PBs and DRDs is whether the benefits of one will overrule the other (Chen et al., 2019; Martin & Quan-Haase, 2013; van der Velde & Ernst, 2009). Even though my purpose is not to take a stance on this debate, but to nuance it by researching their coexistence and trying to find evidence of their complementary use, it is still necessary to examine these devices' physical and digital properties. One way to examine these devices and the experiences they grant is through their *affordances*. In this section, I introduce Affordance Theory based on the definitions by Gibson (2015), Norman (1999) and Curinga (2014).

The term 'affordance' was coined by Gibson (2015) in the ecological psychology field to refer to what the environment "offers the animal, what it provides or furnishes, either for good or ill" (Gibson, 2015, p. 119). These affordances are the properties of the materials, textures and objects which can ignite specific actions or behaviours in animals or humans. Gibson further explains that affordances involve two actors: the environment and the observer. With this definition and transposing this concept to the present study, one could consider the observer as the reader or the user. However, this interpretation does not fully explain how affordances can be applied to a medium, such as a book, nor to understand the users' behaviours. To strengthen this definition, Norman's (1999) and Curinga's (2014) contributions are used.

Firstly, in the design field, Norman (1999) adopted the term affordances and defined two different types, the *perceived* and the *real* ones. The perceived ones are what a user can sense by the appearance of an object, while the real ones entail tangible properties. According to Norman, these two kinds "play very different roles in physical products than they do in the world of screen-based products" (Norman, 1999, p. 39). On one hand, when creating physical products, product designers are responsible for the affordances they attribute to the objects. This means that both the perceived and the real affordances can be defined by the creator. On the other hand, when designing screen-based programs, the designer depends on the hardware which the devices already possess. Thus, the designer can have a word on the perceived affordances, but not on the real ones. Norman's definition introduces another dimension in which the program itself is considered. This is an important notion considering that the phenomenon of the printed and the digital book encompass both tangible and software properties. Hence, it is necessary to elaborate on what do affordances mean digitally.

Concerning the digital context, Curinga (2014) explains that technology is open for interpretations and meaning creation from the people who interact with it, the users. Additionally, Curinga explains that to comprehend the interface's capabilities, one would need to examine its affordances as these "describe the actions something makes available to a particular agent" (Curinga, 2014, n.p.).

In this thesis, I employ Gibson's (2015), Norman's (1999) and Curinga's (2014) concepts of affordances to theoretically guide this research. Introducing this concept enables me to study the properties of PBs and DRDs, and the meaning AU assign to these. Additionally, studying these affordances will contribute to a better understanding of each format and start researching their coexistence. The methodological application of affordances is explained in Section 4.1.

## 4. Methodological Framework

The following chapter encompasses the methodological framework used to research PBs and DRDs, and the experiences they grant to AUs. Firstly, I present *affordances* as tools for analysis and discussion in this research. Secondly, I outline the methodology in detail by describing the research design and the methods which are used for gathering the subsequently analysed data.

### 4.1 Identifying PBs and DRDs' Affordances

Affordance Theory is an academic approach that considers physical and digital properties to study the interpretation which users give of their interaction with objects. (Curinga, 2014; Gibson, 2015; Norman, 1999). Extending this approach and the concept of affordances from a theoretical perspective to an analytical one has been deemed important (Hutchby, 2001). In this section, I explain how the theoretical concept of affordances can take a methodological turn and spread to the analysis.

In his text, Hutchby (2001) highlights the benefits of using affordances as analytical tools to aid our understanding of technologies (Hutchby, 2001, p. 449). When studying technologies as texts, Hutchby indicates that focusing on "the material substratum which underpins the very possibility of different courses of action in relation to an artefact" allows to examine the interpretations users make of a specific technology (Hutchby, 2001, p. 450). In other words, Hutchby defends affordances as analytical resources that consider the material properties of an artifact and the users' interaction with them (Hutchby, 2003, pp. 581, 584). Other authors also highlight the importance of adopting an affordance approach to analyse interactions, not only

with physical objects but also with digital sources. For instance, Bucher & Helmond (2018) advocate for an affordance approach to research the interaction users have with digital technologies in the case of social media. In a closer case to this thesis' phenomenon, Have & Pedersen (2013) utilise affordances to examine the audiobook and research the mediated experience that these artifacts grant.

Now that the use of affordances as analytical tools is justified, I will state how to recognise them. For this, I will draw upon two strategies found in previous literature. Firstly, in their article researching the affordances of DRDs, D'Ambra et al. (2019) follow the model proposed by Bernhard et al. (2013) which indicates that the existence of an affordance depends on the interplay between an object and its user. Moreover, they state that to identify affordances, they focus on the features stated by the readers. Meaning that an affordance is not only a property, but it also needs to be recognised by the users as this unveils what they consider relevant in their experience, whether positive or negative. The authors classified the affordances of DRDs, and how they correspond to their users' behaviours. Besides noticing different affordances, they encounter different attitudes to the same affordance. For example, the authors find that some users consider reading from the digital screen tiring, while others perceive it beneficial as it enables them to adjust the typography's size and style. Secondly, in their text identifying the affordances of audiobooks, Have & Pedersen (2013) decide to recognise affordances by emphasising the interaction between user and object. Echoing Norman (1988), they state that an "*affordance* defines a quality that belongs neither to the medium nor to the user but appears in interaction between the two" (Have & Pedersen, 2013, p.129).

Both strategies are related to the phenomenon that this thesis is concerned with and in line with Hutchby (2001) who recognises users as *readers* of the artifacts that carry different properties (Hutchby, 2001, p. 445). Therefore, to research the affordances of PBs and DRDs, and the reading experience emerging from the coexistence and complementarity of both formats, I will follow D'Ambra et al.'s (2019) and Have & Pedersen's (2013) affordance identification formula. This thesis aims to build on the application of affordances to study mediated reading practices, but most importantly to study the coexistence of PBs and DRDs. Therefore, responding to previous uses of affordances in this phenomenon. Furthermore, to access the affordances and feature the readers' experiences, I perform methods that allow an in-depth examination of their points of view. These methods differ from the ones previously used in this phenomenon and are explained in the following sections.

## 4.2 Research Design

This thesis adopts a mixed-method approach and performs three different methods. Firstly, it is important to outline the research design. Research designs “[provide] a framework for the collection and analysis of data” (Bryman, 2012, p. 46). To understand how methods relate to a research’s inquiry, it is important to define a structure that will guide these tools. To study the AUs’ experiences, a research design that permits an in-depth examination of this case is needed. A *case study design* allows the researcher to scrutinize a specific situation or phenomenon (Bryman, 2012). Hence, this research design is the most suited for this thesis. The *case study* in this thesis are the experiences of AUs when reading PBs and DRDs. Furthermore, exploring this situation is done by focusing on researching these devices’ coexistence and hypothesising about their complementarity.

## 4.3: Research Approach

Qualitative research considers “social reality as a constantly shifting emergent property of individuals’ creation” (Bryman, 2012, p. 36) whereas quantitative research thinks about reality as objective and enables the collection of numerical data to gather the necessary information for investigations (Bryman, 2012). Mixed-method research consists of drawing upon both approaches to strengthen or support the research. Bryman defines multiple reasons behind this combination. One of them, *sampling*, entails the process in which quantitative methods form the basis for subsequent qualitative analysis (Bryman, 2012, p. 644). Regarding the research design, the author states that a *case study* is well suited to guide mixed-method research.

I use a mixed-method approach and, throughout three steps, I perform different methods. Firstly, I use a survey for quantitative data collection which provides an overview of the case study and facilitates my access to the participants. Secondly, after selecting the participants, I interview them to examine the values and perceptions they assign to each device. Thirdly, I invite the interviewees to keep a reading diary to study their behaviours while interacting with PBs and DRDs. This process is outlined in Figure 1.

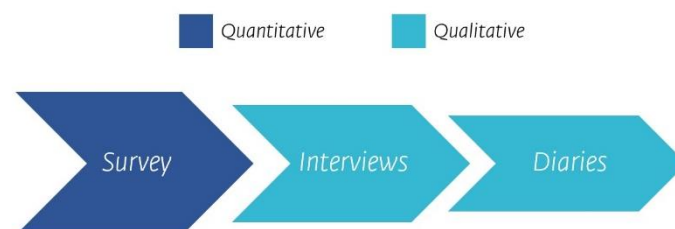


Figure 1: Data collection process.



#### 4.3.1: Survey

Surveying is a way in which one can sample from a group of people, through a structured interview or a self-completion questionnaire (Bryman, 2012, p. 184-186). To answer the research question, I conduct an online survey with a twofold objective. Firstly, to explore AUs' profiles and to discover which formats they interact with. Secondly, the survey serves to invite and identify the most suitable participants for the interviews and diaries. This is crucial since the following stages focus on people using PBs and DRDs, and whose reading activities are frequent. Once these factors are confirmed and the first candidates are identified, I contact them for the interviews.

The seven-question survey contains closed and open-ended questions and is created in Typeform. This survey is distributed through channels that involve people who are more prone to read, like Facebook groups for readers or people involved in academic activities such as students and researchers. A copy of this survey is included in Appendix 1.

#### 4.3.2: Interviews

A well-known method to study a social group is through interviews (Bryman, 2012). Bryman states that interviewing helps collect richer information on what participants consider important and their opinions. As a second method, I use a semi-structured interview which allows me to direct the interview and gather the needed information while also being flexible in the questions' structure (Bryman, 2012).

The interviewees are identified through the survey among the people who express interest in participating in the following steps. Additionally, they are selected based on the following requirements: being an AU (e.g., student, professor, or researcher), use of both PBs and DRDs, and frequent reading experiences. The 30 minute-interviews are recorded with consent from the participants, who are informed about the full purpose of the research.

To analyse this data, I transcribe the interviews and use the software NVivo to identify relevant codes and themes to structure the findings<sup>2</sup>. The coding process consists of two cycles which are guided by affordances as described in Section 4.1. In the first cycle, the codes are created from words explicitly mentioned by the interviewees and which represent affordances from any of the devices. This type of coding, known as In Vivo coding, emerges from people's

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<sup>2</sup> Due to data privacy matters, and following the advice and tools recommended by Utrecht University, the interview transcriptions are safely stored in OneDrive for Business by the researcher. Should you have any questions regarding the data, how it is processed and stored, please send an email to [c.i.ortizvarela@students.uu.nl](mailto:c.i.ortizvarela@students.uu.nl).

literal words to highlight the participants' points of view (Saldaña, 2016). The affordances are transferred to the second cycle where they are classified into themes which are explained in Section 5.2. A copy of the questions asked in the interviews is included in Appendix 2.

#### 4.3.3: Diaries

Investigating the daily interactions AUs have with the devices would be preferred. However, the pandemic makes it difficult to interact face-to-face with the participants. Therefore, I propose to reinforce my data collection by including another method. Collecting and analysing autobiographies, letters, or diaries may reinforce research (Bryman, 2012). For the third stage, I invite the participants of the second step to, for one week including a weekend, track their reading activities<sup>3</sup>. This method provides a snapshot of the daily interactions they have with these devices. Additionally, they provide a space for the participants to express themselves through text, photo, and video. A copy of the instructions shared with the diarists is included in Appendix 3.

Considering that the diaries differ in purpose and length from the interviews, they could uncover patterns and themes not yet identified after the second step. Coding is suitable to process the diaries as it allows the interpretation of data coming from journals and photographs (Saldaña, 2016). However, this method requires its own coding. Similarly, as with the interviews, the NVivo software is used, and the In Vivo coding method is performed. After coding the diaries, these codes are compared to the ones from the interviews. When similar, two codes merge into one, and the additional codes are included in the final list of codes. This coding is further explained in Section 6.3.

Nonetheless, these methods also have limitations. Firstly, the survey information mainly depends on the number of responses gathered (Bryman, 2012). Additionally, qualitative methods collect information from observations and testimonials which might change over time (Bryman, 2012). However, by combining these three methods I collect information both quantitatively and qualitatively to reinforce my results and to provide more insights throughout different stages. The methods' goals are explained in Figure 2.

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<sup>3</sup> Due to data privacy matters, and following the advice and tools recommended by Utrecht University, the diaries entries are safely stored in OneDrive for Business by the researcher. Should you have any questions regarding the data, how it is processed and stored, please send an email to [c.i.ortizvarela@students.uu.nl](mailto:c.i.ortizvarela@students.uu.nl).



Figure 2: Data collection process and methods' goals.

## 5. Findings

To start, an overview of people's reading habits retrieved by the online survey is presented. Next, the information obtained during the semi-structured interviews is introduced, followed by the diaries' findings.

### 5.1 Survey

Based on the 60 responses obtained (Figure 3), PBs remain the most used format with 51 respondents using them. After PBs, the most used formats are laptops and mobile phones, obtaining 35 and 31 responses, correspondingly. Even though this option was not provided, one user specified using a combination between PBs and audiobooks. However, audiobooks do not belong to the scope of this research as they enable content processing through audio instead of text.

Regarding motives for reading, the respondents indicated leisure as the most common one (Figure 4). Additionally, academic motives, like assignments and research, were highly chosen. Book recommendations were also indicated by 22 respondents out of the 60.

When asking people about situations in which they interact with different formats, a relation between PBs to leisure reading, and DRDs to academic purposes was highly perceived. Text availability and costs also play an important role when deciding on a format. Several users indicated that choosing between PBs and DRDs was often defined by the texts' availability. Lastly, when questioning users about the existence of several devices for reading, an overall positive response was obtained. Most users stated that having multiple formats was helpful in

different scenarios. Some users believe that these formats' existence promotes reading and "ensure[s] that a larger fraction of the population has access to books".

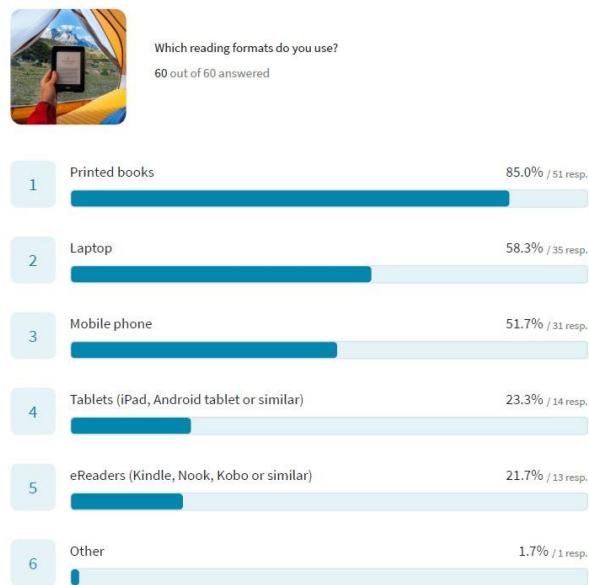


Figure 3: Formats used for reading.

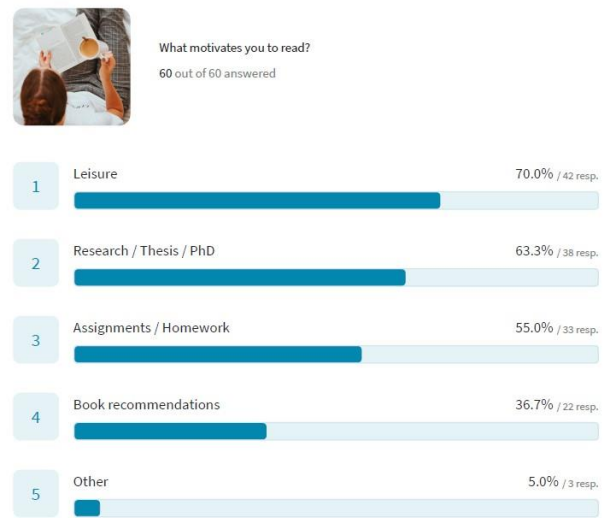


Figure 4: Motives for reading.

## 5.2 Interviews

The interviews allowed to investigate people's interactions with PBs, DRDs, their coexistence and complementarity. From the 60 responses obtained in the survey, 17 individuals expressed their interest in participating in the next steps. Based on the previously stated requirements, I identified and invited 10 people who agreed to be interviewed. The questions asked during these interviews were designed to examine previous and current uses of the PB and the DRDs, and the social interactions enabled by them.

As seen in Chapter 4, an affordance approach was adopted when coding and structuring the following results. By adopting the In Vivo type of coding, the physical or digital properties which the participants mentioned interacting with were identified. Furthermore, following the identification formula previously stated, these were recognised as affordances and used as codes (Table 2). These were also classified according to the theoretical toolbox stated in Section 3.1 into old and new media affordances. During the second cycle, the following themes emerged: *experiences with PBs*, *experiences with DRDs* and *experiences with both*. The following findings are structured based on these themes.

	<b>PRINTED BOOKS</b> (Old Media)	<b>DIGITAL READING DEVICES</b> (New Media)
<b>AFFORDANCES</b>	<ul style="list-style-type: none"> <li>•Smell</li> <li>•Tangibility</li> <li>•Size</li> <li>•Weight</li> <li>•Graphics and art</li> </ul>	<ul style="list-style-type: none"> <li>•Connectivity</li> <li>•Portability</li> <li>•Storage</li> <li>•Virtual Page Turning</li> <li>•Search Option</li> <li>•Note-Taking</li> <li>•Highlighting</li> <li>•Undo Option</li> <li>•Screen Brightness</li> <li>•Battery</li> <li>•Scroll Button</li> <li>•Reading Tracker</li> </ul>

Table 2: Codes emerging from the interviews in order of appearance in the Analysis.

### 5.2.1 Experiences with Printed Books

During these conversations, several participants reported relating the PBs to memories of their past and a sense of nostalgia. Age emerged as a factor behind these nostalgic feelings considering that most of the participants started reading from DRDs until they initiated their higher education. For one participant, this happened even later in her life when her husband gave her a Kindle.

“I belong to a very different generation than you. So, for me it is always that books are the real books, the physical ones” (Spanish teacher, female, 53).

Referring to the PB as “the real”, and “the normal” format, resonated in several interviews. Users in their 20s relate the PBs to their past when DRDs did not exist. When describing their memories, the interviewees mentioned several physical properties of the PBs that highly contribute to this nostalgic experience. Following the affordance identification formula, these were identified as affordances of the old format and added as codes. Participants expressed that the paper and ink’s *Smell*, as well as their feeling, brought them back to their childhood. Actions like turning pages or simply holding the object in their hands granted them “cosy” and “homey” feelings. Nonetheless, the *Tangibility* affordance was also a dislike concerning the PB, as some users consider it a vulnerability. For example, some users, appreciate feeling the paper but feel responsible for the book’s condition. Furthermore, this affordance was reported to be inconvenient in different scenarios:

“I remember when I was camping with my parents... [I] had to move in annoying positions to read properly” (Law student, female, 25).

Their tangible nature, various *Sizes* and inconvenient *Weight* were also reported as negative affordances of PBs. Houses and spaces with tables emerged as preferred locations where people enjoy reading PBs (Image 1). However, some participants indicated that this downside is less present since the pandemic, due to the increased time at home.

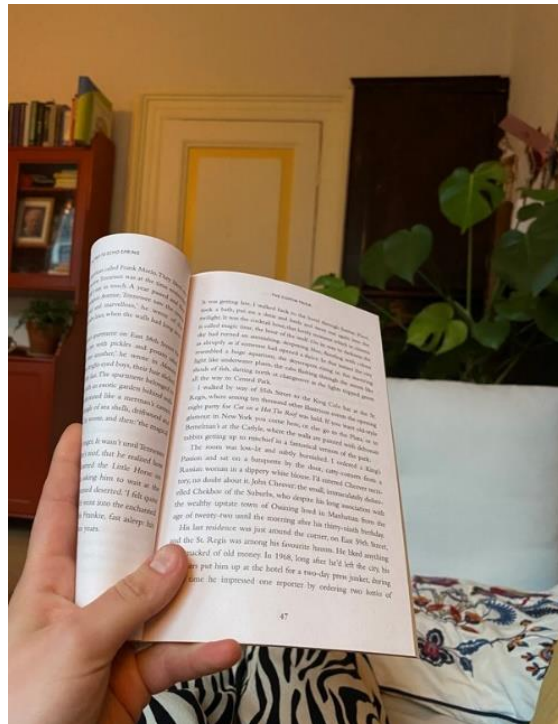


Image 1: Printed books at Home. Photo obtained from diaries to illustrate results from interviews.

Participants shared that the combination of a proper place and the affordances of PBs offer a relaxed and isolated experience. Moreover, participants reported feeling emotionally attached to these formats and enjoyed “the novelty of having [a printed] book” (Media Master student, female, 23).

Furthermore, owning PBs allowed users to engage in social interactions. One user stated that having these objects on a bookshelf triggered conversations when someone would visit her house and ask about her reading preferences. Another participant mentioned that, in the book club she participates in, the books’ covers, and their *Graphics* are often among the topics of discussion. Additionally, several users reported that owning a PB enabled them to easily share it with their social circle. One interviewee recalled participating in a book exchange where people would send a PB of their choice to someone else.

During the interviews, one participant admitted her preference for reading and learning academic topics, like theories or methodologies, from PBs. Another participant described that although the pandemic has encouraged her to read more from a screen, she preferred to print the digital articles when studying, as this helped her retain the information better. Nonetheless, these were some of the few exceptions relating academic purposes to printed texts. Consequently, a predominant relation between leisure reading and PBs was perceived.

### 5.2.2 Experiences with Digital Reading Devices

During the interviews, users stated that spending more time at home since the pandemic, has motivated them to read more. However, this has mostly been with DRDs instead of with PBs, as they found it easier to access new texts even from home. In general, they admitted using DRDs in tasks that required them to be productive. Words as “convenient” and “efficient” were constantly repeated throughout the interviews to describe these formats. Additionally, most interviewees recall their initiation with digital reading due to academic purposes:

“It already started pretty soon... at the age of 12, 13 when I had to do some school assignments. Most of the time, I would do my research on the Internet and not go to a library anymore. And then you start reading digital articles on your laptop or your computer and that continued actually further”  
(Master student, male, 24).

Relating DRDs with academic purposes was a common denominator, and several reasons were uncovered. The most mentioned one was that these devices, as most of the time are connected to the Internet, allowed users to easily access information from anywhere, a highly valued aspect during the pandemic. The *Connectivity*, as highlighted by the interviewees, was identified as an affordance of DRDs. Participants also described that using DRDs was often promoted by their professors as they often shared a link to download an article or to access digital sources. Moreover, users reported that DRDs offered them the flexibility to read and study from anywhere due to their *Portability*.

AUs’ studies demanded high volumes of reading, which done traditionally would force them to carry various and heavy books. Participants explained that DRDs allowed them to store large amounts of information, including articles and books, and easily transport them. Furthermore, users stated that DRDs’ *Storage*, another identified affordance, had an environmental benefit. Instead of printing the articles they need for their assignments, some participants used their DRDs and read these texts from them.

Another advantage of DRDs was text accessibility. For one user, reading on her phone allowed her to acquire titles which she was not able to read physically. In this case, this user enjoyed the digital feature that simulates a paper page-turning, which gave her a better feeling than scrolling through a lengthy text. Besides this *Virtual Page Turning*, the *Search Option*, *Note-Taking*, *Highlighting*, and the possibility to easily do and *Undo* these, were also mentioned as relevant and practical properties of DRDs, and therefore identified as affordances (Image 2). Despite its numerous features, some participants voiced the discomfort their eyes experience after hours of reading from a screen. Nonetheless, for two participants the *Screen Brightness* affordance helped them in similar situations (Image 3):

In other words, we're used to thinking about emotion and advanced artificial general intelligence together. Contemporary narrow A.I. technologies can do nothing of the kind. But it benefits tech firms if people believe by extension that current systems can "feel empathy" or similar. It simultaneously tells the public these technologies are more advanced than they really are. And it distracts from the real impacts of these systems.

Image 2: Highlighting: Photo obtained from diaries to illustrate results from interviews.

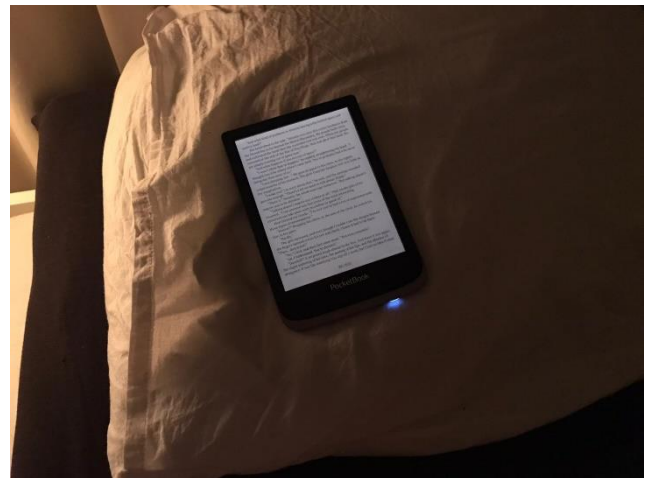


Image 3: Screen Brightness: Photo obtained from diaries to illustrate results from interviews.

"I read in bed often and when I have like a physical book, I need to turn a light on, and my boyfriend is like: 'Are you reading again?' ... So, when I'm reading with my e-reader I can just put it on a very low brightness but can still read without disturbing my boyfriend's sleep" (Master student, female, 26).

Concerning social interactions, users explained that DRDs facilitated them to share articles or other sources with friends and family. Due to DRDs' *Connectivity*, they could rapidly share information with anyone. However, the always-present *Connectivity* was not ideal for all the participants. For some, the multimedia affordance of these devices was also a source of distraction. Users narrated to easily lose concentration when receiving a notification. Furthermore, the technological advantage which DRDs can provide comes along with other drawbacks. One user stated that, depending on the device, the *Battery* life could be an issue when reading. Other participant stated that, like other types of technology, these devices' software did not always work as desired. Problems like glitching and deficient page-turning were also stated. For one participant, the *Scroll Button* on her screen was indicating her



progress in reading the text and sometimes she could feel unproductive depending on its location. Lastly, another participant expressed feeling pressured by her tablet which measured her reading habits and the frequency of her reading activities.

### 5.2.3 Experiences Combining Both Formats.

Participants shared experiences in which using both a PB and a DRD helped them complete a task or access a different dimension of their reading experience. For academic and leisure purposes alike, a combination of the formats was discovered in some of these conversations.

In the case of the former, some participants explained that they use their DRDs as a filter to obtain PBs. For example, they would scan through books in their digital version and, if they were interested in the text, they would proceed to buy it. Other participants reported that having a PB and a DRD side by side allowed them to access information simultaneously, providing them with a better overview of their texts. In some cases, using different formats was caused by the unavailability of one text in its printed or digital version. However, in others, users adopted the analogue and the digital to differentiate between contents. They narrated to read theories from PBs and articles from DRDs. In these cases, users acknowledged that the affordances possessed by the different formats helped them process the information better. As they related PBs' *Tangibility* with better concentration, they decided to read more complex information through them; and as the *Search Option* of DRDs helped them look for keywords, they opted to quickly scan articles through these digital means. Furthermore, some interviewees mentioned that academic sources often invited them to transition between PBs and DRDs when, for example, in a PB the author mentioned an additional source available only digitally.

Regarding leisure reading, more specific cases were found. For instance, one interviewee narrated her experience when reading a novel. She mentioned that after buying and reading a text in its printed version, she discovered through her book club that a subsequent chapter was released in another part of the world. Later, she was able to get hold of the missing passage and read it through her DRDs' *Connectivity*. For another interviewee who reads extensive and complicated novels, and who prefers reading from a PB, a combination of both formats was ideal. She narrated that while reading from a PB, she could also read a repertory of the characters and elements in the complex plot from a DRDs. This way, she was able to keep enjoying her reading without having to go back to other books.

Participants acknowledged that combining these formats had both positive and negative consequences in their reading. On one hand, interacting with the PBs and DRDs allowed them to

complete a task and even to perform actions in a format that the other does not allow. For instance, one participant explained that the DRDs' *Search Option* is something she found useful, and when reading from a PB she would sometimes access the same text in its digital version to make use of this affordance. Then, it was easier for her to navigate through the printed text. On the other hand, for one participant, using the different formats at the same time became overwhelming and difficult to manage. She explained that to organise her reading better, she preferred to assign her time to read from only one format.

Nonetheless, several participants recognised that, regardless of the fact if they would use them at the same time or not, the availability of both formats was an advantage. One participant stated that the main goal for her was reading and that "she would switch between two formats depending on how [she wanted] to experience it". Furthermore, participants recognised that having the possibility to choose between formats helped them in different situations.

### 5.3 Diaries

In this step, the individuals who participated in the interviews were invited to, for one week, keep track of a reading diary. The participants were required to share details from their reading experiences such as the formats they used, their purposes when reading, and factors in their surroundings that could affect their interactions with the devices. From the 10 interviewees present in the second step, 4 people agreed to take part in this last stage.

The diaries, as personal documents, shared a more intimate and recent snapshot of the reading experience lived by the participants. Considering that these participants had been contributing to the research since the first method, some patterns and themes resurfaced when analysing the data. However, the essence of these documents allowed to discover additional situations and identify affordances that were not yet expressed during the interviews. According to the participants, providing them with this space for self-expression, allowed them to "purposely think of [their] reading experience", which differs from the retrieved information obtained during the second method of this thesis. After extracting the codes from the diaries' data through the In Vivo method, the codes from the interviews (Table 2) and the codes from the diaries (Table 3) were compared. The similar codes merged into one, and the additional were included in the final codes table (Table 4).

	<b>PRINTED BOOKS</b> <i>(Old Media)</i>	<b>DIGITAL READING DEVICES</b> <i>(New Media)</i>
<b>AFFORDANCES</b>	<ul style="list-style-type: none"> <li>•Tangibility</li> <li>•Smell</li> <li>•Graphics and art</li> </ul>	<ul style="list-style-type: none"> <li>•Highlighting</li> <li>•Note-Taking</li> <li>•Navigation</li> <li>•Search Option</li> <li>•Screen Brightness</li> <li>•Save For Later</li> <li>•Connectivity</li> <li>•Portability</li> </ul>

Table 3: Codes emerging from the diaries in order of appearance in the Analysis.

	<b>PRINTED BOOKS</b> <i>(Old Media)</i>	<b>DIGITAL READING DEVICES</b> <i>(New Media)</i>
<b>AFFORDANCES</b>	<ul style="list-style-type: none"> <li>•Graphics and Art</li> <li>•Tangibility</li> <li>•Size</li> <li>•Smell</li> <li>•Weight</li> </ul>	<ul style="list-style-type: none"> <li>•Connectivity</li> <li>•Battery</li> <li>•Highlighting</li> <li>•Navigation</li> <li>•Note-Taking</li> <li>•Portability</li> <li>•Reading Tracker</li> <li>•Save For Later</li> <li>•Search Option</li> <li>•Screen Brightness</li> <li>•Scroll Button</li> <li>•Storage</li> <li>•Undo Option</li> <li>•Virtual Page Turning</li> </ul>

Table 4: Final codes in alphabetical order.

This glimpse into the participants' everyday lives uncovered once again the relation between DRDs and academic activities, and PBs and leisure purposes. A finding better elaborated during these documents was the hypermediacy granted by DRDs. Participants described that, for academic activities, they used different sources and affordances of their DRDs, like *Highlighting*, *Note-Taking*, and the possibility to switch between windows and tabs. Hence, facilitating their *Navigation* through the information. Besides some affordances previously mentioned in the

interviews such as the *Search Option* and the *Screen Brightness*, the *Save For Later* function was featured as a relevant and helpful aspect when reading academically, and therefore identified as another affordance. Through this, users stored pieces of information that they could easily find in the future. However, users admitted that this hypermedia sometimes caused them to lose concentration when reading from their DRDs, as these were connected to their messaging apps. While in some cases these notifications would interrupt their reading experience, in others they would even bring this one to an end.

The availability of texts and the sources through which users could read them remained essential. Several diarists documented downloading or accessing sources digitally as this was easier. In other cases, although few of them, users got their texts from the library. Another interesting finding related to DRDs' *Connectivity* concerns language and translations. One international user reported wanting to access a book for leisure purposes, which would usually happen in the printed version. However, and due to the lack of a translated printed version in her native language, she opted for acquiring it digitally.

Furthermore, during the diaries, a difference between how users read from PBs and DRDs in terms of text comprehension and retention was found. DRDs were often used to quickly scan and skim through the text. Coupled with the *Save For Later* and *Navigation* affordances, the participants made use of DRDs' *Portability* in situations when their reading time was limited, such as when travelling on the train, during lunch or in between errands.

With leisure reading, on the other hand, the participants preferred to take more time for this activity and used PBs. Two participants shared that reading from paper offered them a moment of relaxation, isolation, and immersion into the text. Moreover, a user expressed that this type of reading resembled the act of "meditating and ...[a] kind of ritual".

PBs' *Tangibility* reappeared in the diaries both as a benefit and drawback. On one hand, the paper's delicacy disabled users from reading places such as the bathtub, making them opt for reading with their water-resistant devices. On the other, users stated appreciating the *Smell* affordance of PBs and acts such as sorting their books on their shelves, flipping pages, and even leaving bookmarks.

A situation emerging in the diaries was a sense of ownership with DRDs. For one user, who mostly reads leisure in her e-reader, an important component missing in this device are the artistic covers that can be appreciated in the PBs. However, she decided to "customize the device to [her] own liking" to enhance the aesthetics of this device (Image 4).

Lastly, another finding better described in these diaries was the frustration sometimes caused by technology. From eye irritation after a long day of digital reading to slow and old devices, users described some of their daily struggles with DRDs.



Image 4: DRD Customisation: Photo obtained from the diaries.

## 6. Discussion and Further Research

When examining the reading experience of AUs with PBs and DRDs, some results are consistent with previous studies which have considered affordances to examine this phenomenon. Among others, the *Smell* affordance of PBs and the *Storage* of DRDs, are valued by AUs (D'Ambra et al., 2019; Macfadyen, 2011). These affordances carry meanings that AUs assign during their interaction with these devices (Curinga, 2014). For instance, the *Smell* affordance triggers nostalgic feelings in AUs. Interestingly, they reported feeling them due to memories of their past. These results should be considered when researching the same phenomenon in the future, as other generations might differ in the meaning behind this affordance. In the case of the *Storage* affordance, this has various interpretations. For some AUs, this affordance of DRDs is a solution for the *Weight* affordance of PBs, which highlighted their differences. For others, the *Storage* affordance allows them to extend their environmental values to their reading habits.

Furthermore, this thesis uncovers several differences when examining these affordances, especially considering the focus through which this was done and the pandemic. For example, the *Weight* affordance, which for some users would be an issue, does not seem to be crucial due to the increased time spent at home. The same appears with the *Connectivity* affordance, which gains importance during the pandemic where AUs are encouraged to access their text through the Internet (Parikh et al., 2020). This shift in power and meaning of affordances could be explained by Hutchby (2003) who states that the meaning of an affordance is jointly

constructed by a property and the goal with which a user employs this one (Hutchby, 2003, p. 584). In a context in which educational activities are encouraged to continue virtually, the *Connectivity* of DRDs takes a new meaning and the *Weight* of PBs does not seem to be troublesome. This thesis contributes by uncovering these findings which raise the question if the shifting meaning of affordances will prevail after the pandemic. Further research is encouraged to examine this phenomenon.

The thorough examination enabled by the three-step methodology also allowed to uncover detailed scenarios in which the same affordance could have a positive and a negative meaning. These observations are in line with the affordance identification formula used by D'Ambra et al. (2019) which considers an affordance as a property highlighted by the reader, whether positive or negative. For instance, the *Reading Tracker*, *Screen Brightness*, and *Connectivity* affordances have dual meanings for AUs. This thesis helps providing specific scenarios and testimonials of users who acknowledged perceiving mixed meanings from these properties. Furthermore, the findings indicate that affordances extend their dimension and meaning when used in a complementary fashion. For example, the *Search Option* by itself is perceived beneficial when using DRDs to quickly navigate through texts. However, some AUs prefer the *Tangibility* of PBs as it provides immersion in the text. When using both affordances simultaneously, the *Search Option* extends its meaning and application from the new to the old format, enabling AUs to reconfigure their reading experiences and the navigation through texts. Similar results were found in which AUs combine *Tangibility* and *Connectivity*. This thesis understands affordances not only as properties open for interpretations depending on the goal that the users have for them (Curinga, 2014; Hutchby, 2001) but also as links promoting the coexistence and complementarity of old and new media. Hence, validating the use of affordances to study mediated experiences and opening the interest to keep on researching for other possible combinations.

This thesis rejects analysing PBs and DRDs in isolation, as was done before (D'Ambra et al., 2019), and opens up further research of their complementarity. Furthermore, the complementarity of PBs and DRDs sustained by affordances not only has an impact on the experience while reading but also on the synergy between old and new. It was revealed that AUs employed the *Connectivity* of DRDs as a filter to select their texts and later enjoy them through the *Tangibility* of PBs. This finding relates to Nguyen & Western's (2006) contribution which proposes that the use of new media promotes the one of old media.

Another finding is the pronounced relation AUs make of PBs to leisure reading and DRDs to academic and professional reading. By considering both formats and investigating them side-by-side, it was possible to map the different uses which reappeared when talking with AUs.

Despite this distinctive relation, evidence was also found that some AUs perform their leisure reading through DRDs (Image 5). It is difficult to understand when this relation started because this was an unexpected finding and that, to my knowledge, this is the first research that actively focuses on studying the coexistence of PBs and DRDs. However, coupled with the evidence contradicting this relation, the increase in digital reading stated by the interviewees raise the inquiry to research further whether this relation prevails.

Fitting with Remediation Theory (Bolter & Grusin, 1999), some of the results prove that PBs are represented in DRDs. Moreover, this thesis demonstrates that affordances work as tools to research and recognise this remediation. For instance, identifying the *Tangibility* of PBs and the *Virtual Page Turning* of DRDs enabled their recognition not only as affordances but also as indicators of the level of remediation. Due to the lack of *Tangibility* in DRDs, the *Virtual Page Turning* represents an affordance of the new media device which commemorates the old one. These findings contribute to a clearer understanding of remediation in the phenomenon of PBs and DRDs while proposing a methodological approach to study this synergy.

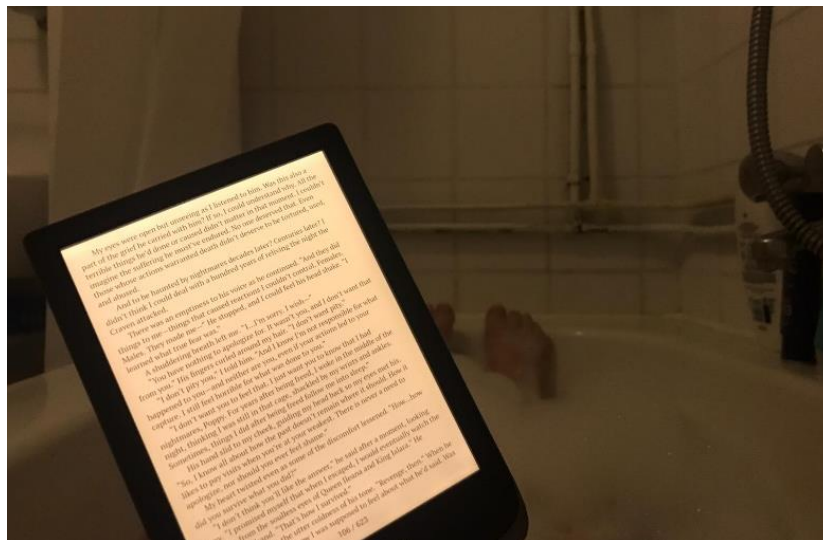


Image 5: Reading for leisure through a digital reading device, an exception. Photo obtained from the diaries.

Regarding the SQ2, this thesis contributes to a better understanding of the impact these tools have on a social aspect. As previously highlighted by Remediation Theory, the synergy of old and new media has an effect in different areas around media, the social one included (Bolter & Grusin, 1999). Through the identification of affordances and the examination of the meanings AUs assign to them, it was possible to understand how affordances function in the social dimension. For instance, the *Connectivity* affordance not only works to quickly access texts, but it also enables users to share information and engage in conversations with their family and

friends. Nonetheless, this *Connectivity* has dual interpretations. For some, this social interpretation of the *Connectivity* affordance is inconvenient as it is a source of distraction due to the notifications users would receive.

Due to the perceived relation AUs give to PBs for leisure reading and DRDs for academic reading, the social interactions emerging from these devices appear similarly divided. For example, owning a PB and enjoying its *Graphics and Art* promotes users to feel emotionally connected to the object and develop a sense of ownership. This affordance extends to the social dimension when in book clubs, several readers enjoy the same affordance, and this triggers social interactions.

Furthermore, addressing the social interactions by also researching the devices coexistence and complementarity allowed to uncover hybrid reading experiences. It was found that through social interactions, an AU discovered an extended chapter of her PB. Through the *Connectivity* of her DRD, she accessed it and read it. Hence, extending her reading experience by combining the *Tangibility* and *Connectivity* affordances of these devices. Similar results were found previously in the phenomenon of audiobooks (Have & Pedersen, 2015), but the lack of research on PBs and DRDs coexistence had not yet enabled to spot similar findings.

Additionally, the theories used, and their implications should also be discussed. Although Remediation Theory allowed examining the flux between old and new media, this notion by itself does not enable to study their coexistence and complementarity. This observation could imply that not only these have not been studied in the phenomenon of PBs and DRDs, but possibly in other media matters due to this theoretical shortage. The results of this thesis imply that an interesting phenomenon occurs when studying, not only the old *against* the new but the old *and* the new. Hence, extending the notions of Remediation to include phenomena of coexistence could ignite more interest in researching it. On the other hand, Affordance Theory provides a strong lens through which technologies and the interaction that users have with them can be studied. Furthermore, this thesis contributes by proving the benefits that giving a methodological turn to this theory has. Employing affordances as analytical tools (Hutchby, 2001) enabled the thorough research of interactions and experiences readers have with PBs and DRDs. Additionally, researching how AUs employ the affordances of PBs and DRDs enabled to study how they manage the devices coexistence and complementarity through them. A table explaining the affordances and the meanings AUs assign to them can be found in Appendix 4.

Methodologically speaking, this thesis also proposes a multi-faceted examination that enabled to examine PBs, DRDs and their coexistence and complementarity in detail. Combining the three methods not only allowed to gradually gather more information, but also provided the



opportunity to deepen the understanding of the findings of one method with the results of the other methods. Due to the time assigned to perform this thesis, the methodology was designed to gather the necessary participants and information which this research's inquiry demanded. Additionally, the results obtained indicate that this methodology successfully introduced the participants to this research's topic, which eventually led to their commitment and collaboration. Furthermore, by offering the participants a space for self-expression in the last method, they documented their experiences in detail and shared more aspects about their interactions. Not only did this result in a more detailed examination, but also a more reflective process from their side. The methodology here presented can be implemented in research interested in examining a phenomenon from an experiential point of view and with a limited amount of time.

Nonetheless, limitations exist too. The survey attracted people who belong to a similar age and occupation group. Additionally, being this the first research to investigate the coexistence and hypothesise the complementarity between PBs and DRDs, the information gathered is still scarce to make categorical findings. However, these findings still contribute to further research as they offer a better understanding of a phenomenon that has so far been simply assumed in academia.

## **7. Conclusion**

Studying the emergence of DRDs and the implications this has for PBs has been previously done in various manners. Ballatore & Natale (2016) describe three narratives authors have adopted to do so. One of them recognises that both formats exist in our current media landscape and that PBs and DRDs coexist. However, previous research has merely assumed this coexistence. This thesis argued that to understand the phenomenon of PBs and DRDs, one would need to study their coexistence, what lies behind it, and most importantly, how readers manage it. To research this coexistence and possible complementarity, it was necessary to observe both formats through the notions of old and new media, and to observe the readers' experiences and the meanings they assign to a specific device. Furthermore, this research was triggered by the COVID-19 pandemic in which DRDs are promoted (Parikh et al., 2020) and the reading practices of AUs might be reshaped. In this thesis' introduction, I stated the following research question and sub-questions:

- **RQ:** *How do academic users shape their reading experience through the affordances of digital reading devices and the ones of printed books?*
- **SQ1:** *In what way do the affordances of digital reading devices differ/resemble/enhance the ones of printed books?*
- **SQ2:** *How do affordances trigger social interactions with digital reading devices and with printed books?*

Concerning SQ1, the affordances of PBs, usually related to material properties, ignite an emotional and nostalgic feeling in AUs. This is the case for *Tangibility* and *Smell* affordances. On the other hand, the ones of DRDs, due to their digital advantages, are related to tasks that require efficiency and productivity. In this case, the *Connectivity* and *Search Option* appeared as highly valued affordances. These differences have promoted an evident relation of PBs to leisure reading and DRDs to academic reading. Nonetheless, it was also found that the pandemic and social circumstances had an impact on the meaning of affordances and how these reconfigure reading experiences. For example, the *Connectivity* affordance of DRDs gained importance for AUs during times of virtual education. Moreover, AUs also reported increasing their interaction with DRDs. These findings raise the question of whether the interaction that AUs have with DRDs will prevail or if it will lead to a new generation of reading practices. Further research could reevaluate these affordances and their meaning. By studying affordances through the lenses of Remediation Theory, it was also possible to study the synergy of old and new media. It was uncovered that AUs long for the *Tangibility* of PBs in DRDs. A resembling affordance was the *Virtual Page Turning*. This affordance, besides providing AUs with an experience that mimics paper, commemorated the *Tangibility* of PBs.

It was also found that AUs combine the affordances of PBs and DRDs during their reading experiences. Cases were uncovered in which AUs enjoy the *Tangibility* of PBs and the *Search Option* of DRDs simultaneously to navigate through their texts. This not only provides evidence of how affordances enhance each other, but also a better understanding of the coexistence and complementarity of PBs and DRDs. Based on these conclusions, future research should continue examining this coexistence when addressing the phenomenon of PBs and DRDs.

Concerning SQ2, addressing the reading experiences through affordances allowed to examine their impact on the social dimension of media (Bolter & Grusin, 1999). This research contributes by researching in which way some affordances can take a social turn and promote interactions. The *Tangibility* affordance of PBs and the *Connectivity* affordance of DRDs appeared as the main ones which promote interactions in their respective devices. The dual meaning of an affordance is also influenced by the social interaction which this enables. This

was the case of the *Connectivity* affordance which allows fast communication, but also easily distracts AUs.

In answering the question of how do AUs shape their reading experiences through the affordances of DRDs and PBs, this research discovered that AUs' interaction with these devices is closely related to their activities and to the goals they have when employing them (Hutchby, 2001). By engaging with PBs and DRDs, interacting with their affordances and sometimes even combining them, AUs can tune their reading experiences. They shape the reading experience depending on the place they are, the task they have in mind, and even their life values.

This thesis proposes a new focus from which PBs and DRDs can be studied, but most importantly it proposes a strategy to do so. The findings in this thesis validate affordances as analytical tools to investigate the coexistence of PBs and DRDs, which could be applied to other media phenomena. Research in this coexistence and complementarity is encouraged to evolve to a better understanding of (re)mediated reading experience.

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## 9. Appendices

### Appendix 1. Copy of the Survey

Hello, my name is Claudia Ortiz. I am a student in the MA in New Media & Digital Culture program at Utrecht University. This survey is part of my master thesis which focuses on studying the reading experience granted by PBs and by DRDs and finding evidence of their complementary use in the academic context. I would highly appreciate it if you could take 5 minutes to answer a few questions.

Participation in this survey is voluntary and will give me an overview of people's reading habits such as the formats readers use, their reading purposes and the frequency of their experiences.

The answers you provide will remain strictly confidential and will only be used for the purposes of this research. The gathered data will not be linked to any participant. If you have any question about the data processing or if you would like to see a copy of the final research, please contact me at [c.i.ortizvarela@students.uu.nl](mailto:c.i.ortizvarela@students.uu.nl).

Additionally, I would like to invite people who are interested to participate in the next step of my research which encompasses an in-depth examination through diaries and interviews. Whether your participation is on this survey or in the subsequent stages, I would like to thank you in advance for your time and answers.

#### 1.2 Questions in the survey

1. What is your age group?
  - Under 18
  - 18-24 years
  - 25-34 years
  - 35-44 years
  - 45-54 years
  - 55-64 years
  - Above 65 years
  
2. What is your occupation?
  - Student (bachelor)
  - Student (masters)
  - PhD Student
  - Researcher
  - Professor
  - Other (specify)
  
3. What motivates you to read?
  - Assignments/Homework



4. Which of the following formats do you use for reading? (multiple options allowed)
  - PB
  - eReader (Kindle, Kobo, Nook, similar)
  - Tablet (iPad, Android tablets, similar)
  - Other (specify)
  
5. How often do you read?
  - Every day
  - Twice or thrice a week
  - Once a week
  - Twice a month
  - Other
  
6. Based on the previous question, in which cases do you use different reading formats?
  
7. What is your opinion about the fact that there are several options which people can choose from to read?
  
8. To finalise... I am interested in observing readers' experiences in detail. To do so, this survey will be followed by an in-depth examination through diaries and interviews. If you are interested in taking part in the subsequent steps, please fill in the following field with your email. I would highly appreciate your involvement in this research. Otherwise, simply click on the Finalise button.

## Appendix 2. Copy of Questions for Semi-Structured Interviews

### General Questions

- Which formats do you use for reading?
- What motivates you to read the most? Do you relate any particular format for reading to a specific situation?
- In your opinion and based on your own experience, how has the appearance of new reading devices changed the way you use to read?

### PB Section

- How would you describe your experience when reading from a PB?
- What are the features that you like/ dislike of a PB?
- How do you think these influence your experience?

### DRDs Section

- How would you describe your experience when reading from a DRD?
- What are the features that you like/ dislike of DRDs?
- How do you think these influence your experience?

### Complementary Use Section

- How would you describe your reading experience with different formats? Do you find yourself using both in one experience? (e.g., researching, assignments, leisure)
- Have you ever needed a particular feature that is not available in one format? Have you used the other format to cover that need? Can you give me an example?
- When using both formats, how would you describe this experience? / Does using both formats have positive or negative consequences in your reading experience?

### Social Interaction Section

- Do you consider reading a social activity? Yes/No and why?
- Have you ever participated in a social activity related to reading? (e.g., book clubs, book debates, sharing books, etc.)
- Which of these social interactions do you perform with PBs?
- Which of these social interactions do you perform with DRDs?

### COVID Section

- Has the pandemic increased the amount that you spend reading?
- During the pandemic, have you found yourself reading more from a particular format?
- Has the pandemic allowed you to discover more features of any format in particular?
- Do you think that the availability of different reading formats has helped overcome the difficulties of reading during the pandemic?

## Appendix 3. Copy of the Instructions Shared with the Diarists

The purpose of this diary is to provide a space where you can track your daily reading experience and to gather more detailed information about the interaction with your reading devices. You are kindly asked to, for one week (seven days, including a weekend), track your experiences while reading. Feel free to add as many details as you want and in any format. You can write about your interactions, add photos or videos, and even audios. All the data gathered will allow me to have a more in-depth examination of situations of everyday life that might have not been uncovered during the interviews.

### *Instructions:*

- Per experience, track the amount of time that you read, what was the purpose of your reading and which format(s) did you use for reading during this time.
- When reading, pay attention to the features of each device. Think about which advantages each format has and how do you use them? Track these features and opinions in your diary.
- Reflect on the formats and their features while also noticing the context around you. Take into consideration facts as your location, activities happening around you, whether you are alone or with someone. All these factors are part of your experience and might influence why and how do you use specific reading formats.

Before and/or after each reading experience, you can come back to this brief guide to make sure you are tracking your experience as detailed as possible. Remember this is a diary of your personal experience and any information you consider important is highly appreciated for the purposes of this research.

**Thank you once more for your participation!**

## Appendix 4. Affordances and Their Meanings

<b>PRINTED BOOKS</b>	
<b>AFFORDANCES</b>	<b>USERS' INTERPRETATION AND MEANINGS ASSIGNED</b>
Graphics and Art	Appreciation, Ownership
Size	Inconvenience
Smell	Nostalgia, Relaxation
Tangibility	Vulnerability, Relaxation, Nostalgia, Immersion, Ownership
Weight	Inconvenience

<b>DIGITAL READING DEVICES</b>	
<b>AFFORDANCES</b>	<b>USERS' INTERPRETATION AND MEANINGS ASSIGNED</b>
Connectivity	Accesibility, Sharing Information, Distraction, Efficiency
Battery	Inconvenience
Highlighting	Text Organisation, Fast Reading, Skimming
Navigation	Text Organisation, Time Saving
Note-Taking	Text Organisation, Fast Reading
Portability	Convenience, Practical Shape, Easy to Transport
Reading Tracker	Productivity indicator, Incentive, Pressure
Save For Later	Text Organisation, Efficiency, Productivity
Search Option	Time Saving, Efficiency
Screen Brightness	Customisation, Reading in the Dark, Eye Fatigue
Scroll Button	Productivity indicator
Storage	Several texts in one device
Undo Option	Efficiency
Virtual Page Turning	Printed Book Nostalgia