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**The effects of the online reading
experience on EFL learners' reading
comprehension strategies:**

A case study in a third-grade Italian middle school

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*To those have always believed in me,
and helped me,
making this possible*

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ABSTRACT

Reading comprehension is one of the key skills in language learning proficiency and its successful outcomes depend on many factors, among which the importance of reading strategies emerges. The technological development and the increasing prevalence of digital devices have offered further resources to the educational context and to language learning. However, at the same time, they have influenced the students' habits and their reading frequency, besides having an impact on the essential skills and competences required in the new contexts of communication.

The main purpose of this study was firstly to investigate the relationship between the students' online experience, that includes reading habits, and the reading comprehension strategies used with texts in English as a foreign language (EFL), and secondly to identify the possible effects that the time spent on digital devices could have on the reading strategies employed during a reading comprehension in EFL.

The present case study, conducted in a third-grade class of a lower secondary school in Italy, consisted of two stages: the first part included a questionnaire about the digital use of students in an out-of-school context, in which the whole class participated; the second part comprised a reading comprehension task completed by four students with different profiles (dissimilar digital usage and skills in English), a reading strategies questionnaire and an observation grid. The outcomes collected suggest that the reading strategies adopted by the students are more influenced by the type of activities practiced on digital tools rather than on the time spent on these devices.

Keywords

Language learning; reading comprehension; English; reading comprehension strategies; middle school; reading on paper and online; lower secondary school

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INTRODUCTION

Language learning is a multifaceted process that involves the developments of numerous skills and competences. Among the four basic language skills, essential to reach a satisfying level of language proficiency, there is reading comprehension, which is considered one of the key skills in modern society due to the frequency of written texts encountered in everyday life. However, in addition to the traditional paper books and resources in print format, over the last thirty years the development of technology and the increasing spread of digital media have enhanced the presence of texts in digital format, which present a structure that differs from the linear structure of paper format (Baron, 2021; Eyre, 2017). The digital environment, therefore, demands new knowledge and competences, defined by scholars as “multiliteracies” (Baron, 2021).

In the language learning context, the internet and the digital devices have expanded the possibility of finding authentic texts in foreign languages, especially in English. Moreover, the access to digital devices and to the internet have increased the resources available to learners, both at school and at home (Gil-Flores et al., 2012), affecting the habits and behaviours of students over the years.

Investigating and understanding the relationship between the use of technologies in the students’ everyday life outside school and the competences developed and employed in the school environment may be relevant to a teaching approach that adapts to learners’ needs and habits. Many studies in this field are focused on the internet use and the leisure online reading (Kuhlemeier & Hemkel, 2007; Merga & Mat Roni, 2017), others on the influence of these factors on the reading comprehension in the native language context (Pfof et al., 2013; Gil-Flores et al., 2012) or in a foreign language context (Nævdal, 2007; Ficzer et al., 2021), but often considering as sample high-school and university students (Reiber-Kuijpers et al., 2021).

The present study intends to explore the influence that the use of the internet in the out-of-school context can have on the EFL (English as a foreign language) reading comprehension of students in the lower-secondary school, and specifically of young teens (13-14 years old). In particular, the research aims to verify whether the reading trends reported in other age groups or in other periods and countries are confirmed, and if these trends could have an impact on the reading strategies used by 3rd grade students during a reading comprehension task.

The study is divided in seven chapters. The first chapter will analyse the role of the four language skills and of the communicative competence in the European scenario of language learning with particular attention to the Common European Framework of Reference for Languages (CEFR) and reading comprehension. The second chapter will illustrate the theoretical framework of reading strategies, the importance of reading in the learning process and the changes affecting reading and literacy in a context where the transition from print to digital has become inevitable. Chapter three will explore the students' features as readers, taking into account the variables that influence reading habits, preferences and digital use.

After the first part dedicated to the literature review, the second part will concentrate on the analysis of the research conducted. The fourth chapter will introduce the method and characteristics of the case study, namely the research aims, participants, setting, instruments and procedures. Chapter five will describe the results retrieved from the questionnaires and the reading comprehension test administered during the case study, while chapter six will discuss the outcomes in relation to the research questions and the studies mentioned in the literature review. Lastly, the final chapter will provide a synthesis of the main findings of the study with some considerations about limitations and issues arose during the research.

PART I

Chapter I: Language learning and reading

In the current globalised world, exchanges with other cultures and with people speaking other languages have increased due to economic, social and political reasons. Travelling has become easier, lots of companies have expanded their business with other countries, the internet has increased accessibility at lower costs and migration flows have had a social impact enhancing cultural variety. All these factors, combined together, have boosted intercultural contact and at the same time the need for better understanding others, who use different languages and cultural backgrounds (Fantini, 2018, p. 5).

In this scenario, language learning has become fundamental in developing essential competences for the citizens of today's society and for the younger generations of students at all ages and levels. However, learning a language does not only mean the development of the four basic language skills (language competence), but it also implies other knowledge of sociolinguistic, pragmalinguistics, extralinguistic grammar and intercultural competences (Balboni, 2015, pp. 33-35), all elements that belong to communicative competence and reflect the complexity of contemporary society.

1.1. The four language skills and the Common European Framework of Reference for Languages

Linguistic competence is a relevant part of communicative competence and the basic language skills that constitute it are four: listening, reading, speaking and writing. These skills can be divided considering the role of the subject using the language: receptive (listening and reading) or productive (speaking and writing); oral (listening and speaking) or written (reading and writing). To these basic elements can be added another group: the linguistic transformation skills, which include for example translation, paraphrase and taking notes (Balboni, 2015, pp. 127-128).

Considering the receptive skills of listening and reading, whose main difference is related to the type of stimulus (oral or visual), the main process involved is comprehension (Balboni, 2015, p. 159), that is also defined as a “psycholinguistic guessing game” (Goodman, in Balboni, 2015, p. 159). It activates cognitive processes based on the *expectancy grammar*, producing hypothesis and anticipating facts that will be verified during the progression of text (Balboni, 2018, p. 97). Thus, besides

communicative competence, comprehension requires further elements such as the knowledge of the world, and cognitive and logic processes (Balboni, 2015, pp. 159-163) that improve with increased language use.

By contrast, the oral (monologue) and written production develop through a linear process which consists of three stages: conceptualisation, planning and realisation. In the first phase ideas are collected and associations are made, then in the planning stage all the contents are organised and structured. In the final part of the process, the real text is produced taking as a reference the scheme previously outlined (Balboni, 2018, pp. 119-121).

As an example of spoken production, the preceding paragraph has considered the monologue, even though another form of oral skill certainly significant in language learning is dialogue. Dialogue, as an oral form of communication and interaction, is far more complex to develop and improve than the monologue – it combines comprehension skills and oral production, and it is at the base of the communicative approach (Balboni, 2015, p. 182).

This brief analysis of the basic language skills defines the complexity of languages and of their multiple features, and therefore of the process of language learning and teaching. However, it is precisely this aspect that emphasizes the importance of the promotion of linguistic knowledge and skills for citizens of the current society. The European Union supports language learning and encourages effective linguistic policies, with the aim of promoting linguistic diversity, international mobility and the protection of minority languages.

In the last decade, European institutions and the Council of Europe have encouraged the importance of language knowledge, plurilingualism and intercultural communicative competence through specific choices at political, social and educational levels, with the aim of fostering respect and tolerance of cultural and social diversity, mutual understanding, international mobility and spirit of enterprise among the European citizens. (Guido, 2004, pp. 203-205).

An example of this political strategy applied to education and to language learning is the Common European Framework of Reference for Languages (CEFR) published in 1996 by the Council of Europe with the purpose of providing shared and common guidelines for the development of languages syllabuses in Europe's member states (Little, 2006, pp. 167-169).

The CEFR is focused on the improvement of communicative competences based on the learner's and user's needs, promoting the enhancement of individual autonomy, as well as self-assessment. It is a descriptive scheme developed on two dimensions: vertical and horizontal. The vertical dimension is divided into six levels of communicative proficiency:

A – basic user: A1, beginner; A2, elementary;

B – independent user: B1, threshold; B2, upper intermediate;

C – proficient user: C1, advanced; C2, mastery.

The horizontal dimension considers communicative language competences, and the strategies used to produce communicative acts (Little, 2006). The approach used in the CEFR is clearly expressed in the synopsis of the text by the Council of Europe:

[...] an analysis of language use in terms of the strategies used by learners to activate general and communicative competences in order to carry out the activities and processes involved in the production and reception of texts and the construction of discourse dealing with particular themes, which enable them to fulfil the tasks facing them under the given conditions and constraints in the situations which arise in the various domains of social existence. The words underlined designate the parameters for the description of language use and the user/learner's ability to use language. (Council of Europe, 2001; emphasis in original)

The text underlines how essential it is for the Council of Europe to foster a knowledge of languages that is not just limited to linguistic features, grammar and lexicon, but emphasizes the priority of a communicative competence adapted to the different contexts of use. All the aspects underlined in the text and the main features highlighted in the CEFR are recognised as key competences of European and world citizens, fundamental to support the development of autonomy, plurilingualism and intercultural competence (Menegale, 2015, p. 58). They provide learners with the strategies needed to self-promote their potentialities, being responsible and aware of their learning process in a view of a lifelong learning (Menegale, 2015, pp. 73-74). A lifelong learning process that recognises, besides the formal and traditional learning context, the importance of non-formal and informal learning contexts, where the achievement of some competences (eight for the Council of European Union) is “essential to citizens for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship and social inclusion.” (European Commission, 2019, p. 4)

1.2. Communicative competence in foreign language learning

To gain a better understanding of communicative competence in foreign language learning, it is essential to know what ‘communicative’ and ‘competence’ mean.

The Cambridge Dictionary describes ‘communicative’ as an adjective “relating to communication” or in specialised terminology as “relating to a style of language teaching in which interaction [...] is seen as the most important method of learning, and the main aim of learning” (Cambridge University Press, n.d.). Moreover, ‘communicative’ can also be associated with the word ‘communication’, whose meaning can be expressed by the following definitions: “the exchange and negotiation of information between at least two or more individuals through the use of verbal and non-verbal symbols” (Richards and Schmidt, 1983, as cited in Boboev, 2014) and “communication means exchanging effective messages” (Balboni and Caon, 2015, p. 15). Therefore, communication implies a voluntary act of sharing meanings between two or more people using a language, which consists both of verbal and non-verbal elements.

The word ‘competence’ is defined by the Longman online dictionary (n.d.) as “the ability to do something well” or as “the ability or skill to do something well or to a satisfactory standard”. In linguistics, the use of ‘competence’ was introduced in the middle of the 1960s by Noam Chomsky, who recognised the “distinction between *competence* (the speaker-hearer’s knowledge of his language) and *performance* (the actual use of language in concrete situations) (1965, p. 3).

However, this notion of competence represented only the starting point for the subsequent development of understanding of communicative competence. Indeed, the sociolinguist and anthropologist Hymes, according to a wider perspective of language use in social interactions, considered the Chomskyan definition “insufficient for the individual to lead a useful linguistic life” (Lehmann, 2007, p. 242). For this reason, he theorised at the beginning of the 1970s the term *communicative competence*, which considered the linguistic interaction as a whole and incorporated “not only grammatical, but also pragmatic and sociolinguistic competence” (Lehmann, 2007, p. 242).

Taking Hymes’ theory and notions as reference, Canale and Swain (1980, pp. 29-21) later identified the four components of communicative competence: grammatical, sociolinguistic, discourse and strategic competence. Grammatical competence implies the knowledge and correct use of the language system consisting of phonology, phonetics, morphology, orthography, lexicon, syntax and textuality; sociolinguistic competence is based on the knowledge of the sociocultural context in which the language is used;

discourse competence is the ability to achieve coherence and cohesion in texts produced in a given context; strategic competence develops from the proper use of verbal and non-verbal communication strategies that compensate for possible obstacles in communication.

Starting with the development of the concept of communicative competence occurred in the last decades, the perception of language and language learning has progressively changed, leading to a new methodology of foreign language teaching that reflects the current needs of learners in a global society, where not only grammar, but also the practice of spontaneous interaction and the experience of authentic communication is required, besides the understanding and awareness of the sociocultural contexts of language use (Savignon, 2017, pp. 3-6).

Therefore, returning to the definitions of communication at the beginning of the paragraph as an exchange of information and negotiation of meanings, this interaction can be considered successful only in a context where cultural codes, values and meanings are shared. To achieve this purpose a certain level of language proficiency must be reached, as proved by the numerous educational and political initiatives developed by EU to promote languages and multilingualism from a perspective of communicative competence.

1.3. Reading comprehension and reading comprehension in EFL

Reading comprehension in foreign language learning derives, to a certain extent, from the reading comprehension processes and skills acquired in the first language (L1). Therefore, the following analysis starts with the review of the main theories and cognitive processes of reading comprehension in L1 and then with a comparison of these with reading comprehension in foreign language learning.

Reading comprehension is a complex, multidimensional and interactive process in which a broad variety of skills, knowledge and cognitive processes is activated in order to accomplish different aims. It plays an important role in human communication, and it is considered one of the key skills in modern society because of the large number of written texts present in everyday life. Due to its multiple features, it is difficult to provide a single exhaustive definition of reading comprehension, and the numerous studies and related theories conducted over the past decades prove this.

1.3.1. Models of reading comprehension

The theory of the Simple View of Reading (SVR) by Gough and Tunmer (1986) can be considered the beginning of the attempts to explain the complexity of this process and it describes reading as a combination of two components: decoding (based on phonology) and language comprehension skills (based on other language knowledge of the word-level meanings) (Blaži Ostojić, 2023, p.124). Even if this theory has been widely used as a reference by several scholars, it focuses only on the features of the text and of language knowledge, neglecting the constructive and interactive part of the process that implies an active role of the reader, using background knowledge, further cognitive strategies and inferences (Bruggink et al., 2022, pp. 5-6).

The Reading Systems Framework (RSF) (Perfetti & Stafura, 2014) is an extension of the SVR theory, and it describes comprehension as the result of two main sub-processes: word identification and word-to-text integration. Word identification consists in two parts: “decoding and recovering semantic information from long-term memory” (Bruggink et al., 2022, pp. 6-7). In the first part of this process graphemes are converted into sounds, then they are combined into words and finally single word meanings are assigned. Word-to-text represents, instead, the following stage in which single word meanings are integrated into sentences and combined to create a mental model of the text (Bruggink et al., 2022, p. 9). The two processes described above are just the main ones involved in reading comprehension, although, according to the SVR theory, there are other significant variables such as background knowledge, comprehension strategies and cognitive skills.

Another model of reading comprehension is outlined by Goodman, who defines reading as a selective process in which the reader, with an active role, constructs meaning by integrating available minimal language cues present in the text with personal knowledge (Bedle, 2017, pp. 7-8). In fact, Goodman affirms that:

reading is a psycholinguistic guessing game. It involves interaction between thought and language. Efficient reading does not result from precise perception and identification of all elements, but from skill in selecting the fewest, most productive cues necessary to produce guesses which are right the first time (1967, p. 127).

Goodman’s definition emphasised the central role of the reader, who interprets texts not only using language knowledge, but especially selecting cues starting from guesses and expectations produced in relation to the text at issue.

1.3.2. Cognitive processes in reading

The theoretical models examined in the previous paragraph can be analysed following two different approaches: bottom-up and top-down processing. The former conventionally refers to comprehension developed from linguistic knowledge of lexis and syntax, and therefore the global understanding of the text depends on the meanings of small units combined together (Bedle, 2017, pp. 8-9). An example of this process can be identified in the SVR theory due to the importance assigned to grammatical elements and linguistic comprehension. In the latter, instead, comprehension is achieved combining language knowledge with prior knowledge and schemata in the reader's mind (Bedle, 2017, pp. 8-9). The features of top-down processing can be recognised in the psycholinguistic model provided by Goodman.

It is rather evident that the two models alone cannot explain the entire complex cognitive process of reading and comprehension, because both are actually essential. Hence, another model has been introduced, namely the interactive model, in which the linguistic-based and the knowledge-based processing converge (Kusumarasyati, 2023, p. 786).

1.3.3. Reading comprehension in foreign language learning and in EFL

As when reading in a first language, foreign language reading comprehension involves similar elements: the reader, the text and the interaction between the reader and the text (decoding and interpretation of meaning), but also other aspects are in common such as cognitive-processing mechanism, universal concepts of language knowledge, developed reading strategies and use of working-memory and long-term memory (Grabe, 2009, p. 110). Whilst there are patterns of similarities between the two types of comprehension, there also exist numerous differences. The knowledge of the vocabulary in FL, as in L2 (second language), is lower or limited compared to that of the native language (Bruggink et al., 2022, pp. 6-7), influencing at the same time the inferences and connections produced during the reading process. Moreover, the social and cultural experience of the reader can be different, resulting in different associations and memory representations, thus affecting the construction of meaning of the entire text (Kusumarasyati, 2023, p. 787).

The contraposition of these two perspectives on the reading comprehension process of L1 and FL has generated two different hypotheses: the Cummins' linguistic

interdependence hypothesis, which supports the theory that proficiency is common for all written languages, and the short-circuit hypothesis in which a certain threshold level of proficiency in FL is required to activate all the reading comprehension processes (Kusumarasyati, 2023, pp. 787-789).

As seen for reading comprehension in general and for its cognitive processes, subsequent theories try to combine elements developed by opposing models. For example, the linguist J. C. Alderson, starting from his studies, asserts that both reading comprehension skill in L1 and proficiency and knowledge in FL contribute to positive outcomes in FL reading comprehension (Alderson, 1984).

According to the theories explored in this chapter, considering firstly the reading comprehension in L1 and secondly its relations with FL reading comprehension, we can therefore confirm the complexity of foreign language learning and the development of the associated basic competences and abilities such as the reading comprehension skill.

Chapter II: Reading and reading strategies

Reading comprehension, as examined in the previous chapter, is a complex process, which involves different elements, namely prior knowledge, knowledge of the topic discussed and, in case of foreign language reading, linguistic knowledge. Nevertheless, the entire reading experience would be compromised without reading strategies. Indeed, a conscious use of reading strategies represents a key feature leading to positive and effective reading comprehension. The strategies used, however, vary depending on the contexts, environments, and on other factors influenced by readers such as motivation, purposes, attitudes and type of supports.

In the following paragraphs, these different aspects will be explored from an academic literature perspective, also taking into account some reflections on the efficacy of traditional reading strategies in the academic contexts.

2.1. Reading strategies in EFL

2.1.1. Defining reading strategies

In the last fifty years, scholars have conducted numerous research on learning strategies and reading strategies, both in L1 and in L2/FL (Alderson, 1984; Carrell, 1991; Grabe, 2009; Habók et al., 2019; Jiménez et al, 1996; Mokhtari & Sheorey, 2002; Sheorey & Mokhtari, 2001; Perfetti & Stafura, 2014), with the aim of defining characteristics, uses and to collect data and information in this field.

Afflerbach et al. (2008), trying to clarify differences between reading skills and strategies, provide the following definition of the latter: “deliberate, goal-directed attempts to control and modify the reader’s efforts to decode text, understand words, and construct meanings of text” (p. 368). This short definition clearly describes the fundamental features of reading strategies, namely the consciousness, intention and direction of these actions conducted by the language learner, who actively selects the best and the most effective strategies for specific set goals. Being strategic during reading also necessitates monitoring the entire process of comprehension, adapting progressively the subsequent steps, and performing different reading strategies before, during and after reading (Mokhtari & Sheorey, 2002).

However, the actual use of reading strategies does not automatically correspond to a successful reading comprehension (Afflerbach et al., 2008, pp. 368-370). It is necessary to deal with potential obstacles that occur during reading, to be flexible and to steadily

control the advancement of the process. Mokhtari and Sheorey's investigation (2002), along with other prior research, indicate that skilled and high-proficiency readers, who use more frequently reading strategies and feel more confident than low-proficiency readers, tend to be more successful and achieve better levels of comprehension.

2.1.2. Reading strategies in L2 and FL reading

In the case of foreign language readers and students, whose limited linguistic knowledge can influence the control of reading strategies, a superior effort is required to accomplish written comprehension that often results in a proceeding of text reading characterised by a word-by-word and sentence-by-sentence translation, which makes the entire process longer and more problematic. Reading L2/FL texts implies, therefore, further difficulties to L2/FL learners and readers, because while reading they need to increase their linguistic knowledge, to cope with the effects of trying to transfer strategies and knowledge from one language to another and, at the same time, to learn to use resources that helps translation of the unknown vocabulary, besides other barriers created by a non-native language (Grabe & Stoller, 2011, p. 35). Improving awareness of reading strategies, as well as leaning how to use them, can help to compensate for the insufficiency of language proficiency (Carrell et al., 1989, as cited in Mokhtari & Sheorey, 2002), easing some parts of the process and encouraging a more effective comprehension.

Even if several researchers agree that a great percentage of reading strategies can be transferred from one language to another (Alderson, 1984; Carrell, 1991, as cited in Mokhtari & Sheorey, 2002), some other strategies are more specific to the foreign language reading context, and those that can be transferred, if on the one hand can represent a support in reading tasks, on the other hand can be a source of interference (Grabe & Stoller, 2011, p. 35). For example, in languages using different graphic characters or writing, such as Chinese, Russian or Arabic, the approach to reading comprehension is highly specific and differs remarkably from languages such as English. Depending on linguistic features, such as morphological complexity, grammatical properties and visual elements, data indicates variation in reading rates and fluency (Grabe & Stoller, 2011, p. 40). Besides, as underlined by Mokhtari and Sheorey (2002), there are key strategies that are not used in a L1 context, such as "translating" from a foreign language to the native one and "thinking in the native and target language while reading" (p. 4), aspects that underline how reading strategies cannot always be compared between different languages.

Likewise, as distinctions occur in the use of strategies between L1 and foreign language reading, different strategies have been observed also between a L2 and a FL context. A remarkable effect, indeed, is determined by different environments: in the former case the foreign language is present in the daily life of the subjects, while in the latter stimuli are less frequent, because they are restricted to specific situations and circumstances, activating, as consequence, distinct responses. This aspect emerges in the study conducted by Riley and Harsch (1999), in which the findings indicate that ESL (English as a second language) students use more strategies than EFL learners (pp. 4-5) and among the reasons identified by the two scholars are the greater motivation, the awareness and regular practice of ESL learners, who are stimulated to improve their language skills every day.

The central role of the reader-student in L2/FL reading context, in which the reader is an active performer, is confirmed by this approach, highlighting the importance of the choices made during the different stages of text reading, as well as the knowledge, awareness and use of reading strategies.

2.2. Classification of reading strategies

Scholars' attempts to develop a comprehensive reading strategies framework have led to the identification of a great number of reading strategies. Nevertheless, these have not always been categorised in the same way with the result that there is not a unique system of reference. For example, some academics have preferred to divide strategies on the basis of the moment of use – before, during or after reading; others starting from the characteristics and the type of action performed. Therefore, in the following analysis, it has been preferred to focus the attention on the main classifications and only a restricted group of reading strategy systems are described: the O'Malley and Chamot (1990), Oxford (1990), Mokhtari and Sheorey (2002) and Oxford (2013) frameworks. O'Malley and Chamot (1990) and Oxford (1990), in particular, have significantly contributed to raise the interest in second language acquisition and have represented the foundation for the research of the following thirty years.

The O'Malley and Chamot framework (1990) divides strategies in three groups: cognitive, metacognitive and social-affective. The cognitive strategies are those actions that directly manage and manipulate information to foster learning, for instance inferencing, summarizing and elaboration. The metacognitive strategies, instead, are based on the interaction between learner and text, and included in the category are

planning, monitoring and evaluating. Finally, among the social-affective strategies there are cooperation, questioning for clarification, and self-talk, all procedures that imply an interaction with other regarding the learning task.

Although the Oxford framework (1990) shares lots of elements with O'Malley's and Chamot's strategy system, the former is more detailed and comprehensive in the strategy classification with the introduction of two other categories: memory strategies, which help learners to save and recover information, and compensation strategies that enable learners to counterbalance their limited knowledge in favour of comprehension. Furthermore, Oxford splits social-affective strategies in two different groups to differentiate strategies related to the individual sphere of attitudes, emotions and motivation from strategies developed through interactions. For Oxford (1990), the fifty identified strategies are divided into six classes, organised in turn according to two major areas, namely direct and indirect strategies. Direct strategies require direct learning and mental processing of the language and include memory, cognitive and compensation strategies; indirect strategies are procedures that do not straightforwardly support learning and consist of metacognitive, affective and social strategies. Thanks to the precise definition and detailed classification of strategies, the Oxford system (1990) has favoured the development of the Strategy Inventory for Language Learning (SILL) employed in several studies in this field.

While the two systems described above focus on language learning strategies in general and can be equally applied to all four of the language skills, the Mokhtari and Sheorey (2002) classification system focuses on reading strategies and is specifically designed for reading strategies in the academic field. It identifies thirty strategies, all evaluated metacognitive strategies, and divided into three groups that are quite distinct from the categories described previously in the other systems. The three categories established by the two scholars are global, support and problem-solving strategies. The global reading strategies are the "intentional and planned techniques" (Mokhtari & Sheorey, 2002, p. 4) used to control and achieve reading comprehension such as skimming, activating prior knowledge, using context clues or figures to foster comprehension. The problem-solving group includes actions employed "while working directly with the text" (Mokhtari & Sheorey, 2002, p. 4), for example reading slowly, adapting reading speed and stopping from time to time to ponder on the read contents. The support strategies are basic support procedures helping the reader to understand the

text “such as using a dictionary, taking notes, underlining” (Mokhtari & Sheorey, 2002, p. 4) or translating the text into the native language.

The last framework examined is the Oxford model (2013) that builds on the Oxford categorisation of 1990. Differently from the antecedent framework, it integrates memory and compensation strategies into the cognitive group, underlines the importance of the sociocultural context as a variable influencing second language reading comprehension, and provides for each strategy dimension a correspondent metastrategy. Thus, starting from six cognitive strategies, two affective strategies, and three sociocultural-interactive strategies, it combines a further eight metastrategies, such as planning, monitoring and evaluating. These metastrategies, especially, emphasise the central role of reader’s metareflection throughout the entire process and denote the intricacy of procedures activated and involved in second language reading.

Every reading strategy framework analysed presents some distinct features, nevertheless, at the same time, all of them share similar characteristics, and one which stands out in particular is the central role of metastrategies used by the reader, who is, as it happens in education for the learner, at the centre of the reading process with his/her own skills, knowledge and abilities.

2.3. Reading to learn

Reading strategies play a key role in comprehension, and this role is even more important when considering reading to learn, which is one of the various purposes of reading. It usually occurs in educational and professional contexts (Grabe & Stoller, 2011), and refers to the acquisition of new or further information related to a topic during reading from a text (Baron, 2021, p. 4).

If with readers at beginner levels, studies are more focused on learning to read, that is recognising vocabulary and syntax to decode contents of texts principally from a linguistic point of view, studies investigating the following stages concentrate on reading to learn, with the aim of deepening the understanding of the process behind reading as a mean to acquire new information and increase personal knowledge (Baron, 2021, p. 17). When people read to learn, it is not sufficient to simply understand the surface meaning of the text, even if decoding is a necessary part of the process; on the contrary, they need to be able to make inferences and, at the same time, integrate new information with their previous knowledge about the topic (Baron, 2021, p. 18), as well as having an adequate

knowledge of text structure and knowing how to take advantage of it to support comprehension (Goldman, 1997, p. 365).

Prior knowledge is a vital component of reading and reading to learn, because it helps readers to predict possible content in the reading, and to develop a situation model in which knowledge recovered from long-term memory is integrated with pertinent information derived from the text (Kintsch, 1988 as cited in Maclellan, 1997, p. 278), an element that increase the final level of reading comprehension and therefore of learning. Empirical studies have demonstrated, that students with some knowledge about a topic usually achieve better results than their peers with little or no knowledge in the field (Baron, 2021, pp. 18-19).

To accomplish learning, a continuous and interactive reading of the text, and a conscious and intentional use of reading strategies are, therefore, essential. This intentional choice of strategies affects the relevant information selected, their meaningful organisation and, as final consequence, the connections developed by the students between new and prior knowledge (Maclellan, 1997, p. 280), placing them at the centre of a process that involves a certain degree of self-regulation and control over the learning progression and that underlines, as already mentioned in the previous paragraph, the remarkable value of metacognition strategies.

The interaction of different strategies during reading permits students to learn and, even before, to decide what kind of learning to undertake, for example, “at the level of acquisition/recall, or comprehension/making sense of, or at the most substantive level of actively reworking their thinking” (Maclellan, 1997, p. 282). Thus, depending on the reading purpose, different paths will be chosen and subsequent reading strategies will be employed. The choice of strategies, in particular, is crucial for the successful outcome of the reading-to-learn process, since the use of effective strategies enhances the learners’ active engagement and, consequently, the memorisation of new information (Dunlosky, 2013, as cited in Baron, 2021, pp. 59-60), giving them the control over their own learning.

Among the most frequent strategies used by students while learning from texts there are different types of annotation, from the simplest forms, such as underlining or highlighting, to the more engaging ones, such as marginalia, that favour a slowdown in reading pace and support thinking and a reworking of text contents (Baron, 2021, p. 36) or elaboration strategies, such as summarising, that elicit the main learning processes of “paying attention to, organising and making sense of new information” (Maclellan, 1997, p. 283). However, as Dunlosky emphasises (as cited in Baron 2021, pp. 59-61), not all

the strategies used by students are equally effective, since they need to actively involve the mental processes of readers, maintain their engagement and be applied properly at suitable time. Only in this way the students' reading-to-learn process will become significant and self-directed.

The reading comprehension processes, which are the basis of the reading-to-learn activity, are divided in two groups: lower-level processes and higher-level processes. The lower-level processes refer to linguistic skill-oriented processes, based on lexical and syntactic recognition, integrated subsequently with basic clause-level meaning units derived from the combination of word meanings and structural information (Grabe & Stoller, 2011, pp. 15-19). The higher-level processes, instead, start from the basic understanding of the text to move forward toward a more elaborated interpretation and reworking of contexts. The parts constituting the higher-level processes identified by Grabe and Stoller are four:

- text model of comprehension, in which the reader links ideas and main points of the text to create a meaningful network of the text contents;
- situation model of reader interpretation, in which the reader interprets information integrating text information and personal background knowledge starting from the previous part of text model;
- background knowledge use and inferencing, where one understands the meaning of the text taking advantage of what is already known;
- executive control of the processes, in which the reader monitors comprehension and adapts strategies and goals to compensate contingent problems (2011, pp. 19-23).

Depending on the emphasis placed on every reading process, different reading purposes can be achieved. For example, in the current case of reading to learn the main focus is firstly placed on the text model of comprehension, and then attention is aimed at the interpretative situation model, where information in the text is combined with background knowledge (Grabe & Stoller, 2011, p. 23).

The aim of reading is, therefore, determined by the decisions taken by learners and in the strategies employed, influencing at the same time attitudes towards the reading material and reading preferences, such as that of the medium used to read, as it will be described in the following paragraph.

2.4. Reading on paper versus reading on screen

The type of support used to read has a significant impact on reading comprehension. Several investigations have reported that reading a text digitally is not the same as reading it on paper because the type of reading support can dramatically influence the mindset, attitude and strategies used during reading comprehension (Baron, 2021; Coiro, 2011; Eyre, 2017; Singer & Alexander, 2017). In the following analysis reading on paper and digitally are compared, highlighting differences and similarities.

Since the beginning, for a complete examination, it is worthwhile considering that the results of research in this field are not consistent and can be sometimes contradictory, “with some studies favouring online reading, some favouring paper-based reading, and some finding no difference between the two” (Eyre, 2017, p. 54). This lack of consistency in the results depends on several factors. Baron (2021) affirms that the outcomes are the result of different contexts in which specific variables and conditions are considered, such as personal preferences and individual characteristics, all aspects that evaluated together prevent a well-balanced and equal comparison of the investigations conducted in the last decades.

There have been many studies conducted on school-age readers to detect the main features of reading and learning on paper and on screen. However, a considerable quantity of these involves college and university students (Baron et al., 2017; Millar & Schrier, 2015; Usó & Ruiz-Madrid, 2009) due to the greater ease of finding participants in higher education, while a more restricted number inspects children in lower school (Eyre et al. 2017; Mangan et al., 2013). This is illustrative of the significant variable (the age of participants) that needs to be considered while comparing the results of two or more investigations.

2.4.1. Paper reading and digital reading

The standard approach associated with reading skill is reading on paper. In education, people start reading using books, and more precisely paper books. Thus, the strategies and abilities developed are tightly bound to this type of support and to linear reading that is often related to deep and critical reading, as well as interpretative and inferential reasoning. Linear reading hinges on following the lines of a text and progressing according to the page order, from the top to the bottom of the text in an orderly way, creating connections between the main ideas along the reading (Eyre, 2017). When considering linear reading one possible subdivision can be into extensive and intensive

reading: the former refers to reading a wide variety of books, articles or stories; the latter instead focuses on reading more in depth a limited quantity of works and/or topics (Baron, 2021, p. 10). In extensive reading, two strategies emerge in particular, that are skimming, namely moving quickly through a text to gain the global significance on the contents) and scanning, that instead is a rapid research of specific information in the text without analytically reading its entire content (Balboni, 2015, p. 168).

On the contrary, in digital environments the reading of texts is often non-linear, based on hyper reading, skimming, searching, and multitasking, implying more complex processes combined with inferential reading strategies (Baron, 2021, pp. 10-13; Coiro, 2011, p. 357). In relation to digital texts, researchers have tried to define the difference between *reading digitally*, where the print text is simply transferred to the screen, despite the layout remains the same with just few enhancements, and *digital reading*, where new functions, elements and features are added to original contents, activating further cognitive processes and skills (Singer & Alexander, 2017. p. 1031), and thus requiring specific strategies.

2.4.2. *Scrolling versus paging, and the role of senses*

The access mode represents a distinction between digital reading and reading on paper. In fact, in the former modality texts are most of times read following a rapid scrolling of pages, which in the case of long texts remarkably increases the amount of cognitive effort necessary to achieve successful comprehension, since scrolling provides no indicator of beginning or ending. A different approach is instead applied reading a printed book or document, since, unlike scrolling, the turning of pages, defined as paging, offers a type of “geographical place” (Baron, 2021, p. 87), where it is easier to locate information, underline and highlights relevant parts, and add visual marks or written notes as marginalia that support active engagement during the comprehension (Baron, 2023, p.13).

Reading involves senses and comprises a part of physicality and kinaesthetics, such as the touch used to interact with a book or screen and the sight that with eye movements can describe where one focuses the attention and which strategies are used, besides the physical space where people read, which can have an influence on the attitudes and mindsets (Baron, 2021, pp. 14-17). Therefore, if on the one hand reading on digital devices can be seen under a positive light, because it is practical to find information in short time and because it helps readers with reading disability and learning challenges, offering them the opportunity to modify text font and size. On the other hand, scrolling

can negatively influence readers with low levels of working memory capacity (Baron, 2021, p. 87) or be considered tiring for others, for example for those affected by eyestrain (Eyre, 2017, p. 55).

2.4.3. Mindset and approach

However, it is not completely clear whether the influence of material mediums and technologies, or personal attitudes and habits regarding reading comprehension is more significant. For example, higher levels of multitasking, less effort and greater speed have been observed when reading on screen, while more engagement for longer time and major awareness with higher scores have been measured on paper version (Eyre, 2017; Mangen et al., 2013; Støle et al., 2020). This evidence suggests that students' approach in the two environments is quite divergent and probably affected by the type of approach used in daily life with print and digital supports. When reading the news or checking updates on social media people use "low-effort mindsets" (Baron, 2023, p. 12), thinking that the effort required for comprehension is limited. On the other hand, they are more engaged and concentrated dealing with print texts that are usually used in education for learning (Baron, 2023), implying that print challenges more focused and sustained attention.

2.4.4. Length of text and type of questions

In experimental studies, where the length of text is considered as one of the variables, results in print and digital comprehension are almost similar with shorter texts, but with longer texts (500 words or more) comprehension scores are considerably better using print (Singer & Alexander, 2017). The same tendency has been observed in relation to the type of questions asked: if the questions are general, as investigating main ideas and topics, the levels of comprehensions measured are almost the same with both mediums. On the contrary with more detailed and specific questions, such as place and time issues (Baron, 2021, p. 84), the performance significantly improves when reading in print (Singer & Alexander, 2017). Mixed outcomes instead emerge in relation to the genre of the text (informational or narrative), where no remarkable variance appears between print and digital support (Baron, 2021, pp. 83-84).

2.4.5. Readers' preferences and predictions

In several investigations, readers and students revealed that with print they feel more concentrated, and the characteristics of paper books helps them to learn and remember;

while the digital support ensures them more with motivation and engagement compared to print, which is perceived instead as a boring medium (Baron, 2021; Baron et al., 2017). Indeed, motivation is another factor influencing readers' preferences. In particular some studies report that there is a tendency to prefer digital devices among reluctant readers, male readers (Tveit & Mangen, 2014) and young children (Baron, 2021, p. 92). Their choices, however, depend not only on general trends due to the inner characteristics of the reading devices, but to a certain extent also to the individual reading habits of readers (Tveit & Mangen, 2014, p. 182).

Nevertheless, in numerous studies students overestimated their comprehension when reading on screen because they feel more confident with digital devices (Singer & Alexander, 2017), leading them to read more quickly and shallowly in this medium (Baron, 2021, pp. 90-91). Conversely, better predictions emerge in investigations conducted at university, when students are free to choose their preferred reading tools (Ackerman & Lauterman, 2012, as cited in Baron, 2021, p. 91).

At the end of the analysis, it can be said that, despite the numerous studies, there is no clear evidence that one reading medium is superior to the other or that the academic performance can benefit from just one of the two types of reading. On the contrary, both mediums have their advantages and disadvantages, and the difference is made by mindful learners and readers that choose the proper medium to fulfil as best as possible their reading goals.

2.5. New literacies

Starting from the considerations listed in the previous paragraphs, both print and digital reading offer advantages, yet entail also some disadvantages. Nevertheless, there is a fact that cannot be avoided, a considerable percentage of present and future reading relies and will rely on technological and digital supports and being literate in one mode does not directly provide being literate in all modes (Kern, 2015, as cited in Chun et al., 2016, p. 65). For this reason, the traditional models of reading and reading comprehension are inadequate to suit the modern, digital environments, where monomodal linear reading comprehension skills are intertwined with new additional strategies and skills specific to online reading contexts. Therefore, it is fundamental to identify the new abilities for the 21st-century readers, to favour and enhance the new skills and strategies to improve their reading performance and experience.

2.5.1. *The development of the concept of literacy*

Literacy is traditionally defined as “the ability to read and write” (Cambridge University Press, n.d.) texts usually realised in handwritten, typed or printed form, and this conventional view is often associated to the idea that these skills and competences are achieved during schooling and then employed in universal environments (Jewitt, 2008, p. 244). This concept, however, does not entirely fulfil all the nuances implied by *literacy* in the current society, especially considering the technological advancement and developments in the field of education occurred in the last decades, raising new questions and making it necessary to find a new definition of *literacy*.

Starting from the ‘70s a new idea of *literacy*, not only restricted to reading and writing words, but also derived from the social and cultural context, spread, and twenty years later, in the ‘90s, the new concept of *multiliteracies* started to be used in educational research, introduced by the New London Group. The term *multiliteracies* “goes beyond writing to include spoken, gestural, and visual communication as well” (Baron, 2021, p. 14), and takes into account two main changes in the communication field, namely the growing relevance of cultural and linguistic diversity in a globalised world and the complexity of texts in relation to non-linguistic and multimodal modes of communication and representation (Jewitt, 2008, p. 245). The new communication landscape of the citizens in the 21st century, characterised by the coexistence of multiple modes of meaning making, is extremely dynamic, multifaceted and fluid, so much that now it is impossible to separate *literacy* from other technological, social and economic components (Kress, 2003, p. 1).

Moreover, when analysing the field of new *literacies*, the concept of affordances emerges. The term, that has its origins in psychology, and, in this case, it is associated to the new digital devices, refers not only to peculiar properties of the digital environment, but also to the voluntary decisions to use, modify or ignore these specific features (Ware, 2017, as cited in Reiber-Kuijpers et al., 2021, p. 3). For example, the affordances of L2 digital reading encompass the features of this context that are related to the opportunities considered by the reader to employ, ignore or change these features, in order to understand and interact with the contents (Reiber-Kuijpers et al., 2021, p. 3).

Consequently, the new concept of literacies entails skills and strategies necessary for producing and understanding multimodal texts consisting of a written text, combined with hyperlinks, visual images, audio, videos, graphics and other types of representation (Serafini, 2012).

2.5.2. *New literacies and education*

From the educational and pedagogical point of view, it is essential to consider the environments in which students employ these new multiliteracies that include both school and out-of-school contexts, and there is little evidence that learners are altogether trained to learn from the new innovative learning environments. For example, in the current reading context, where digital books are becoming more and more affordable at the expense of paper books (Baron, 2021, p. 54), technology and the internet continue to mutate, and “traditional conceptions of reading comprehension may no longer be sufficient in online reading contexts” (Coiro, 2011, p. 353) to the point that many proficient offline readers are not well equipped to tackle the new comprehension demands for searching, understanding and critical evaluate online information (Coiro, 2011, p. 353; Leu et al., 2005, as cited in Coiro, 2011). It is no longer possible to conceive traditional print strategies and skills as sufficient for digital reading. Therefore, in order to understand and elaborate multiple, digital texts, new higher comprehension skills and strategies are required, such as problem solving, synthesis, critical evaluation and advanced metacognitive strategies, that are similar, but at the same time more complex than traditional offline reading skills and strategies (Coiro, 2011; Reiber-Kuijpers et al., 2021).

Even if print and digital reading strategies are not thought of as opposing ideas, since “digital reading builds on print reading (Reiber-Kuijpers et al., 2021, p. 2), what happens nowadays, as previously said, is that not all students, and readers, are well prepared and instructed to understand in depth these new-media environments. This often occurs because a great percentage of the learning experience at school is print-based. Therefore, the developed and trained reading strategies have roots in this type of environment, while the digital strategies and competences used by students have often arisen outside the classroom (Bikowski & Casal, 2018), without the necessary awareness that high-skilled readers have on their learning and reading process. In fact, to develop the essential knowledge, skills, and strategies for reading in a digital context, it is necessary a certain practice and reflection (Reiber-Kuijpers et al., 2021, p. 3).

2.5.3. *Multiple literacies and language learning*

Considering the previous analysis and the concept of *multiple literacies*, in which significant importance is attributed to the non-linguistic and multimodal aspects of communication, digital reading can have a remarkable impact also on reading

comprehension in a foreign language both in a positive and in a negative way. On the one hand, technology and the internet give the opportunity to students and readers to access a wide variety of authentic resources in L2 and FL, and so to practice and improve their linguistic and reading skills to increase their communicative competence (Balboni, 2015). Though, on the other hand, it makes comprehension more complex, since organisation, metacognition strategies, critical evaluation and other online reading strategies are already difficult to be applied in a L1 multimedia context, accessing or transferring these to L2/FL becomes even more complicated, in particular if their often limited linguistic and background knowledge is considered (Reiber-Kuijpers et al., 2021, p. 4). Various empirical studies examine how digital reading comprehension is influenced by reading proficiency variables, and reveal how less-skilled readers are negatively affected in their reading experience due to the lack of advanced skills and self-regulation (Al-Seghayer, 2017, pp. 90-91).

Consequently, this new concept of literacies required in the 21st century by lifelong learners, which endlessly evolves with the technological progress, questions the dominant models of literacy taught in traditional schooling and have a direct impact on classroom teaching and learning (Jewitt, 2008, p. 248), and challenges “how curriculum knowledge is organized, classified, represented, and communicated” (Jewitt, 2008, p. 255), encouraging an approach that focuses on different forms of representation and communication of students across different contexts and sites of learning and aims to improve their critical awareness and reflection in the new multimodal environments.

Chapter III: Students as readers

Reading comprehension is, as already described, the result of the interconnection of different elements, each implying a considerable quantity of other variables, although these elements can be reduced to four: the action at the centre of the process, that is reading; the person who performs the action, namely the reader or the learner; the object of reading, that is the written text such as an article, a book, a story; and the place where the action takes place, i.e. the environment.

In the first two chapters many aspects related to the process of reading, the strategies employed, and some features of the text have been examined. In the following chapter, instead, the analysis shifts to the performers of reading, which can present significant variables for the reading experience, but also to the results of studies that help to understand the constant and inevitable changes in the reading field.

3.1. Variables regarding readers

3.1.1. *Gender*

One of the variables considered about learners to explain possible differences in reading performance is gender. However, as it has been seen for other characteristics, the data collected in different studies has reported conflicting results, that in some cases do not highlight any differences between genders and in other situations document a slight divergence in favour of one of the two groups.

International studies in reading comprehension achievements, such as PIRLS and PISA, have – in reading scores collected over the past decade – recorded a superior performance of females than their male counterparts (Baron, 2021, pp. 20-21; Gil-Flores et al., 2012, p. 656). Although at first the results can be attributed to the gender difference, a further analysis shows an association to other factors, such as the amount of time spent reading. In fact, as underlined by Pfof et al. in their study (2013), reading more frequently promotes the development of reading comprehension and reading efficacy, increasing reading skills and prior knowledge, so that the frequency of reading for enjoyment can have a direct and positive impact on reading achievement scores (pp. 89-90). In some research works such as the study of Tveit and Mangen (2014) a higher percentage of reading frequency and number of books read in a month has been recorded among girls. Furthermore, the same study presents some interesting findings in relation to preference for reading device expressed after the experiment of reading a book both on paper and on

e-book: 28% of girls prefer paper books, compared to the 16% of boys, while 64% of girls prefer e-readers, against the 71% of boys (p. 182), which confirms the male tendency of preferring digital reading.

No significant difference between genders in reading comprehension was, however, found in the literature review on digital reading in L2 or FL by Reiber-Kuijpers et al. (2021), and similar findings emerge in the investigation conducted by Sheorey and Mokhtari (2001) that examined strategies and scores in reading academic materials of a group of US university students, both native and ESL students. Even if, in this case, some differences were recorded in relation to the frequency, number and types of strategies employed – female students reported to use specific strategies more frequently than their male counterparts and the same happens for ESL female students who reported using 16 of the 28 strategies more often than male ESL students (pp. 439-441).

The greater use of reading comprehension strategies by adolescent girls is reported also in the study of Denton et al. (2015) and by Cantrell and Carter (2009, as cited by Denton et al., 2015). The same differences in the frequency of strategy use between genders emerge in Young's and Oxford's enquiry (1997), cited by Brantmeier (2002), who examined the performance of a group of English native students at university while reading two texts in Spanish and one in English. However, no differences in the levels of reading comprehension were measured by gender in this case, either.

In another study conducted by Poole (2005), on gender differences in reading strategy use among ESL university students, no significant variation emerges between the two categories. However, once more, advanced level students are examined, while future investigation may analyse the performance of beginner and intermediate level students and discover other tendencies or a gender gap, as suggested by Poole. He considered, moreover, another possibility, that is that the L2 use of strategies during reading can be more strongly influenced by “task demands and contextual motivation than biology” (p. 17), as to underline the necessity of further research considering the influence of other variables, such as the learners' proficiency level or attitudes, which can be more significant in determining the choice of strategies and the scores in reading comprehension performance.

As far as the correlation between computer use and academic achievement is concerned, in Hunley et al.'s study (2005), there is not a statistically significant relationship between these two factors, although a distinction can be detected in the type of activities carried out by boys and girls on computer: while boys use computers more

frequently without the internet, females tend to use it for homework purposes (Hunley et al., p. 316). Similar results emerge in the investigation conducted by Nævdal (2007) regarding the relation between home computer usage and English performance at school. Also in this case the types of activities of boys differ from those of girls: boys' computer use is destined to entertainment activities such as games, surfing the internet and experimenting with programming, while girls prefer a practical and social use of the technological device, for example to do homework and to communicate with friends. A gender difference is detected only in the higher-user category, where girls, even if fewer in number, recorded a better performance than boys (p. 1118).

In relation to computer usage, that can in some ways influence the reading performance on digital tools, in the data collected by Kuhlemeier and Hemker (2007) examining Dutch secondary school students, girls reported to spend less time on the computer and estimate their computer skills quite low (p. 475), despite the results that attested no significant difference between genders.

From this short analysis of studies on gender differences in reading comprehension, it can be said that, apart from gender tendencies in reading preferences and some slight variance in strategy utilisation, there are no relevant results to state that scores in reading performance depend on gender.

3.1.2. Age

Attitude and approach to reading change according to age. This is mainly due to the variable levels of reading proficiency and competence across the different phases of life and the distinct purposes and applications of reading at specific moments. Moreover, the increasing prevalence of computer screens, tablets and smartphones both at home and at school are transforming the literacy experiences of children and adolescents, making storybooks, narrative and informational texts an increasingly digital experience and influencing children's language exposure (Barzillai & Thomson, 2018). Despite these considerations, some general tendencies emerge as reported by N. Baron in her book (2021).

A recent survey conducted in 2020, indeed, points out that around "two-thirds of readers from teenagers to those in their mid 50s preferred print." (Rea, 2020, as cited in Baron, 2021, pp. 22-23); this outcome appears quite unexpected, considering the spread of digital devices in the last decades. However, if this type of preference is transferred to the learning field, a change in the attitudes of students has been noticed. While in earlier

research, print was preferred to digital by lots of university students, although their scores in comprehension on both medium was almost the same, lately students of different age increased their preference for digital, even if data reported that their analytical comprehension is still better on paper (p. 23).

Considering, two further surveys from the Bureau of Labor Statistics in the U.S. (the first being conducted in 2003, one of the more recent in 2018) that included data about leisure time spent reading and similar studies conducted in the Netherlands in 2013 and 2018 (as cited in Baron, 2021, p. 43), two analogous trends can be detected – the first one and most remarkable is the decrease over the years in the time dedicated to reading; the second one concerns, instead, the comparison of time dedicated to leisure reading among different ages. In this case, it emerges that teenagers spend more time reading than young adults. Another study conducted by Locher and Pfof (2019) demonstrated a similar pattern which indicates a decreased amount of time spent reading amongst teenagers and college students, while compared to the latter the volume of leisure-time reading for adults rise again, as it grows the quantity of time they spend for work-related reading.

Certainly, as said in different parts of this text, most of this data can be considered only as a tendency and cannot be generalised because of the numerous variables and contexts that can influence and vary the actual results. However, a relevant quantity of studies helps to clarify the changing reading habits in the last decades.

In the following paragraphs, some further general considerations about young children and adults will be outlined, whilst more attention will be dedicated to school-age readers. Firstly, because this age range is relevant for the topic “reading to learn” tackled in the previous chapter, secondly because this age group concerns the case study presented in this research work, and lastly because, as already remarked, numerous studies in this field considers participants from middle school to university or college paths.

3.1.2.1. Young Children

Before and during the process of learning to read, very young children in most western countries get in contact with reading thanks the stories adults read to them in books or, as is more increasingly common in recent years, through the use of digital devices that with the aid of sounds, digital voice, and interactive visual elements enhance the traditional approach to reading (Baron, 2021).

Three are the main aspects that these types of reading experience entail for very young children:

- the social side;
- the linguistic and cognitive side;
- the entertainment side.

The social side refers to social interaction that young children build with the person or people reading, and that develops questions, explanations and experiences with the adult (Baron, 2021, p. 67). From this interaction, which helps shaping the ideas of children about reading, the linguistic and cognitive side of reading thrive: it, indeed, boosts children's language and literacy skills, it increases vocabulary and grammar, but also story comprehension through the learning of cause-and-effect relationships and social scripts (Baron, 2021, p. 68). Moreover, it was reported that particularly when using print support, parents engage in more discussion with children and encourage them to connect episodes of the story with moments of their life, while with digital books, despite boosting the engagement, the interaction about contents and word meanings is more distracted and not always content-related (Barzillai & Thomson, 2018, p. 2).

However, in relation to digital devices a clarification is needed, because a certain variation in results has been recorded between basic digital books and enhanced digital books. If, on the one hand, similar outcomes emerge in the amount of learning acquired by children on print and on basic eBooks with adult support, contrasting effects are noticed with enhanced books, depending on the type and relevance of the enhancements present in the digital version (Baron, 2021, pp. 70-73).

The entertainment side, instead, is related to the engagement arising from the reading experience and it is associated, most of the times, with digital books and digital devices, less with print mediums (Baron, 2021, p. 69). Depending on this perception that conceives digital resources more as an entertaining tool than a medium from which to develop learning, the children's approach to digital reading is rarely deeply engaged and less mental effort is committed to the reading comprehension (Barzillai & Thomson, 2018, p. 2). For example, studies (Kerr & Symons, 2006, as cited in Eyre, 2017; Halamish & Elbaz, 2019, as cited in Støle et al., 2020, p. 3) report that during a reading comprehension children of about 10 years old performed better on paper, even if this superior performance on paper is often still not accompanied by a great metacognitive awareness due to the age – after the comprehension, indeed, they thought to have been more efficient on screen (Støle et al., 2020, p. 3).

This data about reading performance is also confirmed by the research work of Støle et al. (2020), in which 10-year-old children with different levels of reading competence

overall achieved better results with reading comprehension on paper than on screen. It is to be noted that these findings are collected in Norway, a country that, compared to other places, offers to students innumerable experiences with and access to digital resources, and therefore where children already have an adequate exposure to digital technologies.

Nevertheless, in addition to the changing relationship to the reading material along the age range, the use of reading strategies also changes. For instance, in a study by Zhang, Gu and Hu at primary school level (2008, as cited in Habók et al., 2019), it was observed that the number and type of reading strategies employed by students hinges on proficiency and year, and students in higher years tend to employ more strategies than pupils in lower years, and this tendency will further increase in the following stages of students' education.

3.1.2.2. Middle-school and high-school students

Starting from middle school, analytical and metalinguistic skills gradually enhance, and the reading process becomes more articulate and conscious. This continuous process of growth leads gradually teenagers to self-awareness and to identify their reading habits and preferences in leisure reading, patterns often dissimilar to those of older generations, that can influence personal attitudes to reading devices and indicate new tendencies of reading (Tveit & Mangen, 2014).

Despite children and adolescents are being increasingly surrounded by digital technologies, when analysing reading comprehension, a growing advantage of paper-based reading over digital reading has been noted in the period from 2000 to 2017, as reported by Delgado et al. (2008, as cited in Støle et al., 2020, p. 2). These findings suggest that simple exposure to digital technologies is not enough to foster an adequate development of digital reading strategies and that the widen access to technological devices does not automatically correspond to an increment of digital literacy (Baron, 2023, p. 6; Merga & Mat Roni, 2017, p. 189). Therefore, digital natives are not always better performers in digital environments, notwithstanding the general preference of teenagers to this type of tools. In fact, when considering complex texts as the ones read in high school, outcomes of different studies indicate that the medium used to read can have an impact on comprehension, and often the quick reading of younger generations on digital tools results in a shallower processing of the text (Singer & Alexander, 2017, p. 1034), in favour of paper-format materials.

The study conducted in Norway by Tveit and Mangen (2014) with 15-year-old students to investigate reading habits, device preferences and digital experiences confirms the adolescent decreasing trend in reading books: only 32% of the students affirm to read in leisure time, while 51% are reluctant readers. These outcomes align with data reported by Norwegian national surveys that confirms the intensification of digital devices use among teenagers in particular to listen to music, play games and share contents with friends, and the decline of reading books (Norwegian Media Authority, 2014, as cited in Tveit & Mangen, 2014, p. 180). Moreover, if on the one hand the results document that more than a half of the students own a tablet, on the other hand only 12% of them can assert to have read a book on this digital device. Nevertheless, responding to a question about the probability of reading an e-book in the future, almost 80% of the students answered positively, demonstrating positive attitudes also from the most averse readers.

More up-to-date information regarding the amount of time tweens and teens spend engaging in media activities comes from the 2021 Common Sense Census conducted in the U.S. by Rideout et al. that compares data of 2019 and 2021. Among the findings, there are the top entertainment activities tweens and teens enjoy performing on screens, namely online videos, television, games and in the case of teens also social media (p. 4). Reading does not appear neither in the top three enjoyed activities of tweens and teens nor in the principal every day activities carried out by both young groups.

Furthermore, despite the increase in time spent using digital devices between 2019 and 2021, the reading frequency and the percentage of reading for pleasure remain almost unvaried: in 2021 “about a third of tweens (33%) and a quarter of teens (23%) say they enjoy reading a lot [...], about a third of tweens (34%) and one fifth teens (21%) say they spend some time reading for their own pleasure every day” (p. 35), values that do not present a significant variance with 2019 outcomes, as it can be seen from Table 1. It is evident that tweens’ reading frequency and attitude is superior to those of teens, even if the average time spent for this activity, both on digital devices and on other platforms included print, averages for both groups around half an hour every day (pp. 35-36).

Table 1.*Reading for pleasure: Enjoyment, frequency, and time spent, by age, 2019 vs. 2021*

	Among 8- to 12-year-olds		Among 13- to 18-year-olds	
	2019	2021	2019	2021
Enjoyment: Percent who enjoy reading “a lot”	38%	33%	24%	23%
Frequency: Percent who read for pleasure ...				
• Every day	35%	34%	22%	21%
• At least once a week	31%	29%	29%	27%
• At least once a month	11%	12%	17%	14%
• Less than once a month	9%	12%	17%	20%
• Never	13%	12%	15%	18%
Time spent: Average daily time spent reading (among all)	:29	:34	:29	:34
• Print books	:21	:23	:12 ^a	:16 ^b
• Ebooks (e-reader, phone, tablet)	:05	:06	:08	:08
• Online (articles, stories, poems, news, blogs)*	:01 ^a	:03 ^b	:07	:07
• Print magazines or newspapers	:02	:03	:02	:03

* In 2019, participants were asked about reading online on iPod Touches, but averaged less than half a minute a day doing so; this item was dropped from the survey in 2021.
Notes: Superscripts (a, b) are used to denote whether differences over time are statistically significant ($p < .05$). Items with different superscripts differ significantly. Totals are rounded to the nearest minute after summing unrounded times. As a result, totals shown in the table may differ slightly from the sum of rounded times.

Note. From Rideout, V., Peebles, A., Mann, S., & Robb, M. B. (2022). *Common Sense census: Media use by tweens and teens, 2021*. San Francisco, CA: Common Sense, p. 35 (<https://www.common sense media.org/research/the-common-sense-census-media-use-by-tweens-and-teens-2021>). Copyright 2022 by Common Sense Media.

Considering, instead, the ownership of personal devices, in 2021 it is reported that more than a half of tweens have a tablet (outcomes similar to the ones presented in the study of Tveit and Mangen), and 43% own a smartphone or a computer. A large percentage of teens own digital devices: 88% own a smartphone and 64% own a computer. The percentage of adolescents who own a tablet is relatively low at 36%, compared to the 57% of the 8- to 12-year-old group. From this data, the role of smartphone in adolescents’ lives is primarily to interact with friends and keep up to date on social media, while for pre-adolescent the tablet still has more importance probably because it is used to play online or to watch videos.

Before moving on to college and university students, one more consideration will be made about reading, with a brief analysis of standard testing in reading comprehension – usually fulfilled in several countries in middle and high school – taking into account the shift from paper to digital which has occurred in the last decades.

There are numerous standardised tests conducted world-wide, at national or international level, to evaluate reading at different grades of school education: PISA (Programme for International Student Assessment), PIRLS (Progress in International

Reading Literacy Study), NAEP (National Assessment of Educational Progress), PAT (Progressive Achievement Tests) and INVALSI (Istituto Nazionale per la Valutazione del Sistema Educativo di Istruzione e Formazione - National Institute for the Evaluation of the Education and Training System) are just some test examples. Originally, these assessments were offered only in a paper format, but recently assessments have also been offered both in a paper version, as well as in a digital format, following the changes occurring in the technological field.

However, as stated by Eyre et al. (2017) in their research work, it is fundamental to reduce to a minimum the differences between the two modes, in order to develop equivalent versions of the test. In their study, to create an online version as similar as possible to the paper-based test, Eyre et al. consider in particular the following factors that are believed to impact to a certain extent the reading comprehension performance: the design of the layout of the text and questions, size and resolution of the monitor, the amount of scrolling, students' ability to comprehend text on screen, and fluency of keyboarding skills (pp. 2-4). Despite evaluating these elements, some differences between the two modes are still in fact present: the scrolling of the online version, especially, has been reduced at minimum, even if not entirely removed; the writing parts are narrower on screen, but they can be made wider and fonts can be modified to help students with learning disabilities; questions are presented one at a time and not all together as in the paper version, and in addition to the paper-based mode, the digital method provides an integrated clock that shows the time left (pp. 4-6).

Nevertheless, if during this paper-digital transition it is essential to reckon with the factors affecting reading comprehension in the two modes, in the same way another issue needs to be considered, that is "what is being tested" (Baron, 2021, p. 115). Going back to the paragraphs dealing with literacy and literacies, what emerges is that not only the platform used, but also the reading skills tested in these types of assessments should be discussed and adapted to the essential requirements of citizens of today's society, where the development of traditional and digital reading skills and habits has become part of a "lifelong process" (Locher & Pfost, 2020, p. 58).

3.1.2.3. College and university students

As said at the beginning of this chapter, the general reading rate has been reducing in the last 20 years, and college and university students are following the same negative tendency, as reported by some studies such the one by Mokhtari et al. (2009, as cited in

Baron, 2021, p. 44) and Huang et al. (2014, as cited in Baron, 2021, p. 44), who cite in their findings respectively 5.7 and 4.2 hours a week of leisure reading, outcomes which are quite surprising if compared to the time spent by the same groups on the internet (more than 12 hours and about 9 hours a week).

It is plausible that the results are affected by the time students need to commit to assigned reading for lectures. However, what emerges from the data collected by Baron and Mangen (2021, as cited in Baron 2021) in two universities (one in the U.S. and one in Norway) is that in a consistent percentage of cases (40% in the American university and 27% in the Norwegian one) fewer reading tasks have been assigned than in previous years and the complexity of reading texts has also been reduced in favour of simpler contents. Furthermore, findings by N. Baron (2021, p. 45) describe that the percentage of assigned reading usually completed by students over the academic year settles around 20%, in stark contrast to findings from 1981, when the reading rate achieved was more than four-fifth.

Studies conducted between 2010 and 2018 in different countries (Baron et al. 2017, as cited in Baron, 2021, pp. 76-78; Millar & Schrier, 2015; Mizrachi et al, as cited in Baron, 2021, pp. 76-78) reveal that, despite the various advantages offered by electronic books, university students prefer printed textbooks to learn, in a percentage that varies across countries, but that is generally more than 60%. Some variances can be detected also among subjects: for example, in the studies of Dillon (2001, as cited in Millar & Schrier, 2015, p. 3) and Ramirez and Gyeszly (2001, as cited in Millar & Schrier, 2015, p. 3) electronic books were widespread in the departments of Computer Science, Business and Economics, while in an investigation conducted by Fernandez (2003, as cited in Millar & Schrier, 2015, p. 4) printed books were more popular in the area of Humanities.

The reasons leading university students employ one medium rather the other are different: print is usually preferred because it helps to concentrate, to focus and to retain more information, it is more suitable for long texts, easier to underline or to annotate (Baron, 2021, pp. 77-85), and less distractive (Millar & Schrier, 2015, p. 11); digital books, instead, can be freely accessed anytime and anywhere, are convenient, offer more updated resources (Millar & Schrier, 2015, pp. 13-16), have adaptable written size and font and are eco-friendly (Baron, 2021, pp. 85-86).

3.1.2.4. Adults

When it comes to adulthood, a phase in which it is assumed that reading comprehension development stabilises (Locher & Pfof, 2020, p. 71), job-related reading starts to be relevant in the general amount of reading performed. For example, a research work on reading by Smith (2000, as cited in Locher & Pfof, 2020, p. 61) indicates that while half of total reading time of adults is performed at home, one third occurs at work. In the study of Locher and Pfof (2020), instead, adults report “an average of about 1 to 2 h of reading per day for work” (p. 65), values that exceeded the time spent for leisure reading, estimated between 30 and 60 minutes a day.

In the same empirical study that investigates the association between time spent reading and reading comprehension over the course of life, results show for the group of adults “a reduced correlation between time spent reading in leisure time and reading comprehension in comparison with the student cohorts” (p. 71), despite the predictions made according to the Matthew effect (rich-get-richer and poor-get-poorer) model. The decrease in correlation, however, is explained by Locher and Pfof taking into account three possible other variables: qualitative changes due to the type of texts and the purpose of reading; external factors affecting reading habits, and the quantity of time destined to leisure reading; the relevance of work-related reading that should be considered separately from leisure reading (pp. 71-72).

A study conducted by Library Journal (2020, as cited in Baron, 2021, pp. 22-23) outlines the medium preferences of different age ranges and, as already stated in previous paragraphs, confirms that print is also the preferred medium for adults and seniors (more than 60% between age 23 and 54, with a slight decrease to around 50% between age 55 and 91), even if older users between age 55 and 91 show a certain inclination towards eBooks, preferring this reading medium in approximately 12% of cases, a higher value than the one registered by younger generations.

3.1.3. Motivation

Motivation is another factor affecting reading comprehension and, together with cognitive processes, it plays a key role in the whole reading activity increasing readers’ engagement and maintaining interest and attention. Motivation to read is not only crucial for reading achievements, but it is also a relevant “predictor of reading comprehension abilities” (Grabe & Stoller, 2011, p. 87).

Motivated students, indeed, employ more effective learning and reading strategies, use creative solutions when performing school and reading tasks, are not afraid of challenging texts and believe that through effort they can achieve a good performance (Ferraz et al., 2021, p. 73). Moreover, students who perceive themselves as good readers are inclined to read more often and persist even with complicated texts. As seen in previous paragraphs, the frequency of leisure reading has positive effects on reading achievement scores (Pfof et al., 2013, p. 90) and successful reading comprehension enhances students' self-esteem (Grabe & Stoller, 2011, p. 49), self-efficacy (Ferraz et al., 2021, p. 74), and boosts positive attitude towards reading (Backer & Wigfield, 1999, p. 452), producing a "virtuous circle of reading" (Pfof et al., 2013, p. 90) which allows them to improve and strengthen reading comprehension performance.

Self-efficacy is the reader's belief in their capacity to manage, thanks to his/her own ability, the entire reading process that included, as previously explained, planning, monitoring understanding and choosing the most effective strategies, connecting to the reader's quality of involvement and the reading comprehension performance (Ferraz et al., 2021, pp. 73-74).

In their book, Grabe and Stoller (2011) define reading as a process that is "always purposeful" (p. 12), first of all because readers read in different ways depending on the reading aims, and then because the motivation that leads to read is activated by personal reasons, determined by intrinsic and extrinsic motivations. In the former case, the reader is curious, and interested in reading "for its own sake" (Backer & Wigfield, 1999, p. 455), for example when he/she reads an article or a book to delve into a topic; while in the second case the reasons that make someone read are external or present in the surrounding environment, such as a reward or a positive assessment (Backer & Wigfield, 1999, p. 455).

Students that spend time reading, not only in an educational context, but also as a leisure activity, present higher self-evaluations of their performance than the ones that fulfil only school-related reading and demonstrate superior level of self-efficacy for the activities that include reading tasks (Ferraz et al., 2021, p. 83).

Motivation plays an important role also in L2 and FL reading comprehension, and if some elements are comparable with the ones of L1 reading, others are more specific to the L2/FL contexts (Grabe & Stoller, 2011, p. 123). One relevant factor shared both by L1 and FL readers is, for example, the intrinsic motivation. In the study conducted among high school EFL students in Japan by Takase (2007, as cited in Grabe & Stoller, 2011, pp.

123-124), it is reported that intrinsic motivation remarkably predicts the amount of extensive reading accomplished and has a strong influence on students' reading choices and reading productivity. However, a lack of adequate reading strategies or of linguistic knowledge and proficiency can be an issue affecting particularly the L2/FL reading motivation.

All the data above about the positive effects of reading habits and motivation contrast with the issues stated several times by Baron in her book (2021) regarding the current decrease over the last decades in reading rate, connected to contrasting attitudes towards reading. The possible causes are numerous, even if the one that concerns more closely the analysed topics is related to the medium used for reading. As some studies report young readers and students consider print books boring, while no one expresses the same opinion in relation to digital reading (Baron et al., 2017; Tyo-Dickerson et al., 2019, as cited in Baron, 2021). On the contrary, as already stated, reading on screen has proved to be a motivational tool, able to increase the engagement of young children (Baron, 2021), and of reluctant readers, such as in the study conducted by Tveit and Mangen (2014).

However, it has been shown that when students are free to select their reading material (Baron, 2021, pp. 21-22), or at least the medium support, students demonstrate to be more prone to and open towards reading. Considering these factors during reading assessments and for reading assignments at school is an important issue and it could be significant in encouraging positive attitudes in relation to reading activities. For this reason, in the next paragraph medium preferences and their influence over reading performance and learning are discussed.

3.1.4. Medium preference

Some medium preferences regarding different age groups have already been introduced, but in the following section more details concerning student preferences will be added collected from investigations conducted in the last 15 years. Despite some contradictory results, a relevant quantity of similarities among students' opinions arises. However, before describing these outcomes, a brief consideration connected to the educational context will be expressed.

The linguist and professor N. Baron in her book (2021) points out the changes occurring not only among students' habits and preferences, but also the transformation taking place in the book and textbooks industry. Books and textbooks are expensive, and costs have been steadily rising. For this reason, university students often opt for digital

resources, while for primary and secondary education this alternative is not always available (pp. 29-31). Hence, this economic factor can influence the choices of students, even if in the evaluation and analysis of preferences it is important to take into consideration how the reading medium affects learning and comprehension performance, as already described in some previous paragraphs.

The first outcomes to be reported are those gathered by two studies (Baron et al., 2017; Tyo-Dickerson et al., 2019, as cited in Baron, 2021) described in Baron's book (2021), in which the positive aspects of both print and digital reading are outlined. Print is appreciated by secondary and university students for the aesthetic qualities and the sensations it conveys, stimulating memories, relaxation and for its authenticity; for the physical experience linked to the kinaesthetic affordances and to its physical aspect, such as the pleasure of turning the pages, the possibility of annotation and underlining essential sections. From a cognitive point of view, besides, students prefer print because they believe it supports concentration and reduce multitasking, making it easier to read (pp. 84-85).

On the contrary, digital reading is preferred because it is more entertaining, ecological and convenient, it takes less time to read, it is easier to use for skimming and font size can be adapted. Moreover, during a reading activity, information can be quickly researched online or integrated with videos or images and another advantage is that digital texts can be accessed everywhere (pp. 85-86). Starting from these opinions of students, one can understand how each medium has its own advantages that depend on the context, purpose of reading, and type of text. Considering for example this last point, surveys reveals that the length of text suggests opposing choices about the reading medium. Baron's study (2017, as cited in Baron, 2021) on university students, indeed, highlights that 86% of students prefer print for long texts, while only the 40% opts for the same support in case of short ones and the same preference for longer texts is recorded in the research works of Mizrachi et al. (2018, as cited in Baron, 2021) and of Tyo-Dikerson et al. (2019, as cited in Baron, 2021) with the 73% and 59% of print preferences, respectively (pp. 82-83).

After listing the positive characteristics for both mediums, N. Baron not only in her book (2021), but also in a report of 2023, describes some of the complaints expressed by students for each reading situation emerging from three studies (Baron et al., 2017; Mizrachi et al., 2018; Tyo-Dickerson et al., 2019, as cited in Baron, 2023). For example, some students consider print boring, tiring and time-consuming, because the reading

speed on this support is much slower than on digital support, while on the other hand digital devices are considered as more distracting than paper (pp. 9-11).

In the investigation of Tveit and Mangen (2014), paper was considered irritating by 24% of subjects because of the writing text (too small or too much text on each page) and for 18% impractical or old-fashioned, while the negative aspects of e-reader are linked to the graphical and technical design, to physical problems such as headache or eyestrain and difficulties in concentration (p. 182). In the case of print books, the positive comments, instead, concern physical aspects related to the good feelings produced by paper, and for e-readers the functionality (pp. 182-183).

In Rowland et al.'s study (2007, as cite in Millar & Schrier, 2015) digital textbooks are described by college students as being "up-to-date, space savers, accessible around the clock, convenient" (p. 6), even if, at the same time they are perceived as a support which is complicated to read and where it is difficult to add comments and mark parts (p. 6), characteristics that however can be due to the features of textbooks at the time of the study, and that have undoubtedly advanced in the last 17 years.

The research work of Millar and Schrier (2015) investigates the preferences of students in two American universities. More than a half of students affirm that if they could choose the type of support for a class, they would prefer printed textbooks, while fewer than one quarter would opt for digital versions (p. 11). Reasons to prefer print over digital support include: simple preference for print over e-textbook, convenience, the possibility to keep the book after the end of the course, and the scarce availability of digital versions for the books required, but also the possibility to take notes, highlight sections and to be less distracted (p. 11). On the other hand, digital textbooks have been chosen by other students because digital mediums provide the opportunity to store all the course materials together "in one place all the time" (p. 12), reducing in this way the weight of books, because it is more convenient (even if some learners reported that digital books cannot be resold), it is environmental friendly and it is quicker to find contents online (p. 12).

The outcomes reported in the previous studies outline the main reasons that lead students to employ one medium rather than the other, although the individual preference is not always an absolute choice but just a temporary one, due to some factors connected to the text or the context of reading. Furthermore, numerous reasons appear in more than one investigation, such as the good feeling of paper and the functionality of digital, while others are less cited by students, such as the possibility to resell paper books and the environmentally friendly nature of digital resources.

3.2. Students' reading habits and internet use in out-of-school context

In their research work, Hunley et al. (2005) affirmed that the increase in the quantity of time spent on computer changes over time (p. 307), and this is confirmed by the data of the Common Sense Census collected in 2021 in the U.S (Rideout et al., 2022) that reports a steady growth of media use in tweens and teens in the last decade with a further significant rise after the pandemic (p. 3). The development of new technologies and the growth of internet access have augmented the available resources of today's students both at school and at home (Gil-Flores et al., 2012, p. 653). For this reason, numerous studies have investigated the relationships between computer usage and students' performance to detect the effects that digital habits can have on the learning process, on the development of skills and, in the case of reading, on the reading behaviour (Ficzere et al., 2021; Gil-Flores et al., 2012; Hunley et al., 2005; Kuhlemeier & Hemker, 2007; Merga & Mat Roni, 2017; Nævdal, 2007; Pfof et al., 2013).

In the following section, findings gathered in the last twenty years will be described in order to deepen the understanding of students' online activity and their online reading habits, whose frequency according to Singer and Alexander (2017) is rising also outside the classroom context (p. 1008). Moreover, it will be outlined how these factors are interrelated with school performance and reading achievements.

The outcomes collected by Pfof et al. (2013) in their exploratory study, which describes "the role of extracurricular reading behaviour in the development of reading literacy" (p. 89), reveal how the influence of reading material on the development of reading comprehension and vocabulary is not homogeneous but varies according to the type of reading (p. 99). Reading narrative texts or books has a positive influence on the development of reading competencies, while on the contrary reading magazines, comics, newspaper or non-fiction books has only slight consequences on reading achievements. A negative impact, instead, is evidenced in the reading of e-mails, blogs, online forum and chat (p. 99).

The students' profiles detected in the study are 5: highly engaged readers, online readers, moderate print and online readers, traditional print readers, and print-avoidant readers. The profiles with high degree of online reading and low amount of print reading have "a less positive influence on the development of reading comprehension and vocabulary in comparison to all other reading behaviour profiles" (p. 99). Moreover, the second group which include online readers performed worse than the moderate and traditional readers (p. 99), which suggests online media use does not always ensure a

proper context for reading competences development. Surprisingly, the highly engaged readers did not perform better than the moderate and traditional readers groups on reading comprehension and vocabulary development. In this case, the result is explained by the scholars by three factors: first, the number of students in the first group of highly engaged readers was quite narrow; second, it could be that after a certain amount of time spent reading, further effects on reading performance are insignificant; third, highly engaged readers present also a frequent use of online media and this could have counterbalanced the positive effects of the other reading supports (p. 100).

The study of Gil-Flores et al. (2012) is focused more on the relationship between the online reading experience and the digital reading competence developed by students. The main reading tasks performed online by the 15-year-old Spanish learners is linked to social purposes, namely chatting (almost half of the students declare to chat several times a day) and exchanging emails, while the least practised activities are taking part in debates and online forum, reading the news online and searching for practical information (pp. 656-657). The social aspect, in particular, has remained a constant during time in the teens' online activities as confirmed by the data of the Common Sense Census (Rideout et al., 2022). However, the same research states also that the activities such as searching information on specific topics online, that have significant consequences on scholastic performance, are precisely those performed by students online (Gil-Flores et al., 2012, pp. 658-659).

The investigation of Merga and Mat Roni (2017), instead, explores the influence of the access to digital devices on reading frequency on children in Australia. It reports that the access to eReading devices do not seem to enhance reading frequency, but on the contrary, in the case of mobile phone access it is associated to a lesser frequency of reading (pp. 194-195). Among the other findings, it is noted that a great quantity of students do not use digital tools with the specific purpose of reading and more access to devices tends to result in less reading, even if at the same time the frequent readers tend to read more on digital devices (preferring iPad/Kindle rather than computer or mobile phone) than the less-frequent readers (pp. 193-194).

As far as computer usage patterns is concerned, the survey of the Policy Information Center of Educational Testing Service Network (1999, as cited in Hunley et al., 2005, pp. 308-309) documents that among 8th grade students (age 13-14) "playing games was the most prevalent computer use" (p. 308) and in the same group the 51% of students claim to never use a computer for schoolwork (p. 309). In the research conducted by Kuhlemeier

and Hemker in the Netherlands (2007), less than a half of students state to use the computer to process texts every week, while nearly two thirds of the first-grade students affirm to spend some time at the computer (almost) every day, and in the same group, more than a half like playing games or listening to music online (p. 469).

Seven years later the U.K. report *Net Children Go Mobile* (Livingstone et al., 2014) shows that the most popular online activities among children are “watching video clips, social networking and listening to music” (p. 3), while in 2021 the *Common Sense Census* (Rideout et al., 2022) affirms that among the first three preferred activities daily performed by tweens there are video and mobile games together with online video and television watching, to which are added the social media for teens (p. 4). From these outcomes, it can be inferred that a great number of activities performed online by students are related to entertainment, an aspect that can have an influence over the learners’ attitude when using digital devices and that can be connected with the “shallowing hypothesis” cited by Baron in her book (2021, p. 79).

The last two analysed studies concern the possible relationship between internet use and the development of linguistic competences. The findings gathered by F. Nævdal (2007) record the best achievement in English in the group characterised by a moderate use of computers (less than two hours a day) (p. 1115), while the low-user students are among the ones who have the lowest performance. Moreover, from the general data collected the researcher concludes that the level of PC use at home can predict performance in English, in particular if the online activities include school-related tasks, such as information seeking, processing documents, whereas playing, surfing and chatting do not seem to particularly influence the performance in English (p. 1119). A similar positive relationship has been identified between reading comprehension in English and internet addiction in the research work of Ficzero et al. (2021). By contrast the data related to reading comprehension in German demonstrate a negative relationship with the time spent online (p. 1988). The different correlation described for English and German has been explained through the availability to find the two languages online: while English is the main language of the most popular websites, German is unlikely to be found and practised during the online activities of students (p. 1988).

The activities performed by students on digital devices are, therefore, various and the digital materials available online to find information, improve competences and knowledge are precious resources for today’s learners. However, if on the one hand this technological world represents an opportunity for students, on the other hand it is also a

venture, because the excessive and unaware usage of digital tools and the internet can lead, as proved by the studies previously described, to more negative effects than benefits.

PART II

Chapter IV: The case study

The studies analysed in part I, concerning language learning, reading competence, reading strategies and students as readers, with the numerous outcomes gathered in the last 30 years clearly describe the complexity and variability of factors in this field, especially in view of the constant technological development during the period. Furthermore, almost five years ago another remarkable change occurred in the international panorama: the Covid-19 pandemic, which has produced considerable consequences on general habits, digital use and reading practices. The effects of the pandemic have just been partially recognised, but more studies in the following years will be needed to collect further data about long-term effects. This study aims to add information about the current digital habits of young-teen learners and the use of reading strategies in a foreign language reading context.

This chapter, that introduces the features of the study carried out in a middle school class, is divided in five sections. The first part illustrates the purposes of the case study, introducing the four research questions that guided the investigation. The second part describes the participants and the setting of the study. The subsequent parts present in detail the method and the materials employed for the collection of data, while the last section describes the procedures followed during the execution of the entire process.

4.1. Research aims

The present study is focused on the students in a lower secondary school, with an age range (13-14 years old) that still presents a limited number of data points and outcomes if compared to the data gathered among high school students and even more among university students. The main purpose of the research is to describe in detail the reading strategies used by the students of this age during a reading comprehension in English and to detect if the strategy choice is related to their computer use at home and/or digital reading habits. Investigating and understanding the connection between the use of technologies in students' everyday life and the skills developed and employed in the school environment may be relevant to improve a teaching approach adapted to students as much as possible.

The stages of the study have been developed considering the prominent tendencies outlined in the literature review about the internet use, online reading experience and

students' performance in reading comprehension. At first it was considered relevant to explore the types of activities performed by learners online, as well as their general information, such as age and nationality, language spoken and an assessment about English as school subject. Afterwards, with the comprehension test, the focus was moved to the reading strategies used by a small sample of four students, each one representing a hypothetical profile. The sample group is very limited and can not be taken as representative of general tendencies. However, it offers the possibility to analyse in detail the strategies employed, adding data to the existing research in this field that can confirm or not the results of previous research.

Therefore, starting from the elements cited below, the following research questions have been developed:

1. What kinds of activities do third-class students undertake during their online experience?
2. What is the percentage of students reading online in a third class of a lower secondary school?
3. Is there a positive relationship between time spent online and the English reading comprehension performance?
4. Do the reading strategies in EFL reading comprehension differ from internet-high-user and internet-low-user students?

4.2. Participants and setting

Participants in this study consisted of 15 students of a third-grade public Italian middle school. The middle school is located in a small town of the north-east of Italy. The students were all members of the same class, and their age range was from 13 to 14 years old. The students, all Italian citizens, were 9 females and 6 males.

The data were collected in two different moments in the spring of 2024: the first phase of the research included all the students, while the second phase was performed by 4 selected students, identified in the first phase.

The parents of all the students were contacted and gave permission for their children to participate to the study. All standard procedures were developed to ensure anonymity to all the participants. All data related to the questionnaires and the reading comprehension test were gathered and processed exclusively for research and teaching purposes in compliance with privacy rights, as provided for by Legislative Decree

163/2017, ex. art. 13 of Legislative Decree 196/2003 and ex. art. 13 EU regulation 2016/679.

4.3. Instruments

The data of the study was collected in two phases. In the first phase using a questionnaire (Appendix 1), completed by all the class members, which contained general questions related to individual characteristics, family, language spoken at home, English as school subject, and specific questions about the internet connection at home, activities performed online and reading activities carried out on digital devices.

In the second stage, the data was collected firstly with a reading comprehension test (Appendix 2) and after the test, with a self-assessment questionnaire (Appendix 4) to evaluate the strategies employed during the comprehension. Moreover, during the reading comprehension task, the researcher completed an observation grid (Appendix 3) of the visible reading strategies used by students, which was integrated afterwards with missing data retrieved using a video recorded during the test.

The participants of the second phase were just four selected students of the original group, whose characteristics, gathered in the first phase, corresponded to the four profiles required to complete the second part of the study.

4.3.1. Student questionnaire

The student questionnaire (Appendix 1) was specifically developed for this case study in order to investigate the students' extracurricular online behaviour and to identify the four profiles required for the reading comprehension test. Most of the questions have been retrieved from questionnaires used in other research works, which will be cited below, after the description of the questionnaire structure.

The student questionnaire consists of 20 questions divided in four sections:

- personal information;
- English language;
- general information about digital devices at home;
- activities performed on the digital devices previously selected.

Questions regarding personal information investigate age, gender, nationality, birthplace of students and parents (for the students not born in Italy also the age of arrival in Italy), the daily most spoken language, and the languages spoken with their family members and acquaintances. These general questions give an overview of the main

characteristics of the students and help to understand if they speak other languages besides Italian at home; aspect that could influence the reading comprehension outcomes. For example, learners born in English spoken countries or with relatives who speak English, could be advantaged in the reading comprehension test. Likewise, students speaking more than one or two languages in their everyday lives could find more straightforward the passage from one language to another in the reading task.

Questions 1 and 2 about age and gender have been extracted from Merga and Mat Roni's study (2017) about the influence of access to digital devices on children's reading frequency. Questions 3, 6 and 7 have been retrieved from the study by Goglia and Fincati (2017) about the immigrant languages and the Veneto dialect present in the Veneto region. Questions 4 and 5, instead, derive from the questionnaire included in the INVALSI (2015), a national standardised testing in Italy, that assesses some fundamental skills such as reading comprehension.

The second section related to the English language concerns the students' opinions about English: knowing since when they have been studying English can help to understand the English level reached by them. Exploring interest and opinion about English suggests the students' engagement in activities that involve the use of the language. In particular, question 8 has been developed from the information investigated in the research work by Ficzer et al. (2021) about foreign language reading comprehension and internet use, while question 9 from Nævdal's questionnaire (2007) about time spent on PC and school achievement in English. Question 10, instead, was used by the researcher to understand learners' external motivation. Moreover, question number 11, which asks for the learners' perception of accomplishment in relation to the four basic language skills, intends to detect a general level of language proficiency, that was a fundamental element in the selection of the profiles for the reading comprehension test. This question has been retrieved from the questionnaire by Illman and Pietilä (2018) about multilingualism in a foreign language classroom.

The third section explores general information about digital devices at home. In particular, question 12 regards Wi-fi connection availability at home and question 13, retrieved from the study by Lazzari (2015) about the internet use in the middle-school, considers students' owning of a mobile phone. This information is important to outline the learners' possibility to access the internet and to use digital tools, influencing the time spent online. For example, if someone has got a personal smartphone with free Wi-fi at home, there are higher chances for him/her to use it compared to someone who has access

only to their parents' phone. After these two questions, point number 14 examines the devices used to access the internet. The question, derived from the study by Merga and Mat Roni (2017), aims to understand if the devices used to access the internet are suitable for reading online: for example, it is unlikely that a student, who only uses smartphone to surf the net, will read long novels online. Moreover, questions 15, 16 (Nævdal, 2007) and 17 give information about the frequency of digital use by students. These questions represent the second relevant area considered to choose the four profiles that are taking part in the reading comprehension test, because the time spent online could influence the frequency and type of strategies used during the reading.

The last section, consisting of three questions, focuses on the online activities performed by students in their free time and their favourite device. Investigating their online habits and preferences can offer further information about the students and can help to explain their reading behaviours and strategies. Specifically, question 18 offers a list of possible online activities from which the students can select those usually performed on screens. The list of alternatives has been obtained using similar options from the questionnaires of other studies (Gil-Flores et al., 2012; Hunley et al., 2005; Nævdal, 2007). Question 19, derived from Pfof, et al.'s study (2013) about the students' extracurricular reading behaviour, pays close attention to online reading and delves into the type of reading genres for the students who chose reading in the previous question, while question 20 surveys the students' favourite digital device.

4.3.2. Reading comprehension and observation grid

The three texts employed for the reading comprehension in English (Appendix 2) have been retrieved from the internet in July 2023 and specifically:

- Text 1 and 3 from *A2 Key (KET) Reading Practice test, part 2 and 3. Free Practice for the Cambridge KET exam* (Exam English, n.d.)
- Text 2 from *Cambridge Assessment A2 Key 2020 sample tests Reading and Writing* (Cambridge Assessment English, n.d.)

The choice of texts was based on the language level expected by students in a third class of the lower secondary school (A2 Level of CEFR). Moreover, their selection has been conducted in order to include the reading strategies of scanning (Text 1 and 2) and skimming (Text 3).

The observation grid (Appendix 3) was developed considering visible reading strategies cited in Baron (2021) and Bedle (2017), which were then integrated with other

visible behaviours that could be described using frequency and time. For this reason, the graphic grid presents on the axis of ordinates the strategies and on the axis of abscissae the time values.

4.3.3. Self-assessment questionnaire about reading strategies

The self-assessment questionnaire about reading strategies (Appendix 4) is the Italian translation from English of the *Survey of Reading Strategies* (SORS) (Sheorey & Mokhtari, 2001). The survey was entirely maintained except for two features: question number 6, which was considered too complex for the metacognitive competence of students at the age 13-14, was removed. Furthermore, the 5-point Likert scale was converted into a 4-point Likert scale, to make students reflect on their reading strategies and avoid neutral evaluations.

4.4. Method

This study is an explorative research based on qualitative data. The data was collected using written questionnaires, direct observation and a reading comprehension test. Both surveys and reading comprehension were completed on paper and not in digital format.

Before proceeding with the production of the reading comprehension test, previous selected studies, that include an assessment in reading comprehension, were analysed and compared to increase the understanding of the testing approach in reading comprehension. The main procedures employed in the studies to gather data were thereafter summarised in a list (Appendix 5) and represented a starting point for the development of the reading comprehension session.

Moreover, to detect the reading strategies used during the reading comprehension performance, two different instruments (the observation grid and the self-assessment questionnaire) were used in order to crosscheck the data and get a perspective as much as possible complete.

4.5. Procedure

The gathering of data took place in the second term of the school year, between the beginning of April and the end of May of 2024. The research was developed, as previously stated, in two different phases, during English school classes.

In the first meeting, all the participants completed the students' questionnaire about their online experience and digital reading habits. Before starting, the questionnaire was

read to students, in case of requests for clarification and then the form return was set for half an hour later. At the end of this session, no further information about the questionnaire was given to the students in order to avoid influencing outcomes of the reading comprehension.

Before the second meeting, the results of the questionnaires were processed and analysed to select four profiles with the following features:

- Profile 1/Student A: high/medium-high internet usage and very good/good self-assessment in English;
- Profile 2/Student B: high/medium-high internet usage and very low/low self-assessment in English;
- Profile 3/Student C: low/medium-low internet usage and very good/good self-assessment in English;
- Profile 4/Student D: low/medium-low internet usage and very low/low self-assessment in English.

In the second meeting, the four selected students were taken to a separate room for the reading comprehension task. To complete the reading comprehension each student had at his/her disposal a bilingual paper dictionary and a computer with access to online dictionaries, as well as the possibility to ask the researcher or other peers questions. The duration of the comprehension test was 50 minutes. During the comprehension reading, the researcher observed the students to complete the observation grid about visible reading strategies. This data was subsequently integrated with the support of the recorded video.

After this section, each student was asked to complete the self-assessment questionnaire about strategies used during the test and during usual reading. This questionnaire required approximately 5-10 minutes to be completed.

4.6. Data analysis procedure

The data was gathered without the use of digital programmes, and this choice mainly depended on two factors: firstly, the number of participants in both the student questionnaire and the reading comprehension consisted of a restricted number; secondly, the questionnaires and the reading comprehension tests were paper-based and not in a digital format, where the control of the variables would have been complex to supervise.

However, Microsoft Excel was employed to convert the gathered data into graphs. The type of graph or table was chosen considering both the data and their characteristics, with the purpose of presenting the results as clear as possible.

Chapter V: Results

In this chapter, the data collected will be reported in an objective manner, while the discussion and interpretation of these outcomes will follow in the next section.

The description of the obtained data is divided into four paragraphs, each one containing the results emerged from each phase of the research. Paragraph 5.1. reports the data gathered through the questionnaire accomplished by the entire class group about their use of digital devices and their digital habits. Paragraph 5.2. describes the results of the reading comprehension performance of the four selected students (students A, B, C and D). Paragraphs 5.3 and 5.4 reveal the outcomes emerged in relation to the reading strategies employed during the reading comprehension by each student.

5.1. Student questionnaire results

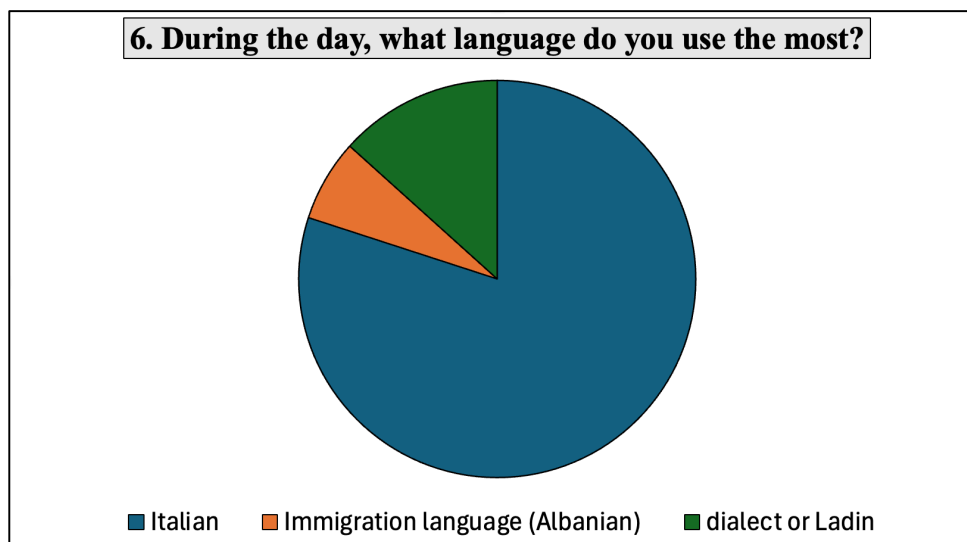
The student questionnaire, as previously introduced, was completed by 15 students, 6 males and 9 females. All the learners were of Italian nationality and 11 of them were 13 years old, while just 4 were 14 years old.

To question 4 “Where are you and your parents born?”, all students stated to be born in Italy, as well as the majority of their parents. However, two mothers and two fathers were born abroad – both parents of one student were born outside the EU (it is not specified where, but probably they were born in Albania as in question number 6 he/she affirms to speak Albanian); two other students have a parent born abroad, one mother was born in Switzerland, and one father was born in France.

Question 5 presents no results, since all the students were born in Italy.

To question number 6, as can be noticed from the graphs below (Figure 1), most of the students (12 of them) answered saying that Italian is the most used language during the day, 2 students stated to use mainly dialect or Ladin, while only one student affirmed that the most spoken language in his/her daily life is Albanian (his/her immigration language).

Figure 1. *Language used during the day*



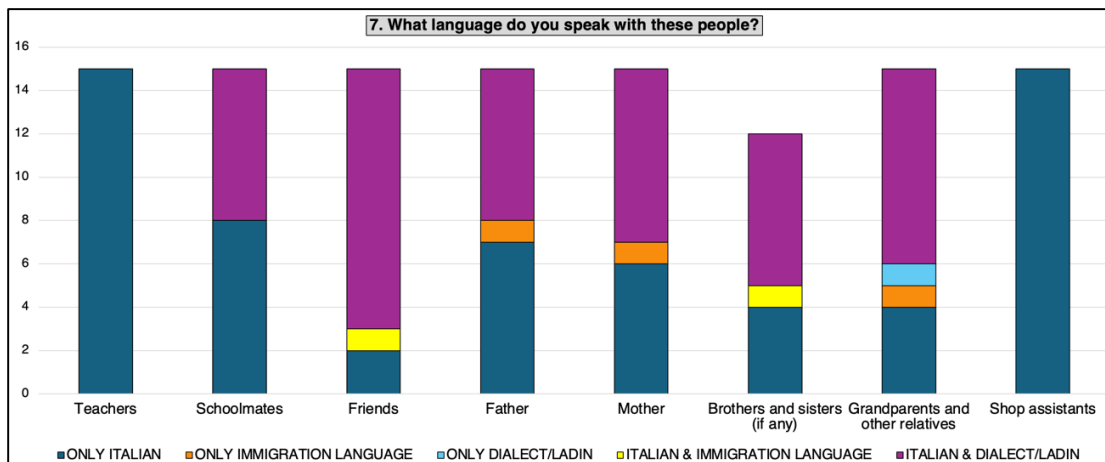
The last question of the first part (General information) presents different answers that are summarised in the following part and in Figure 2. To be noticed is the fact that only one student in the class reported to speak Italian in all his/her social contexts.

In a public environment, the use of Italian prevails, because with teachers and shop assistants, Italian is the only language spoken. Also, with schoolmates more than a half of the class (8 students) use Italian to communicate compared to 7 students who use both Italian and dialect/Ladin. Different outcomes emerge, instead, in private relationships: a mix of Italian and dialect/Ladin dominates the language spoken with friends (12), while just one student reports to speak Italian and the immigration language. The results are more balanced when the language spoken with parents is considered: with their father 7 students speak Italian, 7 learners use both Italian and dialect/Ladin and only one student use the immigration language (Albanian) both with father and mother. With their mother the numbers are almost unvaried, because the values change of only one unit: 8 students speak Italian and dialect/Ladin with his/her mother, while 6 students speak only Italian.

3 students are supposed to be only child, since they did not complete the part in the table concerning the siblings. In the cases of students with siblings, more than a half of learners speak Italian and dialect/Ladin with them, 4 speak only Italian and only one student speaks Italian and Albanian with them, the same student that speaks only Albanian with grandparents and relatives.

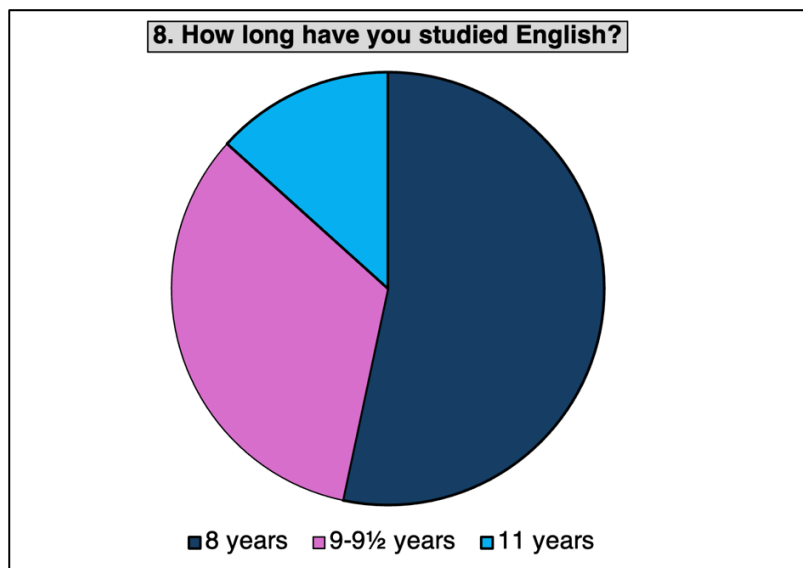
With grandparents and other relatives Italian and dialect/Ladin is usually used, just one student speaks only dialect/Ladin with them and 4 students use only Italian.

Figure 2. Languages spoken in social contexts



Moving on to the section related to English language, it emerges that more than a half of the students have learnt English for 8 years, while 5 students for 9-9½ years and only 2 students have studied English for 11 years (Figure 3).

Figure 3. Years of English study



Question 9 investigates the interest in English as a school subject. 8 students affirmed to like English (Figure 4), 1 student likes English very much, 4 are neutral and 2 do not like it. No students expressed a complete dislike to English.

Despite the students' grade of interest in English as a foreign language, in question 10 (Figure 5), almost all of them (12 students) answered 5-points to the question "How much do you think learning English is useful?", and all the others answered with 4-points (3 students).

Figure 4. *Levels of interest in the English language*

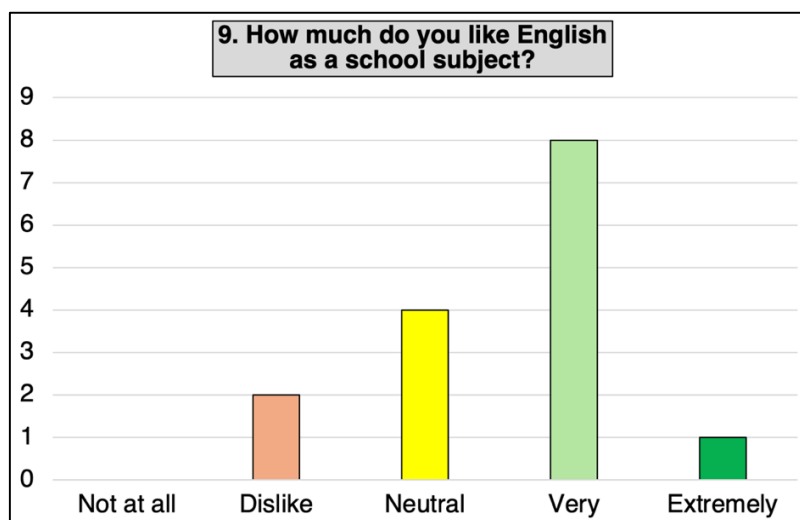
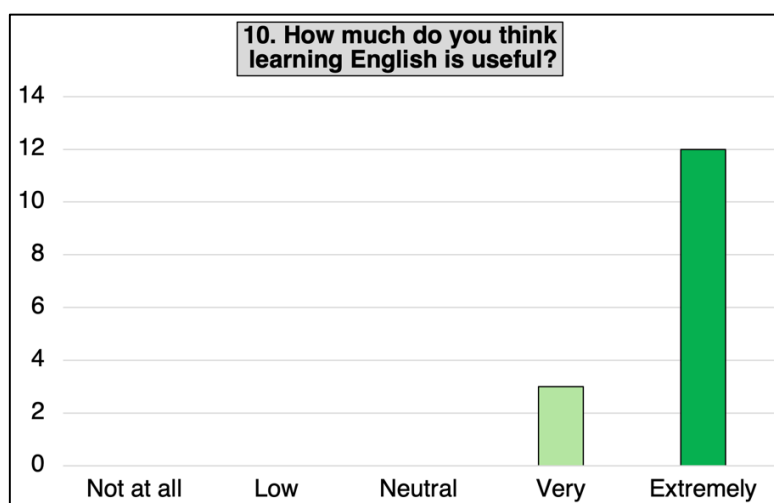


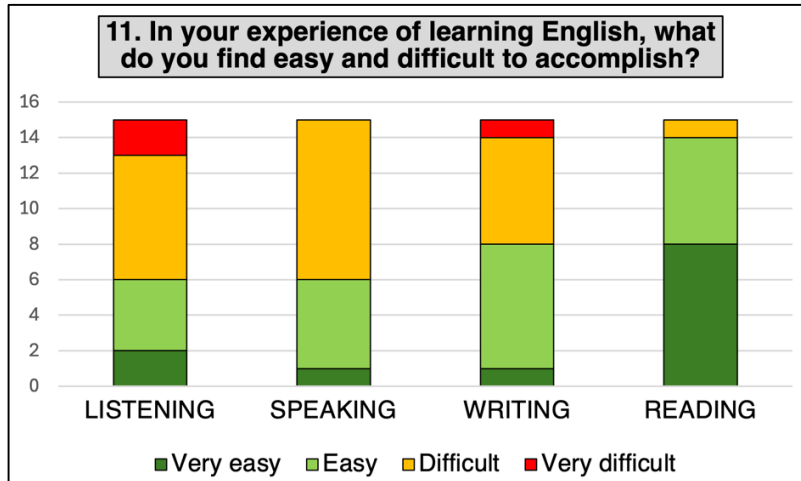
Figure 5. *Rated usefulness of the English language*



The last question of this section explores the learners' perception in relation to the four basic linguistic skills (listening, speaking, writing and reading). What can be noticed is that reading is considered the easiest competence (Figure 6) – 14 students, almost the entire group, consider reading to be an activity that is easy or very easy to accomplish, while only one student considered it difficult. On the contrary the oral competences are evaluated as the most challenging skills to achieve. Listening is perceived difficult or very difficult by more than a half of the learners (9), 4 students consider it an easy task while it is very easy for just 2 students. Speaking is also evaluated difficult by more than a half of the students (9), while 5 consider it easy, just one perceives it a very easy activity. Writing, instead, is the only competence that presents an almost balanced rating – it is

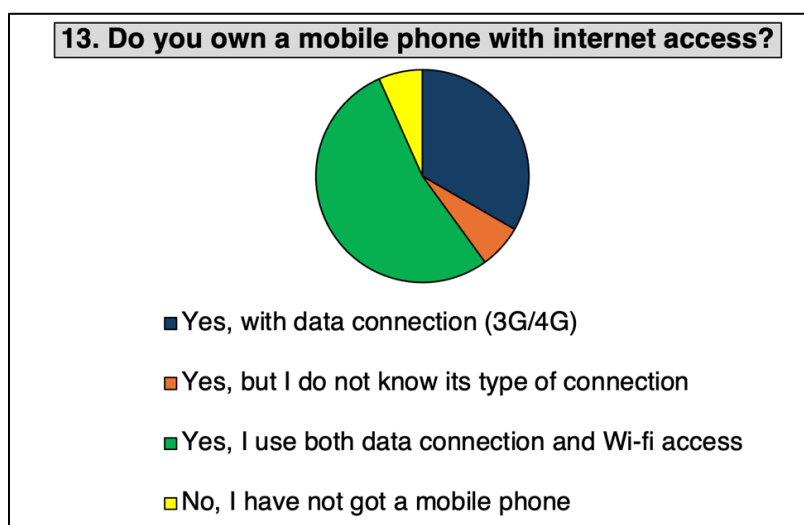
easy for 7 students, difficult for 6 and just 2 students expressed extreme opinion (1 very easy and 1 very difficult assessment).

Figure 6. *Self-assessment of English skills*



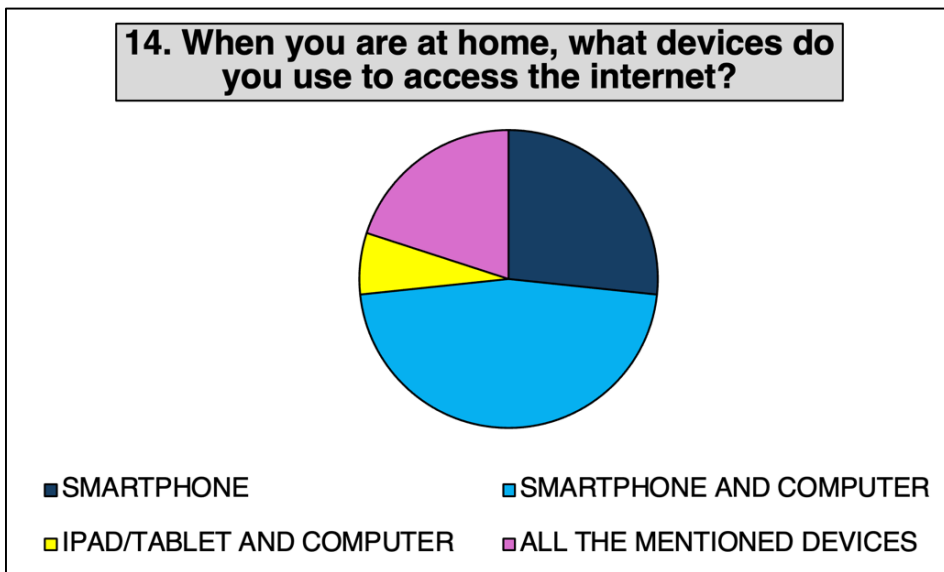
The third session about digital devices at home begins with question number 12, in which all students confirmed to have access to a Wi-fi connection, however not all of them stated to own a mobile phone, because one student has not got one (Figure 7). On the contrary, all his/her classmates have a mobile phone with access to the internet: 8 students use both data connection and Wi-fi to access the internet, 5 students employ only the data connection, and 1 does not know the type of connection of his/her phone.

Figure 7. *Mobile phone and internet access*



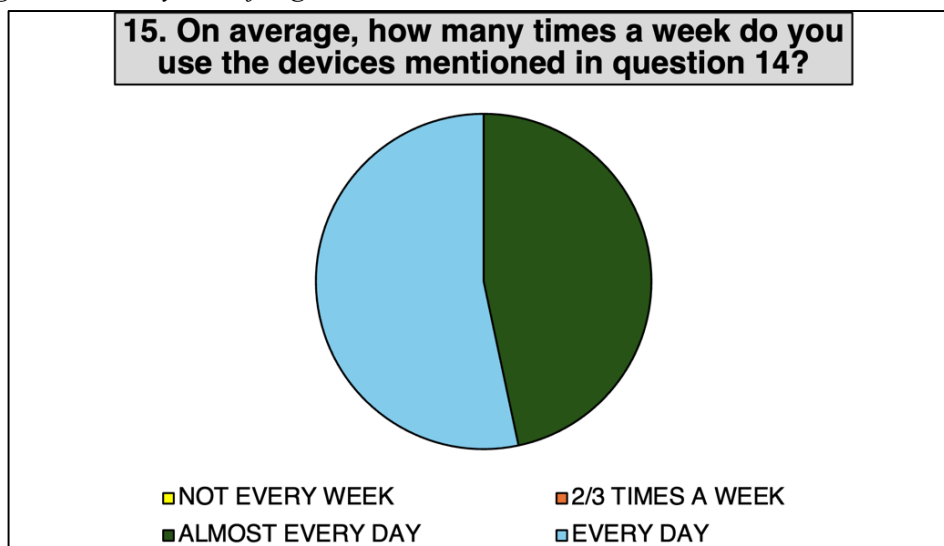
Question 14 investigates the type of devices used by the class to get access to the internet at home (Figure 8) – the majority of learners get access to the internet both from smartphone and computer (7), one student does not use the smartphone but just iPad/tablet and computer to surf the net, 4 students employ only their smartphone and 3 access the internet from all the cited devices (in this last group, one even added the PlayStation among the devices used to access the internet).

Figure 8. *Digital devices and internet access*



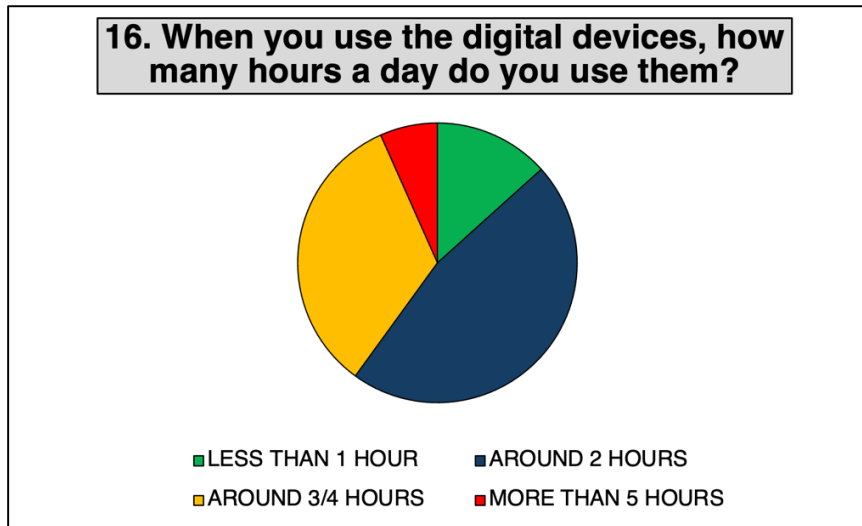
In question number 15 (Figure 9), learners are asked on average, how many times a week they use the digital devices mentioned in question 14, and the entire group employs them almost every day (7 students) or every day (8 students).

Figure 9. *Weekly use of digital devices*



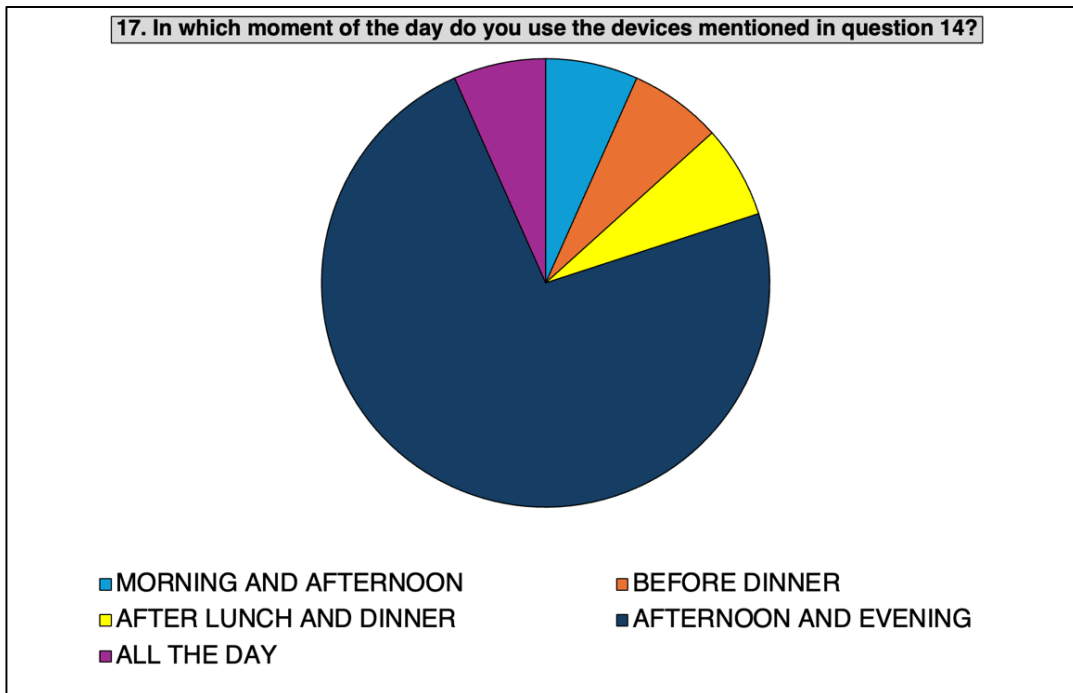
More variance is reported in question number 16 that asks for the time of employment of such devices in a day (Figure 10). 2 students reported to use the digital devices less than one hour, more than three quarter of the class spend between 2 hours (7 learners) and 3/4 hours (5 learners) on screens, only one student spends more than 5 hours of his/her time on a digital device.

Figure 10. *Daily hours spent on digital devices*



Analysing the outcomes of question number 17 (Figure 11), most of the students use the digital devices in the afternoon and in the evening (11 learners), only one student uses them before dinner, one after lunch and dinner, one in the morning and in the afternoon, only one during the entire day, from the morning to the evening.

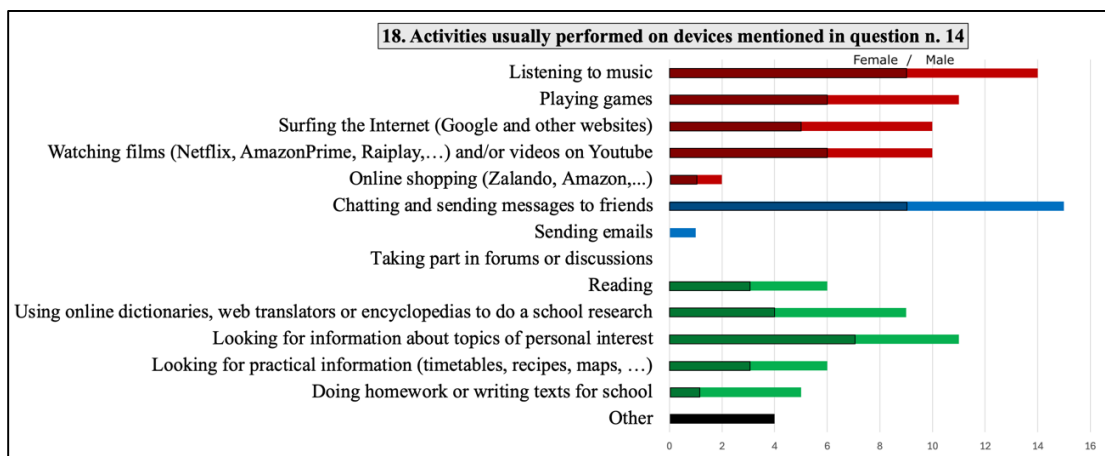
Figure 11. *Time of the day dedicated to digital activities*



The last three questions, as previously introduced, regard the activities performed on digital devices, the digital reading activities carried out and the preferred device.

In question number 18 (Figure 12), the activities are divided into three groups, differently coloured in the graph: the entertaining activities such as listening to music or playing games are in red; the activities related to communication, for example chatting, are in blue and the activities concerning information research/reading/school, such as using online dictionaries or looking for information, are in green.

Figure 12. *Activities performed on digital devices*



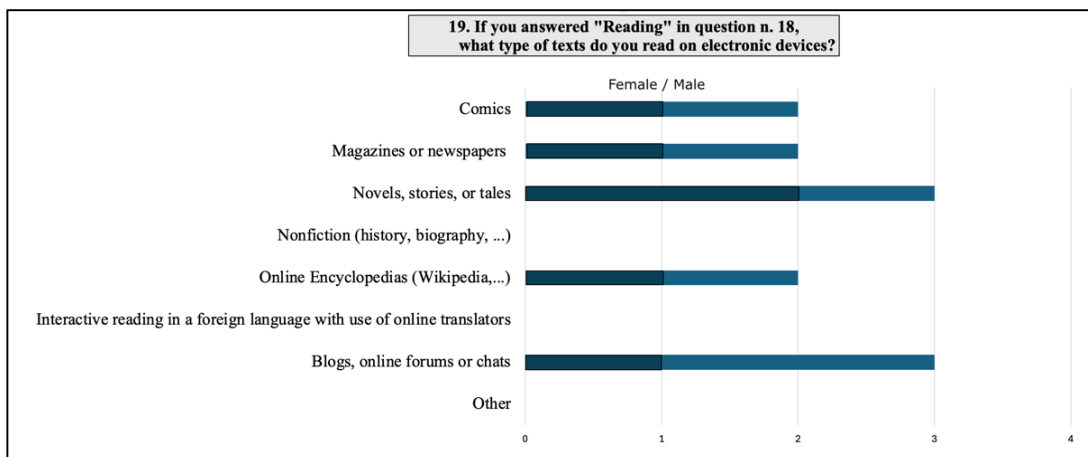
What emerges from the results is that the main activities performed are connected to entertainment and communication, for example all students chat or send messages to friends online and almost all of them listen to music; more than two thirds of the class play online game, surf the net and watch films. Among the activities with higher rates in the information research/reading/school group, around two thirds of the students use online dictionaries or encyclopedias to do school research and to look for information about topic of personal interest.

Online reading is practiced by a bit more than one third of the students, as well as the research of practical information and writing homework/texts for school. A very limited number of class members (1 or 2) shop online, send emails, programme videogames, play with foreigner players, use social network or write. Nobody in the class takes part in online forums or discussions.

If the findings to question number 18 are analysed taking into account the gender of respondents, it emerges that entertainment and communication activities are appreciated by both males and females, whereas some differences arise in the third group of information research/reading/school: three boys and three girls read online and look for practical information, 5 male and 4 female students use online dictionaries/translators/encyclopedias to do school research and only one girl compared to 4 boys does homework or writes texts for school with digital supports.

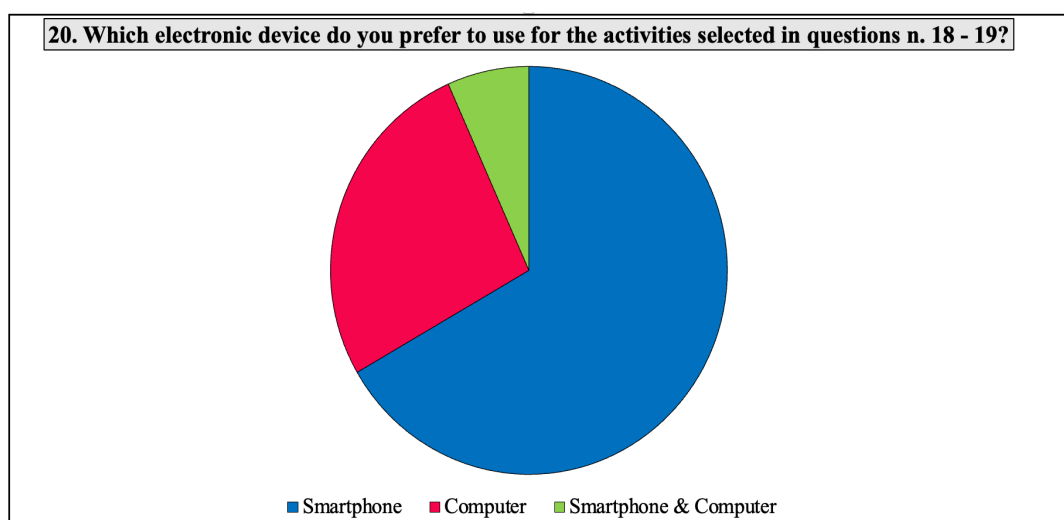
From question number 18, it is visible that only a limited number of students read on digital devices. Of this group made of 6 learners, as it emerges from question 19, 2 read comics, 2 newspapers or magazines, 3 novels, stories or tales, 2 encyclopedias and 3 read blogs, forums or chats (Figure 13). Nonfiction and interactive reading in a foreign language are two genres that students of this class do not read on digital devices.

Figure 13. *Types of digital reading*



The last question of the questionnaire investigates the preferred device of learners for the activities mentioned in question 18. The outcomes report that 10 students prefer the smartphone, 4 the computer and 1 both the computer and the smartphone (Figure 14). Nobody expressed his/her preference in favour of the iPad/tablet.

Figure 14. *Favourite digital tool*



5.2. Reading comprehension results

Before moving on with the description of the accomplished results, some more considerations about the four selected students are reported.

Firstly, student A is the only one to practice online reading – he reads comics, novels/stories/tales and blogs/online forums/chats, while the other three students did not report to read on digital devices.

Secondly, all the students in the part of questionnaire concerning their English self-assessment skills evaluated writing as an easy (student B and D) or very easy (student A and C) task to accomplish, despite the general competence perception of student B and D in English was judged quite low.

The overall outcomes (Table 2) achieved by the students who performed the reading comprehension test are the following ones:

- **Student A** (male, medium-high internet usage and very good self-assessment in English) answered 18 out of 20 questions correctly (90%);
- **Student B** (male, high internet usage and low self-assessment in English) answered 9 out of 20 questions correctly (45%);

- **Student C** (female, low/medium internet usage and good self-assessment in English) answered 15 out of 20 questions correctly (75%);
- **Student D** (female, low internet usage and low self-assessment in English) answered 17 out of 20 questions correctly (85%).

The reading performance of students A and D was very satisfying or satisfying, student C achieved a good score, differently from student B, who reached a low score.

If the texts are divided in relation to the two reading strategies of scanning and skimming, it emerges that students B reached a low score in texts containing both scanning and skimming reading strategies, while students A and D performed very well in the two texts with scanning strategy.

Table 2. *Reading comprehension results*

	SCANNING TEXT 1 - 2	SKIMMING TEXT 3	TOTAL SCORE
STUDENT A	12/13	6/7	18/20
STUDENT B	6/13	3/7	9/20
STUDENT C	10/13	5/7	15/20
STUDENT D	12/13	5/7	17/20

In Figures 15-16-17 detailed results about texts and questions are synthetised. The correct answers of student A are coloured in blue, the correct ones of student B in yellow, student C is associated to the green colour and student D's correct answers are purple. From the three graphs, it is visible the high percentage of correct answers assessed by student A and D. Moreover, it emerges also the general difficulty of students in question 3 of Text 1 and question 4 in Text 3.

Other features that stand out in the analysis of the students' answers is that student A in a couple of questions modified his answers, student B modified the answers of four questions and student D modified just one answer. For student C there are only the final answers with no modifications. Furthermore, student B not only ticked the chosen answers but also underlined them in Text 2 and partly in Text 1.

Figure 15. Correct answers – Text 1

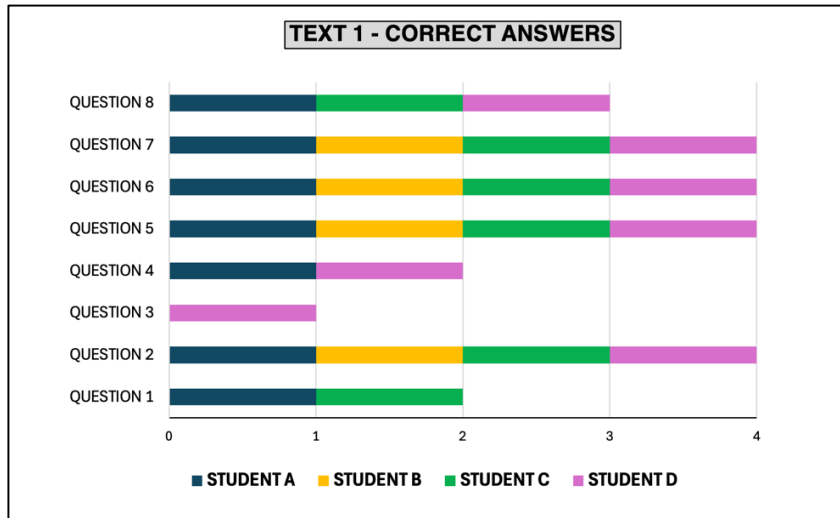


Figure 16. Correct answers – Text 2

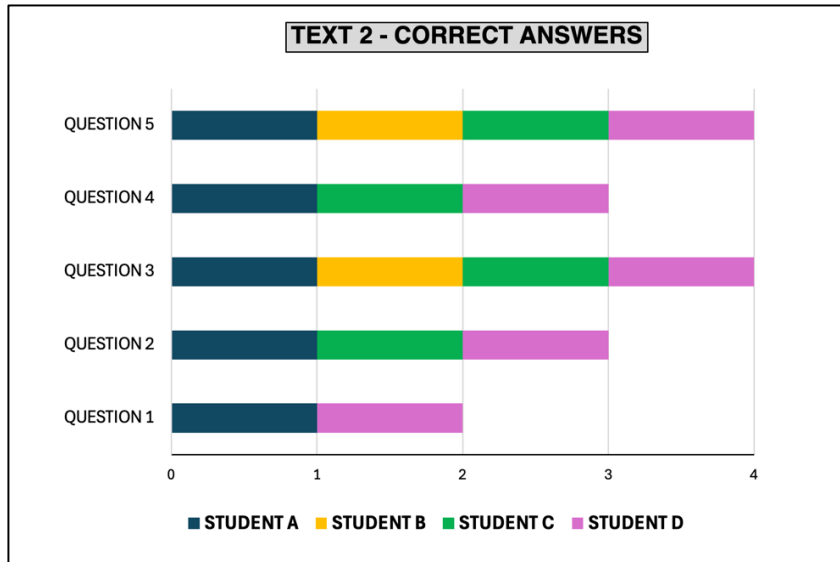
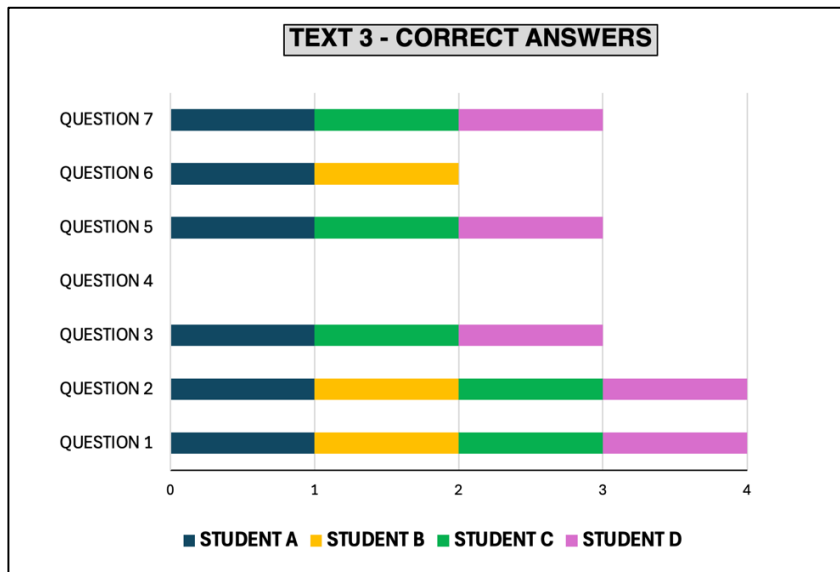


Figure 17. Correct answers – Text 3



5.3. Observation grid results

The visible strategies employed by the students are summarised in the observation grid results. Together with the description of the grid further information will be added about the reading comprehension for each student, thanks to the free notes taken during the observation by the researcher.

Despite individual behaviours, some strategies were shared among the students. For example, during the comprehension they went back in the text to reread and detect useful information, they paused when necessary and to think about the meanings, and they took enough time to check their answers at the end of the first reading. On the other hand, the four students also shared the choice of not using particular strategies, for example they did not mark or underline any words in the texts, did not write the meaning of words in the text and they did not even write marginalia. They ticked directly the answers with the pen, without the use of pencil to mark possible alternatives. The four learners did not ask for help neither from the researcher nor from the classmates, and did not express aloud any thoughts, doubts or ideas.

5.3.1. *Student A*

Student A was the first to complete the reading comprehension, after only 23 minutes (Table 3). He was concentrated since the beginning, read quickly the text, and after just a couple of minutes ticked the first answers. He did not hesitate much or reflect for long moments before answering. However, it was noticed that moments of high concentration were alternate with moments of rest or distraction, due for example to external noises or to looking around. Moreover, the student tended to have always something in the hands to play with. Concerning facial expressions, while reading the texts, the student sometimes assumed a perplexed expression.

Despite the dictionaries were available in case of need, student A did not use them to look for unknown words. Besides these elements of support, also other strategies were not employed by student A during the comprehension. The most used strategy was to reread the texts, both during the first reading and then during the second reading, which probably led to change two of the answers.

Table 3. Observation grid – Student A results

Observer: the researcher (non-curricular teacher) Date: 25 th May 2024 School: Middle School "A. Pertile", Agordo Class: 3 ^a Number of Students: 4 Time: 55 minutes	
Task: reading comprehension activity (3 Texts) Language: English Student: <u>A</u>	
Segue il testo con il dito o con un segnalibro.	
Ritorna indietro per rileggere parti difficili.	X X X X X X X X X X X X
Legge ad alta voce, cercando di pronunciare correttamente le parole.	
Sospende la lettura per chiedere la pronuncia di una parola.	
Fa pause frequenti per riflettere sul significato delle parole o delle frasi	
Usa espressioni facciali che indicano comprensione o confusione (corrugare fronte, sorridere)	
Scomponde le parole in sillabe per facilitarne la lettura.	
Cerca somiglianze tra parole straniere e parole nella lingua madre.	
Utilizza un dizionario o un'app di traduzione per cercare parole sconosciute.	
Fa riferimento a note a margine, glossari, o immagini nel testo per chiarire significati.	
Chiede aiuto a insegnante/compagno quando incontra difficoltà.	
Discute il contenuto del testo per confermare la propria comprensione.	
Mostra segnali di frustrazione (sospiri, chiusura libro, distrazione) quando incontra difficoltà.	
Dimostra entusiasmo o soddisfazione (sorrisi o commenti positivi) quando comprende il testo.	
Verbalizza strategie di comprensione ("devo rileggere questa parte"...)	
Si auto-interroga per verificare la comprensione ("Cosa significa questa parola?")...	
Prende il tempo necessario per rileggere e comprendere, piuttosto che affrettarsi.	
Fa delle pause regolari per riposare o riflettere su ciò che ha letto.	X X X X X X X X X X
Prende appunti o segna le parole nuove nel testo.	
Fa uso di evidenziatori o penne per sottolineare parti importanti o difficili.	
Gira Pagina	X X X X X X X
Inizia a segnare le risposte	X

Tempo 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57

5.3.2. Student B

At the beginning of the reading comprehension, student B looked a bit worried, his facial expressions were serious, and he changed different times his position. After the first minutes, his body movements started to decrease, while the reading process became more focused (Table 4). The student sometimes used the pen to follow the reading, even if most of the time it was used as an object to fiddle with.

More facial expressions followed during the reading, mainly doubtful, even if also an expression of surprise came when he probably found out an answer or the meaning of a word. In the second part of the reading and in particular during the second reading, the student, for brief but frequent moments, gestured moving his hands and head as to imitate the aloud reading, despite the reading was only silent and not aloud.

The student sometimes took some moments to think and to rest and had the time to reread the texts and look for the difficult words. During the reading comprehension student B used both the paper and the online dictionaries.

The student finished the reading comprehension after 37 minutes.

Table 4. Observation grid – Student B results

Observer: the researcher (non-curricular teacher)	Date: 25 th May 2024	School: Middle School "A. Pertile", Agordo	Class: 3 ^a	Number of Students: 4	Time: 55 minutes																																																					
Task: reading comprehension activity (3 Texts)	Language: English	Student: <u>B</u>																																																								
Segue il testo con il dito o con un segnalibro.	X	X X	XX X		X																																																					
Ritorna indietro per rileggere parti difficili.	XXX X	XXX	XX X	X X	XXX X X X																																																					
Legge ad alta voce, cercando di pronunciare correttamente le parole.																																																										
Sospende la lettura per chiedere la pronuncia di una parola.																																																										
Fa pause frequenti per riflettere sul significato delle parole o delle frasi				X																																																						
Usa espressioni facciali che indicano comprensione o confusione (corrugare fronte, sorridere)	X X X			XX X	X X X																																																					
Scomponde le parole in sillabe per facilitarne la lettura.																																																										
Cerca somiglianze tra parole straniere e parole nella lingua madre.																																																										
Utilizza un dizionario o un'app di traduzione per cercare parole sconosciute.			cartaceo X	X	X X online																																																					
Fa riferimento a note a margine, glossari, o immagini nel testo per chiarire significati.																																																										
Chiede aiuto a insegnante/compagno quando incontra difficoltà.																																																										
Discute il contenuto del testo per confermare la propria comprensione.																																																										
Mostra segnali di frustrazione (sospiri, chiusura libro, distrazione) quando incontra difficoltà.	X X X																																																									
Dimostra entusiasmo o soddisfazione (sorrisi o commenti positivi) quando comprende il testo.		X		X	X X																																																					
Verbalizza strategie di comprensione ("devo rileggere questa parte" ...)																																																										
Si auto-interroga per verificare la comprensione ("Cosa significa questa parola?", ...)																																																										
Prende il tempo necessario per rileggere e comprendere, piuttosto che affrettarsi.				X X X	X X X X																																																					
Fa delle pause regolari per riposare o riflettere su ciò che ha letto.	X X X X	X	XX	X X X	XX																																																					
Prende appunti o segna le parole nuove nel testo.																																																										
Fa uso di evidenziatori o penne per sottolineare parti importanti o difficili.																																																										
Gira Pagina	X X	X	X X	XX	X X X																																																					
Legge mentalmente, muovendo testa e mani e mimando la lettura				X XX	XX X X																																																					
	Tempo	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57

5.3.3. Student C

Student C was very systematic in her reading. For each text she had a general overview of the text and then started a very focused reading that started from the beginning and followed line by line the text. To help the reading, the student very often used a pen or a finger to guide the eyes and in some points the text was read in a low voice (Table 5). After reading the text for the first time, student C often went back to reread some parts.

Almost at the end of every text comprehension, the student checked the time on the watch before turning the page. Enough time was taken to reread the texts at the end of the comprehension and some very brief moments were taken to reflect on the meaning or to rest.

To look for the unknown words, student C opted for the online dictionary, that was used three times. After finding the translation of the words, however, no notes or marginalia were written on the reading comprehension paper. Only a couple of times her expression was perplexed.

Student C accomplished the reading comprehension in 35 minutes.

strategies (PROB) are used with high frequency, while support strategies (SUP) are sometimes or never used.

Comparing all the graphs, there are three reading strategies that all the students employ with the same frequency: strategies number 13-24-27, which are all global reading strategies (GLOB). Statement 13 says “when the text becomes difficult, I pay closer attention to what I am reading”, statements 24 is “when the text becomes difficult, I reread it to increase my understanding” and statement 27 “when I read, I guess the meaning of unknown words or phrases” (Mokhtari & Sheorey, 2002). However, other tendencies about reading strategies are shared among the learners, despite their different assessments.

The strategies that are more frequently used by all the learners are number 3 “I think about what I know to help me understand what I read”, 4 “I take an overall view of the text to see what it is about before reading it”, and 16 “I use context clues to help me better understand what I am reading” (Mokhtari & Sheorey, 2002), which are global strategies (GLOB). Problem solving strategies (PROB) are also very common reading strategies among the four students, such as strategy number 8 “I try to get back on track when I lose concentration” and 15 “I stop from time to time and think about what I am reading” (Mokhtari & Sheorey, 2002). Conversely, the least reading strategies employed by students are support strategies (SUP), such as in statement 2 “I take notes while reading to help me understand what I read”, 5 “when the text becomes difficult, I read aloud to help me understand what I read”, 9 “I underline or circle information in the text to help me remember it”, and 25 “ I ask myself questions I like to have answered in the text” (Mokhtari & Sheorey, 2002).

Figure 18. Reading strategies questionnaire – Student A

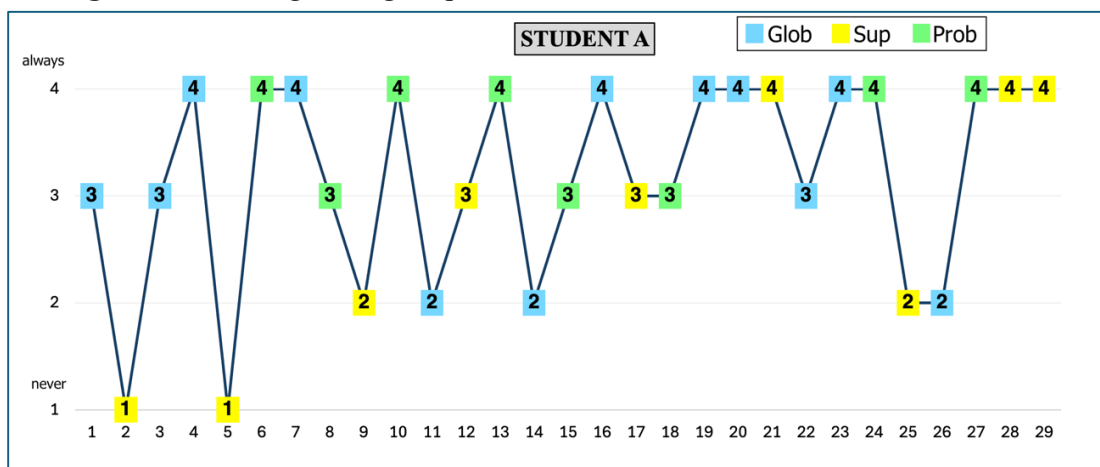


Figure 19. Reading strategies questionnaire – Student B

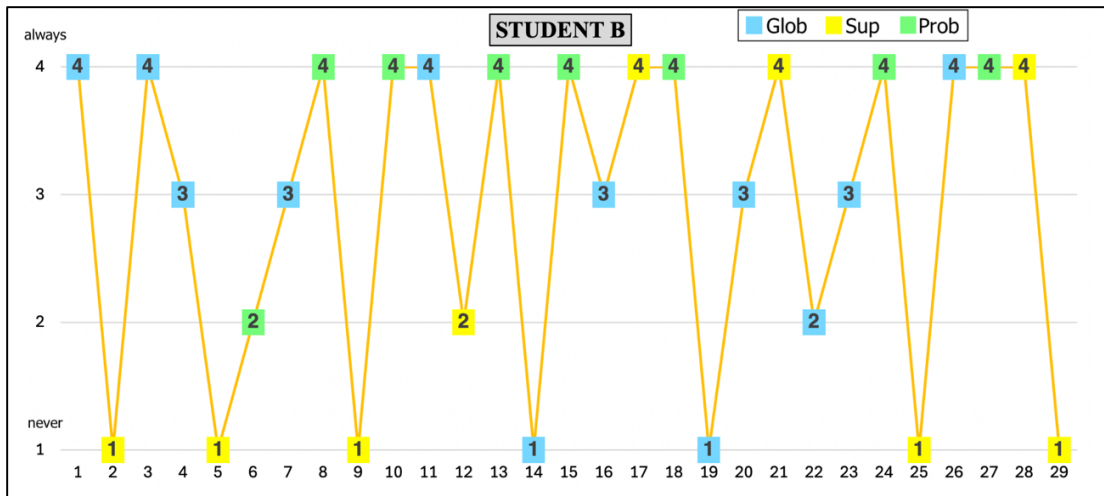


Figure 20. Reading strategies questionnaire – Student C

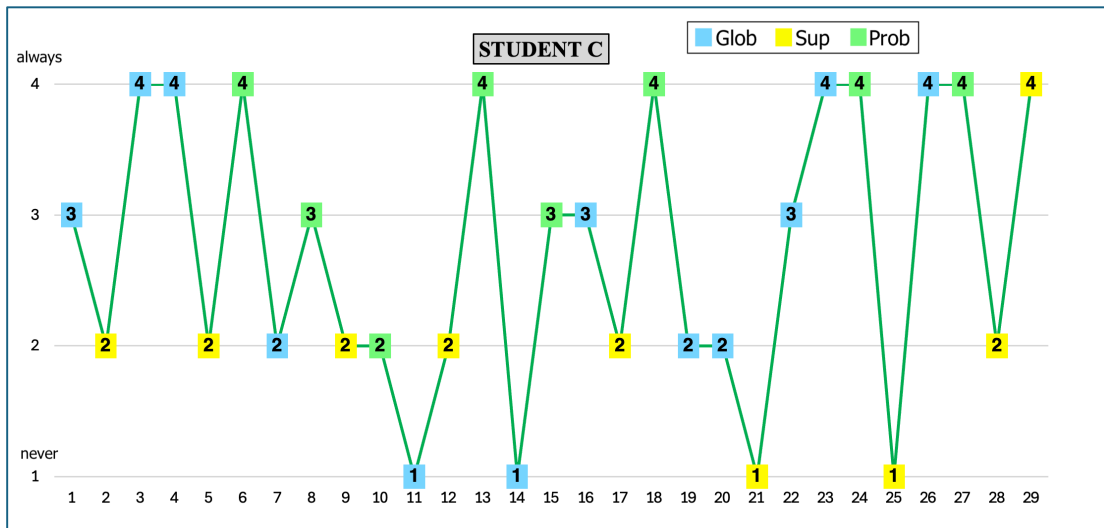
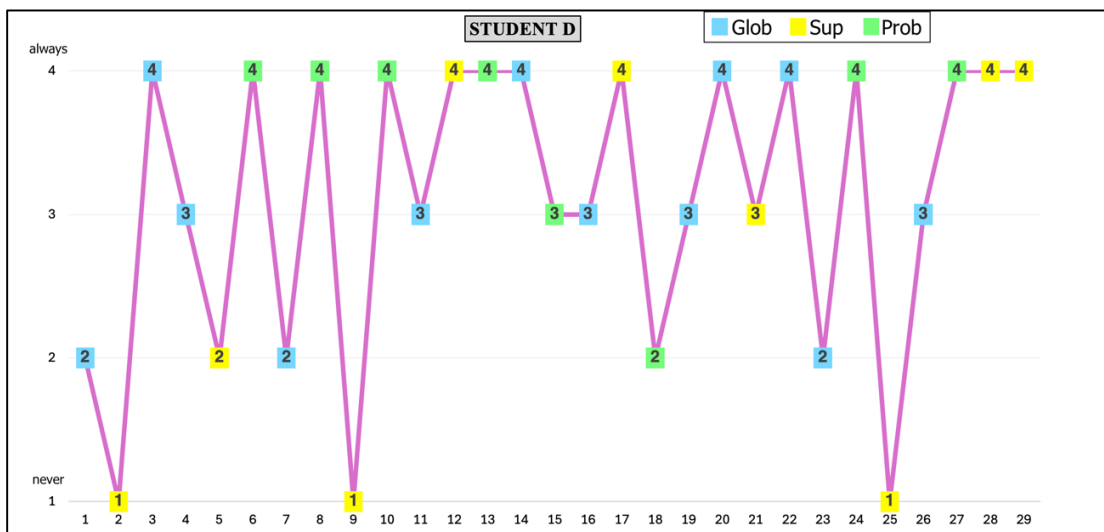


Figure 21. Reading strategies questionnaire – Student D



Chapter VI: Discussion of results

In this chapter the results of the current research will be discussed and compared to the outcomes of the previous studies, mentioned in the literature review.

The data reported in chapter V are qualitative data collected through the analysis and observation of a very limited group of students, therefore they cannot be generalised or considered common tendencies. The data is quite specific and intertwined with the unique context in which it was collected. However, some similarities to the results of previous research can be detected also in this restricted group of students and suggestions for further research on a larger scale can be developed.

This chapter is divided in two parts, the first paragraph focuses on the discussion of the results of the students' questionnaire, whereas the second paragraph considers the features emerged from the reading comprehension.

6.1. Discussion of student questionnaire results

The data emerged from the questionnaire confirm some tendencies related to the adolescent digital habits observed in numerous studies of the last twenty years, as it will be explained in the following part. As it can be seen, except for one student, all the other class members own a mobile phone, which means more than the 90% of students, that is a percentage quite near the value detected by the Common Sense Census in the U.S. (Rideout et al, 2022). The use of digital devices is also very frequent – all the class reported to use them every day or almost every day, as in the outcomes emerged from the study of Kuhlemeier and Hemker (2007). Moreover, considering both the time spent on screen and the moments of the day when the devices are accessed, it seems that just in a few cases the use of digital tools is regulated by some restrictions adopted by their parents, for example using the mobile phone for a maximum of one hour or just before dinner.

To answer to the first research question “what kinds of activities do third-class students undertake during their online experience?” it can be stated that the digital experience of students aligns with the data recorded for example ten years before in Norwegian national surveys (Norwegian Media Authority, 2014, as cited in Tveit & Mangen, 2014), but also with the up-to-date data by the Common Sense Census in the U.S. (Rideout et al, 2022), in which entertaining and communication activities dominate the digital habits of tweens and teens. Therefore, despite a decade has passed, in which also a pandemic has occurred,

from this data it can be stated that the type of activities associated to digital devices have remained generally unvaried.

At the same time, this aspect can partly confirm the reasons at the base of the “shallowly hypothesis” associated to digital reading cited by Baron in her book (2021). If the activities digitally performed by young people of different generations are most of the times related to entertainment and communication – two activities that do not require an excessive mental effort – the approach used to access digital tools would continue to be more relaxed and not excessively focused, as it is instead required during a reading comprehension task.

The use of digital devices to do homework or to look for information for school does not seem to be considerably changed when compared to previous studies (Hunley et al., 2005; Kuhlemeier & Hemker, 2007), even if with the pandemic the school environment has promoted the use of digital tools and resources for the learning process. Only one third of the students states to use digital supports for activities related to school, even if, consciously employed, the net and the digital devices could represent a significant resource to learners. This tendency could be due to many reasons, the first one could be the association of learning and education to paper-based resources, as reported in some studies (Baron, 2021), otherwise it is possible that the school itself has not offer learners enough opportunities to take advantage of the digital resources available.

However, the school related activities are not the only ones with low scores in the questionnaire. Moving on to the second research question “what is the percentage of students reading online in a third class of a lower secondary school?”, from the collected data it stands out that only one third of the class students engage in digital reading, so reading still remains a limited activity, despite the changes that the pandemic may have caused in children’s and adolescents’ habits. Even if in this study no information about general reading as leisure activities has been collected and it cannot be proven that the students in the class do not read very often, the questionnaire result about digital reading confirms the general tendency, underlined in some surveys cited by N. Baron (2021), that reading on digital devices is not so spread as it would appear. Besides, analysing the data concerning the type of device employed by students for the activities of question 18 and their favourite digital device as expressed in question 20, the results highlight the smartphone as the most privileged tool. Thus, it is most likely that smartphones do not favour extended reading for the reasons cited in paragraph 2.4.2. such as eyestrain, and learners of this class prefer reading on other supports.

Nevertheless, it is singular that, checking the results of question 11 about the students' perception of the basic linguistic skills in English, reading is considered the easiest skill to perform according to the members of the examined class. This outcome partially contrasts with the general tendency that does not record reading, both on paper and digitally, as one of the most practiced activities in leisure time (Baron, 2021).

Considering the findings related to the online experience of the students from the gender point of view, it can be seen that, in the research/reading/school part, the percentage of male students performing this type of activities generally overtakes that of the female counterparts. These results contrast with other studies (Hunley et al., 2005; Nævdal, 2007), in which female outnumbered male students in the use of digital devices for scholastic activities, even if they partly confirm other data suggesting the male tendency of preferring digital reading (Tveit & Mangen, 2014). However, in the current study no comparison with data of paper reading can be analysed, since this information was not present in the questionnaire.

The last considerations of this section concern the students' opinions and perceptions about English. Exploring the results regarding the importance students give to English language, it emerges that it is considered useful, regardless of the interest. This outcome can be significant in particular if related to the initiatives promoted by the EU in favour of multilingualism, because it suggests that adolescents have been somewhat affected and perceive the importance of languages, at least of English, in the current society.

6.2. Discussion of reading comprehension results

Moving on to the discussion of the results of reading comprehension, research questions 3 and 4 will be considered. To find an answer to research question 3 “is there a positive relationship between time spent online and the English reading performance?”, we can start from the results obtained by student A, who achieved the highest score in the group. Student A, besides having a very good self-assessment in English and a medium-high internet usage, is the only student in the reading comprehension group to read digitally in his free time, and to engage also in a wide enough variety of reading genres. This outcome seems to confirm what affirmed by Pfost et al. (2013) in their research, namely the positive influence of leisure reading on the correspondent achievements. Moreover, also in reference to the considerable amount of time spent on digital devices, it can be affirmed that in this case their use of digital devices, joined to the practice of digital reading, had a positive effect on English reading performance.

Nevertheless, if the results assessed by student B are considered, this last statement is no longer valid. Although his performance can be explained taking into account other studies, in which emerges that the use of digital devices does not automatically lead to better academic achievement (Baron, 2023; Merga & Mat Roni, 2017), and that the type of activities and reading experienced online can differently influence reading comprehension competence (Pfost et al., 2013). Student B, differently from student A, has a low self-assessment in English, however, considering also the outcomes of the research by Ficzer et al. (2021), the high internet use should positively affect reading comprehension in English, tendency that is not confirmed in this case by student B, who accomplished only 45% of the correct answers.

Considering students C and D, who report both a limited use of digital devices, but also two opposite self-assessments in English, the outcomes of the reading comprehension are quite near to student A. There is only a slight difference in favour of student D, since student C in the associated results of Text 1 + Text 2, which required a major employment of the scanning strategy, achieved two points less than students D and A. Going back to the two students' questionnaires, the difference in the activities performed online is located in the online experience of student D, who also uses online dictionaries/encyclopedia and prepares texts/homework for school. However, apart from this factor, in these two cases the infrequent use of internet seems not to negatively influence reading performance.

The last part of the discussion will be focused on the fourth research question: "do the reading strategies in EFL reading comprehension differ from internet-high-user and internet-low-user students?". Before comparing these two groups of learners, the analysis will focus on each group in order to identify potential similarities and/or differences.

Starting with the group of high users of internet, students A and B significantly differ in terms of behavior and use of visible reading strategies. Student A started immediately the reading comprehension, moving relatively quickly forward and keeping enough time at the end to check the most difficult parts. He did not use any dictionaries or visual markers on the text to promote the comprehension and did not often manifest with facial expression doubts or feelings. On the contrary, student B had some difficulties to concentrate at the beginning, at some points used the pen to guide the eye movements, employed both the paper dictionary and the online translator to find the meaning of words. Moreover, student B made use of facial expressions and body movements to express perplexity, thoughts or feelings. Considering, instead, the outcomes of the reading

strategy questionnaire, students A and student B employed both a considerable number of reading strategies, in particular the global and problem-solving strategies. Nevertheless, a difference is present in the number of strategies not used – student A reported to use almost all the reading strategies suggested, albeit with a distinct frequency, while student B affirmed to never use 7 strategies, nearly one quarter of the total number, in which are included mainly support reading strategies.

The second group of low users of internet consists of students C and D. From the point of view of visible strategies and behaviours there are similarities such as going back to reread complex parts or taking enough time to ponder about meanings, but on the other hand there are also remarkable differences. Student C guided the reading with fingers and moved her head following the lines, read in a low voice for a considerable length of time and checked the time to organise the reading. Student D spent longer time on the comprehension of a text before moving on with the others, used since the beginning both paper dictionary and online translator, and read in a low voice the text for just a couple of times. From the point of view of the outcomes related to the strategy questionnaire, student D used more strategies in the frequency range often-always (just one less than student A), while student C is the one in the group to use the least number of strategies in the same frequency range. Then, while the type of strategies mostly used by student D are similar to those of student A, student C distances considerably from the others in relation to support strategies.

Therefore, the results collected suggest that the reading strategies in EFL employed by students do not hinge directly on the frequency of internet usage but could be influenced by other factors. Considering the entire group of students, more similarities in visible strategies are detected by students with opposite profile, for example between student A and D and between student B and C, while the reading strategies emerged from the questionnaire for some aspects are similar in case of students A, B and D. The other factors affecting the choice of reading strategies could be detected in the type of activities performed, both on digital and paper reading, since for example the last 3 mentioned students engaged in more types of online activities than student C, and student A performs online reading, while student B does not.

One last consideration is related to an observation related to visible strategies. From the outcomes, nobody in the group used visual marks, notes or marginalia on the text, even if from the data and students' comments analysed by N. Baron in her book (2021), annotation, such as underlining and highlighting, is one of the most common strategies

employed by students (p. 139). In addition, one of the issues of digital reading and learning emphasised by university students is exactly annotation (p. 85), easier on paper than on digital texts. Therefore, it could be that the general increase in digital use have partly affected the use of some specific strategies such as annotation, even if this hypothesis requires a greater quantity of data to be confirmed.

Chapter VII: Conclusions

The research aimed to identify the possible effects of the online reading experience of students on EFL reading comprehension strategies. By analysing the results of the questionnaires about digital habits and preferences and the outcomes of the reading comprehension, the investigation has shown that the type of strategies and the frequency of their use seem to depend more on the kind of activities performed in the digital environment than on how often digital devices are used. Both students with high use of digital devices, indeed, have showed not to have a considerable number of strategies and behaviours in common during the reading comprehension and the same has occurred in case of the two students with low use of digital devices. On the contrary, greater similarities were found among the students with different time of digital usage, but similar activities performed in the digital context. Further studies could be conducted in this direction to investigate the validity of this last hypothesis.

Turning to the findings related to the student questionnaire, the prevalence of entertainment and communication activities among young teen students in their digital experience is aligned with the data emerged in prior studies, as well as digital reading and digital resources for educational purposes seem to remain activities practiced by a limited number of learners.

However, as already stated, the data refer to a very limited number of participants in the study, characteristic that on the one hand gave the opportunity to observe in detail the behaviour of the students during the reading comprehension task, but that on the other hand does not allow the generalisation of findings. Moreover, as emerged in the literature review, since reading is a complex process and the use of digital devices is an ever-changing phenomenon, taking into account all the possible variables occurring in the context of research becomes particularly challenging and problematic.

More data need to be gathered about the influence of digital experience on students' reading competence and strategies, both on paper-based and digital-based comprehension tasks. For example, it could be useful comparing the performance of the same group of students in the two reading environments to detect recurring and occasional strategies. Otherwise, further research could examine the factors considered in the present study, but with a larger number of participants and quantitative data to see if similar results emerge. In this case, I suggest integrating the student questionnaire with questions related to the language level of students, for example in case of learners with a positive self-assessment

in English, it should be checked if this is also related to past experiences of language certification, study or life abroad, which could alter the results of the reading comprehension task.

Language learning, types of resources available and reading habits will continue to change in the following years, making necessary a steady monitoring and observation of the changings taking place in learners' school and out-of-school contexts. In this way it would be possible to enhance a teaching approach able to adapt to the changing characteristics of students and their learning context.

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APPENDIX

Appendix 1 – Student questionnaire about general information and the use of the internet in non-scholar context

<input type="checkbox"/>					
Questionario sull'utilizzo di internet in ambiente non scolastico					
Informazioni generali					
1. Età: _____					
2. Genere: <input type="checkbox"/> M <input type="checkbox"/> F <input type="checkbox"/> altro					
3. Nazionalità: <input type="checkbox"/> italiana <input type="checkbox"/> altro _____					
4. Dove siete nati tu e i tuoi genitori? (Barra una casella per te, una per tua madre e una per tuo padre; per il punto B e C indica anche il Paese)					
	io	madre	padre		
A. Italia					
B. Unione Europea (Austria, Belgio, Bulgaria, Cipro, Croazia, Danimarca, Estonia, Finlandia, Francia, Germania, Grecia, Irlanda, Lettonia, Lituania, Lussemburgo, Malta, Paesi Bassi, Polonia, Portogallo, Repubblica Ceca, Romania, Slovacchia, Slovenia, Spagna, Svezia, Ungheria)					
C. Altro					
5. Se tu non sei nato/a in Italia, quanti anni avevi quando sei arrivato/a in Italia?					
<input type="checkbox"/> Fino a 3					
<input type="checkbox"/> da 4 a 6 anni					
<input type="checkbox"/> da 7 a 9 anni					
<input type="checkbox"/> da 10 più					
6. Durante la tua giornata quale lingua usi di più? (Nel caso di lingua di immigrazione indica quale)					
<input type="checkbox"/> Italiano					
<input type="checkbox"/> lingua di immigrazione: _____					
<input type="checkbox"/> dialetto o ladino					
7. Che lingua parli con queste persone? (Nel caso di lingua di immigrazione indica quale)					
	Solo italiano	Solo lingua di immigrazione	Solo dialetto o ladino	Italiano e lingua di immigrazione	Italiano e dialetto/ladino
Insegnanti					
Compagni di scuola					
Amici					
Padre					
Madre					
Fratelli e sorelle (se ne hai)					
Nonni e altri parenti					
Personale nei negozi					
1/3					

Lingua inglese

8. Da quanti anni studi inglese a scuola? _____

9. Da 1 a 5, quanto ti piace la lingua inglese come materia scolastica?

	1	2	3	4	5	
Per nulla	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Moltissimo

10. Da 1 a 5, quanto pensi che sia utile imparare l'inglese?

	1	2	3	4	5	
Per nulla	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Moltissimo

11. Cosa trovi facile e cosa trovi difficile nello studio della lingua inglese?

	Molto facile	Facile	Difficile	Molto difficile
Ascoltare				
Parlare				
Scrivere				
Leggere				

Informazioni generali dispositivi elettronici a casa

12. Possiedi una connessione Wi-fi a casa? Sì No

13. Possiedi un cellulare con connessione ad internet?

- Sì, con connessione dati (3G/4G)
- Sì, mi connetto quando c'è il Wifi
- Sì, ho un cellulare con connessione mobile, ma non saprei dire di che tipo
- No, ho un cellulare che non si può connettere a Internet
- No, non ho un cellulare

14. Quando sei a casa, per connetterti ad internet che dispositivi usi?

- Smartphone
- ipad/tablet
- computer

15. In media, quante volte alla settimana utilizzi i dispositivi indicati nella domanda precedente?

- Non tutte le settimane
- 2/3 volte alla settimana
- Quasi tutti i giorni
- Tutti i giorni

16. E nei giorni in cui usi i dispositivi indicati nella domanda 14, quante ore li usi?

- Meno di un'ora
- Circa 2 ore
- Circa 3/4 ore
- Più di 5 ore

17. In che momento della giornata utilizzi i dispositivi indicati nella domanda 14? (è possibile segnare più di una risposta)

- La mattina
- Il pomeriggio
- La sera
- Altro_____

Tipo di attività svolte sui dispositivi indicati nella domanda 14

18. Che attività svolgi abitualmente quando usi i dispositivi indicati nella domanda 14?

- Ascolto musica
- Gioco
- Navigo in internet (Google e siti web)
- Guardo film (Netflix, AmazonPrime, Raiplay, ...) e/o video su Youtube
- Faccio shopping (Zalando, Amazon, ...)
- Chatto e invio messaggi agli amici
- Mando email
- Partecipo a forum o discussioni
- Leggo
- Uso dizionari, traduttori o enciclopedie per fare ricerche (Wikipedia, ...)
- Cerco informazioni su argomenti di interesse personale
- Cerco informazioni pratiche (orari, ricette, mappe, ...)
- Faccio compiti o scrivo testi per la scuola
- Altro_____

19. Se nella domanda 18 hai risposto LEGGO, quali delle seguenti tipologie di testo leggi su dispositivo elettronico (smartphone, ipad/tablet/kindle, computer)?

- Fumetti
- Giornali o riviste
- Storie, romanzi, racconti
- Saggi (storici, bibliografici, ...)
- Enciclopedie (Wikipedia, ...)
- Letture interattive in lingua straniera con l'uso di traduttori (google translator, ...)
- Blog, forum, chat
- Altro_____

20. Quale dispositivo elettronico preferisci utilizzare per le attività che hai indicato nella domanda 18 e 19? _____

Appendix 2 – Reading comprehension test

TEXT 1

- Read the article about two sisters and for each question choose the correct answer.

Something very **strange** happened to Tamara. She never knew she had a twin sister until she started university!

Tamara was born in Mexico. Her parents could not **look after** her, so she went to live with a family in Manhattan, USA.

When Tamara was twenty years old, she started university in Long Island. She enjoyed her university life. But one day she was walking home from class, and a student smiled at her. "Hello Adriana!" said the student. "I'm not Adriana," said Tamara.

This happened to Tamara again and again. People Tamara didn't know kept calling her Adriana. It was very **strange**. One day, when a woman called her Adriana, Tamara asked "Why do you keep calling me Adriana?"

The woman replied, "You look like my friend Adriana. You have the same face and the same hair. Is Adriana your sister?" Tamara said that she did not have a sister called Adriana. But she was interested in this girl Adriana. Finally, she asked someone for Adriana's email address.

When Tamara wrote to Adriana, she found out that they both had the same birthday, they **looked the same** and both of them were from Mexico. When Tamara went to live with the family in Manhattan, Adriana moved to Long Island to live with a family there. It had to be true! Adriana and Tamara were twin sisters!

1) Tamara's parents ...

- A moved from Mexico to Manhattan B sent Tamara and Adriana away C are still alive

2) Tamara and her sister were both born ...

- A in Mexico B in Manhattan C in Long Island

3) Adriana wrote to Tamara...

- A after speaking to friends B to reply to an email C to suggest a meeting

4) How did the sisters meet?

- A Adriana contacted Tamara B A friend introduced them C Tamara contacted Adriana.

5) Tamara didn't know ...

- A that she was born in Mexico B what day her birthday was C that she had a sister

- Match the words with the correct definitions or synonyms.

1. Look after (line 3)

- a. Take care of b. respect c. give food

2. Strange (line 1 and 9)

- a. boring b. annoying c. unusual

3. Look the same (line 13)

- a. be completely different b. be very similar in appearance c. look in the same direction

TEXT 2

- Read the article about a family of dancers and for each question choose the correct answer.

The women in the Watson family are all crazy about ballet. These days, Alice Watson gives ballet lessons, but for many years, she was a dancer with the National Ballet Company. Her mother, Hannah, also had a full-time job there, making costumes for the dancers.

Alice's daughter Demi started learning ballet as soon as she could walk. 'I never taught her,' says Alice, 'because she never let me.' Now aged sixteen, Demi is a member of the ballet company where her mother was the star dancer for many years.

Alice's husband, Jack, is an electrician. They met while he was working at a theatre where she was dancing and got married soon after. 'When Demi started dancing, the house was too small for her and Alice to practise in, so I made the garage into a dance studio. Now the living room is nice and quiet when I'm watching television!' he says.

Last month, Demi was invited to dance in the ballet Swan Lake. Of course, Alice and Hannah were in the audience and even Jack was there, which made it very special for Demi. Jack says, 'I'm not that interested in ballet myself but it's fantastic seeing Demi taking her first steps with Alice's old company!' Demi was wearing a dress that Hannah made for Alice many years before.

'It was very exciting for all of us,' says Hannah. 'Demi's way of dancing is very like Alice's. I know I'm her grandmother, but I think she has a great future!'

1. What is Alice Watson's job now?
 - A. Dancer.
 - B. Teacher.
 - C. Dress-maker.
2. Demi had her first ballet lessons
 - A. at a very young age.
 - B. at the National Ballet Company.
 - C. from her mother.
3. Jack helped his wife and daughter by
 - A. moving to a larger house.
 - B. letting them use the living room for dancing.
 - C. making a place for them to practise in.
4. What was the best thing about the Swan Lake show for Demi?
 - A. It was her first show with the company.
 - B. All her family were there.
 - C. She was wearing a new dress.
5. Hannah says that Demi
 - A. will be a star one day.
 - B. is her favourite granddaughter.
 - C. dances better than Alice did.

TEXT 3

- Read the three texts about sports experiences. For each question, choose the correct answer.

Jeanne

We did lots of team sports at school, like football, volleyball and hockey. But I'm not very fast or strong, so I couldn't hit or kick a ball hard. Often, members of my team laughed at me, and so I stopped playing sports as soon as I could because it upset me. But later I learned that you can get exercise without other people around. Now I sometimes go cycling, swimming and running, but always on my own. Then no one can get mad at me when I'm slow!

Laura

I used to do every sport I could when I was at school. I loved the exercise, and I also liked being a member of a team. We had some great times together. We travelled by bus to watch matches and had parties when we won. Then I was in a terrible car accident three years ago, and I hurt my leg. It still isn't better. It's made me really unhappy. The only sport I can do is fishing, and that's so boring! But a friend of mine has suggested going sailing. It sounds fun, so I think I'll try that.

Thea

I don't mind team sports. I'm quite good at baseball and cricket, but I prefer doing sports when there aren't lots of other people making noise, laughing, and telling jokes. That's why I like surfing. It's just me and the sea and a few other people who also like quiet, beautiful places. I think I would enjoy horse riding and skiing too, for the same reason, but those sports are expensive. I already spend a lot travelling to different beaches with my board.

1. Who doesn't have enough money to try sports that she's interested in?
A. Jeanne B. Laura C. Thea
2. Who plans to try a new sport soon?
A. Jeanne B. Laura C. Thea
3. Who is unable to do the sports that she enjoyed in the past?
A. Jeanne B. Laura C. Thea
4. Who only enjoys sports she can do alone?
A. Jeanne B. Laura C. Thea
5. Who made a lot of friends by doing sports?
A. Jeanne B. Laura C. Thea
6. Who only enjoys playing sports with others if they aren't too loud?
A. Jeanne B. Laura C. Thea
7. Who had unhappy experiences when playing team sports?
A. Jeanne B. Laura C. Thea

Appendix 5 – Studies containing reading comprehension assessments, followed by a short description of test methods

- Al-Sheri, S., & Gitsaki, C. (2010). Online reading: A preliminary study of the impact of integrated and split-attention formats on L2 students' cognitive load. *ReCALL*, 22(3), 356-375 <https://doi.org/10.1017/S0958344010000212>

Testo di comprensione online, tratto da manuale di lingua della University of Cambridge Language Examination Syndicate (UCLES).

Le domande di comprensione sono somministrate in due diverse modalità: per il primo gruppo il testo e le domande si trovano su due differenti pagine web, per il secondo gruppo il testo è stato diviso in quattro parti, ciascuna delle quali presenta le relative domande sulla stessa pagina. Questi due gruppi poi si dividono a loro volta in due, uno con possibilità di accedere al dizionario online Babylon 7® durante la prova e un gruppo senza accesso al dizionario.

- Coiro, J. (2011). Predicting reading comprehension on the Internet: contributions of offline reading skills, online reading skills, and prior knowledge. *Journal of Literacy Research*, 43(4), 352-392 <https://doi.org/10.1177/1086296X11421979>

Comprensione del testo su interfaccia Quia (<https://www.quia.com/web>) con risposte esportate successivamente su Excel; lettura e azioni online registrate e salvate in formato video con il software Camtasia (<https://www.camtasia.com>). Fissato tempo di durata della prova.

- Coiro, J., & Dobler, E. (2007). Exploring the online comprehension strategies used by sixth-grade skilled readers to search for and locate information on the Internet. *Reading Research Quarterly*, 42, 214-257

Utilizzo di testi già presenti online (5 Tigers: The Tiger Information Center www.savethetigerfund.org).

Le domande di comprensione sono presentate su foglio e le risposte, riportate verbalmente al ricercatore assieme ad altre riflessioni e descrizione di passaggi (think-aloud protocol), vengono registrate.

- Eyre, J. (2017). On or off screen: Reading in a digital world. *set: Research Information for Teachers*, 53-58 <https://doi.org/10.18296/set.0072>

Suggerimenti di comprensione scritta su <https://newsela.com>

- Eyre, J., Berg, M., Mazengarb, J., & Lawes, E. (2017). *Mode equivalency in PAT: Reading comprehension*. Wellington: New Zealand Council for Educational Research. <https://doi.org/10.13140/RG.2.2.32130.07361>

Vengono descritti gli aspetti da considerare per rendere la comprensione su supporto cartaceo e online il più possibile corrispondente con esempio illustrato di layout per le due versioni dello stesso testo (paper and online version), <https://www.acer.org/ae/pat/assessments>

Testo di comprensione a doppia pagina con testo scritto sulla sinistra e domande di comprensione sulla destra. Orologio per misurare il tempo rimanente per la prova e possibilità di modificare font e grandezza del testo.

- Ficzer, A., Stranovská, E., & Gadušová, Z. (2021). Foreign language reading comprehension in the context of internet use. *TEM Journal*, 10(4), 1983-1991 <https://doi.org/10.18421/TEM104-64>

Per le due prove di comprensione viene specificato il numero di testi e domande, ma non i tempi di svolgimento. I test e il questionario sono somministrati in formato cartaceo.

- Kahn, I., Ibrahim, A. H., Kassim, A., & Kahn, R. M. I. (2019). Evaluating the efficacy of active reading software in enhancing EFL learners' reading comprehension skills. *International Journal of Scientific & Technology Research*, 8(12), 1861-1869

Per la comprensione del testo online in inglese utilizzo di Active Reading Software sviluppato da Clarity English.com

- Kang, H. (2014). Understanding online reading through the eyes of first and second language readers: An exploratory study. *Computers & Education*, 73, 1-8

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