

DIGITAL TEXTBOOKS WHAT'S NEW?

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Future teachers' perceptions of the pedagogical use of digital textbook in the learning process

La percepción de los futuros profesores del uso pedagógico de los libros de texto digitales en los procesos de aprendizaje

A percepção dos futuros professores do uso pedagógico dos livros de texto digitais nos processos de aprendizagem

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Abstract: *Using digital textbook (from now on, DTB) in the learning context has been gradually gaining importance in the 21st century educational scenarios. Nevertheless, there is ambiguity in the literature and in the educational field as far as the advantages and efficiency of the widespread use of digital textbook. In order to understand, in the Portuguese context, the implications foreseen, as far as the learning process is concerned, on the use of digital textbook, the present study focuses on students' perceptions of some pedagogical and functional issues related to the use of digital textbook and was carried on at a higher School of Education in Oporto. A total of sixty-six students from postgraduate classes (future teachers/educators of children from five up to eleven years old) participated in the study by completing a survey questionnaire regarding their representations on their familiarity, perceived pedagogical advantages, textbook format preferences (print vs. digital) and learning potentiality of the digital textbook. The results illustrate the importance given to digital textbook, and despite the fact that the students were, to a large extent, unaware of the concept of digital textbook, their perceptions on the usability and pedagogical aspects indicate, on the one hand, the need for continued growth in the number and variety of digital textbook made available and, on the other hand, that more research on this subject is needed.*

Keywords: *Digital textbook, teachers training, perceptions*

Resumen: *El uso de libros de texto digital (de ahora en adelante, LTD) no contexto educativo foi ganhando pouco a pouco importancia nos escenarios educativos do século 21. Sin embargo, hay una ambigüedad en la literatura y en el ámbito educativo cuanto a las ventajas y la eficacia de la utilización generalizada del libro de texto digital. Con el fin de entender, en el contexto portugués, las consecuencias, para el proceso de aprendizaje, del uso de libro de texto digital, el presente estudio se centra en las percepciones de los estudiantes sobre algunas cuestiones pedagógicas y funcionales relacionados con el uso de libros de texto digitales y se llevó a cabo en una Escuela Superior de Educación situada en el Porto. El total de sesenta y seis estudiantes de clases de posgrado (futuros profesores / educadores de niños de cinco hasta once años) participaron en el estudio, completando el cuestionario con respecto a sus representaciones cuanto a su familiaridad, ventajas pedagógicas percibidas, formato preferencial de lectura (impresión vs digitalmente) y la potencialidad para el aprendizaje del libro de texto digital. Los resultados ilustran la importancia que se da a los libros de texto digitales, y aunque los estudiantes expresan, en gran medida, un desconocimiento del concepto de libro de texto digital, sus percepciones cuanto a su uso y a los aspectos pedagógicos indican, en primer lugar, la necesidad de un crecimiento continuo tanto cuanto a su importe cuanto a la variedad de libros disponibles en texto digital y, además, que se necesita más investigación sobre este tema.*

Palabras clave: *libro de texto digital, formación de profesorado, percepciones*

Resumo: O uso de libros de texto dixital (de agora en diante, LTD) no contexto educativo foi gañando pouco e pouco importancia nos escenarios educativos do século XXI. Porén, existe unha ambigüidade na literatura e no ámbito educativo en canto ás vantaxes e a eficacia da utilización xeneralizada do libro de texto dixital. Co fin de entender, no contexto portugués, as consecuencias para o proceso de aprendizaxe do uso de libro de texto dixital, o presente estudo céntrase nas percepcións do alumnado dunha escola superior de educación situada no Porto sobre algunhas cuestións pedagóxicas e funcionais relacionados co uso de libros de texto dixitais. Participaron no estudo o total dos sesenta e seis estudantes de clases de posgrao (futuro profesorado e educadores/as de nenos e nenas de cinco ata once anos), que cubriron o cuestionario con respecto ás representacións en canto á súa familiaridade, vantaxes pedagóxicas percibidas, formato preferente de lectura (impresión vs dixitalmente) e a potencialidade para a aprendizaxe do libro de texto dixital. Os resultados ilustran a importancia que se concede aos libros de texto dixitais, e aínda que os estudantes expresan, en gran medida, un descoñecemento do concepto de libro de texto dixital, as súas percepcións en cuanto ao seu uso e aos aspectos pedagóxicos indican, en primeiro lugar, a necesidade dun crecemento continuo tanto en relación á súa importancia como en canto á variedade de libros dispoñibles en texto dixital e, en segundo, a necesidade de seguir investigando sobre este tema.

Palabras chave: libro de texto dixital, formación de profesorado, percepcións

Introduction

In contemporary societies, children and teenagers are growing up in a world where digital technology is all over. The widespread use of information technology and communication (ICT) and online services by the teenagers in their lives, whether for leisure, fun or in their social relationships has an impact on their learning needs, on their requirements and expectations. There is therefore a need to equip them with the ability to learn skills for their personal development, to participate in society and in future working life, because they are increasingly using ICT to learn everything. That is how this “learning new generation” (also called the New Millennium Learners by OECD) was born and how new learning forms are arising, such as informal learning, largely boosted, though not determined, by the opportunities offered by ICT.

Considering the fast pace of ICT evolution, we think that educational institutions (particularly those engaged in teacher training) should consider a strategic update of the different possibilities that technology offers, by bring examples, practices and/or theories typical of this arising scenario of the new learning.

Despite the existence of numerous ICT application possibilities, new ICT tools, public social network applications - Web 2.0 and Learning 2.0-, as well as recent opportunities to learn via mobile or playing games, among others, the DTB really fits both this educational paradigm and the way this new generation learns. In fact, according to Morgado and Morgado (2012: 148), «educational institutions are led by actors who strive to deliberately assume themselves as “digital immigrants”, having in mind a generation of “digital natives” that requires active and evolvable methods, so knowledge and knowledge processing must occur in new formats, more challenging, so that “digital natives” could identify with them, by taking advantage of ICT in general», and of DTB in particular.

Considering that the current and future learning in a knowledge-based digital society is more horizontal and open, comprising learners as active contributors, new

challenges arise. Some are already with us, namely, the importance of soft/transversal skills (e.g.: learning to learn, creativity, innovation, collaboration), the teachers' crucial (but changing) role, the increasing value of informal learning, and the alternative methods to assess, and certify the skills, the tacit knowledge and the experience skills, among others. Therefore, it's urgent for schools and teacher training schools to find ways to support this new learning generation, *opening paths* for modern learning in order to acquire skills to a professional context, not forgetting the learners' perceptions regarding the current context. In this work, the concern is to understand and discuss the prospective teachers' perceptions as far as DTB is concerned, using as a reference the teacher education at an education school in Portugal.

The training context of study participants

Since its origin, the Escola Superior de Educação de Paula Frassinetti (ESEPF) has been developing its activity through the systematic and unsystematic education with a special concern: the promotion of a global education and the harmonious development of the human being in its different dimensions (individual, communitarian and transcendent). ESEPF establishes Education as a scientific and professional domain that, in a transdisciplinarity process, aims to generate, spread out and apply knowledge on multiple contexts, speeches, citizens and processes that configure education as a field of practice and research, benefiting from a closeness relation among collaborative college members, students and institutions. In this direction, undergraduate courses constitute a first stage in the professional training and development of kindergarten, primary and middle school education teachers, intending to develop knowledge that constitute basic foundations of the personal, professional and citizenship development in a democratic society.

This curriculum is organized to allow the skill development in different knowledge areas, which forms the basis to the second study cycle and entitles to teaching. The objectives definition represents the purpose of a consistent training in the areas of General Educational Training, Teaching Training, Specific Teaching and Initiation to the Professional Practice, as defined by the Decree-Law 42/2005 of 22nd February, the Decree-Law 74/2006 of 24th March and the Decree-Law n.º 43/2007 of 22nd February, articulated with the general and specific profile of the professional performance of the Infancy Educator and the Teacher of Primary and Secondary Education. The learning of the human being, the knowledge and the know-how constitute the pillars of this dynamic process of training, based on the participation, negotiation, reflection and the knowledge questioning.

ESEPF main goal is the reflection, scientific production, the training of students/teachers and the knowledge disclosure in the education field. Within its

principles, there is the purpose of developing these aspects in a humanitarian, participative way, supported by the continuous scientific knowledge development. All the study cycles intend to construct a global perspective in political, organizational, curricula, educational psychology and social aspects. Thus, the purpose is the assimilation of scientific, artistic and technological knowledge by students, which allows the construction of a global overview of children and the contexts where they grow and develop. The development of this knowledge and of personal/professional skills is enabled by reflection attitudes, critical spirit, the intellectual curiosity, openness to diversity and collaborative work, in a throughout life training perspective.

Goals of the study

Some of the problems related to the use of DTB - the difficulty of reading from digital display, the need of mastering digital and the cognitive skills for making effective use of this tool, and the lack of a larger and more diverse range of DTB available (when compared to the heavy weight of printed versions of textbooks), among others - have been emerging as some of the most important reasons that justify the relatively low use of DTB in the context of Portuguese educational system.

Accordingly, and in order to verify if these problems were perceived by our postgraduate students, the main goals of this study were to determine students' perceptions of the following aspects:

1. Knowledge on the digital textbook format;
2. Expectations on the use of the digital *versus* printed textbook;
3. Pedagogical potentialities and limitations of the DTB in learning environments.

Tools

A structured survey questionnaire consisting of twelve questions was designed in order to retrieve data concerning:

- i. the sample's characterization in terms of the students' age and the frequency of computer's use;
- ii. students' perceptions about the following aspects:
 1. Knowledge on the DTB format in terms of their familiarity with the concept, level/degree of experience and identification of the relevant features;
 2. Expectations on the use of the digital *versus* printed textbook as far as its usefulness, specific purposes and format preferences;

3. Pedagogical potentialities and limitations of the DTB in terms of the perceived learning potentiality, the impact on study methods and possible advantages and disadvantages.

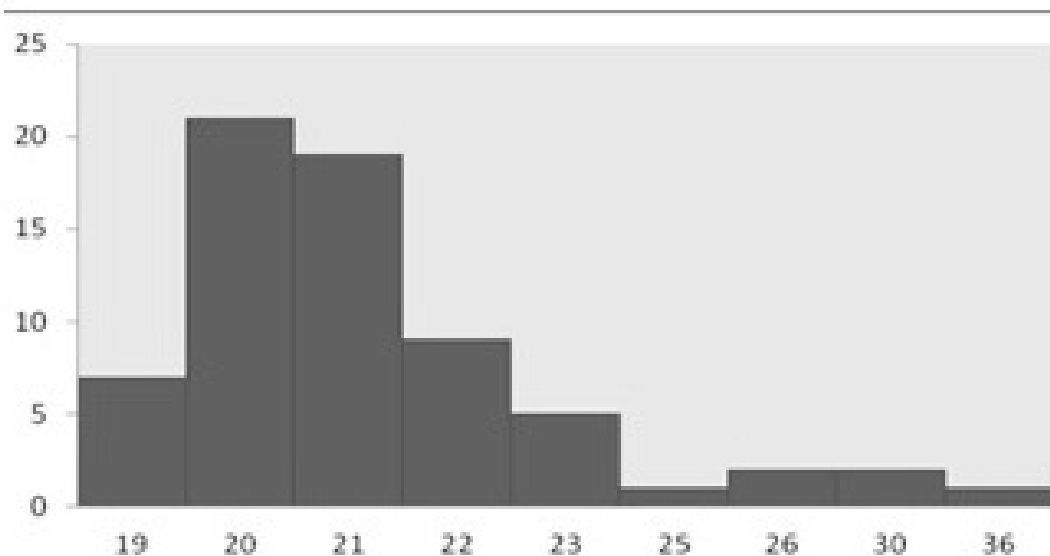
The questions were presented in a deliberate random sequence, in order to reveal possible inconsistencies in the answers, given the fact that we are dealing with student representations.

Ratings were made on a 1-2, 1-4 or 1-5 Likert scale for some questions, depending on the subject. In some other questions, ratings point to the number of students that agree with a given statement. The survey questionnaire was distributed during the fall semester in 2012 and can be found in Appendix A.

Participants

Data were collected anonymously, during the 1st semester of the school year 2012-2013 from three postgraduate classes that constituted the convenience sample for this study. The participants, 65 students (all female), were carrying their postgraduate studies in order to become educators/teachers of five to eleven year old children. The selection of the participants to integrate the study was restricted to postgraduate students, on the account of their experience both in the educational context and in the domain of ITC; only one responded that doesn't use the computer in her daily practice.

The sample student's average age is 21 and a half years old and its distribution according to age is shown in figure 1 (age – horizontal axis; frequency or number of participants – vertical axis).



Procedure

Students were asked via electronic mail to complete the questionnaire, which was administered on a [google.doc](#) format¹. It was not compulsory to complete the questionnaire, since it was not part of the any class requirements and students participating in the study were given no incentive to do so.

Due to scheduling issues and time considerations, it was not possible to conduct a pilot study (pre-test) of the survey questionnaire.

Results: presentation and discussion

The results will be presented in order to attend to the three major study goals as far as student's perception of:

- i. their knowledge on the digital textbook format;
- ii. their expectations on the use of the digital *versus* printed textbook and
- iii. the perceived pedagogical potentialities and limitations of the DTB in learning environments.

Students' knowledge on the digital textbook format

In order to determine the students' knowledge on DTB, they were asked to evaluate their familiarity with the concept, their level of experience and to identify the relevant features of DTB.

As far as the first question is concerned, we found that 60% of the respondents were not familiar with the concept.

As for the minority of the participants that answered affirmatively, they were asked to identify the contexts they associated with the use of the concept. Only 7 did that identification: each one identified only one context and, as we can see below, there is a somewhat generalized confusion between the concept of DTB and that of a digital text:

- In primary school manuals;
- Actual daily news, schools and students reading support;
- Didactic (Educational) books in the classroom or ludic books during the free time;
- Text books that can be digital in teaching context and playful too;
- It is the book that can be read / looked up on the computer;
- I often see, more and more people using PDA's, mobile devices, laptops to read books. Instead of carrying books often heavy, people choose digital

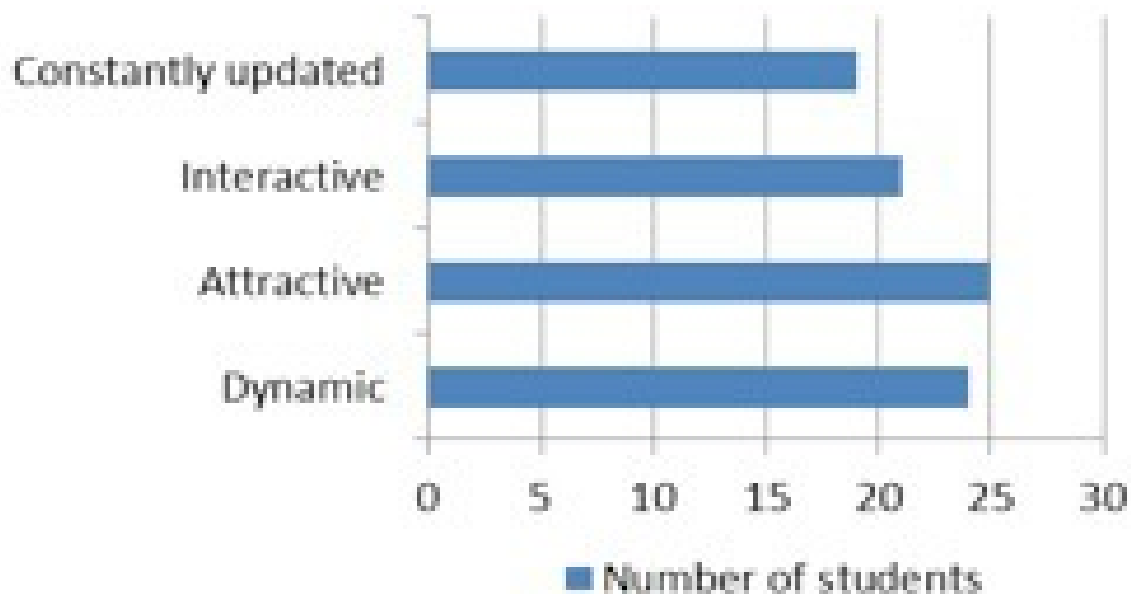
- books;
- Actual daily news, schools and students reading support.

This mismatch in the conceptualization of DTB is not new and it can be explained attending to the low rate of use and implementation of DTB in the academic Portuguese context, which makes them still very poorly understood devices.

In the next question, the participants were asked to evaluate their level/degree of experience with DTB. The majority of them stated they have never experienced (54%) and about one third had a limited experience with this tool. Only five students evaluated their experience as good and no one considered their level of experience to be exceptional/ high.

According to this scenario, we consider that teacher training should emphasize the dissemination of new multimedia learning resources like the DTB, truly taking into account the challenges of a digital culture.

In one of the final questions, the participants were asked to identify, from a set of given features, the ones they considered to be relevant to describe the DTB.



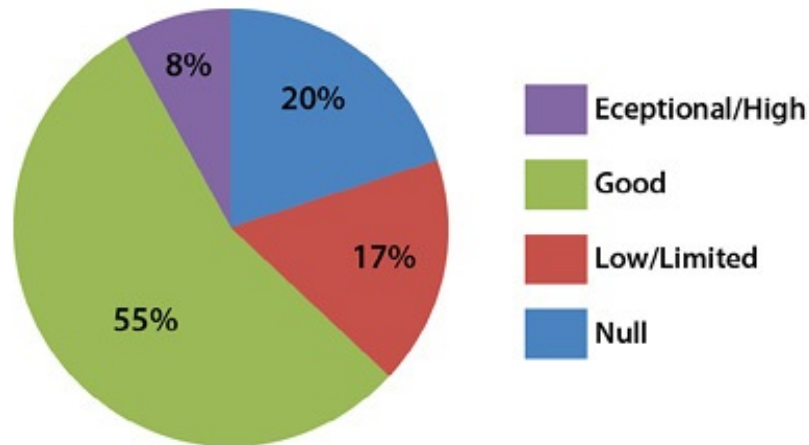
Although our participants' knowledge on DTB was poor, they were able to identify, in an equal manner, some of the most relevant features of this tool as being its dynamism and interactivity (given the benefits from learning with hypermedia and multimedia), its attractiveness and constant updating.

Anticipating the students' unfamiliarity with the subject, we thought it would be interesting to explore their expectations both on the general use and on the perceived

pedagogical potentialities and limitations of the DTB.

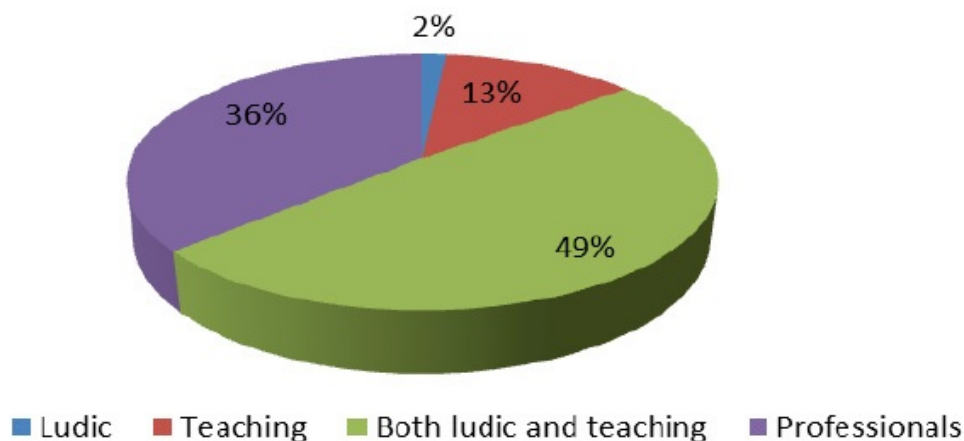
Students' expectations on the use of the digital *versus* printed textbook

In one of the next questions, we asked the students to rate their expectations for the usefulness of the digital textbook.



The majority of the students rated their expectations as being good and only 5 students (8%) as being exceptional/high. A considerable minority of 37%, however, reported to have null or limited expectations as far as the DTB usefulness. We can interpret these answers as indicators that there may be a lack of interest on part of schools or simply a lack of knowledge about this available technology.

Students were then asked to rate their expectations on the use of the DTB as far as specific purposes (ludic, teaching, both ludic and teaching or professional in general). The results can be seen in figure 7:



Almost half of these students reported expecting to use DTB for combined ludic and teaching purposes, thirty-six percent for professional purposes and thirteen percent only for teaching purposes. We would like to enhance here a certain depreciation of the ludic functionality, *per se*, of the DTB, unless when combined with a teaching purpose, which seems to be a most relevant feature for these students who will soon be teachers.

With the next question, we intended to perceive how much they expected to use the digital textbook in comparison to the paper book. Once again, the participants revealed a wise sense of proportion: none of them reported expecting to use only paper book and only one stated the intention of using exclusively the digital textbook. The majority of the participants, fifty one percent, reported they intended to use the paper and digital text about evenly.

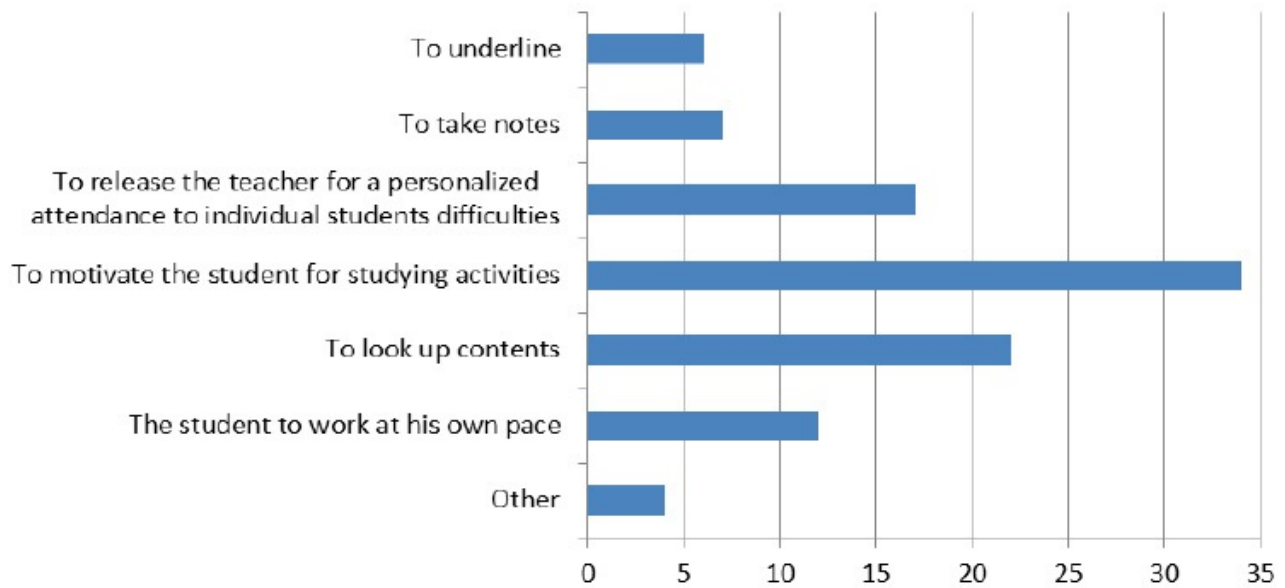
In fact, other studies [like Weisberg (2011)] have shown that, as far as students are concerned, DTB are becoming more and more popular but are not yet ready to completely replace textbooks:

They do see value in having their textbook available digitally on the computer for research. In the study, 71% of the students reported that they would use their computer as a secondary textbook if the textbook was available in digital format. (Weisberg 2011 193)

Students' perceived pedagogical potentialities and limitations of the DTB in learning environments.

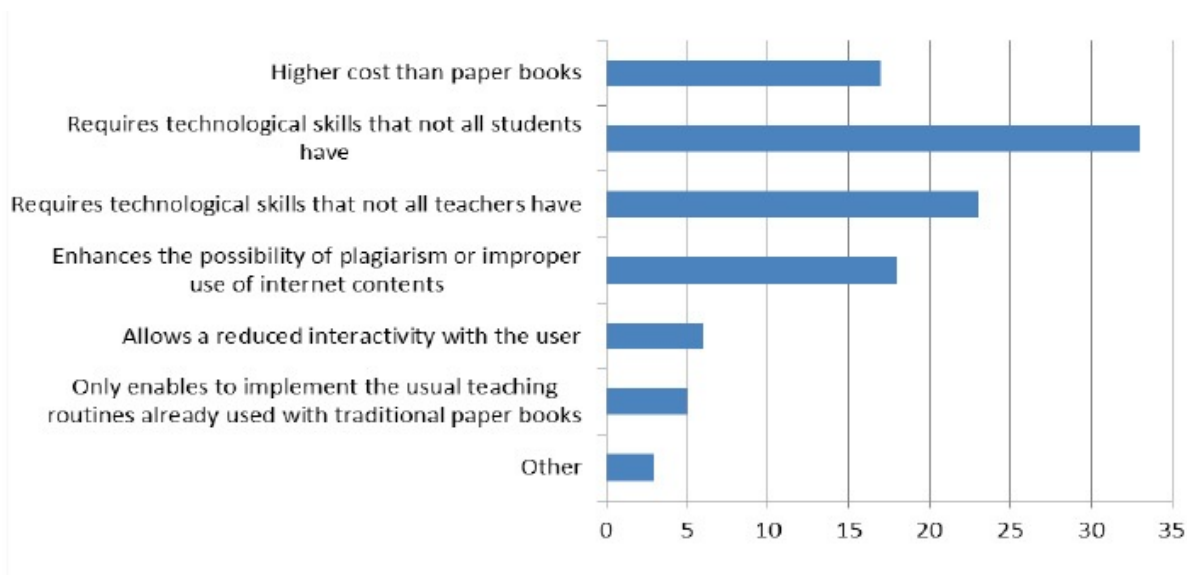
As far as the potentiality of the DTB, almost two thirds of the participants (63%) stated that this technology would, indeed, lead to changes in study methods, statement that can be interpreted to portray the importance given to this tool.

When asked to identify the pedagogical advantages of using the DTB, we found out that the participants enhance the fact that it motivates the student for study activities and, at the same time, releases the teacher for a personalized service of the individual student difficulties. By doing so, it further facilitates the search for contents and allows the student to work at his own pace.



Indeed, when we take into consideration the need to attend individual educational needs, we quickly get to the conclusion that the printed textbook is just an instructional device that makes it easier for the teacher to teach and the student to learn in a scaffolding logic. On the contrary, the DTB evolved from being the pdf version of the textbook to a more dynamical resource that nowadays incorporates other tools (such as videos, hyperlinks, and virtual reality) in a collaborative logic that involves both teachers and students in the creation and construction of knowledge.

Finally, we also wanted to identify the limits and constraints of the DTB, which can be seen in this final figure.



One of the main concerns the students reveal as far as the DTB constraints are the often-alleged need for technological skills that may not be familiar to all students or teachers. This is, however, a false claim, especially if we consider younger learners. According to Kim & Jung (2010), there has been a change in the role and cognition of the Net-Generation Learner:

The educational system of the 21st century must prepare life-long learners who are capable of processing vast amounts of knowledge on a daily basis. In traditional South Korean educational system, the student is a vessel receiving the knowledge the teacher transmits. Therefore, good students are characterized by skills such as listening attentively, summarizing content, taking notes and taking tests. In contrast, 21st century learners need to be self-directed, active problem solvers, and knowledge generators who design their own learning goals. [...] In particular, this characteristic of self-regulated learners is key to the definition of the Net-generation as it has come of age on the Internet. Net generation is another name for Generation Y who has grown-up with information technology. Reared in cyberspace, the Net-generation thinks differently from the old generation. Theorists argue that personal computers, personal digital assistants, Game Boys and the Internet may displace formal schooling as the primary means of developing thinking skills. [...] The new computational media demands students with new habits of mind and the ability to master new skills such as programming and algorithmic thinking. (Kim & Jung 2010, 249-250).

This change in the role and cognition of younger learners has not, however, affected most educators, who will be willing to admit that their students know more about technology than they do. This necessarily means that, if we want to keep up with their rhythm, we will have to learn to meet their needs.

As far as the cost of textbooks, we all know how expensive textbooks can be. Reynolds (2011) conducted a recent study in the United States that concluded the following:

“While digital textbook sales currently represent a small portion of the overall textbook market – approximately 1.5% - year over year increases show strong and steady growth” [...]

With digital textbooks from many publishers continuing to sell for 50% of print textbook prices, students are turning to digital solutions as a lower-priced alternative". (Reynolds 2011, 179-180)

Again, DTB can be considered a means to reduce educational costs, attending to the fact that printing textbooks, because of the time and money required by the publishing process are, actually, more expensive. Furthermore, printed textbooks are expected to be used for a period from several years to a decade, but we know that the content of the book can be quickly outdated before that.

Brief considerations on DTB in the Portuguese context

In the Portuguese context, as in other countries, education has traditionally (and still is, to a large extent) based on printed material. According to the survey carried out within the *Associação Portuguesa de Editores e Livreiros (the Portuguese Association of Publishers and Booksellers)*, the number of digital textbook published in Portugal until the end of 2012 is irrelevant when compared to the printed textbook editions.

Because of the costs (both of time and money) required by this publishing process, printed textbooks are, nowadays, expected to be used for a period of several years and the loan is presently being considered a valid option both by the parents and the government. In recent legislation on textbook evaluation and certification (Decree-Law n.º 258-A/2012), the government continues to ignore the digital textbook specificity and no reference is made to it: among other criteria, all textbooks are subject to the evaluation of physical features as weight, dimensions, and other criteria only applicable to printed books.

This general trend has, to a certain extent, restrained the publishers intention to invest in the digital edition. In parallel to this, we must remember that what Rodríguez Rodríguez e Montero Mesa (2012) identify in the Spanish context, also happens in Portugal, namely. In most cases, teachers end up following almost *verbatim* the schedule contemplated in the printed textbooks not only to facilitate their action, but also due to the difficulty in using efficiently and effectively the ICT. What started out as a potential advantage to deal with the fact that students are coming to school with different skill sets has been facing the educators anxiety towards the impact of integrating digital content into the existing curriculum.

However, as the pace of change evolves, it is not infrequent to find educators that are willing to recognize that a printed book is already outdated when it gets to be finally published. Indeed, printed textbooks cannot often cope with the increasingly short life cycle of knowledge. Furthermore, the volume and variety of information required by the learners of the 21st century, used to processing vast amounts of knowledge, is hardly compatible with the physical limitations of printed textbooks. Digital textbooks can effectively overcome these limitations, due to their storage capacity, being able to further incorporate resources such as animations and video.

Indeed, although the DTB already exists since the 90s, with technological advances since then, the use of it has become increasingly attractive as, in addition to the characteristics of the conventional book, the DTB also offers often audio and video resources to help the reader assimilate the information contained in the text.

Another important difference between DTB and printed text book that quickly emerged was the ability to search text without having to rely on an index, as in DTB it is possible to do keyword or expression search.

As the digital textbooks became more appealing, many textbooks started to adopt online interfaces to help with students' homework, helping the consolidation of learned subjects, since students can complete their homework even being offline. In this case, it is necessary to load a full version of the software attached to the textbook and then, when the student comes back online, it can send his work via email or via network.

Nowadays, in the Portuguese context, there are textbooks' publishers that already offer digital textbooks with their printed versions; in some cases, when purchasing a printed manual, the publisher offers for free the same but in digital format. However, the characteristics of each digital version vary from publisher to publisher, with no well-defined criteria to evaluate this teaching resource.

The question that comes to mind is, then, what are the characteristics that identify a DTB.

According to Kim & Yung (2010) these can be reduced to four specific features: hypertext, multimedia, interactivity and self-regulated learning.

As far as the hypermedia feature is concerned, this is considered to be one of the most beneficial features. Contrary to the traditional printed textbooks, digital textbooks allow for much more flexibility both in the delivering of instruction and in the construction of an individualized knowledge. Different theoretical perspectives have been arguing that "hypermedia environments allow for active, constructive, flexible, adaptive, and self-regulated learning", at the same time it "allows the learner to actively control the learning process rather than being directed by a teacher or the argumentative structure of a textbook" (Kim & Yung 2010, 254).

Learning from multimedia is another specific feature that has been suggested in the literature to foster cognitive change, facilitating information processing in learning. By promoting the contact with several multimedia products like games, videos, audios, animations and so on, digital textbooks explore multiple sensory channels, in which verbal and non-verbal (visual and spatial clues) combine to offer the most effective learning environments.

Combining multimedia with carefully designed interactive resources that provide feedback in learning offers the learner the possibility to gain conscience about the learning process. In fact, educational researchers have pointed out that, "despite the

ability to interact with the instructional materials (behavioral activity), learning may not occur if opportunities to obtain feedback and to reflect (cognitive activity) are absent. Therefore, the interactivity principle needs to be considered in combination with the principles of guidance and reflection.” (Kim & Yung 2010, 255) In order to clarify what kind of activities are we dealing with, we can consider the five common types of interactivity in multimedia environments presented by Moreno & Mayer, in Kim & Yung 2010):

“There are five common types of interactivity in multimedia environments: dialoguing, controlling, manipulating, searching, and navigation. By dialoguing, the learner can ask a question and receive an answer, or can give an answer and receive feedback. For example, in the course of learning, the learner can seek help from an on-screen agent or can click on a highlighted word in a hypertext environment to get additional information. Interactivity enables the learner to determine the pace and/or order of learning episode. For example, with a narrated animation, the learner may be able to control the pace by using a pause/play key, or by using a continue (or forward) button when the material is presented in segments; and the learner is able to control the order by using a forward and back key, rewind key, slide bar, or a menu for direct access to a particular segment. Interactivity that is manipulative allows the learner to control aspects of the presentation, such as setting parameters before a simulation runs, zooming in or out, or moving objects around the screen. Where interactivity is accomplished by searching, the learner is able to engage in information seeking by entering a query, receiving options, selecting an option, and so on, as in an Internet search. Interactivity that is based on navigation enables the learner to determine the content of a learning episode by selecting from various available sources, such as by clicking on a menu (Moreno & Mayer 2007)”. (Kim & Jung 2010, 255-256).

Finally, learning in a self-regulated learning process is another one of the specific features that, in common, define the DTB. In fact, learning with a hypermedia environment in digital textbooks demands from the student the ability to regulate his or her learning, namely when compelled to make choices about what to learn, how to learn and when to learn.

The shift from the traditional educational paradigm to an emergent one is partly driven by a net generation who has grown up with information technology. Nowadays, we observe that this generation, always connected and engaged in the computational media, thinks and relates differently from the previous generations. In fact, several authors (for instance, Gee 2003) have been arguing that the traditional focus on language skills based on the ability to read and write (essential in the printed world) is being challenged by the need to interact in multimodal literacy scenarios, which, as we have seen, can easily be explored in a digital support.

We believe that this fact has to be taken into consideration when evaluating the pedagogical implications of the use of the DTB and, for that reason, we focused on students’ perceptions (future teachers/educators of children from five up to eleven years old) of some pedagogical and functional issues related to the use of DTB, namely regarding their representations on their familiarity, perceived pedagogical

advantages, textbook format preferences (print vs. digital) and learning potentiality of the DTB.

Final remarks

Results of the current study provided a meaningful contribution to our understanding of the perceived knowledge, expectations and pedagogical potentialities of the DTB by our students.

Although the students participating in this study were, to a large extent, unaware of the concept of DTB, their perceptions on the usability and pedagogical aspects indicate, on the one hand, the need for continued growth in the number and variety of DTB made available and, on the other hand, that more research on this subject is needed.

The findings that students tend to have a positive though moderate preference for the DTB, in comparison to the printed version, is in agreement with reports from most studies on the subject. (see Weisberg (2011) for instance).

As far as the usability aspects are concerned, we would like to enhance the students' perception as for the flexibility in reaching easily to the content and for motivating students, at the same time it frees both the teacher and the student to more significant tasks.

The current study has some limitations concerning mainly the reduced sample size and the fact that participants are students in an educational graduate program which provides them higher computer/digital skills than the average student.

Furthermore, the questionnaire used in the study did not undergo a large - scale validation process.

In future studies, and after validating the questionnaire, special care should be given to the testing of a larger group, comparing students' attitudes from different proficiency levels, for instance.

We must emphasize, in teacher training, the need to disseminate these multimedia learning resources if we don't want to be left behind. It is possible to infer, from these results, the need to develop digital skills in teachers so that these can use a variety of teaching resources with their students, including digital, facilitating the learning process and relying on higher student motivation.

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Appendix A – Survey questionnaire

1. Age:

2. Do you often use the computer in your daily practice?

- Yes
- No

3. Know the concept of “Digital Textbook”?

- Yes
- No

3.1 If you answered yes, please describe in which context you identify it



4. Evaluate your experience to date with Digital Books.

- Null
- Reduced
- Good
- Exceptional/High

5. Evaluate your expectations regarding the Digital Books usefulness.

- Null
- Reduced
- Good
- Exceptional/High

6. Evaluate how you will expect to use the Digital book in the near future.

- Ludic
- Teaching
- Both ludic and teaching
- Professionals

7. Evaluate the Digital Book potential benefits for learning.

- Null
- Reduced
- Good
- Exceptional/High

8. Evaluate how you expect to use the paper books versus Digital Book in the near future.

- Only paper book
- Mainly paper book
- Both in the same way
- Mainly Digital Book
- Only digital Book

9. This technology will change the way you study.

- Yes
- No

10. How do you classify the Digital Book?

- Dynamic
- Attractive
- Interactive
- Constantly updated

11. The Digital Book is an advantage (is an asset) as it permits:

- To take notes
- To underline
- To look up contents
- To motivate the student for studying activities
- The student to work at his own pace
- To release the teacher for a personalized service of the individual students difficulties
- Other:

12. The Digital book is a difficult resource because:

- Higher cost than paper book
- Needs a technological ability that not all students are prepared
- Needs a technological ability that not all teachers are prepared
- Enhances the possibility of plagiarism or improper use of the internet contents
- Allows a reduced interactivity with the user
- Only enables to implement the traditional teaching routines already used in traditional paper books

- Other:

Submit

1 available on <https://docs.google.com/spreadsheet/viewform?fromEmail=true&formkey=dDIiczJfR3BkamxPdU5YOGp5d3loclE6MQ>