Designing Gamified Educational Interfaces: Analysing Pedagogical Strategies for Teaching Portuguese

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Abstract

In today's society, education faces several challenges in terms of motivating and engaging students with learning content [4]. Specifically in the field of reading and literary education, studies in Portugal show a progressive decline in reading habits and interests among young people throughout adolescence [5]. Considering not only the technological advances of recent years but also the current post-pandemic context which has recently led to drastic changes in teaching methods and resources, this study aimed to understand the current pedagogical challenges and strategies in the teaching of school literature. Particularly, it was intended to identify and understand the existing methods and resources used to teach Portuguese literature, in order to reflect on the possibilities of designing gamified educational interfaces to promote reading practices and habits. For this purpose, a qualitative methodology was used, in which semi-structured interviews were carried out with Portuguese language teachers from grades 7th to 9th, selected from schools with different socio-economic contexts. The aim of this approach was to achieve a more heterogeneous sample. Subsequently, the interview material was analyzed using the method of Content Analysis [1] and it was possible to draw conclusions regarding: a) students' attitudes and motivations towards reading; b) learning objectives; c) students' main difficulties; d) techniques and resources used by teachers; and e) considerations in the design of complementary resources for reading and literary education. This research proves to be relevant as it allows to collect useful considerations for the design of future learning solutions that complement traditional teaching methods and promote a literary education that is better suited to contemporary challenges.

Keywords: *Literary education, Portuguese literature, educational interface design, reading.*

1. Introduction

Motivation and student's engagement are topics widely discussed in the context of educational challenges in the digital age. The speed, immediacy, and multimodal nature of digital media present challenges to activities that demand time and concentration, such as reading.

Recent research focusing on primary and secondary school students in Portugal have revealed a concerning gradual decline in reading habits and interests, largely associated with the current digital culture [5]. Books compete daily for limited leisure time with other more stimulating and engaging forms of communication and entertainment, such as social media, playing video games and watching movies [3][7].

While efforts to promote traditional reading remain crucial, there is also a growing need and tendency to adapt reading supports and teaching resources to digital technologies. The educational reality during the COVID-19 pandemic also highlighted the importance and convenience of the existence of e-learning resources for both mediated and autonomous learning. These e-learning resources often use multimedia and gamification strategies to motivate and engage students with the learning contents, which prompts reflection on how these strategies can be integrated into reading.

Given the identified pedagogical challenges, as well as the digital opportunities emerging, it becomes imperative to understand the current teaching methodologies used, in order to reflect on the possibilities of designing gamified educational interfaces particularly to promote reading practices and habits.

Since it was identified an existing gap in data on literary education methods for Portuguese young students, it was pertinent to carry out a set of semi-structured interviews with Portuguese language teachers to get an in-depth understanding of their experiences and perceptions.

2. Method

This study follows a qualitative research methodology that consisted on semi-structured interviews for exploratory data collection. This type of interview requires a previously structured script, but it allows freedom and flexibility to adjust the flow of the conversation according to the answers obtained. This approach promotes a richer and more detailed understanding of the perspectives, experiences and opinions of the interviewees, providing a more complete overview of the subject under study [6][2].

Three Portuguese language teachers from the 3rd cycle of basic education were selected to participate in the study, each from schools representing different socio-economic contexts, ensuring a heterogeneous sample. The participants included teachers from a public school, a private school, and a TEIP school (Educational Territories of Priority Intervention) and they were classified as P1, P2 and P3 respectively.

The process of the study included a phase of data collection and a phase of data analyses.

The data collection phase started with the formulation of the interview's script based on the multidisciplinary topics involved: reading; teaching strategies and learning resources; and gamification. The script included various questions and the respective goals.

For the data analysis, the Content Analysis method was employed. This systematical method involves the identification, categorization, and interpretation of themes and patterns present in the responses obtained, and its process involved the following steps: 1) Pre-analysis; 2) Material Exploration; and 3) Treatment and Interpretation [1].

The pre-analysis phase consisted of a superficial reading of the data collected, in this case, the transcribed interviews, for a general understanding of the material, which [1] refers as "floating reading". This reading allowed familiarization with the content and identification of relevant topics, facilitating the subsequent categorization process.

The second phase of the process was the material exploration. In this step, indexes - elements or recording units that serve to facilitate the organization and categorization of the data obtained - were identified and grouped into categories. In this study the indexes consisted on relevant text excerpts selected from the interviewees' speech.

Based on the goals previously defined, as well as the information obtain throughout the interviews process, the categories determined were:
- A. Student behaviors and motivations
- B. Learning objectives
- C. Difficulties in literary education
- D. Methodologies and resources
- E. Design

Following the exploration, we proceeded to the stage of processing the results obtained and interpreting them. At this stage, based on the indicators formulated for the different categories of analysis, inferences were made, in order to meet the initially proposed objectives.

2.1 Material Exploration

In the Material Exploration phase, a dedicated table for each interviewee was created to systematically categorize excerpts from their speeches into the five predefined categories. Through this categorization process, key themes and patterns were identified and indexes were made to facilitate interpretation.

It's important to note that the excerpts were translated from the original language. Efforts were made to ensure accuracy and fidelity to the interviewees' intended messages.

The following table, referring to P1, serves as an example of the process used to organize and explore the data obtain during the interviews.

March 1, 2023 at 14pm
Interviewee P1 – Secondary School of Miraflores

Categories	Excerpts	Indexes
Student behaviors and motivations	'Nowadays, it's already very difficult for them to read' 'They want quick work' 'They are the kids of now'	Students prefer tasks that are quick to execute, in contrast to the time and effort that reading requires.
	'The majority don't have reading habits' 'They find excuses to avoid it'	Most students have no habits or interest in reading.
Learning objectives	'In literary works, domains are worked and studied in a transversal way' 'Mandatory reading ends up being reflected in all areas. It's all transversal' 'Portuguese is not just literature and grammar' 'In the Portuguese class, there is also culture'	Literature is used as a tool to approach and explore different areas of knowledge in an interdisciplinary manner.
Difficulties in literary education	'Reading implies concentration, some slowness, and they have a lot of difficulty'	Students struggle with tasks that require time and concentration.
	'They don't know the vocabulary and have difficulty inferring'	They demonstrate a lack of vocabulary, which makes it difficult to understand and interpret texts.
	'One of my strategies is to ask them to look for the meaning of words in the dictionary' 'I ask them to place the meaning on top of the words so they don't lose sight of the text'	Students lose focus in reading when they have to divert look away from the text.
Methodologies and resources	'Generally, there is a starting point...'	Use of interactive resources, such as videos and animations, to contextualize the works.
	'It forces to do intertextuality'	Importance of connecting literary text to other media or resources.
	'It's important that they can establish a relationship between the text and the video, the image, the cartoon...'	This approach aims to enrich the understanding of the text through its associations with other forms of expression.
	'The paraphrase of the text must be given.'	It indicates that there is a need to provide an explanation of the text in other words, so that students can understand and interpret it.
	'…reading, interpreting, seeing the vocabulary, expressive resources...'	Methods and resources used: • Interactive resources to contextualize the literary work: YouTube videos, animations from e-learning platforms or the activity proposed in the manual; • Reading and interpretation in class; • Reading guides from the manual; • Quizzes; • Activity sheets;

		'They love Kahoot'	Students show a lot of interest in the Kahoot game.
		'In a classroom context, it is a very time-consuming game.' (referring to the Escape Room game from Escola Virtual)	Some resources, although interesting, are not suitable for the classroom context due to time constraints.
		'One difficulty we struggle with is time.'	
Design		'Interactive resources encourage them, but they get distracted by the graphics.'	The graphic elements of interactive resources sometimes distract students.
		'They look a lot at the drawings and get distracted from the information being conveyed.'	
		'…the childishness with which the illustrations sometimes appear...'	Sometimes the illustrations are very childish.
		'It is necessary to adapt to their reality'	
		'Too much text also turns them off. It's a middle ground'	It is important to have a balance between text and visual resources.
		'Take advantage of the text structure'	The resources and graphics should follow and be coherent to the structure of the text.

This is one of three tables created for the analysis. The following section will discuss the findings and interpret the results.

2.2 Results Treatment and Interpretation

In this step, the obtained information was processed and interpreted based on the formulated indicators for each category of analysis and study objectives:

A. Student's Behaviors and Motivations

Objectives: 1) Understand the habits and attitudes of students towards reading; 2) Determine how/whether interest in reading varies according to the type of books/texts.

These objectives allow the identification of existing educational challenges, in order to adapt new solutions to the needs and preferences of the students.

The interviewees demonstrated divergent opinions and experiences regarding the predisposition of young people towards reading, although the majority of students appear to demonstrate disinterest in the topic. In the public school (P1) and TEIP school (P3), disinterest in reading and in literary education classes was considered high, especially among older students. On the other hand, in the private school (P2), students' interest was characterized as ambiguous, with a relatively positive predisposition towards reading.

Both teachers from the public school (P1) and TEIP school (P3) associated this disinterest with two main factors: 1) the lack of contextualization of the mandatory reading works in relation to the current reality of the students, and 2) the immediacy and ease of activities to which young people are used to, stating a preference for simple and quick tasks that do not require much development, time, or concentration. The teacher from the private school (P2) also mentioned that disinterest can arise from the difficulty in understanding the texts, which ultimately leads to boredom. This challenge in understanding the vocabulary is often a consequence of point 1).

Disinterest in reading was mentioned in a generalized manner, covering both recreational reading and mandatory reading, although it was stated that, the students that show more predisposition in reading schools' literature appear to be those who already have that habit and involvement with the activity.

B. Learning Objectives

Objective: Identify the relevance and the learning objectives of literary study.

This objective ensures that new solutions are aligned with the existing educational objectives.

The learning objectives can be found in the essential learning documents issued by the Portuguese DGE - *Direção-Geral da Educação* (General Directorate of Education), in which reading and literary education are two of the domains addressed. One of the aspects highlighted by the teachers from the

public school (P1) and the private school (P2) regarding the importance of these works in the development of young people was their transversality and versatility, both in terms of the Portuguese language learning domains (orality, reading, literary education, writing, and grammar), and in terms of their multidisciplinary nature.

The TEIP school teacher (P3) mentioned the development of thinking and reasoning, abilities required to be able to understand and interpret texts, as well as the fact that these works provide students with perspectives beyond their social context.

C. Difficulties in Literary Education

Objective: Identify the main difficulties of students in reading.

This objective allows the creation of strategies and resources that target the existing learning needs.

The three teachers showed agreement regarding the main difficulty students face in reading and literary study, which is interpretation. In addition, they all mentioned lack of vocabulary and consequently, lack of comprehension, as one of the reasons for the struggles in decoding and inferring information.

Regarding vocabulary, both the teacher from the public school (P1) and the TEIP school (P3) mentioned the captions with the meaning of the difficult words, as an essential resource, but poorly conceived in the manuals. This is because students need to divert their attention from the text to check the meaning of the word, resulting in the loss of reading flow. Given that students already demonstrate difficulties in tasks requiring concentration, it is important to develop efficient strategies that avoid interruptions during continuous reading.

D. Methodologies and Resources

Objectives: 1) List the teaching methods and tools adopted at different moments of learning; 2) Investigate students' motivation towards interactive resources.

These objectives allow the identification of gaps and opportunities in existing practices and the understanding of students' predisposition towards interactive resources currently used.

The teacher from the public school (P1) and the teacher from the private school (P2) both mentioned the need or importance of contextualizing the literary work that is being taught in order to stimulate students' interest in reading. This first contact with the story is made through more interactive resources, usually digital resources like videos and animations.

All teachers mentioned reading and text analysis in class, with reading being done either by themselves or by the students. Some identified strategies to assist and enhance the comprehension and interpretation of the literary works that include: adding question marks or looking up and writing down unknown words close to the text; providing an explanation of what was read in other words; and asking directed questions to guide students' reasoning. The teacher from the private school (P2) also mentioned other active reading strategies to engage students, such as drawing hearts on favorite sentences and connection arrows between subjects.

Other more traditional resources were mentioned, such as worksheets and exercises, in addition to the occasional use of digital resources. It was noticed that, in the classroom context, videos or animations, and questionnaires or quizzes prevail. One of the reasons for choosing this type of resources, instead of others like more complex games, is the time limitations in class.

Most students have technological devices such as computers and mobile phones, even in the classroom, and, in general, teachers consider that they have the ability and interest to use these digital means to perform certain tasks. All teachers highlighted Kahoot as highly appreciated by students. It is a game that involves direct and quick-to-answer questions, involving interaction and competition with classmates, factors of interest in the classroom dynamics.

E. Design

Objective: Obtain information to consider in the design of new solutions.

This objective allows identifying gaps and opportunities in the design of digital resources and ensuring that new projects meet existing needs.

Regarding the design of resources related to literary study, some gaps and important considerations were identified.

As mentioned earlier, one of the needs identified is the creation of new visual strategies that facilitate locating the meaning of words in the text.

An aspect mentioned in all interviews was the childishness of certain resources and illustrations for the 2nd cycle, that is, in the pre-adolescent phase.

Both teachers from the public school (P1) and the private school (P3) emphasized the importance of coherence between the text and visual resources, stating that students pay close attention to graphic elements and, sometimes, may get incorrect information or ideas about the characters or the story.

The teacher from the public school (P1) highlights the importance of maintaining a balance between the amount of text and visual elements since excess of text demotivates students and, too many graphic and interactive resources distract them.

3. Conclusions

This study explores literary education in the context of digital culture, uncovering significant challenges and opportunities. Through qualitative analysis of interviews with Portuguese language teachers from diverse school backgrounds, several key insights emerged.

Firstly, it was verified that the majority of students in the group of teachers interviewed demonstrate a lack of interest in reading and literary education. The lack of context of the works and their respective vocabulary in relation to the present-day result in reading and interpretation difficulties, leading to disinterest.

Teachers face limitations in the resources they can use in class due to time constraints. However, they observe increased student engagement when more interactive resources are used, highlighting a large participation rate with the use of games such as Kahoot.

Reflecting on the potential of gamified educational interfaces to promote reading habits, it is evident that a balance is needed between strategies that support continuous reading, such as effective vocabulary tools and removal of unnecessary distractions, and those that encourage student engagement, like multimedia elements and interactive challenging tasks. Moreover, visual elements should align closely with text descriptions suitable for the target audience and not appear overly simplistic or childish.

To conclude, while the study uncovered many challenges and needs in literary education, it also revealed opportunities for improvement and innovation.

REFERENCES

[1]   Bardin, L. (2011). Análise de conteúdo (Presses Universitaires de France, Ed.; 1st ed.). Edições 70 Lda.
[2]   Bell, J., & Waters, S. (2018). Doing your research project - A quide for first-time researchers (Open University Press, Ed.; 7th ed.). Open International Publishing Ltd.
[3]   Blauvelt, A., Campanelli, V., Ehmann, S., Ferro-Thomsen, M., Gerritzen, M., Lovink, G., & Kampman, M. (2011). I Read Where I Am: Exploring New Information Cultures (M. Gerritzen, G. Lovink, & M. Kampman, Eds.). Valiz/Graphic Design Museum.
[4]   Eustáquio, A., & Cardoso, T. (2020). Promoção da leitura no ensino secundário: os projetos individuais de leitura em Literatura Portuguesa. Páginas A&b : Arquivos & Bibliotecas, especial, 45–59. https://doi.org/10.21747/21836671/pag2020a4
[5]   Mata, J., Neves, J. (coords.), Lopes, M., & Ávila, P. (2020). Práticas de Leitura dos Estudantes dos Ensinos Básico e Secundário-Primeiros resultados.
[6]   Quivy, R., & Campenhoudt, L. (1998). Manual de investigação em ciências sociais (2nd ed.). Gradiva - Publicações, Lda.
[7]   Wehbe, R. R., Robb, J., Clarke, J., Costa, J., & Nacke, L. E. (2016). Design guidelines for Gamifying reading applications. 1–4. https://doi.org/10.1109/gem.2014.7405433