

English Learning Experiences With Students At-Risk Using Digital Games

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Abstract: Learning difficulties and inappropriate and disruptive behaviors in the classroom are today the main risk factors for students' exclusion from school. The ongoing investigation aims to contribute to the consolidation of empirical knowledge in the area of digital games with regard to the analysis of behavioral, affective and cognitive involvement of students at risk from the experiential perspective of interacting with digital games in a collaborative English language learning environment at an elementary level. The study integrates action research as a methodology and involves 21 students at risk belonging to the 9th grade in a junior high school in Portugal and takes place in a school library for a period of 3 months. Following the interaction with digital games oriented to learning in the school library, the researcher interacts with all students in class to get to know the aspects of the game that they liked the most, what they felt during the game and explanatory reasons, the students' perceptions about the lessons learned and the factors that favored or hindered learning.

The study collects empirical data from students, incorporating their collective responses to those questions and subsequent analysis and in particular it provides an analytical view of the self-regulating component of learning through effort and persistence, as well as the components of attention, concentration and absorption in promoting student behavioral involvement and positive emotions of pleasure, satisfaction, interest and enthusiasm in stimulating emotional involvement. The study also focuses on the analysis of English language learning activities carried out with digital game applications, particularly oriented to the teaching-learning process, formulated in the practice of collaborative oral interaction, recommending the training of grammatical structures, training in argumentative writing and vocabulary training. The study also explores the role of self-efficacy and its motivational effect in developing the abilities of the student at risk. Finally, the study addresses the role of digital games in the development of feelings of school relatedness, stimulated by the bonds of intrasocial affective relationship between teacher-student and peers, aiming at promoting inclusion, self-efficacy and improvement of learning, and constituting itself as protective mechanisms of school exclusion phenomena.

Key words: experiences with digital games, behavioral, affective and cognitive engagement, self-efficacy, school relatedness, self-regulation, emotion, oral interaction, inclusion

I. Introduction

The risk factors for school dropout are the academic poor school performance, learning difficulties and disruptive behavior. Digital games can contribute, in this regard, to the improvement of learning and inclusion through mechanisms of stimulation and intrinsic motivation.

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The creation of an appropriate level of challenges, in particular, is the key to create a motivational learning environment. The common motivations for interacting with digital games are the sense of immersion (flow), the sense of autonomy and control, the sense of self-efficacy, social interaction and creativity. Malone defined three elements that make games motivating: challenge, curiosity and fantasy. Concerning students' self-efficacy, the motivational factors are the offer of continuous improvement, advocating the user's ability to make progress in the interaction with the game and the perception of their cognitive ability to perform tasks.

In particular, the digital game promotes motivation, insofar as it intellectually stimulates the user; develops cooperation, recommending the performance of tasks in a collaborative way; encourages competition, advocating the importance of competing with others to gain personal gains; encourages involvement, related to the degree of active participation of the user, and incorporates the fun component. The motivation in the digital game determines that the user is committed to achieve goals, exploring the discovery of the virtual world, and simultaneously implementing mechanisms of social interaction with others.

The digital game also promotes involvement in the established relationship with learning. The involvement in digital games in particular includes the following components: challenge, related to the user's motivation to perform a task and including the perception of its accomplishment with self-efficacy; control, related to the level of choice of the user over the actions available under his/her authority in the virtual environment; immersion, i.e., the degree of absorption of the user in the task; interest and intrinsic motivation in carrying out the task; purpose, related to the perceived value of the task for the achievement of learning. One of the theories that explains the user's involvement in the game is the flow theory, corresponding to an optimal experiential state. An activity that incorporates flow has the following elements: a challenge that requires the application of skills to achieve the objectives; defined objectives; immediate feedback. During the flow process, the user experiences complete absorption in the activity, a sense of control, concentration on the task and loss of self-awareness. Flow can be achieved if there is a balance between the level of difficulty of the task and the challenge offered by the task itself, the task being neither too easy nor too difficult.

Concerning emotions, games arouse the user's interest, as they create an appropriate balance between the level of challenge and the skills necessary to successfully perform the task, offer challenges and objectives, offer significant choices to the user about the actions that may happen next, offer competition vs. cooperation and foster imagination. The feeling of entertainment is provided by the dimension of "play" in the game, which presents an inherent attraction to the user, it is fun, frees the user from feelings of boredom and anxiety and it arouses positive emotions of pleasure and satisfaction. The "play" dimension also promotes positive emotions by incorporating the sense of surprise, related to the discovery of the unexpected, the anticipated sense of curiosity and self-fulfillment. At the heart of understanding "play" is the fun component: "play is fun". The fun component is, therefore, related to the incorporation of positive emotions, the sense of self-efficacy and discovery, resulting from the stimulation of challenges. Other elements that contribute to the development of entertainment are curiosity, the virtuosity that is linked to the realization of self-efficacy and the socialization that results from the perception of belonging to a group.

2. Methodological Options in Teaching English With Games

The game Kahoot¹ is a fun learning game integrating multiple choice questions. It allows the addition of

¹ Available online at: https://getkahoot.com.

videos, images and diagrams to the questions to amplify the involvement. This game promotes collaborative socializing learning.

The proposed activity was intended to practice learning how to use the verb "to be" in the present simple in declarative and interrogative sentences, as well as the usage of adjectives — comparative and superlative. The activity provided a quick solution to the problems in an informal and playful way through a quiz, thus offering a potential to motivate students with more difficulties. The game offered a specific numerical code, which after typing, allowed the student to access each of the activities listed in the digital game. In the course of the activity, students were supposed to answer the question correctly: "What are the correct phrases?". The students interacted orally in a collaborative manner, demonstrating autonomy and a spirit of initiative, aiming at decoding the problem proposed by the digital game activity. The students also showed a spirit of helping each other, in an attempt to solve the problem by their own peers, without having been asked by the teacher to actively intervene in class. To that extent, the kahoot digital game offered solid motivational elements for the development of students' oral interaction, aiming to solve grammatical problems through a quiz.

The game Alieo games² is a motivational game for writing. The game was a motivation for carrying out a writing activity, initiated by oral interaction, which allowed students to feel more confident and motivated to initiate a small paragraph of writing dedicated to the theme of personal identification. Before performing the writing task itself, the teacher encouraged exploratory questions such as: "What's your name?", "Where do you come from?", "How old are you?", "What are your favorite hobbies?" "Do you like school?", Have you got friends?", etc. Following the development of moments of oral interaction within the class to answer those questions, some more participative students were invited to record their answers to some questions, thus allowing the writing of a short paragraph, aiming to provide, then, a description of their personal identification. The students showed participation and commitment in carrying out the activity in terms of developing the register, both oral and written.

The Quizlet game³ allows the introduction of educational resources such as flashcards and images accompanied by text, which are a support for vocabulary and grammar learning, as well as for the practice of oral interaction. The game also offers the functionality of electronic oral text reproduction. Grammar is, for most students, a low motivating activity and this activity revives important grammatical structures such as the "will" and "going to" to form the future simple. The activity enabled the practice of reading grammatical structures inserted in real contexts of communication, followed by listening procedures in English. The activity also allowed students to elaborate questions and simultaneously carry out multiple choice and true/false exercises, making use of those grammatical structures to previously state answers, containing an image background support. The grammatical activity was based on the practice of oral interaction and to that extent it requested a motivational collaborative intervention from students, aiming at solving the problems proposed by the digital game. Students responded to the challenges offered by the digital game, even without being asked. To that extent, the digital game called for student participation and involvement.

The digital game Tricider⁴ is intended for debate and/or discussion of ideas. After launching an idea, the participants in the game had the opportunity to express an opinion on it, considering it either positive or negative and, depending on the expression of agreement and/or disagreement with the idea, present the respective

² Available online at: https://www.alieogames.com.

³ Available online at: https://quizlet.com/latest.

⁴ Available online at: https://www.tricider.com.

arguments. The game motivated, therefore, for oral interaction as well as for argumentative writing. The game boosted the development of argumentative writing, through the training of communicative expressions of agreement vs. disagreement from the launch of an idea, which was as follows: "school is fun". This idea motivated the development of an oral discussion among the students, certainly encouraging them to provide their opinion and/or point of view and/or reflection. During the activity, the teacher also helped the students in the translation process into English of some response words verbalized in the mother tongue, thus increasing their self-confidence through corrective feedback. Finally, the ideas expressed and collected orally were recorded in an organized manner in the writing of sentences by each of the students participating in the task.

The noredink game⁵ is a game aimed at teaching and learning grammatical content, allowing to train the identification of verbal grammatical structures, whose poor interpretation or understanding often leads to wrong answers by students. Whenever students made a mistake in their response, in order to give a correct identification of the verbal structure, the teacher provided additional clues for students to successfully identify the verbal structure. The activity boosted the students' motivation, and the students showed active participation in solving the proposed problems, even without having been requested by the teacher for that purpose. The students also participated in the corrective feedback action to their peers and to that extent the activity registered in the game also promoted collaborative oral interaction.

The near pod game⁶ features multimedia content that allows the exploration of determined themes through the practice of oral interaction and argumentative writing. The game featured numerous images of tourist sites, which should be commented on by the students. The activity aimed to anticipate some of the key vocabulary and appeal to some knowledge of students on the theme of travel. The exploratory questions posed by the teacher were multiple and fit perfectly into the visual elements represented by the images and aimed, to that extent, to expand the student's vocabulary in the field of travel through the digital game and simultaneously appeal to the practice of oral and collaborative interaction of the student. The activity also allowed vocabulary training, referring to the learning of adjectives expressing emotions, explored from the posing of questions by the teacher.

The padlet game⁷ is a wall platform that allows the addition of multimedia content. Music is a topic that students usually like, which made this activity a good opportunity for motivation and broadening of vocabulary in the media area. The activity started with listening to the song "What a Wonderful World" by Armstrong, after which students were asked to identify the theme. Then, the activity provided an oral listening comprehension, proposing an exercise of filling blanks with certain missing words that constituted an integral part of the lyrics of the song. Then, the proposed activity was to encourage students to develop collaborative oral interaction around the components of life that contribute to the stimulation of feelings of happiness, properly framed in the general theme of that song. The oral discussion was also supported on some questions asked by the teacher. The purpose of this activity was also to foster the use of a bilingual dictionary by students, while working and consolidating new vocabulary. Thus, the proposed activity for the treatment of vocabulary could thus be supported by using auxiliary materials such as the dictionary. Finally, the activity also allowed a focus on the grammatical training of the interrogative sentence using the simple present tense. For this, students were asked to ask questions, with the support of the teacher, to phrases previously enunciated in the song "What a Wonderful World".

⁵ Available online at: https://www.noredink.com.

⁶ Available online at: http://www.nearpod.com/index2.php.

⁷ Available online at: https://www.padlet.com.

The game flipquiz me^8 allows the introduction of images accompanied by text and, thus, fosters the learning of vocabulary through the practice of oral interaction. The objective was to invite the students to remember the vocabulary and structures studied, in particular referring to the world of "jobs". The game activity projected the question "what's his/her job?" supported by an image of someone performing a given professional activity. Then, the students tried to answer by decoding the respective profession portrayed in the image: "He/she is a (n)…". The activity, to that extent, also motivated students to practice collaborative oral interaction, in this case aiming at vocabulary training.

3. Data Collection

We present a data collection matrix, resulting from collective interviews, following the students' experiential interaction with digital games.

Categories	Sub-categories	Record units
English course identity	Measuring liking and/or disliking to English and reasons why	Yes, I like it — 17 students. No, I don't like it — 4 students I like to learn new languages. Everyone speaks English. I like the language. It is a new language. I don't like it, because I can't speak. It is very difficult. I don't study. We like fun classes, they are the best.
Thoughts and feelings about the game	Definition of the elements of liking in the game	 I've learned something more, as they say. It is good to teach. It's interactive. A good way to understand more words. It's interacting. It is a new way of understanding words, very different from other classes. I liked the possibility of writing in English. Writing on the PC is more interesting than writing in the notebook. Possibility to learn English. I like to write on the PC because it is funnier, more simple and faster. We can learn more English in the area of personal identification. I like to write on the PC, because it is much better. I write better on the PC and that allows me to learn more on the PC. It is also funnier. I liked to translate the sentences. I liked to translate the sentences. I liked it, because it was easier and I've paid more attention to class. I've enjoyed learning more English. To be able to learn new words. Learn some more English and translate the words into English. An interesting game, because it is fun and more attractive Say what one feels about the school. Learn something new — English verbs. Discover the verbs. It was fun. Learning new things: how to describe an image. See the images. Translate into English.

⁸ Available online at: http://flipquiz.me.

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		I liked the music.
		I've enjoyed learning more English.
		Learn new things and new words.
		Learn new words.
		Music and looking for information
	Definition of feeling	I felt good.
		It S COOL
		Learned new and interesting things
Emotional		I felt good: satisfaction, because I was able to write more or less in English
		It is an interactive game
	Reasons for	It's fun
		I felt satisfaction because I was able to write in English.
		I felt good, because I liked the game, because it is fun and lets me learn English.
		I've learned a little more English.
		Because the exercise was not difficult.
		Because that way I get better marks.
Response		Because I liked to translate the words.
-		Because I thought the level of difficulty was adequate and it was interesting.
	faaling	Because I managed to write English, which I didn't know.
	reening	Because it's funnier to work on the PC.
		Because I felt confident.
		Because I knew things, how to respond.
		I have learned better things in English.
		Because I like English.
		Curiosity to explore museums and other things.
		It was fun to see the images.
		I've learned to speak English better.
		English is great for the future.
Student practice with games	Get to know if he/she played out of school, where does he/she play in school and why	Yes, I play outside school - all students.
		In the library with a cell phone.
		The indiary is a better environment.
		There is no confusion
		We feel happier in the library because classes are more interesting and there is more
		interaction
		We learn better the simple present of the verb "to be".
		We learn English
		We learn best in a group, because we can help each other.
Learning		It's more interesting.
		We are more interested in being in class.
	Issuing	I've learned to write a text from beginning to end, as it allows a better visualization of the
	judgment about	letters. It is more interesting and motivating to write letters on the computer.
	what you	I've learned to write in English and to correct my mistakes.
	learned from the	I've learned how to introduce myself and say the things I like best.
	game	I've learned to ask questions in the future simple and to speak orally in English.
	0	I've learned English, how to make sentences better.
		I've learned to answer the questions.
		I've learned to use the future in questions.
		I've learned more English — the words of disagreement.
		Describing images.
Facilitators and	Definition of facilitators	We are all together.
		In the library you feel like working more than in class.
		We like to have fun at school, we don't like to study.
		It allowed me to write better.
constraints		The game identified the wrong word.
- shou allo		The images.
		Allowing to search for information.
		Looking up the meaning of words in the dictionary.
		Playing games in English helps me to speak more English

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Defi	nition of	It could be funnier.
con	straints	Greater interactivity.

4. Results

Concerning the student interaction experiences with digital games, we can conclude that digital games boost students' ability to learn English. The responses of most of the students involved in carrying out tasks with digital games in the school library pointed to the fact that digital games provide them with the possibility of learning English. Hence, it can easily be inferred that serious digital games geared towards teaching and learning English develop students' perception of competence/self-efficacy, which in turn contributes to increase their academic success. Chamot stresses that one of the basic needs of language learners is self-efficacy (Chamot, 1993). Some students also considered that the interaction with digital games for learning English was emotionally interesting. It can be inferred that this degree of interest allocated to the interaction with digital games was subordinated to the degree of motivation offered by the tasks and/or activities supported by the use and/or application of digital games, as they offered an action meaningful and relevant to student learning. The subjective value allocated to the task by the student was an important incentive for their involvement (Eccles et al., 1983). Several educational practices contemplating the interaction with digital games have emerged associated with the development of the student's self-efficacy in the school library: the encouragement of students in making choices and decision-making; the encouragement of collaborative work with peers in carrying out tasks enhancing the development of the sense of relatedness, which under the motivational prism asserts that the individual is born with an innate desire to connect with others (Ainsworth et al., 1978). From a school point of view, this was reflected in the student's desire and/or interest in forming safe and close emotional relationships and connections between peers and the teacher. The teacher also played a key role in stimulating students' competence/self-efficacy, as he did not assume himself as a mere transmitter of knowledge, also supporting them in promoting their levels of self-confidence, autonomy, motivation and self-concept, while organizing a learning environment that considered the student's mistake as a natural element of the learning process and that promoted the positive reinforcement of the learning actions, referring to the student's success and competence/self-efficacy, thus contributing to the increase of his/her intrinsic motivation and positive emotions of pleasure and satisfaction.

The teacher adopted, to that extent, an empathic moral posture, interacting cognitively and affectionately with the students and simultaneously stimulating the social interaction of sharing and collaboration between the students, contributing to the improvement of their behavior, to the increase of their sense of relatedness to the class (to the teacher and peers) and also to promote a positive learning environment. Researchers stressed the importance of emotional affect and affective proximity in the teacher-student relationship (Birch & Ladd, 1996). The student's perceptions of a healthy and harmonious learning environment favorable to learning implied that tasks with digital games exercised a significant and relevant motivation and at the same time that the teacher promoted student autonomy, offering choices and encouraging the student's responsibility for learning and consequent self-regulation. Students became more autonomous, more confident and optimistic, becoming more easily involved in carrying out challenging tasks, defined learning objectives and maintained a personal structure of active involvement, aimed at solving problems and challenges, leading to self-regulation of their learning. Studies show that students with a high sense of autonomy have better school results, greater involvement in the classroom, self-efficacy and self-regulation (Grolnick & Ryan, 1987). According to Bandura, self-efficacy consists of the student's belief in his/her ability to successfully perform a certain task (Bandura, 1997). Britner & Pajares

(2006) emphasize that self-efficacy decisively influences the student's self-regulation variables, namely effort, persistence, resilience and motivation (Lei, 2010). Effectively, digital games promoted the student's intrinsic motivation, insofar as they boosted their self-efficacy for the active accomplishment of tasks successfully, resulting in positive emotions such as pleasure, satisfaction and self-regulation.

The self-efficacy provided by digital games combined with factors such as student autonomy, student motivation, student orientation towards goals and problem solving fostered their whole involvement, which was also a decisive factor for the development of their resilience (Connell et al., 1994). Alva defines the resilient student as one who exercises high motivational value leading to a positive performance in the face of adverse conditions (Alva, 1991). Self-efficacy is a protective mechanism for the student, self-regulating his emotional well-being through cognitive, motivational and affective processes (Hamill, 2003).

Bamhardt describes the characteristics of the student who assimilates the belief in self-efficacy:

"Students who incorporate self-efficacy feel confident in solving problems (...) They attribute their success mainly to their efforts and strategies, they believe that their skills will improve as they learn and recognize error as an integral part of learning" (Bamhardt, 1997).

We believe, then, that self-efficacy was an essential component of learning English, as it motivated the students to improve their skills. The expectations of success formulated by the belief in self-efficacy were of importance to the student, as they provoked the stimulation of his/her involvement in favor of the task, based on the premise that the learning outcome would be positive. Thus, we reiterate that the key to success in increasing student motivation and involvement in favor of learning lies in their belief in self-efficacy (Pressley et al., 2003).

Another important aspect driving the student's self-efficacy was the teacher's immediate feedback on the student's performance in solving the task, considering the indication of the error as well as suggestions for improvement. Digital games benefit student learning by focusing on the process. Through offering students the solution of problems and challenges, digital games taught the student to understand how to evaluate new hypotheses and strategies, as well as to conceptualize new ideas and concepts that in practice would involve them in successfully handling information in a foreign language, implying the assumption of freedom to explore and experiment with the surrounding virtual world and active and constructive involvement in carrying out tasks, in collaborative social convergence with the teacher and peers. The involvement in the digital game advocated the student's focused interaction with his/her physical and social environment, while conceptualizing an active, persistent, constructive and goal-oriented search for knowledge.

The emotional dimension of involvement put a focus on learning activities that generated enthusiasm, interest and satisfaction (Meyer & Turner, 2002). With regard to emotions, the students' emotional response to the interaction with the games was quite satisfactory. Students verbalized positive emotional experiences such as satisfaction and even happiness. Studies reveal that positive emotions increase the student's tendency to become self-motivated and involved in favor of the task, stimulating their processes of discovery and experimentation of the surrounding environment (Frijda & Mesquita, 1994). Positive emotions stimulated, in particular, the design of pro-social behavioral attitudes, namely, they invited the student's collaborative interaction with peers (Cunningham, 1988; Isen, 1999). The sense of relatedness also promoted student involvement. The student's social interaction with peers stimulated effort, persistence, active participation and consequent promotion of positive emotions such as interest and enthusiasm. The student's perception of peers' emotional and social support also contributed to the increase in their levels of involvement and self-concept (DuBois et al., 1992).

Students, having the possibility of interacting orally with each other and providing emotional support in

solving tasks and sharing experiences, stimulated their sense of relatedness to school, thus creating a positive learning climate, and offering a context of support to develop their autonomy. The range of positive emotions experienced by students is reflected in the increase of their motivation and self-regulation in favor of learning (Pekrun et al., 2011). Recent studies show that positive emotions influence motivational variables such as beliefs of self-efficacy and significant value attributed to the task and its successful completion, learning objectives (Roeser et al., 1996), intrinsic motivation (Olani, 2009) and self-regulation (Pekrun et al., 2011).

One of the ways games have benefited learning is interactivity, which in particular has integrated feedback to form the core of the learning experience. Through the development of an iterative feedback cycle, postulated in the action-reaction dialectic, the user progressed throughout the game, thus stimulating his/her learning. The games have also integrated a variety of media such as music, video and interactive graphics, presenting in their entirety appealing visual and sound interfaces that presented a multifaceted variety of information. Through the incorporation of these multimedia elements, the games constituted multisensory environments favorable to the development of the student's learning, allowing him/her to develop mental representations, essentially from the text, sounds and images.

It should also be noted that the learning of the cooperative model tested in the interaction with digital games in the school library promoted the student's involvement, considering an increase in his/her motivation, improvement of the appropriate behavior and social conduct to the detriment of the disruptive behavior shown in the classroom, improvement of the academic success and social self-efficacy (stimulating the relational proximity to the teacher and peers) and providing a stimulus to the resurgence of positive emotions.

This finding becomes relevant because, in opposition to the interaction with digital games in the school library, teaching English in traditional molds of transmissive pedagogy in the classroom with the same group of students, on the contrary, showed a disinvestment and/or student's non-involvement in the definition of goals and learning strategies aimed at success, resulting in negative emotions of dislike, frustration, revolt, anxiety and even chronic stress, due to the fact that the teacher's energy is often channeled to solve disciplinary problems. In this case, in the classroom, students feel incompetent and show resistance to active participation in tasks proposed in a foreign language.

5. Conclusion

Digital games are useful learning tools for students at risk, as they promote their motivation and involvement in favor of learning, integrating the following components: offering goals and challenges; stimulation of social interaction; sense of self-efficacy; flow.

The digital game also stimulates positive emotions like interest by offering choices, competition vs. cooperation and promotion of imagination and creativity. The dimension of entertainment through play is also an emotional motivation to arouse positive emotions of pleasure and satisfaction, namely through the inclusion of the sense of surprise, activating curiosity and self-realization.

Digital games are enriching platforms for learning foreign languages such as English, fostering the areas of oral interaction/production, argumentative writing and grammar.

From the empirical point of view, the data collection allowed us to conclude that digital games promote student self-efficacy in learning English, contributing to that extent to the experience of positive emotions, stimulated also by the incorporation of interactivity, the integrative multimedia component that fosters the

exploratory discovery and playful factor in learning.

The teacher's emotional support providing corrective feedback to the student stimulated his/her autonomy, self-regulation, social interaction with peers and sense of relatedness to school.

Digital games stimulated a collaborative/cooperative learning paradigm, advocating teacher-student and student-class interaction that contributed to increase their motivation and involvement, improving their behavioral attitude towards school, thus promoting school success.

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