The use of the Mobile App BOOKR Class in San Blas Hospital Classroom with Basic Education Learners.

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Introduction

The use of ICTs as an integral part of hospital classrooms is not strange or surprising, previous research reported advantages of using these tools such as a positive impact on the child's emotions and behavior (Chacón et al, 2017), improve learning management, store content, personalize and adapt activities to the needs of hospitalized students (Pesántez, 2021; Castañeda et al, 2014; Garriga, 2012). In addition, Sánchez & Espinosa (2015) found that the primary use of ICT in HC has been the contribution to communication processes, a great impact in this particular context to reduce academic lethargy (Chacón et al, 2017) and attenuating the feeling of separation (González et al, 2019). However, according to Pesántez (2021) new research is required to analyze the pedagogical potential and the impact of ICT in the teaching-learning process, along with the imminent need to continue researching the application of mobile learning (Castañeda et al, 2014) for English learning purposes in a hospital classroom context. Therefore this intervention aimed to analyze the impact of the app BOOKR Class regarding EFL teaching within the public hospital classroom San Blas, located in the south of Bogotá, Colombia. with hospitalized students from the 4th locality (San Cristóbal), 1 or 2 socio-economic levels, ages between 3 to 15 years old, various illnesses or vulnerable situations, and the lead and support hospital classroom teachers.

Justification

Hospital classrooms are an essential factor in the educational and affective development of children who due to illness or vulnerability, spend a period of their lives in a hospital, away from their school, familiar and social environment. They aim to guarantee that hospitalized students may continue the educational process and improve their stay in the hospital center (Prendes & Serrano, 2014). In these spaces, using ICTs is one of the most interesting strategies for improving comprehensive educational care (Serrano & Castañeda, 2016), being integrated with flexible and diverse methodologies and adapted to the needs of hospitalized students. According to Chacón et al. (2017), ICT and its didactic materials have the following advantages: a positive impact on the child's emotions and behavior- the adaptation of activities to students' needs-allow synchronous or asynchronous interaction. Furthermore, as Castañeda et al. (2014) stated, the physical spaces of hospital classrooms propitiate the interest in implementing mobile learning, which breaks down the barriers of space and time that affect hospitalized students. Besides, M-learning can also be used to teach EFL skills and contribute to developing them (Agustina et al. 2022). Therefore, new research is required to analyze the pedagogical potential and the impact of ICT in the teaching-learning process (Pesántez, 2021), and the development of EFL communicative skills of hospitalized students. This intervention emerges from the interest to understand, analyze and compare, with previous research, the potential of using the mobile app BOOKR Class in a hospital classroom located in Bogotá, Colombia.

Problem Statement

The intent of this internship is to analyze the impact of the mobile app BOOKR Class on EFL teaching within the context of a hospital classroom. According to Castañeda et al. (2014), these physical spaces propitiate the interest in the implementation of Mobile-learning- a valuable tool that provides easy access, mobility, and learning opportunities anytime-anywhere. In Colombia, the Telefónica foundation (2015) has been implementing the use of ICTs as a powerful tool in the hospital classrooms of four private institutions in Bogotá, highlighting the advantages of its use in terms of mobility, access to educational content, and means of communication. According to Blume & Würffel (2018), there is a lack of research reports about M-learning regarding EFL teaching in these environments. Therefore, there is a need to analyze the impact of the implementation of an English educational mobile app in a public hospital classroom as well as makeup for a lack of research to explore the pedagogical potential and impact of these technologies in the teaching-learning process in this setting (Erazo, 2021). Moreover, during the recognition phase of the San Blas hospital classroom, it was identified that there was a lack of material and resources to use during English interventions and the use of academic activities created by a social science teacher with grammatical and spelling mistakes implemented with the patient-students. This recognition increased the interest to analyze the impact of a mobile app that can be integrated with flexible and diverse methodologies (Serrano & Castañeda, 2016) that may positively impact the San Blas hospital classroom. By exploring the impact within its context, teachers can better understand the possible impacts or potential issues of mobile learning implementation, and researchers can identify setbacks and the need for future research to better understand M-learning in these highly valuable environments.

Objectives

General Objective:

- To analyze the impact of the app BOOKR Class regarding EFL teaching within the San Blas hospital classroom context

Specific objectives:

- To identify the main features of the EFL context in a hospital classroom environment located in the South of Bogotá, Colombia.
- To contrast emerging patterns regarding the implementation of an App towards the development of communicative skills in English with the use of the mobile app BOOKR Class in a control group.
- To determine the impact of the App BOOKR Class in a hospital classroom per se.

Theoretical Framework

This part of the paper presents and illustrates the primary constructs that have been reviewed to generate, understand, and create knowledge about the main concepts of this proposal. It presents theory-based literature and research-based literature on the phenomenon. From an educational perspective, the literature focuses on defining hospital classroom & hospital pedagogy, the potential of ICT in hospital classroom settings, m-learning, and the app BOOKR

Class. Besides providing a clearer idea of these constructs, their applicability, and their strong relation with the present proposal, striving to get a broader view of this field and how different studies may support this intervention.

Hospital Classroom - Hospital pedagogy

The hospital classrooms are educational support units located in hospitals that aim to provide school care and guarantee the continuity of learning processes for student patients. These physical spaces seek to help hospitalized children to reduce isolation, fear, and anxiety caused by vulnerable situations or illnesses. As stated by González et al, (2019), due to the special conditions of the hospital classrooms; the work methodology must be flexible, active, and adapted to the particular characteristics of the student body while starting from the interests of the minors, and encouraging creativity, emotions, and socialization might facilitate intervening regarding behaviors and learning (Carrillo, 2020).

According to some authors, there are a few other elements that are key to accomplishing the objectives of a hospital classroom such as adaptation to the emotional state of students, use of creative and motivating teaching sources (Chacón et al. 2017), and ICT as a means of communication and relationship (Castañeda et al. 2014) or to socialize and learn (Garriga, 2012). Therefore, as hospital classrooms are filled with diverse learners these should be positive environments to accompany hospitalized children in their educational process. In addition, the hospital pedagogy, based on inclusive education, says that no one can be segregated due to disability, gender, illness, ethnicity, or suffering from some type of learning difficulty. (Gil &

Salinas, 2021). This pedagogy arises in these settings, due to the pedagogical needs of learning subjects, school contents, and the psychological needs of reception- adaptation- and care during the patient's stay.

Potential of ICT in hospital classrooms

The use of ICTs is a crucial element in hospital classrooms. The great benefits of these technologies can be increased in these settings since they make various devices available to patients, which allow them to access both leisure and educational content (Castañeda et al. 2014). These stimulate intellectual abilities and serve as a communication and learning tool for eliminating space-time barriers (González, 2015, as cited in Gil & Salinas, 2021). Also, allow educational attention adapted to the diversity and the needs (age, interests, educational level, and type of injury or illness) of hospitalized students (Serrano & Castañeda, 2016). Moreover, ICTs as learning tools are essential to reduce academic lethargy and improve the students' mood (Chacón et al. 2017), social and psychological states, and state of mind, and decrease isolation (González et al. 2019), attenuating the feeling of separation while normalizing their life. Overall, ICTs can become pedagogical and didactic material if they are used properly.

In order to implement the use of ICTs in a hospital classroom setting, is important to take into account the possible setbacks. According to Serrano & Castañeda (2016), the difficulty of this type of implementation lies not only in the already complex relationships inherent in any teaching-learning process but in the hospital context, teacher's training, methodological principles, and technological resources. Thus, the present intervention took into consideration the hospital classroom's lack of technological resources (tablets, laptops) and the limitation of the

hospital internet restriction policy by providing a laptop and using a mobile app that allows downloading content to access offline.

Mobile Learning (M- learning)

Understanding how and why Mobile Learning could be a valuable tool in learning settings is crucial to understand what it involves. Many definitions have been made about what M-learning is, and these evolved in different ways and directions; initial definitions focused on access and mobility, and contemporary definitions are more personal and social-driven (Pedro et al., 2018), which may be difficult to bear a clear understanding of its usefulness and applicability in the teaching-learning process. According to Hidayat et al. (2014), M-learning is a service that provides general information to the learner, and its educational content helps the achievement of knowledge. "It is a kind of learning which offers the learners' independence of the time and place." (Sönmez et al., 2018). Therefore, one of the critical features of Mobile Learning is its easy access and mobility, providing learning opportunities anytime and anywhere, which may be convenient, keeping in mind that for hospitalized students face-to-face and classroom interactions are scarcer or interrupted. Consequently, learners might require looking for different learning strategies that may overcome this situation, allowing them to continue with their learning process without the need for in-person or scheduled lessons.

According to Wong (2013), mobile technology has the potential to make sure that critical thinking skills can be developed while doing problem-solving and mobile applications can harvest the students' attention in the process of problem-solving and make them more willing to learn. Also, in a study carried out by Jodoi et al. (2021), the use of an app contributed to providing their students the experience to train themselves in critical thinking with gamification,

and the results showed many students did engage in this app and were satisfied with their

learning. Kukulska-Hulme et al. (2011), stated that mobile technology devices could offer

learning opportunities: spontaneous, informal, contextual, portable, ubiquitous, pervasive, and

personal, which would be a plausible reason why Mobile Learning keeps growing, and its

popularity is increasing. Tracing similar perspectives, another author suggests that there is an

imperative need for educational institutions to implement the use of innovative teaching

techniques or approaches and transfer attention to emerging technologies in different contexts

(Toquero, 2020). Therefore, it can become a valuable addition to hospital classroom settings as

mobile learning can be a helpful tool to accelerate learning, provide valuable interaction, and

promote lifelong learning.

From an EFL perspective, some studies found that educational mobile applications and

games are especially effective in foreign language education (Kuimova et al. 2018), as they

change this process into a more exciting and interactive one improving their competencies

(Camilleri & Camilleri, 2019) through the engagement these apps offer. M-learning can also be

used to teach EFL skills such as vocabulary, pronunciation, grammar, spelling, listening, reading,

and writing and contribute to developing them (Agustina et al. 2022). Moreover, in a study

developed by Rezaei et al. (2014), the findings supported the idea that using mobile apps helps

vocabulary acquisition, following the principle of presenting content through graphics to show

the meaning of words and help students remember. In a different study developed by Hsu et al.

(2013), a mobile learning system was developed based on the approach of providing reading

material recommendations for EFL students to read articles that matched their preferences and

knowledge levels. Consequently, using the educational app chosen for the present intervention. It

is expected to contrast previous patterns about the development of communicative skills this may

provide, taking into account that this app contains games, illustrated flashcards, interactive e-books, a Lexile placement test, and scaffolding functions. A deeper description and case studies carried out with the app continue below.

BOOKR Class app

According to Ed Tech Impact (2022), BOOKr Class is a research-based 2-in-1 complementary tool to teach English, a gamified library application with a curated selection of engaging interactive books and games for children between 4-14, and a Lexile placement test that helps to start the user journey efficiently, allowing the teachers and the system itself to recommend the most appropriate books to the learners. The library, aligned with CEFR and Lexile measuring system, consists of classic and modern interactive e-books, enhanced with animated illustrations, native English voice-over, thousands of games, and flashcards with speech analysis.

It is supplemental development material that may be a useful tool for some students with SEN such as ADHD- dyslexia-hearing impairments-intellectual or physical disabilities-behavioral problems- learning difficulties- or chronic illness- medical needs- or low socio-economical status, as recognized by the OECD (2019), since the scaffolding elements and functions in the app (texts broken into shorter paragraphs- high-quality illustrations-and animation supporting the text comprehension- narration-interactive tasks), may close the achievement gap between the learners (Hietajärvi & Maksniemi, 2017). Moreover, according to Blume & Würffel (2018), text-to-speech programs are good for learners with hearing

impairment. Such a statement arises interest in the possible potential of the native English voice-over function of the BOOKr Class app with the control group of the present intervention.

In a case study planned by Aldeas Infantiles SOS x BOOKR Pilot Project (2022), they implemented a 4.5-month-long pilot project enabling children in Guatemala (from the organization) to try learning English with the application. The most important aim was to make English learning and reading a habit as stories and reading have a direct impact on children's well-being and social development (Mendelsohn et al, 2018; Dursma et al. 2008; Silva & Desidério, 2021). Another key purpose was to test the effects of using context, stories, and songs to improve not only children's language skills but soft and social-emotional skills as well. In this project, both qualitative and quantitative data were collected. In terms of results, students completed the assignments with a 94% completion rate, and 80% of opened books were finished, which is a very high completion rate. This may prove that based on the statistics BOOKR Class is highly engaging for students. Overall the children's emotional well-being improved, they enjoyed learning with the class and showed enthusiasm while using the app. Similar outcomes were found in another pilot project developed by Kayany foundation & BOOKR Class in 2022 with vulnerable Syrian refugee children (Saving A Generation Through Education, s. f.).

To assess the viability of the app, this intervention will consider the four categories of the framework modified by Guo (2014), based on Kim's (2012) adaptation of Hubbard's widely used software review criteria. The analytical framework mapALL includes four categories: Target Learners, Content and Focus, Theoretical and Pedagogic Features, and Reputation in

Target Learners, and is focused on the non-technological aspects of mobile apps-assisted language learning. Below find a table with a more specific description.

Table 1. *Analytical Framework of MapALL - BOOKr Class App*

Categories	
Target Learners	**age:** children and teenagers between 4-14 years **interest:** English as a Foreign or Second Language learning, reading comprehension development, developing 21st-century skills. **proficiency level:** beginner (pre-A1), intermediate (B2)
Content and Focus	**topic/theme:** classical & modern tales, basic, culture, critical thinking, emotions, daily topics such as travel, shopping, etc. **structure:** Lexile test, digital e-books, educational games, flashcards, songs. **content size:** 1000+ engaging digital content. **focus:** language skills, sociolinguistics, 21st century soft and cognitive skills.
Theoretical and Pedagogic Features	**learning theories and paradigms:** lifelong learning, collaborative, teaching support, and Competency-based learning. **instructional activities:** vocabulary drills. **individual exercises:** practice, tests, games.
Reputation	**download count:** 50,000+ downloads **average rating** **users' comments**

Note. From "Analysing and Evaluating Current Mobile Applications for Learning English Speaking," by H. Guo, 2014, British Council ELT Master's Dissertation Awards: Commendation, p. 34.

The categories observed in *table 1* are appropriate for the context of the San Blas hospital classroom in terms of interest, proficiency level, and focus. BOOKR Class can serve as a supplement to texts at any level. Pairing text with narration and illustrations and chunking reading into sections of text are all research-based practices that improve student comprehension. Since the games happen only at the end of the story, students will likely need some guidance as

they move through the texts, especially if they are reading long or complex stories. For readers who struggle with long texts, the app chunks such texts into manageable sections that allow the readers to digest content in small bits, while the visual cues -sometimes static and other times animated - help with context and bring the stories to life. The review of its potential will be analyzed according to the next methodological framework.

Methodological Framework

This part describes the work plan, type of study, and approach of the internship, bearing in mind that the present intervention aims to contrast emerging patterns regarding the implementation of an App towards the development of communicative skills in English with the use of the mobile app BOOKR Class in a control group.

Work Plan

Hospital Classroom approach

The objective of this first part consisted of the recognition of children in the hospital classroom, their characteristics, and various possibilities of accompaniment based on the specific needs of the students, using a needs analysis test, approaching the patient-student registered in the hospital classroom, to understand and get knowledge about his medical conditions, learning disability, and previous EFL learning experiences. Moreover, the recognition of the hospital

classroom resources, methodologies, the review of material and activities that had been used in this setting for English interventions, and work mechanisms took place.

Lexile pre-test & Adaptation of material

In this part, the first phase of the intervention took place, it was sought to carry out the Lexile pre-test with the patient-student, which helped to start the user journey efficiently, allowing the teachers and the system itself to recommend the most appropriate books to the learner. Upon obtaining the results of the needs analysis test, the class materials -activities were adapted or created including flexible and adaptable strategies to use during the implementation (use of body language-pointing-miming, completing dialogues, group activities, using pictures-printed material- puzzles- games, giving English instructions with code-switching when necessary, use of realia, use of personalized examples or significant situations and mechanisms as the association of vocabulary through images). ensuring that these activities complemented the possible limitations of the mobile app or that were significant for patient students.

BOOKr Class App Usage

During this second phase, the control group, and the no-intervention group (in some interventions) used the mobile application in a personalized way focused on their needs, interests, strengths, or difficulties. While the patient students used it, the activities were also implemented to complement the use of the apps in a more general way, ensuring that learning is transferable to day-to-day contexts. During this part, it was also necessary to constantly monitor the planned activities in case changes or adaptations were needed.

Lexile post-test & interviews

In this last phase and after having completed the experimental use of the mobile application, planned-adapted activities, and material, the same Lexile test was carried out again to observe somehow or analyze if the use of BOOKr Class was beneficial for the control group. Likewise, the interviews took place, to collect the ideas, opinions, and thoughts of the control group and teachers about using this app for learning English in a hospital classroom setting.

Type of Study

The type of study of the present intervention combines both qualitative and quantitative models. Considering that mixed methods recognize the value of iterating between what can be counted and what cannot, to generate richer insights about the phenomena of interest. (Kaplan, 2015). This specific aspect is relevant to this proposal in seeking to get both perspectives. Besides, According to Creswell, (2012) in quantitative research, the researcher identifies a research problem based on trends in the field or on the need to explain why something occurs. This interpretation fits with the present intervention according to the interest it arises in contrasting emerging patterns regarding the implementation of an App for the development of communicative skills in English in the San Blas hospital classroom. Qualitative research allows exploring the environment in which the study would take place, and the way in which the participants relate and act in their context (Hernández et al, 2018), it focuses on understanding and deepening the phenomena, exploring them from the perspective of the participants in a natural environment and in relation to the context. Taking this into account the qualitative approach will be appropriate and helpful for the purpose of this intervention as it allows interns

to observe each of the patients-students within their hospital environment, to identify the main features of the EFL context in a hospital classroom environment, get their insights regarding the use of a mobile app and the potential it may behold in the development of communicative skills within the context of the setting.

Mixed methods are intended to be used due to the addressed concerns required to be answered, putting up with the measurable data itself and the human perception. Additionally, according to Elmiana (2017), this method can investigate reality and be used for detailed descriptions of phenomena in the ELT field. Noticeably, quantitative and qualitative data are going to be transcendental to elucidate the addressed concerns.

Participants

This intervention was carried out in the hospital classroom of San Blas in Bogotá, Colombia. In this classroom, school support is provided focused on fields of thought -logical-mathematical, scientific and technological, historical-social, communication, art, and expression by literature and social science teachers. Most of the patient students come from the 4th locality of Bogotá (San Cristóbal) with 1 or 2 socio-economic levels, ages between 3 to 18 years old. Hospitalizations can vary from 1 to 10 days and are due to various illnesses or vulnerable situations, commonly abdominal pain- gastroenteritis- syncope- poisoning- odontogenic abscesses -malnutrition - drug abuse -sexual violence- suicide attempts- accidents at home, and fractures. Apart from the patients-students that are cared for every day. The hospital classroom has an 18-year-old patient student registered in 11th grade, he has vasovagal syncope, a condition that leads to fainting, hearing impairment, and mild cognitive impairment (MCI),

which can take the form of learning disabilities, memory problems, ADHD, language problems, etc. The patient student was not having English lessons, he just completed a SENA course and expressed he had difficulties understanding his previous English teachers. Therefore, it was important to create material with illustrations, use of context, significant situations, realia, and mimics with other different flexible strategies while implementing the use of the app BOOKR Class in the hospital classroom and promoting autonomous work at home.

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Approach of the study

This proposal can be classified as a case study, it is defined by Yin (2014, as cited in Hollweck, 2016) as "an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context", is a general term for the exploration of an individual, group or phenomenon. From an educational perspective, Rebolj (2013) states that a case study "is a description and analysis of an individual matter or case […] with the purpose to identify variables, structures, forms and orders of interaction between the participants in the situation (theoretical purpose), or, to assess the performance of work or progress in development (practical purpose)". According to Marrelli (2007), this approach offers rich perspectives and insights that can lead to an in-depth understanding of variables, issues, and problems.

Thus, the present intervention aims to use the mobile app BOOKR Class in a hospital classroom setting to analyze its potential, identify the main features of the EFL context, and contrast emerging patterns regarding the implementation of the app towards the development of communicative skills in English. Consequently, taking into account that in this setting the population is diverse (in age, diagnostic, grade, disability, and medical condition) and the

intervention span depends on the type of hospitalization, the "case" or object of study is the

hospital classroom per se, encompassing several aspects denominated as "control group" -refers

to the patient-student registered in the hospital classroom, who has determined medical

conditions and a learning disability- who used the mobile app in the classroom and at home, the

"no intervention group", which includes, regardless of such denomination, the group of

patient-students who had short-term hospitalizations, participated in the experimental use of the

mobile app in some moments throughout the whole internship, but intervention span was not

enough to collect reliable data. In terms of instruments, an unstructured journal, semi-structured

interviews with hospital classroom teachers, semi-structured interview, and app pre-Lexile test &

app post-Lexile test in the control group were carried out, to build knowledge, get different

insights about the implementation of the mobile app, complemented with the natural approach

flexible methodology, and the different strategies used during the intervention.

Data collection instruments

In relation to the objectives of this project, certain instruments for analysis were needed.

Accordingly, three data collection instruments were selected:

Semi-structured interviews: this instrument is particularly suitable for creating

conversational situations that facilitate the natural expression of perceptions and perspectives by

the research subjects (Mata, 2020). The semi-structured interview demonstrates the ideas of the

interviewed about the phenomenon of interest (Johnson & Christensen, 2014) being useful in this

intervention, as the intern can apply it, through flexible questions that can be turned into

conversations, to know the perspectives of San Blas hospital classroom teachers on the potential

of BOOKr Class app and teaching practices in their hospital context, and to know the control group perspective regarding the use of the mobile app to improve communicative skills and opinions regarding the pedagogical personalized intervention.

Unstructured Teaching journal: a journal is used to capture the passed-through and subjectively experienced situations and events. It is exactly the subjective experience of teachers and all events in educational settings that they consider important, what they think may affect them and that may point to new circumstances (Wiegerová, 2013). An unstructured journal has no prescribed structure and the teacher may freely write notes in it. According to Annink (2017), a journal may be seen as a valuable addition to the research protocol, because it allows researchers to reflect on arising issues that are not included in the protocol and require immediate decision-making. Being useful for the present internship, as it allows narrating of the intervention situations or events, and the control & no intervention groups' responses to the activities planned, including the photographic evidence which is useful for data collection (Erdner & Magnusson, 2011) playing a supportive role in data analysis without being subject to analysis.

Lexile pre & post-test: A Lexile reader measure represents a person's reading ability on the Lexile scale, a Lexile test can help a reader choose a book or other reading material that is at an appropriate level of challenge (Smith et al, 2016). Moreover, according to one of the specific objectives of this project, the pre & post-test may provide numerically measurable data regarding the improvement of reading skills in the control group.

Chronogram

This internship project was developed in 384 hours, in a time of three months. These hours were divided into hospital Classroom approach- diagnostic, Lexile pre-test, creation & adaptation of material, BOOKr Class usage, Lexile post-test, interviews with control group & teachers, data analysis, and drafting the final report. Below find the chronogram table with the activities carried out according to the time (weeks) in the period of execution of the internship.

Table 2. *Intervention chronogram*

Activity	Weeks											
	1	2	3	4	5	6	7	8	9	10	11	12
Hospital Classroom Approach- Diagnostic	x	x										
Teaching Journal	x	x	x	x	x	x	x	x				
Lexile pre-test			x									
Creation & adaptation of material		x	x	x	x	x						
BOOKr Class usage	x	x	x	x	x	x	x	x				
Lexile post-test									x			
Interviews to control group & teachers								x	x			
Data analysis										x	x	x
Drafting final report									x	x	x	x

Analysis

From the current internship, it was possible to implement the work plan, gather data, and consequently analyzed it to get some results. In accordance with the mixed method nature of this report, triangulation was followed to analyze and compare all the information collected during the intervention's space. Based on Howe's (2012) conception of triangulation grounded on the integration of quantitative and qualitative data, not merely to look at agreement or disagreement between the data sets, but to put the data into a more comprehensive explanatory framework. Moreover, according to the data collection instruments and literature reviewed, it is approached as methodological triangulation which can be used to enhance the analysis and the interpretation of findings (Bekhet & Zauszniewski, 2012), using more than one kind of method to study a phenomenon. The research subjects approached with this intervention were the patient students were divided into a control group (patient student with specific diagnosis and a longer intervention span), a no-intervention group (patient students with diverse diagnoses, and variable shorter intervention spans), the lead & support teachers in San Blas hospital classroom, and contrasting with the journal reflected during the intervention and emerging patterns regarding the phenomenon in interest.

Description of the obtained results

In terms of obtained results, on the one hand, it was possible to get a better understanding of the phenomenon of interest based on the objectives established. On the other hand, from the

experience in the San Blas hospital classroom and the audience's perception, it was possible to understand different implications of the phenomenon which were not included in the initial inquiries but represent an excellent opportunity for further research and can be compared with previous research.

From this intervention, it was analyzed and determined the potential of BOOKr Class app in the San Blas hospital classroom environment in terms of the development of communicative skills, its impact on students' well-being, engagement, mobility, and the possibility to access off-line content. Also, the control group had a 5% level of progress while using the app.

Besides, it was possible to get the audience's and control group's perceptions regarding the implementation of M-learning in hospital classrooms and the challenges these spaces may encounter. Moreover, it was feasible to reflect on the implications of implementing M- learning in a hospital classroom and the challenges and impact this internship traced in the intern. A detailed analysis description including all the instruments analyzed continues on, divided into three categories: impact of BOOKr Class regarding EFL in the hospital classroom, development of communicative skills, and challenges of M-learning implementation.

Data analysis

The first category analyzed in the triangulation chart was the impact of BOOKr Class regarding EFL in the hospital classroom. During the semi-structured interview, the patient student in the control group mentioned that one of the advantages of using the app was that he could recognize vocabulary and that listening and reading at the same time was helpful for him. Also, the patient student mentioned that the app adapts to the level of each person to facilitate learning.

Figure 1

Control group intervention
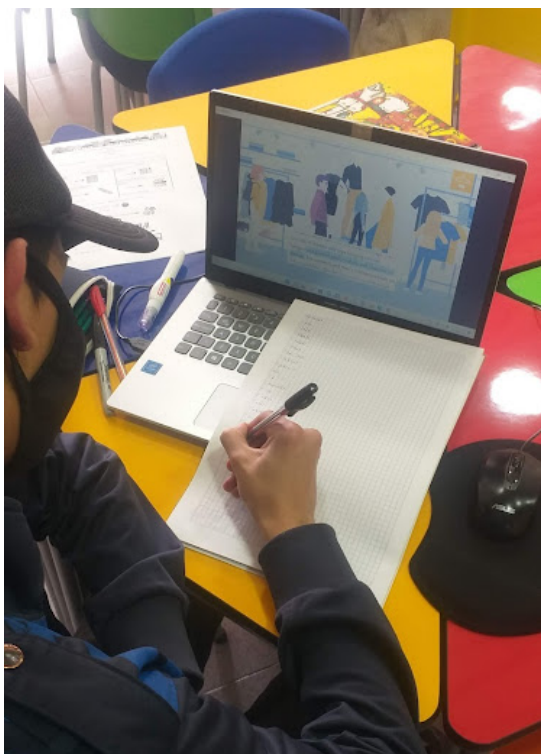
According to previous research, M-learning can be used to teach EFL skills and contribute to developing them (Agustina et al. 2022). As expected, the app's native English voice-over function was beneficial for the control group as stated by Blume & Würffel (2018), who highlighted these advantages for learners with hearing impairment. As observed in *figure 1,* the app contains illustrations and highlights the text as the voice-over advance in the reading, during the intervention the intern could notice these features helped the control group's reading comprehension and to remember vocabulary.

From the support teacher's perspective, she mentioned noticing the patient students were active, engaged, and concentrated while using BOOKr Class. During the intervention, it was also possible to observe engagement and interest in patient students with a willingness towards

English language learning. Moreover, for both the control group and no- intervention group it was observed that in general terms the use of the app impacted the well-being of students as they were engaged with the app and "distracted" from their illness, diagnoses, or vulnerable situations. Also, while analyzing the journal, it was observed that most of the students had a positive response to the games at the end of each story and song chosen for the intervention.

Figure 2

No-intervention group patient student - cycle 1

In *figure 2* is possible to observe the patient student engaged in completing a memory game about farm animals from the song "Old mc Donald", the student was hospitalized for malnutrition and studied in a bilingual primary school.

Figure 3

No-intervention group patient students - cycle 3

Figure 3 includes two patient students hospitalized for gastroenteritis and drug abuse respectively, as it can be observed they were engaged, concentrated listening, and reading the story "A short trip home". At least, during the intervention span, they were focused on the activity and not on their illness or vulnerable situation, while improving EFL skills.

Another relevant impact of using the mobile app in the hospital classroom was the mobility it offers. On several occasions, the patient students were not able to attend to the physical space of the HP, mostly due to fractures or because they were receiving intravenous medicine.

Figure 4

No-intervention group patient student - cycle 4

figure 4 is one of the pieces of evidence taken during the occasions when the patient was not able to assist to the hospital classroom due to a left foot fracture.

According to the expected results, it was concluded that the BOOKr Class app function of native English voice-over was beneficial in the control group, moreover, the research subject expressed that the app was easy and convenient. Also, referring to the Lexile measurement system, was an advantage when recommending readings in the control group as he mentioned it is adaptable to each person's English level. For the no-intervention group, taking into account that stories and reading have a direct impact on children's well-being (Mendelsohn et al, 2018; Dursma et al. 2008; Silva & Desidério, 2021) and the engagement these applications offer (Camilleri & Camilleri, 2019). The potential was the engagement it provided, the impact on the well-being of students, and mobility. As the support teacher states, the engagement potential gives the app an acceptability status.

The next category analyzed was the development of EFL communicative skills with the use of the BOOKr Class app. The app Teacher's Dashboard displays real-time statistics to improve the measurement of student learning. In the case of the control group the acquired skillsets were: cognitive, grammar, listening, reading, and vocabulary, these acquired skills are based on the books and activities correctly completed by the patient student. The statistics are not reliable by themselves however, during the interview the student stated that the features in the app such as listening and reading at the same time helped him to understand better and recall vocabulary. Furthermore, according to the results from the first application of the Lexile test to the post-test, the control group had a 5% level of progress in reading comprehension, both results are located in level 3 in the app and CEFR level A1, but represent an improvement in the control's group communicative skills taking into account the short period of this intervention.

During the specific moments of app implementation with the no-intervention group, it was possible to analyze from the journals that the app functions such as illustration and animation supported text comprehension, the texts broken into shorter paragraphs are appropriate for beginner-level learners, and the content presented with illustration, and voice-over, and drilling exercises in the flashcards were accurate for vocabulary acquisition. However, due to the variety of hospitalization and intervention periods of time with the patient students, it was not possible to get more reliable data about their insights or experiences using BOOKr Class.

In the semi-structured interview, three questions with a Likert scale were included to get a better understanding of the control group and lead & support teachers regarding the use of BOOKr Class as a fun way to learn English and relevant features in inclusive settings, and the

implementation of M-learning in the hospital classroom. The results are organized in the next graphs.

"El uso de la aplicación BOOKR Class ayuda a los pacientes estudiantes a aprender inglés de una forma divertida"

De acuerdo
33,3%

Totalmente de acuerdo
66,7%
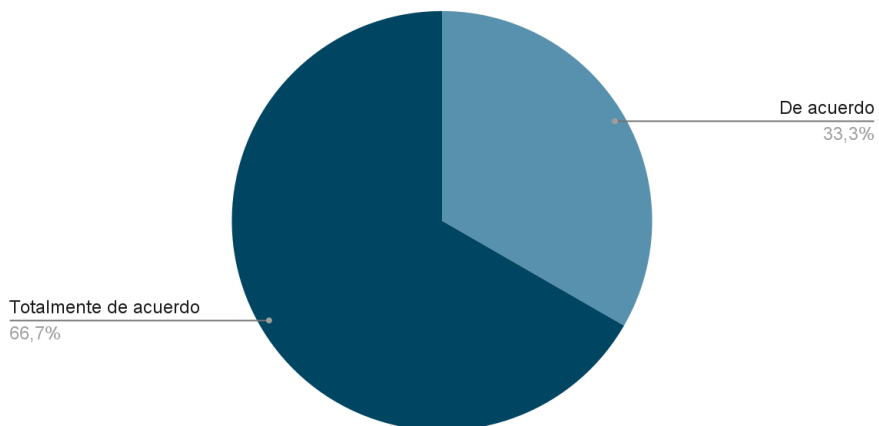
Graphic 1: *The use of BOOKr Class helps patient students to learn English in a fun way. Semi-structured Interview.*

"Las características o funciones de la aplicación BOOKR Class son pertinentes para un contexo inclusivo"

De acuerdo
50,0%

Neutral
50,0%
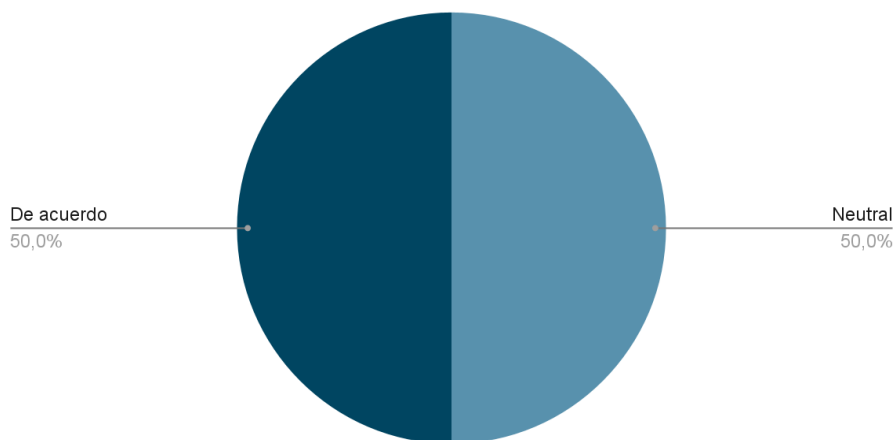
Graphic 2: *The characteristics or functions of BOOKr Class app are relevant in an inclusive context. Semi-structured Interview.*

¿Cree usted que el aprendizaje móvil debería implementarse en las aulas hospitalarias?

Neutral
33,3%

Si, de acuerdo
66,7%
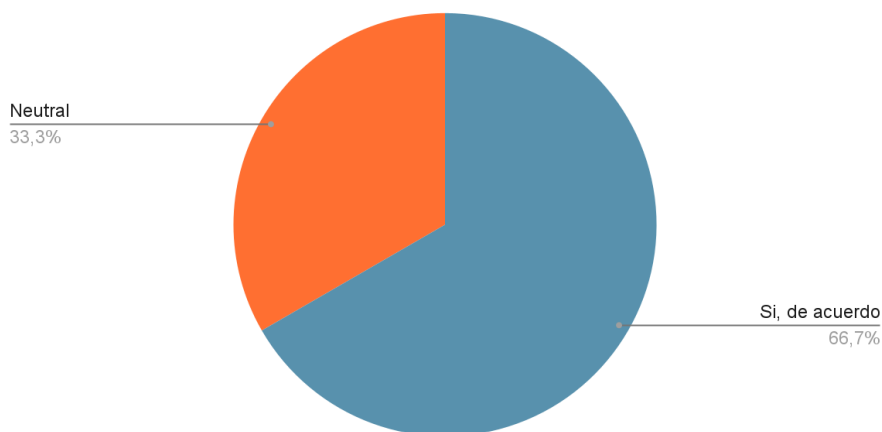
Graphic 3: *Do you think M-learning should be implemented in hospital classrooms?. Semi-structured Interview.*

The last category included in the triangulation is the challenges of M-learning implementation in San Blas hospital. These implications were not a part of the first inquiry but such discussions arose during the interviews and were included in the reflective journal. Internet access in San Blas hospital is limited and restricted. Thus, the function of BOOk Class to download content and access it offline was a huge advantage. This setback was taken into account during the recognition of the hospital classroom however, the lack of mobile devices was a challenge, in the case of the no-intervention group, not all the patient students were able to use the app, or they had to wait for turns. Another challenge was that not all the patient students had the performance level in the management of computer equipment. Some students had no or scarcer access to computers, which was mostly observed in patients students with low socioeconomic levels and Venezuelan young patient students. Furthermore, from the lead teacher's perspective, most of the time technological resources or an internet connection are not

available. He also mentioned that it differs from private and public hospital classrooms, most of the time the resources are not available. Even when he considers M-learning should be implemented in hospital classrooms as it can be a learning strategy, it should be noted that each hospital classroom is unique and is very different from one to another.

Meanwhile, it was possible to determine the potential of BOOKr Class in the San Blas hospital classroom. However, it is important to mention that the mere presence of technology in a classroom does not change anything (Jones and McDougall,2010), teachers must modify their methodologies. During this intervention, different strategies were implemented to support EFL teaching in the HP and patient student's well-being; the activities used, adapted, or created follow the natural approach principles including the flexibility and adaptability the hospital classroom requires. The printed & created material, the adapted puzzles, and the activities complemented the intervention limitation regarding the lack of mobile resources.

Figure 5

Adapted puzzles & material

The vegetables and domestic animals puzzles observed in *figure 5* were adapted with English vocabulary, usually complemented with activities or a topic-related story from the app. While using these tools some strategies were implemented such as the association of vocabulary through images, giving short English instructions with code-switching when necessary, drilling, and mimicking.

Figure 6

Printed material

The created and printed material observed in *figure 6* was used with strategies such as vocabulary association with images, pointing, short English instructions, and drilling exercises, complemented with printed activities or stories and games from the app.

Achieved Objectives

Based on the objectives established for this intervention, it was possible to identify the main features of the EFL context in the San Blas hospital classroom, the lack of material and activities for English classes. Subsequently, create material, activities, and a game, and adapt puzzles to

use in English language interventions. Then, the objective of contrasting emerging patterns regarding the development of EFL communicative skills implementing M-learning was achieved to finally analyzed and determined the impact of BOOKr Class impact in the San Blas hospital classroom.

Conclusions

- The impact of BOOKr Class in the San Blas hospital classroom was the development of communicative skills, its impact on students' well-being, engagement, mobility, and the possibility to access off-line content. For the control group the English voice-over, highlighted text, and Lexile functions were beneficial to develop reading, listening, and vocabulary skills.

- During the control group interventions it was important to create personalized material with illustrations, use of context, significant situations, realia, and mimics as flexible strategies while implementing the use of the app BOOKR Class.

- For the no-intervention group, the app features promoted engagement, and the illustrations, and animation supported text comprehension, while the use of games had positive responses in the patient students.

- The implementation of M-learning in these inclusive settings is appropriate while taking into account the methodology to approach its use, the context of the hospital classroom, and the possible limitations.

- According to the audience's perceptions, the methodology, and strategies used during the intervention were playful, motivating, effective and assertive according to the flexible

educational model and in line with the suggestions given.

● For further research, long-term intervention with SEN students would be interesting to analyze or determine how the scaffolding elements and functions in the app may close the achievement gap between the learners.

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Appendixes

Appendix A. Semi-structured Interviews

Control group Interview	
Introduction questions	-Presentate a ti mismo
Teaching Practices	-Cómo te has sentido durante las clases de inglés? -Menciona ventajas y desventajas de utilizar la aplicación durante las clases
Learning Practices	Reacciona a las siguientes afirmaciones: "El uso de la app BOOKR Class ayuda a los estudiantes a aprender inglés" ● Totalmente en desacuerdo ● Desacuerdo ● Neutral ● De acuerdo ● Totalmente de acuerdo "Utilizando la app BOOKR Class es divertido aprender inglés" ● Totalmente en desacuerdo ● Desacuerdo ● Neutral ● De acuerdo ● Totalmente de acuerdo "El uso de aplicaciónes móviles debe implementarse en todas las aulas hospitalarias" ● Totalmente en desacuerdo ● Desacuerdo ● Neutral ● De acuerdo ● Totalmente de acuerdo
Final Questions	Tuviste algún problema para utilizar la aplicación

	en el aula hospitalaria o en tu casa?

Teachers Interview	
Background Information	-Teaching experience -Mobile learning experiences -Cree usted que el aprendizaje móvil debería implementarse en las aulas hospitalarias?
App BOOKR Class	-Cuál considera usted sería la mejor palabra para describir el resultado del uso de la aplicación BOOKR Class en el espacio de la práctica hospitalaria ? Reaccione a las siguientes afirmaciones "El uso de la aplicación BOOKR Class ayuda a los pacientes estudiantes a aprender inglés de una forma divertida" ● Totalmente en desacuerdo ● Desacuerdo ● Neutral ● De acuerdo ● Totalmente de acuerdo "Las características o funciones de la aplicación BOOKR Class son pertinentes para un contexo inclusivo" ● Totalmente en desacuerdo ● Desacuerdo ● Neutral ● De acuerdo ● Totalmente de acuerdo
Teaching Practices	-Qué piensa de las adaptaciones de material, actividades, ejemplos empleados durante las clases de inglés?

	-Qué piensa de las estrategias y metodología empleadas durante la clase de inglés?
Final comments	

Appendix B. Journals

Appendix C. Triangulation chart