



An Analysis on the Feasibility of Videoconferencing as a Tool to Teach English in Public Schools in Paraguay

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Abstract: The Ministry of Education of Paraguay (MEC) introduced the teaching of English in public primary education in 2012. The number of English teachers was not sufficient to meet the high demand, especially because the majority of those teachers reside in the central department of the country. In response, this qualitative research study was designed to examine the feasibility of teaching English via videoconferencing. In the process, semi-structured interviews served as the main data collection instrument, leading to the conclusion that videoconferencing could become an effective teaching option, but it will not be feasible until a project fostered by governmental institutions in coordination with departmental governments join forces towards a common and synchronised objective. Technology could prove to be a meaningful teaching tool; albeit an expensive one. Therefore, a sustainable action plan should be elaborated for a successful implementation that yields the expected outcomes.

Keywords: Distance education, videoconferencing, team teaching, Plan Ceibal en Inglés

Résumé: Le ministère de l'Éducation du Paraguay (MEC) a introduit l'enseignement de l'anglais dans l'enseignement primaire public en 2012. Le nombre de professeurs d'anglais n'était pas suffisant pour répondre à



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la forte demande, notamment parce que la majorité de ces professeurs résident dans le département central du pays. En réponse à cette situation, cette étude qualitative a été conçue pour examiner la possibilité d'enseigner l'anglais par vidéoconférence. Au cours du processus, des entretiens semi-structurés ont servi d'instrument principal de collecte de données et ont permis de conclure que la vidéoconférence pourrait devenir une option d'enseignement efficace. Cependant, ce projet ne sera réalisable que s'il est encouragé par les institutions gouvernementales en coordination avec les gouvernements des départements et que ceux-ci unissent leurs forces vers un objectif commun et synchronisé. La technologie pourrait s'avérer être un outil d'enseignement efficace, bien que coûteux. Par conséquent, un plan d'action durable devrait être élaboré pour assurer une mise en œuvre réussie qui produise les résultats escomptés.

Mots clés: Enseignement à distance, vidéoconférence, enseignement en équipe, Plan Ceibal en Inglés

Introduction

Technology and the English language have become powerful communication tools. Technology has been successfully introduced in education while facilitating the teaching and learning of languages (Bozkurt & Ataizi, 2015; British Council, 2013).

Videoconferencing may reduce the physical distance among learners or between learners and instructor, and it could also add authenticity to the learning experience, which might result in higher levels of attention, engagement, and motivation among learners (Comber et al., 2004). Since videoconferencing enables different types of interaction, the learning environment resembles that of a traditional classroom (Garrison, 1989, as cited in Bates, 2005).

MEC, in its attempt to meet global demands implemented a programme in 2012 with 70 schools to include teaching English as a Foreign Language, beginning in elementary

schools. In this way, they hoped to achieve a more egalitarian curriculum among all schools throughout the country (Benítez, N. personal communication, July 2016). Of the 6,137 public primary schools (1st – 6th grade), 65% are located in rural areas (DGPE, 2011). According to the database facilitated by the Directorate of Registration, Certification of Documents and Promotion Roster (2016), there are 1,078 certified and registered English teachers in Paraguay; the majority being concentrated in urban centres and much more in Asunción and the Central Department. Consequently, only a small percentage of public schools have been and would be in a position to provide English lessons.

This qualitative research study has been conducted to examine how feasible and worthwhile it would be to implement the teaching of English through videoconferencing technology in public primary schools. With such a method, more schools could be targeted, especially those located in remote areas. Therefore, a more inclusive education could be achieved with more students having the opportunity to learn English. The questions addressed in this study include:

1. What does the English programme implementation in public primary education consist of, and how are public primary schools dealing with this implementation?
2. What learning can be provided by the “Plan Ceibal en Inglés” (PCEI) manager and the Paraguayan-American Cultural Center (CCPA) pilot project (PP) managers, teachers and students, based on their experiences in implementing, teaching and learning through videoconferencing?
3. What nationwide scope of the Internet service can be provided?
4. What is the most appropriate videoconference platform to use in the teaching of English, taking into consideration the English programme designed by

MEC, the number of students in public primary schools' classrooms and the Internet connection offered in the country?

In order to conduct this study, a number of selected professionals were asked to share their perspectives regarding the current approach to teaching English in Paraguay. These included, MEC officials, public school deputy heads and teachers, representatives from two existing programs (one in Uruguay and one in a private institute in Paraguay), representatives from CONATEL (National Commission of Telecommunications), and a technology supplier company. In addition, the suggested technological equipment and the Internet service offered were analysed according to the schools' infrastructure and the country's network connection. This study presents data concerning the possibilities of implementing an alternative teaching method of the English language in public primary schools.

Literature Review

Distance education evolved as a need to facilitate the education of people remotely located and later to provide learners with a flexible approach to educational access (Hankinson, 2012). Kaufman and Nipper (1989) identify the "third generation" within distance education, consisting of "two-way communications media, [that is the] Internet or video-conferencing," through which students can interact not only with the teacher but also among themselves (as cited in Bates, 2005, p. 6–7). Videoconferencing is considered to be an expensive alternative in comparison with other distance education methods; and despite the fact that it allows interaction, videoconferencing does not guarantee that socialisation will be effective and successful (Ehrlich-Martin, 2006). Due to the similarity with face-to-face communication, some advantages of videoconferencing include: "real time interaction" (Bates, 2005, p. 191), allowing students to become more engaged (White, 2003), and teachers to become better aware of

the learners (Daft & Lengel, 1986, as cited in Demiray, 2009); “immediacy” (Soo & Bonk, 1998, as cited in Bates, 2005, p. 188) and “immediate and timely feedback” (Bates, 2005, p. 60–63); “collaborative learning” (Jonassen, 1999 and Oliver & Reeves, 1996, as cited in Bates, 2005, p. 188). Another valuable advantage lies on the possibility of exposing learners to native speakers (Motteram, 2013).

Although videoconferencing allows participants to watch and hear themselves in real time, it does not create the same environment as that of a traditional classroom where learners interact more naturally and spontaneously (Bonk, et al., 1998; Collins, 1991; Schweizer et al., 2003, as cited in Anastasiades, 2009). Besides, participants are limited to seeing only what the camera shows, decreasing the value of non-linguistic cues (Bruce, 1996, as cited in Anastasiades, 2009). Additionally, it does not offer students opportunities of time and place flexibility (Bates, 2005).

In order to apply a given technology-based method successfully, the infrastructure, location, and organisation of the institution must be analysed, as well as “the existing technological infrastructure within [the] country” (Bates, 2005, p. 63). Additionally, specific technical aspects need to be examined, including access, cost, interactivity and user-friendliness, novelty, speed, and the teaching and learning methodology (Bates, 2005).

When introducing videoconference technology, there are certain factors that teachers must consider and become familiar with, such as “new forms of communication and interaction, new kinds of awareness and skills and the scale of processes” (Moore and Kearsley, 1996, as cited in White, 2003, p. 68–71). Furthermore, teachers work together in different ways when videoconferencing is used for teaching purposes as some schools connect to other schools and some schools connect to a remote site, with a teacher in the classroom and another one in the remote site (Maroney, 1995; Robinson & Schaible, 1995, as cited in Goetz, 2000).

A number of studies attempted to evaluate aspects such as, the attitude of learners and instructors, the motivational levels in learners, as well as the effectiveness of videoconferencing. The first studies did not show positive results as some learners reacted negatively or were unable to meet their expectations (Motamedi, 2001; Knipe & Lee, 2002, as cited in Anastasiades, 2009; Tyler, 1999, and Coverdale-Jones, 1999, as cited in Harris, 2003). Furthermore, Cavanaugh (2001) reported that using videoconferencing as a “primary tool of teaching delivery” showed fewer effective results “on achievement” than using videoconferencing as an “enhancing” teaching tool, concluding that video conferencing should not be used as the only instructional method (as cited in Anderson & Rourke, 2005, p. 7–8).

Nevertheless, other studies showed opposite results, in which learners expressed not only interest but also joy in the use of videoconferencing (Wright & Whitehead, 1998; Eales et al., 1999, as cited in Harris, 2003). Similarly, Eales et al. (1999) demonstrated that videoconferencing enhanced the motivation of students, especially for those who performed low in literacy skills, as they became more active and engaged in communicative tasks (as cited in Harris, 2003; Anastasiades, 2009). Other projects that consisted of connecting schools from countries with different official languages reported that students improved their linguistic competence and performance (Arnold et al., 2002, as cited in Anderson & Rourke, 2005; Kinginger, 1998, as cited in Lundgren, 2012; Comber et al., 2004). Reports from the Museum of London “[showed] improved ‘knowledge and understanding,’ changes in ‘attitude and values,’ ... ‘enjoyment, inspiration and creativity’ categories in follow up work” (Boyd et al., 2008, as cited in Warry, 2011, p. 14).

One programme that implemented videoconferencing for teaching English as a Foreign Language in Uruguay is Plan Ceibal which stands for "*Conectividad Educativa de Informática Básica para el Aprendizaje en Línea*" (Educational Connectivity/Basic

Computing for Online Learning in English) (PC). It was designed and implemented to improve the teaching and learning processes by the inclusion of technology within the traditional classroom (Banegas, 2013; Fullan et al., 2013; CPA-Ferrere, 2010). This programme was implemented in public primary schools with a methodology consisting of three 45-minute English lessons per week, combining remote with face-to-face conventional classes (Stanley, 2015). Results from students with different access to social and cultural resources showed no relevant difference (Stanley, 2015).

In the Paraguayan context, ICT has been implemented in public educational institutions slowly and gradually through different projects. One of these projects is *Improvement of learning conditions through ICT incorporation into educational institutions and educational management units in Paraguay 2015–2019*¹ that emerged as a result of the poor use of technology in pedagogical processes and in administrative procedures. Both educators and students have little or no access to technological resources inside and outside schools; this fact reflects how scarcely equipped the Paraguayan community is in terms of technology and connectivity (MEC, 2015a). The foundations of this project lie upon a list of pillars considered essential for its sustainability. These pillars are: “a database setting-up with storing, processing and communication capacity;” research on the use of ICT on education; training of teachers in the use of ICT; “technological infrastructure supply – equipment and connectivity – to institutions, educators and students; a virtual portal and learning platform designed with digital educational content; technological management of information.” Besides, the necessary technical support available at all times (MEC, 2015a, p. 20). It is expected that this project will reach institutions located in all departments and districts throughout the country. As a result, there will be

¹ The name of this project was translated by the researcher from Spanish into English.

705,416 students and 40,500 educators directly benefited, setting the technological groundings so that other projects can be attached to it towards a more inclusive education (MEC, 2015a). Considering these aspects, this study was aimed at analysing the feasibility of a videoconference English programme in Paraguay, similar to that offered by PC.

Research Design and Methods

This study is of an exploratory and descriptive nature following a qualitative approach as it is flexible in structure, process-oriented, based on collection of context-bound and low-down data. The main method of data collection was in-depth interviews as they offer a deep understanding of the phenomenon from the perspective of the participants (Lodico et al., 2006).

The study is a threefold design, grounded in the information collected from three purposefully selected sources: (a) principals and English teachers from two public primary schools, as well as two civil servants from the curriculum department at MEC; (b) PCEI manager, as well as CCPA-PP managers, two teachers and two students; and, (c) CONATEL personnel and a technology supplier company staff who provided information regarding the locally current and new telecommunication implementations.

Data was collected from participants' workplaces or through remote communication with participants who were in distant locations. (Lodico et al., 2010). At the same time, articles and official documents, including the national census contributed data about current local demographics, education, and economics. This data undergirded the project structurally with background information (Bell, 2010).

Each interview was semi-structured, with some in the form of focus groups, allowing participants to give their opinions more actively, insightfully, and collaboratively. All interviews were audio-recorded with the participants' consent for later transcription

and analysis. Every participant was free to choose not to participate or to stop participating at any point during the research process. Furthermore, confidentiality was guaranteed (Bell, 2010).

The analysis was conducted once the audio recordings were transcribed and ordered according to the participants interviewed and the topic of discussion. This was done after each interview so that common patterns could be distinguished, and confusing information clarified in future interviews. Once all data was gathered, it was coded and organised by labels and into categories. Then, common themes were identified. Subsequently, a description of the categories was completed for the interpretation of the whole data which is presented below (Lodico et al., 2010).

Findings

What Does the English Programme Implementation in Public Primary Education Consist Of, and How Are Public Primary Schools Dealing With It?

To answer the first question, common themes were organised into three categories: education on paper, education in practice, and attitude towards videoconferencing.

Education on Paper

When designing and implementing the English programme for public schools, MEC established institutional and academic objectives; the former, to reduce the gap in the educational opportunities between poor and wealthy families, and the latter, to have students reach the A2 level in the English language. These students would then meet the standards of the common European framework of reference by the end of primary school. A communicative approach was proposed, fostering listening and speaking first, then reading and writing. The methodology was very flexible, with teachers expected to use Total Physical Response (Asher, 1969) and rely on body language,

pictures, songs, games and realia. Fixed weekly hours were not assigned; however, it was reported that schools offered two teaching hours devoted to the English programme per week.

Some of the schools' principals commented that the national curriculum was excellent on paper but too expensive in practice. Teachers often prepare their own tools and materials, investing money and time that are not remunerated. For this reason, parents' help is essential. Besides, one principal explained, English as a subject is listed only in the report card but not in the certificate of studies, which is the only valid academic document. Therefore, failure in the subject does not prevent students from passing on to the next grade.

Education in Practice

MEC selected 70 isolated schools located in rural areas; most needed intervention by the Government to implement the English programme. According to official documents, the number of enrolled students in primary schools is 814, 651; over 80% of them attend public institutions and 45% of them attend in rural areas. Besides, in 12 departments, there are more students attending rural schools (DGPE, 2011).

For the implementation of the English programme, MEC only supplied the 1st grade with a teaching guide, audio materials and practice books. In 2nd and 3rd grades, only the teacher received materials. According to principals and teachers, mostly all resources used in class are prepared by the teacher, and basic technology such as radio, DVD-player, and TV are used. In some cases, they have a computer and a projector. Teachers expressed the need to count with practice books and a CD for home practice.

Another issue discussed by teachers is that students study the language three hours per week in one single day, although they could benefit more if the three hours were divided into more days. At the same time, teachers asserted the use of a mix of

deductive and inductive approaches with the use of Spanish, English and Guarani, depending on the mother tongue of the student. Teachers agreed on their role as a facilitator, collaborator, model, assessor, and guide in the teaching process. In some cases, parents offer to buy materials to enrich the learning process of their kids; however, not much can be said about students' learning since no formal evaluation has been performed thus far.

Attitude Towards Videoconferencing

Professionals from the curriculum department, as well as principals and teachers expressed a positive attitude regarding the use of videoconferencing in Paraguayan education and overall agreed that it could yield good results. One of the professionals from the curriculum department expressed they were open to the idea, not only to teach English, but other subjects and training programmes as well. Both principals and teachers asserted that videoconferencing would enrich the learning process because it would complement the teacher's work while saving time and resources. On the other hand, one teacher claimed that videoconferencing would never replace the real human contact with students that affects teaching efficacy, especially because children need human contact to learn more — thus, videoconferencing should be used as a complementary tool. Principals and teachers also commented on possible constraints in the use of videoconferencing, such as the lack of competence in technology and familiarity with videoconferencing.

What Learning Can Be Provided by the PCEI Manager and CCPA-PP Managers, Teachers, and Students, Based on Their Experiences in Implementing, Teaching and Learning Through Videoconferencing?

In answering the second question, common themes were organised into three categories: pedagogical aspects, infrastructure, and students' and teachers' reactions.

Pedagogical Aspects

The manager reported that PCEI does not hire remote teachers (RT); it signs a contract with language institutes instead, which provides a number of lessons per week and provides RTs and coordinators. RTs report to their coordinator who then reports to Plan Ceibal (PC). At the same time, there are mentors who visit classroom teachers (CT) often. They report to their mentor, who then reports to PC. For economic and pedagogical reasons, the programme was designed to give one remote lesson and two in-class practice lessons. Regarding the instructional approach, a combination of communicative teaching and learning, blended learning, and team teaching is used. In the CCPA-PP, a student-centred, communicative, and natural approach was used, with plenty of pair-work and group work completed with the assistance of the CT.

The PCEI manager manifested that this approach is possible due to the average of students in public primary schools in Uruguay, 25; while the average of students in the CCPA-PP was 8. This is a common average with primary schools in Paraguay, 14 students in rural schools and 22 in urban schools (DGPE, 2001).

Before implementing the programme, teacher training and an application protocol about what to do while teaching was provided. Both programmes implemented the adaptation model for videoconferencing. The CCPA-PP managers remarked that students used the same books as in a traditional course. Book activities were transferred to a net presented through a smartboard. The pace of lessons depended on both teachers, for which coordination was crucial. Teachers reported that deductive as well as inductive procedures were used. As a common result, the linguistic skills mostly developed in both programmes were speaking and listening. However, students reported that lessons were balanced, allowing them to practise all skills equally.

PCEI uses a virtual platform for students to find materials, upload their work and contact RT. Likewise, CTs and RTs use this platform to carry out coordination and find materials, including the lesson plans. Similarly, the CCPA-PP made use of additional

resources, such as a smartboard in both rooms and a virtual platform for students to upload their work.

During lessons, teachers and students depicted specific roles with students collaborating actively in their learning. In PCEI, RTs teach lesson A and guide CTs for lessons B and C on second language acquisition and the use of technology. RTs also correct students' work. CTs participate actively in lesson A, guide and support English learning in lessons B and C and continue their English learning through an online course. Both teachers coordinate weekly for about 30 minutes. For the CCPA-PP, students' and teachers' roles were the same as those in a traditional classroom. English teachers and CTs communicated consistently before and after each lesson, so that CTs could develop the lesson whenever connection problems were experienced.

Regarding assessment, PC requests writing activities every week, ongoing evaluations every ten or twelve lessons, and one end-of-year evaluation. These evaluations are done on a special platform, for which access to a computer is essential. With the CCPA-PP, tests were performed in the same way as in a traditional classroom, and written homework was uploaded to the platform for the teacher to correct.

Infrastructure

For a call to be established, the remote site and the classroom have to use compatible videoconference equipment. As reported by PCEI, the equipment installed in each school consists of a codec, a UPS, a camera, a microphone, a 52" TV set, and 4 to 6 loudspeakers on the side walls — depending on the size of the room. Moreover, the selected videoconference equipment enables file sharing (audio, video, images, and data). Each language institute pays their own bill, but the state pays for the schools' bills to procure and enable this equipment. In the CCPA-PP, similar equipment was used, with Cisco videoconferencing equipment. They also added a smartboard which

included a license. All this equipment was installed in both rooms with Internet connection. Both projects used fibre optics and a bandwidth of 2 megabits per second (Mbps). The CCPA-PP agreed that classrooms do not need many modifications, mentioning that the most important aspect is to use a classroom away from significant noises and to consider the side from which the sunlight enters into the classroom.

Students' and Teachers' Reactions

To examine the reaction of participants with the technology involved, participants discussed their attitudes towards the teaching and learning method, the benefits, limitations, and problems encountered, and the impacts of working with videoconferencing.

Attitudes Towards the Teaching and Learning Method. Teachers expressed how this method made them more aware of the importance of technology in today's classrooms and that students were shy and focused only on the technology at first, but once they became familiar with the method, they increased their levels of participation, motivation, enthusiasm, and concentration. The same was reported by students. This method also demands as many activities as possible to keep students engaged.

Benefits. The method implemented had positive results in both programmes, not only with students but also with CTs who were also learning English. Autonomous learning is promoted, increasing students' engagement. Besides, it provides students with more time for practice. Similarly, students agreed that the method was characterised by less interruption, no chance for chats, optimised class time, fast-paced learning, spontaneous increase in respect and discipline levels, more dynamic and elaborated lessons, and more productive interactions with the teacher.

Limitations and Problems Encountered. Among the limitations was making all learners progress in the same way, the high cost needed to acquire and maintain the equipment, and to adapt the rooms (acoustics and lightning). Another aspect is that not all teachers may be able or willing to do it as they may not have the skills or knowledge. They expressed that it is stressful, making them feel as if they taught longer than they did. Another common limitation was the technical glitches as a consequence of constant power outages. As a response to this inconvenience, an assistant teacher in the classroom was incorporated as part of the CCPA pilot project (PP). One of the teachers also expressed that the connection established with students was not the same as one built in a classroom and, as a consequence, it was difficult to assess the process.

Impacts of Working with Videoconferencing. It was reported that students realise that learning is flexible, and knowledge can be acquired by knowing how to use a computer and some English. Hence, students perceive English as a valuable asset. Moreover, the learning process is completely different, with CTs no longer as “the owners” of knowledge, but as facilitators of learning who admit their lack of language knowledge and reveal what a mature person does to learn. They go from being the model of language to being a model of a learner. As a result, the learning process is based on constructing knowledge together.

What Nationwide Scope of the Internet Service Can Be Provided?

In answering the third question, professionals from CONATEL and a review of secondary/existing data provided the information presented below.

Reports about the current situation of Paraguay in terms of access to the Internet, computer, broadband and electricity, broken down by departments, show that the local mean of Internet (23.89%), computer (30.47%) and broadband (2.39%) breakthrough is considerably low (DGEEC, 2015). The situation becomes even more serious when

examining each department, since only Asunción and Central surpass each mean. Moreover, not all departments have complete access to electricity. Regarding the price of the Internet connection, Paraguay is situated in the 10th position in comparison with other countries of the region in terms of the monthly fee paid for such a service. (CONATEL, 2016). As for the fibre optics infrastructure throughout the country, out of the 250 Paraguayan cities, 240 of them already have access to it (CONATEL, 2016). According to the *National Telecommunications Plan 2016–2020*, it is expected that by the end of 2016, all cities will be covered with this technology. Besides, the majority of the country is covered with 2G and 3G mobile broadband. It is worth mentioning that Paraguay defines broadband as download speed access higher than 512 Kbps (CONATEL, 2016).

Examining connectivity among public schools, MEC has already started negotiations with the local telecommunication provider, which is expected to provide broadband of 2 Mbps. The cost of this service has been fixed according to the current market monthly fees, which is of 332,800 *₲* (*guaraní* or PYG, Paraguayan currency; around \$50 Canadian dollars) (MEC, 2015a; COPACO). Professionals from CONATEL suggested that the most suitable option for videoconferencing in our country is fibre optics with a download broadband speed of 2Mbps. However, there are certain locations which are not flat, for which fibre optics extensions could be replaced by microwave links. Professionals suggested that the local government in accordance with MEC and departmental governments work together to pay for schools' connection service. Besides, they claimed that this kind of project needs the initiative of governmental institutions because it is unprofitable for private enterprises to invest in rural areas.

What is the Most Appropriate Videoconference Platform to Use in the Teaching of English?

In answering the fourth question, the following considerations applied: the English programme designed by MEC, the number of students in public primary school classrooms, and the Internet connection offered in the country. A technology supplier provided the information below.

A professional with vast experience working in the field, and who was well aware of projects that incorporated videoconferencing in education and medicine, suggested the “Cisco TelePresence SX20 Quick Set model” — shown in Figure 1 and described in Table 1, with its respective accessories and cost. A 55” TV screen and an extra microphone were also included in the description since they are required items that do not come with the videoconference equipment. As for the installation, there is no additional cost, and the local provider offers free operator training. Moreover, the acquisition cost of each videoconference unit drops down 20% with the purchase of 50 units or more. Regarding warranties, they cover 1 year, and have to be annually renewed afterward. If operated accordingly and manipulated decently, the model is expected to work fine for 7 years. In case technical support is needed, the seller provides it with the cost varying based on the hours worked and the distance travelled. The videoconference model suggested is shown in Figure 1 with its respective accessories.

Figure 1

Cisco TelePresence SX20 Quick Set Model



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Note. 4x precision HD camera, wall mount, table microphone, and remote control.

(Cisco, 2012).

Table 1

Acquisition cost of videoconference equipment and its accessories.

Cisco Telepresence SX20

Item	Quantity	Total (USD)
SX20 Quick set with 2.5x PHDCam, 1 mic, remote and TC7 sw	1	4,345
SX20 Quick set warranty	1	1,162.91
Performance microphone 20	1	257.40
Microphone warranty	1	68.96
55" HD screen	1	1,200
SubTotal		7,034.27
20% discount with the acquisition of 50 or more units		1,406.85
Total		5,627.42

To the central question, “would the teaching of the English language in public primary schools via videoconferencing be a feasible and worthwhile alternative method?” the previous answers were analysed, having in mind that the scope of this research project

was limited to the feasibility of implementing the teaching method proposed to only those schools which are already teaching English, with an overview to all regions of the country. This analysis yielded the following categories: technical infrastructure and Internet connection, public primary schools' infrastructure, the English programme designed by MEC, and financial aspects.

Technical Infrastructure and Internet Connection

The most recommended connection infrastructure to use with videoconferencing is fibre optics. This is mainly because the districts in which the schools where English has already been implemented are covered with fibre optics; therefore, Internet connection can technically reach these institutions. Fibre optics infrastructure is placed along the main roads that join the different areas around the country. If a school is located far away from these roads, more infrastructure would be required which would involve a much higher budget. Once fibre optics reach institutions, a reliable Internet connection must be offered, which is currently shown to have low accessibility and a high cost.

Public Primary Schools' Infrastructure

The infrastructure of Paraguayan public schools is very basic. Students neither have access to a computer nor to Internet connection. The principals of the schools visited assured that most schools offer some type of security service, at least. As a result, they would be in a position to ensure the security of any equipment installed. However, none of the schools visited has a spare classroom that could be used for videoconferencing purposes. On the contrary, they argued for having very small classrooms and needing more physical space. At the same time, MEC does not have any extra physical space that could be used and adapted as teaching booths.

English Programme Designed by MEC

The English programme will have to be adapted so that teachers and students benefit from the videoconference technology to be implemented. The current programme uses a communicative teaching approach, relying solidly on the use of Total Physical Response. This would be a restriction while teaching with videoconferencing, especially because students can only see part of the teacher's body. Moreover, the teacher can only move around a limited area.

Financial Aspects

What could determine the feasibility of teaching via videoconferencing are financial factors. In order to connect schools with Internet, high investments are required, plus a monthly fee for this service will have to be paid. Even though MEC reported having started negotiations with the local telecommunication provider, one of the school principals interviewed also explained that when MEC became responsible for the Internet connection at their school, it could only be used in their office. In addition, students would need to have access to a computer, which would require more investment. When professionals from the curricular department at MEC were asked about the situation of the 2009 One Laptop Per Child (OLPC) project in the country, they explained that it was considered a very expensive option for MEC. Therefore, it was successful only in the city of Caacupé, where third sources were responsible for the project to continue running. Teachers would have to be trained, which will imply more investment as well. Regarding the videoconference equipment, a database and a data centre are also required. The data centre must be built following specific requirements, needing not only more financial investment but also physical space, which would need to be acquired as well.

According to UNESCO, investment in education is essential for countries to grow and develop sustainably. In order to do so, governments are suggesting increasing the budgets allocated to education to be no less than 7 or 8% of their respective GDP (DGPE, 2011). The Paraguayan Central Bank (BCP) informed that the country's GDP is 149,681,418,700,000 ₡ (Paraguayan currency; around \$28,034,252,016 Canadian dollars) and the budget MEC received in 2016 was 4,728,000,000,000 ₡ (around \$885,813,494 Canadian dollars) representing only the 3.1% of the 7 or 8% suggested (in MEC, 2015b). This data reflects that the budget assigned to education should at least double and shows that the state is still far away from the desired goal for Paraguayan education, should quality and equity be among the institutional goals.

Discussion

The fact that videoconferencing might be considered similar to traditional classroom teaching does not mean that technology will take classroom teachers' place and work effectively in a mechanical way. As one of the CCPA-PP managers expressed, it does not matter the technology implemented, if the methodology is not properly designed, the programme will fail. Besides, the PCEI manager explained that the novelty of the model implemented lasts only a couple of months, so it is the teachers' responsibility to make it effective. At the same time, Hanor and Hayden (2002) stated that the function of videoconferencing is to complement the teaching process (as cited in Anastasiades, 2009; Cavanaugh, 2001, as cited in Anderson & Rourke, 2005).

Team Teaching

In PCEI, RTs teach the content, while CTs provide knowledge about students, maintain good behaviour among students, and teach follow-up lessons. Something similar was found with the CCPA-PP. When technical glitches did not make communication possible, CTs were in charge of giving the lesson. These types of interactions and

arrangements among teachers were described by Maroney (1995) and Robinson and Schaible (1995, as cited in Goetz, 2000) as complimentary/supportive team teaching and teacher monitoring.

Benefits

Eales et al. (1999) emphasised how motivational levels increased, enabling students to become more active, especially in communicative tasks (as cited in Harris, 2003).

Similarly, Comber et al. (2004) commented that students improved their behaviour and concentration, while at the same time developing autonomous learning skills. These results were supported by CCPA-PP students and the PCEI manager.

Since students learn in real time, they benefit from receiving immediate feedback (Soo and Bonk, 1998, as cited in Bates, 2005). Likewise, the CCPA-PP students agreed that receiving timely feedback from the teacher helped them enormously to correct their mistakes, while allowing the rest of the students to benefit as well.

Conclusions

This research study intended to examine the feasibility of teaching English via videoconferencing in public primary schools as a response to the limited number of English teachers and the high demand of schools for English programmes. The study found that the programme designed by MEC is flexible, encouraging teachers to use a communicative approach and adapt their lessons based on their particular students' needs. Unfortunately, students' learning could not be tested since MEC has not provided a formal assessment methodology. In fact, English as a subject is not documented in the certificate of studies — only in the report cards. At the same time, MEC has not provided enough didactic materials, which means teachers have to invest a great deal of time, money, and effort to prepare their own.

Regarding the use of videoconferencing as a teaching tool, PCEI has made it possible and also beneficial to both teachers and students. Classroom teachers provide contextual knowledge, help remote teachers organise activities, manage the classroom atmosphere, lead two of the three lessons given per week, and are also a learner model for their students. These roles allow students to become more autonomous learners. The access to a computer plus the design of a virtual platform became essential not only to enrich the learning experience, but also to carry out coordination between teachers, perform formal assessment and evaluations, and to offer training sessions.

In the CCPA-PP, students' ages ranged from 15 to 40. They agreed that learning via videoconferencing had positive results, reflected by the increase of motivation, participation, encouragement, and enthusiasm. Additionally, they could learn faster and grasp the teacher's explanation more easily since there was less distraction and less opportunity to digress and chat. Therefore, students' discipline and behaviour improved. Participants also expressed that the most common limitation was the technical glitches as result of a poor Internet connection and power outages.

While examining the nationwide scope of the Internet service that could be provided, this study identified that videoconferencing requires Internet connection to operate. Fibre optics were highly recommended for this purpose. However, in order for this plan to be sustainable, more investment in education is required. At the same time, experts suggested the most appropriate videoconference equipment that could be used in the teaching of English, taking into consideration the English programme designed by MEC, the number of students in public primary schools' classrooms and the Internet connection offered in the country.

The Cisco TelePresence SX20 Quick Set Model was recommended, which comes with a 4x precision HD camera, a wall mount, a table microphone, and a remote control. To all

this, a TV set plus one or two microphones and loudspeakers must be added, as well as compatible equipment in both terminals (rooms), plus a database and a data centre.

Finally, after analysing the results presented by PCEI and the CCPA-PP in the use of videoconferencing to teach English — those aligned to the results presented by other projects revised in the literature, and the social and educational context of our country — it was concluded that videoconferencing could be a valid alternative teaching method. However, due to the infrastructure of public schools and the country in terms of technology access, plus the low investment allocated to education and the lack of a synchronised working manner among governmental institutions, it was concluded that videoconferencing is not and will not be a feasible teaching method in the near future.

As it was reviewed in the literature, the project *Improvement of learning conditions through ICT incorporation into educational institutions and educational management units in Paraguay 2015–2019* was already approved and it attempts to provide the whole educational system with technological infrastructure and support. In case this project makes headway, the use of videoconferencing could become a feasible teaching tool, extending its use to more subjects other than only to English, and enriching students' educational opportunities. The next step would be to conduct more research in order to design a viable English programme that could be implemented in accordance with the technology at hand, the budget at disposal, the objectives expected to be met, the needs of students, the number of educators and the number of schools willing to participate, and the training and competence teachers would have to acquire to perform in the most natural and spontaneous way.

In order to support all data reported in this research study, a larger pool of participants should be included, especially those coming from public schools. Besides, due to its qualitative nature, analysis of data leads to different interpretations. The use of videoconferencing to teach English emerged as a possible teaching tool to meet the

objectives proposed by MEC; however, other models and tools, as well as different combinations could prove feasible. A final point for further research is to involve governmental institutions to work in harmony towards common objectives for equitable and quality education. Hence, the government and MEC would support one another, and resources would be used in a more effective, productive, and diligent way.

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