PLEs in Primary School: The Learners' experience in The Piplep Project

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Abstract

In this paper the experience of learners during the first phase of the PIPLEP project is explored. PIPLEP is aimed at promoting digital literacy and independent learning with the creation of personal learning environments (PLEs) as the final product. The participants were a group of 17 students enrolled in year 5 of primary school, and the main objective of the research method was to listen to the voices of the learners and their narratives about their emotions and conceptions as regards learning in digital environments, following the main guidelines of the IPA (Interpretative Phenomenological Approach) as applied in the LEX (Learners' EXperiences of e-Learning) project. The findings showed that learners had constructed a dichotomy between technology and learning, developed in the setting of the school and home, and based on the recreational use they made of their digital devices. However this misconception about the educational value of technology started to change with the introduction of the PIPLEP project, due to the learners acquiring new skills to use technology to learn.

Key words

PLE, Learners' experience; primary school; digital literacy, IPA.

PLE en la Escuela Primaria: La experiencia del alumno en el Proyecto Piplep

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Resumen

Este artículo explora la experiencia de los alumnos durante la primera fase del PIPLEP (Proyecto para la Implementación de Entornos Personales de Aprendizaje), cuya finalidad es promover la alfabetización digital y el aprendizaje autónomo, con la creación de entornos personales de aprendizaje (PLEs) como producto final. Los participantes fueron un grupo de 17 estudiantes matriculados en 5º de educación primaria, y el objetivo principal del método de investigación era escuchar las voces y narrativas de los aprendices acerca de sus emociones y concepciones del aprendizaje en entornos digitales, siguiendo las directrices principales of IPA (Interpretative Phenomenological Approach) tal y como fueron aplicadas en el proyecto LEX (Learners' EXperiences of e-Learning). Los resultados muestran que los aprendices habían construido una dicotomía entre tecnología y aprendizaje, desarrollada en el contexto de la escuela y del hogar, y basada en el uso recreativo que hacen de sus aparatos digitales. Sin embargo, esta idea equivocada sobre el valor educativo de la tecnología cambió a medida que el proyecto PIPLEP se implementaba, debido a la adquisición por parte de los alumnos de nuevas habilidades para usar la tecnología para aprender.

Palabras clave

PLE, Experiencia del aprendiz, escuela primaria, alfabetización digital, IPA.

I. Introduction

Although the digital and technological version of personal learning environments (PLEs) is new, learning has always been set in a personal environment consisting of family, friends or the school (Adell and Castañeda, 2013a). New technologies transcend the limitations of these physical environments, paving the way towards a new interrelated and interconnected universe, which can be accessed anywhere, anytime. In this new setting, changes have been imposed on the traditional concept of learning and learner. Learning in virtual environments is constructed by means of active participation and involvement so that the student can select, process, edit, create, share and communicate information and knowledge. The concept of PLE is to channel all these changes and to provide an instrumental and explanatory framework for online learning (Downes, 2010), which is why it is becoming a powerful approach that is gaining more followers and is being implemented in different settings. In fact, although PLEs are naturally related to long life and non-formal learning, their implementation is moving ahead in the field of formal education, particularly in adult and higher education, since they enable formal and informal learning to be connected (Dabbagh & Kisantas, 2012).

Thus, several projects in connection with the implementation and research on PLE have been carried out at a university level, among which are the DIPRO project (Cabero Almenara, 2012, 2014) and the CAPPLE project (Prendes, Castaneda, Ovelar and Carrera, 2014) in Spain. In this sense, a growing body of research on PLE in higher education is being developed, and clear examples of it are the special issues for personal learning environments published by scientific reviews such as *Interactive Learning Environments*, vol. 16 (1), 2008; *Digital Education Review*, vol. 20(1), 2011; *Edmetic*, vol. 2 (1), 2013; *Culture and Education*, vol. 26 (4), 2014, and *Edutec-e*, vol. 47, 2014, among others. There are also initiatives and research in the field of non-university education. The SAPO Campus School project in Portugal, for example (Pedro, Santos, Almeida, & Koch-Grünberg, 2012; Santos & Pedro 2013), was initially focused on university settings and later spread to other educational levels. However, the volume of research in primary and secondary education settings is still substantially low.

On the other hand, research on learning in digital environments has mainly focused on the product or on the observable behaviour of learners (Creanor, Trinder, Gowan & Howells, 2008). The problem with these methods is that they detract from hearing the voices of the learners, from understanding the emotional and cognitive processes involved in virtual learning just as the own learners experience it (Sharpe et al., 2005). To overcome this drawback, two projects supported and founded by the Joint Information Systems Committee (JISC) were developed, the LEX and the LXP projects, of which the former was particularly noteworthy as it provided a more holistic approach to research on e-learning. Despite the contextual difference, in this study the learning experience of 10-11 year olds immersed in the PIPLEP project (Project for the Implementation of PLEs in Primary education) is explored, by adapting the guidelines of the ground-breaking LEX study to our setting.

II. Literature review

Since 2000, different studies on the experience of learners in digital environments have been carried out. What is interesting about this approach is that it "explores what is important to learners, rather than tests hypotheses put forward by a research team. (JISC, 2007, p. 9). In this sense, with this approach "a culture of listening to learners" (JISC; 2007, p. 24) is encouraged and a deeper understanding of institutions and practitioners is enabled, so the learners can fulfil their potential in digital contexts.

Before this focus on the voices of learners, different studies based on the perceptions, opinions and emotions of the students were carried out. O'Regan (2003) explored the emotions connected to online learning and found that frustration was one of the most common of these among the 11 online students interviewed, while Dickey (2004) studied the reduction of feelings of isolation and alienation by means of web-logs. Additionally, Macdonald (2003) carried out online and telephone interviews to explore the crucial role of assessment in fostering online collaborative learning and in encouraging students enrolled in Open University courses in the UK to participate online. Other studies have focused on the perceptions of students on aspects of online tutoring, such as effective e-moderation (Jones, Miller, Packman &. Thomas, 2004) and the roles of tutorial participants (Sweeny, O'Donoghue & Whitehead, 2004). Furthermore, one of the most important contributions made by the study carried out by Sweeny et al. (2004) is that it focused on the voice of the students and verified differences in perceptions between individuals. Moreover, the authors suggested the use of board tutorials had been conducive to reducing race and gender-based inhibitions. In turn, Arraiz Martínez (2016) explores mathematical learning in virtual environments through the view of undergraduate future teachers.

The most important breakthroughs in learner experience in digital environments have been developed in e-learning settings, i.e., in the field of SEEL (Students' Experiences of E-Learning) and at high and vocational educational levels. One of the first projects in which the experiences students had of e-learning were evaluated was the SOLE project (Timmis, O'Leary, Weedon & Martin, 2004). In this project course modules in a highly varied range of subjects were studied and differences in disciplines were observed. This issue also came out in the study of Kirkwood and Price (2005) who reported differences in terms of the online access students had depending on the subject areas they were learning.

However, the most interesting projects as regards the experiences learners have of e-Learning were those funded by the Joint Information Systems Committee (JISC), namely, the LEX project and the LXP project. Based on the findings of Beetham (2005) the JISC intended to bridge the gap in research on the experiences e-learners had. A scoping study (Sharpe, Benfield, Lessner & DeCicco., 2005) was also included in the JISC strategy. As a result of this, Sharpe at al. (2005) suggested taking a more holistic approach to exploring the e-learning experience. In the development of this approach the LEX and the LXP projects were expanded in parallel.

The LEX (Learners' EXperiences of e-Learning) had "an exclusively learner-centred focus to find out from the learners how they felt about, and coped with, e-learning" (Creanor, Trinder, Gowan & Howells, 2006, p. 3-4). For this purpose, the Interpretative Phenomenological Approach (IPA), a method primarily applied to health and psychology research, was used. In this approach the

interviewees -the students in this case- are deemed to be experts on their own experience, and on conveying meaning. This method is inductive, which means that it "deliberately avoids testing hypotheses and making prior assumptions" (Creanor et al. 2006, p. 4), and thus "the researcher cannot pre-specify the details of the project before analysis, only locate the sample and an area for investigation" (Mayes, 2006, p. 7). The LEX project also used the "Interview Plus" method, which included artefacts such as audio logs and learning diaries. The results led to a conceptual framework made up of five high level categories: life, formal learning, technology, people and time, and five influencing dimensions: control, identity, feeling, relationship and abilities.

In turn, the LXP project, is aimed at capturing "all the ways in which learners use ICT - both in formal and informal learning - for educational purposes and other aspects of their lives" (Conole, De Laat, Dillon & Darby, 2006, p. 102). This project was more focused on disciplinary influences, and collected data by means of online surveys, audio logs and interviews from four Higher Education centres for different disciplines (Medicine, Economics, Information and Computer Science, and Languages and Linguistics). The findings showed that students were learning by means of technology, both in formal and informal settings and that technology was integrated into the lives of the students. However, differences were found between the kind of tools chosen for learning and for their personal life, and there was even a tangible separation in these two areas of their lives observed when they created separate email accounts, for example. The report finished with some recommendations for institutions to effectively support learning by means of new technologies.

In conclusion, in the literature review a trend can be seen for understanding different aspects of the learning process by means of ICTs and enabling the voices of the learners to be heard when using new technologies in learning. Together with the focus on the voices of the learners, the studies reviewed are a benchmark as regards the method used for data collection and analysis, namely, the Interpretative Phenomenological Approach (IPA) and Interview plus, specifically. These approaches have been applied to the study of e-learning in Education for the over 16s, but according to Kop & Fournier (2013, p. 4) "this method could be used to assess the learner experience in a PLE", and in this sense, the aforementioned research could provide a consistent framework for this study whose aim is to explore the perceptions of primary school students as well as their uses of technology as regards the implementation of the personal learning environment in the classroom.

III. Setting: The PIPLEP project

The PIPLEP (Project for the Implementation of PLEs in Primary school) is an on-going biannual project (2015-2017) whose aim is to incorporate the personal learning environments into the teaching-learning process in primary school. Collaboration between university and a primary school was established to study the possibility of inclusion of PLEs in the curriculum, and its particular and contextual advantages and drawbacks. The school where the innovation was carried out was a small primary school located in a rural setting. The reasons for this choice were twofold: firstly, the implementation of PLEs and the subsequent improvement of digital competence was considered as an added value of the project for its promotion of equal opportunities, and the academic, personal and social development of students in a rural setting. On the other hand, it provided valuable information about the implementation of PLEs in rural and multicultural settings, which a priori was deemed to entail more difficulties and to be more challenging than in urban settings.

After meetings and discussions with the teachers of the school, it was decided the project would be implemented with students in year 5 and would continue till year 6. Students in years 5 and 6 have

access to laptops provided by the education administration and this fact, along with the level of cognitive development of students and the possibility of starting the project in year 5 and continuing with the same students in year 6, were decisive for the choice of the aforementioned level.

As a result, seventeen students of an intact class of year 5 participated in the project. Before the implementation started and to determine their sociocultural level, their access to new technologies outside school, and their digital competence, all the students (17) took some questionnaires. Questionnaires about socio-cultural level and access to technology revealed that only 11.1% of the students' fathers had college education and more than half did not study beyond primary school. 70.6% of the fathers were employed in low-skilled jobs, such as farming and building while 75% of mothers did have under compulsory secondary school qualifications and only 40% of them are working at present. 25% of families immigrated to Spain from other countries, namely Romania and Morocco. Moreover, in almost 60% of homes there were fewer than 26 books, while in 63.2% there were 3 or more TVs. Almost all students had game consoles and in 22.2% of homes there were 3 or more. All students had some device to connect to the Internet. Almost half spent less than an hour watching TV on weekdays, while 36.9% spent more than 2 hours doing this. 72.2% played the console for under an hour on weekdays and 42.1% spent under an hour a day on online entertainment. Almost half spent between 1 and 2 hours a day doing homework and studying.

Regarding the results of the digital competence test, most students were familiar with programmes that enable them to carry out basic tasks with technological devices such as surfing the Internet, although this percentage fell to 39.51% when it came to navigation-related tasks (saving pages as favourites, using the cursors to correct errors in URLs or updating browsers) or using file attachments in emails or filling in address fields. You Tube was one of the most popular services for hosting videos among students, but only 42.35% were aware of hosting services for documents, presentations, images or saving files. Additionally, students had scant knowledge as regards what other digital objects could be created on the network (presentations, time lines, mind maps ...) and had trouble in responding appropriately to requests for personal data from an untrustworthy website. Regarding using word processors, only 49.01% were familiar with the basic notions of these (justifying text, spelling corrections, saving to a specific location, etc.)

With these data, the plan for the implementation of PLE was designed in two phases, adapting concepts and ideas from Álvarez (2014) and Castañeda y Adell (2013b) about the PLE structure and, additionally including some aspects of the flipped classroom approach (Bergmann and Sams, 2012; Milman, 2012; Roehl, Redy and Shannon, 2013) for the first phase of the project.

In the first stage, the main objective was for students to reach a sufficiently high level of digital literacy and equip them with the tools that are indispensable for learning in technological environments. The second phase was devoted to the implementation of the personal learning environments, thereby transferring control of the learning process from the teacher to students, and strengthening their identity, independence and self-regulation as learners. This methodological innovation is part of a longitudinal study and focused on a group of students from year 5 to year 6 of primary school. As in Castilla-La Mancha, the local administration provides 5th and 6th year students with laptops, we had the material resources to incorporate more enriching technology into the teaching-learning process. In the first phase of digital literacy, students were in their 5th year (10-11 years-old), and in the second phase of effective implementation of PLE, they will be in their 6th year (11-12 years-old) of primary school.

A detailed description of every phrase of implementation of the project and their contents can be found in tables 1 and 2.

First phase: Digital literacy		Year 5
CONTENTS		**IMPLEMENTATION**
1.1. USE OF EMAIL		The school previously gained access to Google Apps services for Education and every student involved in the project was provided with a Google account that gave them access to Gmail. In this phase students learnt to use this tool to communicate with their peers and his/her teacher outside school time.
1.2. AUTONOMOUS LEARNING VIA TECHNOLOGY		At this stage, digital artefacts, such as videos, infographics, presentations and interactive activities and tasks of all kind were selected and published on the classroom blog. All these resources were connected with the objectives and contents of the school subjects. Students were required to watch the videos, understand and analyse the information and carry out the activities and tasks suggested at home. Thus, and by means of the implementation of a *flipped classroom,* digital competence as well as independent learning was promoted. Additionally, this methodology freed class time from lectures and allowed for more motivating and effective learning activities, such as discussions and collaborative work, and catered for student diversity better. To assess content acquisition and provide students with immediate feedback some tools such as playposit, edpuzzle, thatquiz or kahoot were used.
1.3. CREATION OF DIGITAL ARTEFACTS.		In this phase, in a progressive way and by using scaffolding strategies, students learn how to use different apps, tools and services to create new digital artefacts and share them with the other users. The artefacts the students were expected to create were: - Files, documents and reports generated from Google Drive and published and shared on Calameo. - Diagrams and mind maps using Coggle. - Presentations generated from Google Drive and published on Slideshare. - Infographics using piktochart. - Videos to be hosted on youtube. - Collaborative boards with Padlet. - Timelines with Dipity.

Table 1. Content and description of the first phase of the PIPLEP

Second phase: Implementation of PLEs	Year 6
CONTENTS	**IMPLEMENTATION**
2.1. SELECTION OF INFORMATION	Using Symbaloo.edu, a set of selected digital resources connected with the different lessons for the school subjects will be at the disposal of every student. The students, in turn, and using Feedly have to add new resources and relevant information related to each lesson throughout the year. The PLEs of the students will be configured with Symbaloo.edu.
2.2. ORGANISATION OF INFORMATION	Once the students have launched their Feedly, they will receive information to be saved for future tasks. Students will also learn how to organize information to find it easily when they need it by means of two tools, Diigo y Pinterest, which will be added to their PLE on Symbaloo.
2.3. CREATION OF NEW INFORMATION	In this phase, more freedom will be granted for students to choose different tools or apps to carry out their learning tasks. At this stage, the stress will be placed on collaborative creation of information and development of wikis on Wikispaces, which will also be included in the PLEs of the students.
2.4. BUILDING OF OUR PLN	In this last phase of PLE implementation two tasks will be carried out by the students: - Creation of their own blog using Blogger, where posting useful information for their learning process, as well as their own creations and personal reflections. - Subscription to their peers' blogs via Feedly, by which they will begin to build their own Personal Learning Network (PLN).

Table 2. Content and description of the second phase of PIPLEP

The different stages of each phase were integrated in the normal development of classes. The implementation of both phases was designed according to the official curriculum and all its elements were included: key competences, objectives, contents and learning standards. For example, in the first phase of implementation, videos, infographics, and other digital artefacts to foster autonomous learning and learning to learn strategies were selected due to their connection with official content of different subjects (mainly Spanish language and mathematics). Likewise, the creation of digital artefacts by students helped them understand, analyse, present and, in short, learn content required in the official curriculum. In addition, the planning of the project was aimed at the development of the key competences: linguistic and mathematical competences (the project was mainly developed in the subjects of Spanish language and mathematics), digital competence (the project is based on the use of technology to learn), learning to learn competence (both phrases of PLE implementation boost autonomous learning and learning strategies acquisition) social and civic competences (the student learn to work in group, participate and construct knowledge in community), sense of initiative and culture awareness and expression,

through the fostering of creative expression of ideas, concepts and content in their elaboration of digital artefacts.

IV. Method

The main objectives of this study were to explore the impressions, emotions and feelings of the students involved in the first phase of implementation of PLE, and reveal the views of the learners on the broader influence of technology on their lives and on their learning.

As this study is part of the PIPLEP project, contacts with the school via the headmaster and the class-teacher were intense in the development of the project in which the class-teacher was involved, and activities for monitoring the development of the project and classroom observation were carried out from the beginning of its implementation. After 5 months of developing the project, the need to explore how learners were experiencing their own learning process with new technologies arose, and a methodological approach focused on the experience of the learner was chosen, as adopted in the LEX study (Mayes, 2006), which in turn applies the Interpretative Phenomenological Approach (IPA) to learning in digital environments. According to Mayes (2006), this is "a method for exploring how participants make sense of their own experiences" (Mayes, 2006, p. 6) and it is based on the premise that "participants are experts in their own experiences and can offer an understanding of their researchers feelings, intentions and motivations, and attitudes" (Mayes, 2006, p. 6). No hypothesis or prior assumptions were made, as letting participants freely produce their narratives and interpret their own understanding of their experiences, was key to the inductive research method applied.

The participants were a group of 17 primary school learners in year 5 taking part in the first phase of the PIPLEP. Following the guidelines of IPA regarding the use of a small sample to enable "a resource-intensive process" (Mayes 2006, p. 7), a smaller sample of 6 students was chosen for individual interviews. From this viewpoint, even "a single case can throw light on a phenomenon" and represent "a significant research finding" (Mayes, 2006, p. 7). The targeted sampling of 6 students was chosen for being the most effective learners of the group and the most willing to discuss their experiences.

Participants ranged from ages between 10-11, which meant there was some lack in fluency and difficulty in expressing complex thoughts and in reflecting on and interpreting their experience. To compensate for this drawback, the interviewer had to help learners to build and develop their ideas and impressions, using different techniques, such as making statements and then asking students to give examples of these, asking further questions, reformulating questions etc.

Since the aim of the study was to obtain a holistic view of the impressions learners had and their feelings about the use of new technologies in learning, the focus was on the learning context as a whole and different instruments were applied:

- Socio-cultural level questionnaire.
- Access and use of technology questionnaire.
- Digital competence test.
- Focus group interview.
- 6 Individual interviews.
- Classroom observation.
- Interviews with the class teacher.

Recommendations of Sharpe et al. (2005) for an ideal learner-centred methodology following from the LEX study (2006) were applied, particularly: the use of open-ended methods, which fostered the emergence of unexpected themes; triangulation, by means of consideration of different sources of evidence and including the teacher's view; access to beliefs and explanations; and using authentic contexts.

For the data analysis, the LEX project guidelines were also followed, so we worked intensively with the interviews transcripts and, together with the other evidence collected, the interpretative stage of the process began with the search for emerging themes, the construction of superordinate concepts and the elaboration of a conceptual framework. As a result, the following table was obtained, whose superordinate concept shows the dichotomy between technology and learning that has been constructed by students in two settings: home and school, with the family, the teachers and the learners themselves participating. This has been revealed in three dimensions: abilities and skills, independence and control and perceptions and emotions. The development of the PIPLEP project provides a dynamic perspective of all these elements in order for the construction of the superordinate concept to change throughout the process.

Superodinate concept	Technology/learning dichotomy			Time axis PIPLEP
Context	home	school		Before
agents	family	teachers	learners	
Dimensions	Abilities and skills	Independence and control	Perceptions and emotions	during

Table 3. Conceptual framework

V. Results

The findings show the learners had constructed a superordinate concept which consisted in a dichotomy or contradiction between technology and learning, and from this viewpoint, technology would hinder learning instead of fostering it. However, this conception is undergoing a process of evolution, since from the implementation of PIPLEP, students have been learning content and concepts using new technologies and progressively understanding its potential for education.

In the next sections, we will study the development of binomial technology/learning according to the experience learners had in three dimensions: abilities and skills, independence and control and perceptions and emotions, in school and home settings and with families, teachers and the learners themselves participating.

a. Abilities and skills

The students' skills before starting the PIPLEP project were almost solely related to recreational and communication uses: "I accessed PlayStore to download games, movies, music, I chatted" (Anna), "I searched the net, I knew how to access sites for playing and ... and that´s about all" (Mia), "Before starting the course I did nothing. I did almost nothing with it, nothing but Googled and found a song or something, but not much else" (Paloma).

After starting the PIPLEP, this situation began to change, as students were learning to use tools and applications for online learning. Now, they are able to name and work with websites and educational applications (Kahoot, educanon and Coggle, for example), to use email, follow the classroom blog and carry out online activities or watch educational videos and presentations. All their knowledge on the use of internet to learn is nevertheless limited to what their class-teacher tells them.

At home, learners state they are leaders in technology, by which they mean, to be specific downloading videos or songs: "Well, for example, my mother wants to use an application, for example, for downloading music on her mobile or computer, and asks me for help, as I know more ... she asks my father for help and my father does not know how. When it's about technology, I have to do everything. She calls me: Anna do this" (Anna).

Again, since the implementation of PIPLEP, students started to cooperate at home in areas not only related to recreational but to more educational uses: "It's that just yesterday my mother asked me for help, as she couldn't open a folder or paste it, but I could, and so she asked me for help. She also had to make an outline, and she also has an email, and I helped her" (Nana).

Regarding the use of technology and communication skills the learners have, these were also quite restricted to connections with family and friends. The social role of technology was emphasized and considered to be its most privileged use: "... with technology we could get into technological life, I mean, have more friends" (Nana). However, students did not use technology to communicate in educational contexts for educational and purposes, until the PIPLEP project began. Connections take place at present within the group class: "Our class has a WhatsApp group: the best are 5th, and every time we have to do something, we have to do group work, we write on it what time we will meet, what should we bring ... "(Anna). Learners use WhatsApp as a tool to make an appointment face to face. However, interactions in the virtual world for collaborative learning are starting to develop: "As we have a WhatsApp group, if I do not know something, I get into the group and ask what the homework is or how I can do this exercise" (Anna); "For example, sometimes a classmate calls me if we have an English exam the next day so that I can explain something to her by video calling" (Nina). Nevertheless, collaborative networking is one aspect of technology that has not been taught in the classroom yet, and because of this, when asked about collaborative tools, learners are unable to conceive how it would be possible to do group work without meeting face to face. Again, their knowledge about the different possibilities, apps or tools provided for supporting online learning is conditioned by what their teacher teaches them.

Apart from peer-communication, the new setting has enabled interactions to be built between teacher and students outside school hours, asynchronously, using the classroom blog and emails. In fact, among students a need is felt to have the possibility of contacting the teacher outside school hours, and they have expressed some anxiety in the hypothetic situation that such contact was not possible: "because if you can't, how can you communicate with the teacher or friends?, how can you do the homework if you didn't write it down?" (Nana). Moreover, as it is apparent from the excerpt above and from the class-teacher opinion, the possibility of accessing class information after school has been related to a decline in attention to these details and aspects (such as homework assigned for the next day) when the teacher provides them during class time and therefore, virtual communication can have a negative impact on the quality of classroom exchanges. Despite this fact, students are clear when expressing their preference for face to face contact with the teacher and peers.

As for independent online learning, this is also quite limited in the students. It is true that some of them show certain aptitude for independent learning and the use of new technologies in learning to

learn: "I practice and sometimes when I do not know something, well, I practice and if I do not know how to do something totally, well I find a how to video and manage to do it "(Celia).

b. Independence and control

The superordinate concept of the contradiction between technology and learning is reflected by the parental-control of the use of digital devices for learners. For families, the belief that technology and academic life are two unconnected worlds prevails, and in this view, technology is related to leisure, and therefore, restricted to the moment in which children have already completed their school homework: "My parents let me play the tablet after I finish all homework and I have studied" (Nina). This statement is shared by other learners: "When I study I am not allowed to have it [the mobile phone] because I get distracted and I get bad marks" (Anna). When asked about the relationship between technology and good academic results, they show a negative view of the effects of technology, "Well, if you spent all your time with technology, you wouldn´t get good marks, because you wouldn´t have enough time to study mathematics "(Nana).

Therefore, parental limitations of the use of technology are accepted by students as they somehow recognize the addictive potential these new technologies have and their difficulties to control the time they are connected whilst engaged in pure leisure activities. "Well. Sometimes I play for five minutes. Then I leave it. Then I go back to it" (Anna); "... other times, well, you play a game and you get hooked and then you forget everything." (Celia)

As for independence and control at school, the teacher is a figure of prestige and confidence for students and they feel more comfortable when he is in full control of organizing all the aspects of the teaching-learning process; in fact, they believe that it is much better to learn by means of what the teacher teaches them than independently, due to their lack of self-confidence in both using a computer and in searching, selecting, understanding and processing information by themselves: "Because ... he makes it easier because the teacher can convey what he has studied and we would learn better because with the mobile, (...) ... Well ... in books when there are some things that I do not know, because sometimes I look on the Internet but there are such strange things there that you don´t understand" (Nana).

Independent learning even appears to be connected to a sort of "arrogance" by the student who "dares" to learn alone: "Well, you can be as clever as you like, but you see, a teacher would teach you much better, because maybe he or she knows more than you" (Paloma).

As regards implementation of the second phase of PIPLEP and the subsequent construction of their own PLEs, students were asked about the possibility of being more independent in the selection and processing of the content of the different lessons. Although students, in general, did not feel totally confident in this regard, some of them admit that way they would learn more: "the teacher looks for the best things he can to explain it to us (...) I don´t think I could do it" (Ronald); "Well, that would be OK, but it would be a bit scary" (Paloma) "…sometimes I prefer the teacher to give us the websites and everything and not have to look them up myself because that way it would be easier, but for helping me use a computer better, then ... it is better for us to search for them" (Nana).

c. Perceptions and emotions

The tensions between learning and technology translate into contradictory emotions. On the one hand, the introduction of new technologies in the classroom provides students with a sense of joy and well-being, and even feelings of self-esteem have been reported. The most common impression is their motivation to learn: "I was happy because I was going to use a computer"; "Happy, Happy, because others use ... this and not just me" (Paloma); "Relaxed and motivated". (Mia) "I feel good. Comfortable (...) I feel self-confident" (Ronald).

On the other hand, learners feel concerned about the negative side of technology "I've heard that some games have a camera and as they watch you, they may know where you live (Anna); "The internet is easier but books are better because they do not damage your eyes" (Nana), "They can lead to bullying and that does not make you feel good" (Nana) "and they can hack into your mail and mess with you" (Paloma), "if you take a picture of yourself and a man steals that photo ..." (Mia).

Nevertheless, these misgiving students have do not prevent them from displaying heavy dependence on using their devices, and so, without technology they become depressed, bored and angry: "[without technology] I would lie in bed, miserable" (Nana); "I would be in bed and not leave the room" (John); "in my life mobiles are really important, without them I die "(Anna) "I'm a little angry because if for example you haven't charged them and you want to use them, what can you do?" (Lisa), "I feel frustrated because I can't play what I want, search for information... I do not know what to do". (Anna) "Angry. You feel weird, then" (Paloma), "Pissed off because you do not have what you want" (Romi).

In spite of the fact that learners valued the presence of technologies in their personal lives, they showed contradictory feelings about the relevance of new technologies for education. On the one hand, they think technology is better than books because they have more fun while learning: "With new technologies you can play games and have fun learning, not always having to search in books. It is easier to have fun and learn than always searching in books. (Anna), "…you learn more on a computer and besides it's really cool" (Rick). Moreover, according to the students, using new technologies means searching for information is faster and easier: "I say we can't live without technology because when I want to look up information and it takes a long time in books, you don´t feel like anything and you don´t feel like searching in books, it is easier on the Internet."(Anna) "[time] goes faster when I have to do homework on the computer (...) I have fun and do it faster" (Nina).

Conversely, learners display conceptions that value traditional teaching more than with new technologies, influenced by social discourses, including concepts forged from inside the school: "And doing the task [with the book] helps you and as you read, well it makes it easy ... as you read more, you read faster". (Nana) "You do not get out of practice [of reading in books], either" (Ronald). When students think about technology they are considering its recreational uses and because of this they cannot appreciate its value for education. Due to such beliefs, they even think that learning technology cannot be appropriate at school: "Teachers are for showing you how to multiply and that stuff and not for teaching you how to get into a website and play games" (Rick); "so much technology is not good for your education" (Paloma). They also interpret and agree with the views of the teachers who do not use technology in their classrooms: "[some teachers do not use technologies] because they are not interested in them or think you don´t need them to be intelligent or to get a degree" (Paloma). Even if they recognize the contribution technology makes to learning, they find it difficult to understand the importance of ICT skills for future personal and professional development: "The good thing is that they [technologies] also help you learn, although

they don't help you become very clever" (Paloma). Nevertheless, learners were starting to understand that apart from recreational uses, technology has great potential for learning and stress the concept of responsibility in its use, as a condition for school achievements: "I would like to use mobiles in the classroom, but to learn" (Anna); "but if you don't use them responsibly, and you play or watch videos all the time, they won't be good for your marks" (Paloma).

VI. Discussion and conclusions

According to learners, learning and technology are two conflicting concepts. This clash between learning and technology has been developed in two settings: home and school and three agents have collaborated to build it: the family, school and learners themselves, and it has manifested itself in three dimensions: the skills the students display, their independence and control and their emotions and conceptions. However, this negative view as regards the contribution new technologies have to learning is being affected by evolution, driven by the introduction of PIPLEP, since students are learning how to learn by means of new technologies and they are gradually changing their preconceptions.

Regarding skills and abilities, although learners in this study would belong to Generation Z, they do not fit in with some of its reported characteristics (Fernández Cruz & Fernández Díaz, 2016, p. 97). They are supposed to be "techsavvy" but, as our participants described, their abilities were quite restricted to leisure (communication, downloading music and videos and playing games) while the educational use of technology remains almost uncharted territory. Therefore, although students were successful in terms of the recreational uses of technology and claimed to be the experts on technology at home, digital literacy and educational ICT skills were solely taught and acquired at school. Digital competence is essential to cope with the demands made in a knowledge-based society, and because of this it is one of the eight key competences for lifelong learning recommended by the European Parliament and the Council in 2006 [2006/962/EC]. Digital competence is critical for the development of active citizenship, as it provides tools for accessing the labour market and contributes towards personal, professional and social growth. In this sense, the school plays a key role in ensuring that all children have access to acquiring knowledge of it on an equal footing, and it cannot be assumed that students are sufficiently exposed to digital environments or that they already have the necessary digital skills when they come to school. On the contrary, the school needs to take action on this issue and take on the difficult task of teaching how to use technology to learn, which it is not the same as using technology for leisure.

Secondly, as reported by the learners, technology was seen by families, the learners themselves, and also by the school as a threat to learning, as all these players equated technology with recreational practices. Therefore, the time for using technology was limited by families and the school, and some learners even believed that there was no need to teach new technologies at school. Moreover, the prevailing belief is that the cultural tool par excellence remains the book as opposed to technologies. This traditional view of culture may be connected with the rural socio-cultural context of our setting. In light of this, the PIPLEP project entailed introducing technology for educational uses and promoting independent learning, so that learners and families seemed to start changing their minds about the potential technology has for education. However, the implementation of PLEs meant other problems, namely the fact that learners are unfamiliar with independent learning and too used to the concept of the teacher controlling the whole teaching-learning process, and they also showed poor strategies in learning to learn. Again, "learning to learn" and "sense of initiative and entrepreneurship" are two key competences for lifelong learning that have to be developed at school, and implementation of PLEs could be a plausible instrument to

achieve them, due to their potential for changing the attitudes learners have by means of assuming a more active role in their own learning process.

Finally, the predominance of recreational uses by learners was bound to produce mixed feelings in them in a field subject to emotions such as technology (Serrano-Puche, 2016). Learners experienced contradictory feelings when starting to apply technology to learning. On the one hand, they feel good and motivated when using technology to learn, but on the other hand, they believe that culture resides in books and feel more confident knowing what to learn, where to find it and working under the control of the teacher. Furthermore, although students feel happier and more motivated when using new technologies in the classroom and are ever more aware of the contribution these make to learning, they found it hard to grasp how important ICT skills are for their training and their future. This underestimation of new technologies may be due to the fact that learners use technology only for fun and leisure. This outlook must be changed and the only way to do this is by teaching learners more responsible uses of technology and providing them with tools to learn in digital environments.

Acknowledgements

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