THE IMPACT OF DIGITAL LITERACY DEVELOPED DURING THE PANDEMIC ON TEACHERS' POST-PANDEMIC BELIEFS

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Abstract

This study attempts to verify the impact of digital literacy developed during the pandemic on university professors' beliefs. If before the pandemic most of my fellow university professors used digital technologies very little, with the pandemic this picture has completely changed. However, the pandemic made it clear that in addition to the digital exclusion on the part of students who did not have financial conditions to access technologies, there was also teachers' exclusion, as most of them did not know how to use these technologies in their practice. As there was no other form of communication during the time when we had to work from home, the university provided equipment for some learners. We also offered training on how to use a web conferencing platform and the institutional virtual learning environment (VLE). Now, after the pandemic, it is possible to notice a greater interest from colleagues in maintaining their spaces in the institutional VLE and a still frequent use of web conferencing platforms, especially for orientations, presentations, or events. This participatory action research seeks to understand whether there have really been changes in their professors' beliefs regarding the use of digital technology for teaching. To do so, a questionnaire was sent to all the institute professors. The theoretical background of the research includes topics such as beliefs, Emergency Remote Teaching, cyberculture, digital literacy, interactive classroom and multiliteracies. The results show that there has been a positive transformation in teachers' attitudes in relation to applying digital technologies to language teaching. Participants confirmed that before the pandemic, only a few colleagues used digital technology, while nowadays more teachers use virtual learning environments and web-conference platforms. However, they mentioned some important points to be considered, such as the lack of appropriate access to digital technology and the internet by learners and teachers at university, the importance of face-to-face classes for interaction and the importance of reflecting critically on their practice.

Keywords: Digital literacy, teachers' beliefs, post-pandemic, teacher development.

1. Introduction

This presentation has as its main objective to verify the impact of digital literacy developed during the pandemic on university professor's beliefs. If before the pandemic most of my fellow university professors used digital technologies very little, with the pandemic this picture has completely changed. However, the pandemic made it clear that in addition to the digital exclusion on the part of students who did not have financial conditions to access technologies, there was also teachers' exclusion, as most of them did not know how to use these technologies in their practice.

As there was no other form of communication during the time when we had to work from home, the university provided equipment for some learners. We also offered training on how to use a web conferencing platform and the institutional virtual learning environment (VLE). With my post-graduate students who had been researching digital technology in education, we offered workshops to discuss gamification (Cardoso, 2022; Cardoso; Correa & Leão-Junqueira, 2020), cyberculture and the use of applications (Torrentes & Vergano, 2021) to facilitate remote classes and turn them into lighter activities.

The results of the study show that there have been some changes in these teachers' beliefs as now feel more positive towards the use of digital technology in education.

2. Objectives

The main objective: To verify the impact of digital literacy developed during the pandemic on university professors' beliefs.

Specific objectives: (a) to verify to what extent where these specific teachers and their students were digital excluded; (b) to understand how digital literacy developed during the pandemic may have impacted in the solutions these teachers have taken during and after the pandemic; (c) to reflect on changes in these teachers' beliefs in relation to the use of technology in their teaching (strategies).

3. Theoretical background

The theoretical background includes different concepts, such as beliefs (Fonseca & Cardoso, 2021; Silva & Barcelos, 2021), Emergency Remote Teaching (Cardoso, 2021; Fonseca & Cardoso, 2021; Rabello & Cardoso, 2022), cyberculture (Santos, 2014), digital literacy (Dudeney; Hockly & Pegrum, 2016; Pegrum & Cardoso, 2019), and multiliteracies (Kalantzis; Cope & Pinheiro, 2020; Kalantzis et al., 2016). However, this article does not focus on the definition of these topics, but on their use in the better understanding of the results.

4. The study

This participatory action research (Kemmis & Wilkinson, 2011) seeks to understand whether there have really been changes in their professors' beliefs regarding the use of digital technology for teaching. The discussion is based on the answers to a questionnaire which had 31 respondents.

4.1. The questionnaire

The questionnaire consisted of 20 questions, being 16 multiple choice questions and 4 open questions (11, 18, 19 and 20). The first section of the questionnaire was to understand these teachers' more general profile, including their names, the kind of institutions they work and their experience in the area (teaching languages). The second section of the questionnaire had to do with the use of digital technology before, during and after the pandemic. Questions 2 to 11 and question 17 are related to teachers' experience using digital technology and questions 12 to 15 focus on learners' experience. Question 16 asks about the kind of teacher training they got involved during the pandemic. As for the last three open questions the topics are the following: teachers' perceptions concerning digital technology during the pandemic (18); changes after the pandemic (including reasons) (19) and comments on the themes approached in the study (20).

In a future study, we intend to invite four of these teachers to be interviewed. Two of them will be selected because they continue to use the VLE and the other two because no longer uses it, in order to understand why they position themselves in such a way.

4.2. The participants and the context

The questionnaire was sent to all the institute professors, about 172 altogether, but only 31 answered the questionnaire. All the respondents work at UERJ, and one of them also work in two other high schools one private and another public. They are all experienced teachers, 42 % of them has been a language teacher from 10 to 20 years; about 27% from 20 to 30 years; and 23% have more than 30 years of experience. Only about 8% of them had less than 10 years of experience (from 5 to 10 years).

5. Results and discussion

The first thing that must be considered is that this study deals with a group of teachers' perceptions about what has been happening. It cannot be generalized. We are not interested in searching for a general reality, but to reflect on our specific experience. This reflection will be partly presented here, divided in four aspects: the learners' exclusion; the teachers' exclusion, emergency solutions and (teachers') changes of beliefs.

5.1. Learners' exclusion

The new cultural relations, which associates digital technologies to our social lives, creates a new way of understanding, feeling and being in the world. We are all in this complex hybrid relation between the cyberspace, the city and different educational networks, named by Santos as *cyberculture* (Santos 2014). Different daily activities have been transformed by this new culture.

However, the pandemic showed that not everybody has the same opportunities, or have the same conditions, to participate in this new style of society. Before the pandemic, even if you didn't have access to the Internet at home, it was easy to find free Internet in shops, at school, at work or even in the streets. However, with the lockdown, which forced us to stay at home, the digital exclusion became more evident.

In this study, learners' digital exclusion is confirmed in the answer to at least two questions: when we ask whether learners had adequate resources to study during the pandemic and reasons for them to keep the cameras off.

Twenty-seven teachers answered the question about technological adequacy, and from this group, ten respondents (37%) believed that most learners had adequate access, eight (30%) believed that few learners had access, six (22%) believed that part of them had access and three (11%) believed that almost none of them had adequate resources. Another way of looking at this data is to show that while 37% of teachers believe that most students had access to technology, 63% believed that only a few learners had access to adequate technology.

When questioned why learners kept their cameras off during remote classes, there were 31 respondents. According to 21 of these teachers, the main reason was problems with connectivity. The second reason pointed out by 16 of them was to avoid expose their home or place of work. Other aspects were also mentioned, such as shyness (11 respondents) lack of confidence (8 respondents), four mentioned that probably learners were doing something else (not actively participating in class) and two mentioned sadness.

These results are confirmed by other studies conducted during the pandemic, which mentioned between learners' difficulties for studying and or participating in remote classes, emotional reasons (sadness, shyness, loss of concentration) and inadequate equipment or connectiveness (Fonseca & Cardoso, 2021; Rebello & Cardoso, 2021). One question that I asked myself several times during the pandemic is whether we all really live in the cyberculture.

The pandemic also helped to reinforce the importance of considering the two multis of multiliteracies, when we refer to meaning (multicontextual and multimodal). We cannot only consider the question of multimodality (multiform transpositions of communication – written, visual, spatial, tactile, oral, etc.) if we do not consider the social diversity (symbolic, embodied and material differences, such as community setting, social role, identity, etc.). To sum up, we should consider how social contexts, and not only modality, affect the construction of knowledge (Kalantzis et al, 2016).

5.2. Teachers' exclusion

When we consider teachers' digital literacy, we often think more in the higher levels of technology awareness, such as knowledge on how to learn and teach using these digital technologies in a creative and critical way. However, the pandemic showed us that even the basic access to technology was inadequate to most teachers and another problem is when the equipment was available, they are not ready to use them appropriately.

Twenty-eight teachers answered the question about resources adequacy. A little different from learners, from this group, 16 mentioned that the resources available for teaching during the pandemic was enough (57%). However, about 43% mentioned that their resources were inadequate. From this second group, seven mentioned that they had some resources, but they weren't adequate, three mentioned that they did not have them and two mentioned that they bought what was needed when the classes began.

As the only way to work and communicate with others was through web-conference and social networks, teachers had to find ways of acquiring computers and accessing Internet in a way or another. Most of us had to include in our economies, the acquisition of new computers, special chairs, more access to the Internet, not to mention, the increase in energy expenses. Besides the financial problems, teachers had to learn very quickly how to use some technologies which were new to them, like web-conferences and virtual learning environments and at the same time how to deal with the disease. Emotional problems, such as insecurity, unpreparedness, disability and sadness, were part of difficulties faced by teachers.

5.3. Emergency solutions

Freire (2018 [1968], p. 149) mentions that in limit situations, we must apply what he named as the "unprecedented viable", what is possible to be done in extreme situations. Here we will consider the emergency solutions the ones we had to adopt during the pandemic. In relations to learners, after a long time of negotiations, by the end of 2020, they received chips to access the Internet (most of them using cell phones) and in the beginning of 2021, the university distributed tablets to who did not have conditions of buying appropriate digital equipment (such as computers and tablets) for studying.

One of the questions in the questionnaire investigated how much the distribution of tablets and internet chips to learners impacted on the classes. Most teachers believed that there was much impact (19% totally and 31% much), 27% believes that the impact was partial, 19% that it was little and only 4% believed that there was no impact. Only after the distribution of the tablet, were almost all learners able to participate of the classes. The lockdown began in March 2020, and at our university the "regular" classes began in September 2020. During those seven months, in my institute, we offered teacher training on how to use a web conferencing platform and our virtual learning environment (VLE). We also offered

workshops to discuss cyberculture, gamification, and the use of technology to facilitate remote classes (Cardoso, 2021; Cardoso & Velozo, 2020). The use of gamification (Cardoso, 2021) was essential to make the learning process lighter and more enjoyable. We believed that teachers could learn while teaching, so we invite these teachers to prepare remote activities in groups, using a collaborative virtual learning environment (*VLE Integrated Space*), and a common web-conference space (RNP). To organize and publicize these activities, we created a collaborative calendar of activities, using the Padlet app.

When asked which teacher development activities they had taken during the pandemic these 18 of these professors mentioned RNP web-conference workshops or videos and 18 mentioned VLE workshops or videos, nine mentioned workshops and videos on how to use our new administrative system (SEI) and seven mentioned events, lectures or workshops about Emergency Remote Teaching (ERT), seven mentioned workshops and lectures on use of technology for teaching, while three mentioned other activities.

5.4. Changes of beliefs

When we compare the kind of digital technology used before, during and after the pandemic by this group of teachers, it possible to notice that the biggest change was in relation to VLEs and web-conferences. Before the pandemic, only two of them used the university VLE and four used other web-conference platforms (Figure 1).

Figure 1. Teachers' digital technology use before, during and after the pandemic.
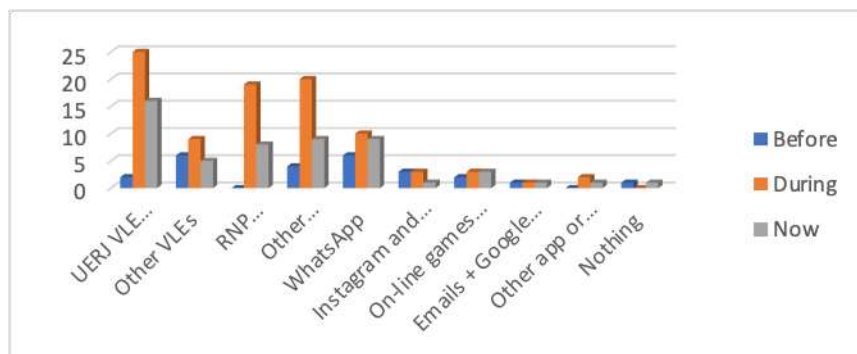
There has been some change also in the frequency of use of these digital technologies. Before the pandemic, only 8 used them very frequently and 12 mentioned that sometimes they used them. During the pandemic, almost all of them (24) used technology every class and three used very frequently. After the pandemic, at least 16 of them have used digital technology more frequent, three mentioned that they use it every class and 13 mentioned very frequent use. And one that never used, now (s)he is using it.

The answers to the open questions confirm this positive feeling towards technology by most of these teachers. Below there are two examples.

> *Yes, it has changed. I started to see that **it is possible to do everything online**. Nowadays, despite being in the face-to-face classroom, **I continue to use the activities I created for the pandemic period**, especially the ones related to the procedural evaluation. **Everything happens in the VLE**. Face-to-face classroom is for exchanging ideas,...*

> *Digital technologies have allowed me to **rethink my role as a teacher**. Through the concept of online education, I understood myself no longer as a holder of knowledge, but a "teacher-curator", who searched the internet for materials to contribute to students' learning. I also understood that it was important to bring to class **practices that students already had on social networks**, such as sharing productions, commenting on each other's production, use of technologies to make mind maps, gamification of assessment, etc.*

It is not that the in-person classes are being substituted by on-line classes, but they have noticed that both can be used. However, there is still some resistance, especially when they try to compare teachers and technology, as if it was possible or necessary.

> *I continue to believe that - for emotional development and emotional balance, as well as learning - **there is nothing more important than the face-to-face teacher/student relationship**.*

> *It hasn't changed. **Technology, by itself, does not guarantee learning**. Mediation/Interaction is needed, that is, **the teaching profession is fundamental**.*

It seems that in these cases, teachers still feel afraid of being substituted by technology. Another negative point mentioned by them is the lack of appropriate technology at the university. Only 31% of

them mentioned that they have enough technology for teaching. The same percentage (31%) stated that they would like to have better access to the Internet, 22% would like to use more equipment, 9% would like to buy more equipment and 5% do not have enough technology to work. As for the equipment that they would like to have available at UERJ, seven mentioned more efficient access to the Internet in the classrooms and four of them mentioned e-boards, three mentioned that there should be more projectors and computers, and nine mentioned some other kind of technology.

6. Conclusion and future actions

The results show that there has been a positive transformation in teachers' attitudes in relation to applying digital technologies to language teaching. Participants confirmed that before the pandemic, only a few colleagues used digital technology, while nowadays more teachers use virtual learning environments and web-conference platforms. They also mentioned some important points to be considered, such as the lack of appropriate access to digital technology and the Internet by learners and teachers at university, the importance of face-to-face classes for interaction and the importance of reflecting critically on their practice. Most of the teachers who answered the questionnaire liked the study and felt it was a good way of reflecting on their practice. As a teacher-researcher, but also director of the institute, my next steps will be to interview four selected teachers, to understand better their perceptions, organize more teacher development activities, try to provide more equipment and to improve the access to the Internet.

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