

The Use Of Technologies In Early Childhood Education

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Abstract:

The article seeks to study postmodernity and cyberculture, more specifically in the process of adopting smartphones as integral tools in the educational process. To this end, a study was carried out correlating the technological revolutions and the educational processes, reaching the cyberculture, seeking a detailed analysis of the characteristics of the latter and its influence on the teaching and learning processes. In a second moment, the research carried out among the researched groups and the results of this research are presented, focusing on the acceptance or rejection, by students and teachers, of the use of smartphones in the classroom in early childhood education. Thus, in addition to the search for substrates to demonstrate the need for the use of smartphones in the classroom, based on successful cases and UNESCO guidelines, it is intended to demonstrate the existence of barriers resulting from the lack of knowledge of educators, which can lead to the rejection of the adoption of these tools in the classroom in early childhood education.

Key Word: Early Childhood Education; Technologies; Meaningful Learning.

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I. Introduction

Civilization has reached a new point, a new way of perceiving and connecting with the world around it. Bauman calls this era liquid modernity, while in the more technical concept of historical sociology this new time is called postmodernity. Within this era, a new human condition emerges, which contrasts with the perception and searches of outdated modernity. While in the modern age the search was tangential to security, in post-modernity what is sought is individual freedom, or, at least apparently, it is what is designed.

In this post-modernity, the search for freedom is also characterized by the deconstruction of the solidity of relations and communications characteristic of modernity. In this context, cyberculture emerges, a reflection of the technological revolutions of the last decades, allowing knowledge and access to it to reach a different level. Cyberspaces, hyperlinks, interconnectivity allow a universe of knowledge to be available today, literally, in the palms of the hands, represented by *the smartphones*, popularized today.

It is in this context that the questions of this research arise, which seeks the implications of post-modernity, especially cyberculture, in education and the consequences in the process of teaching, of researching from this new format of society in which there is a permanent connection, in which it becomes possible, also in education, the use of ubiquity, making the teaching-learning processes extrapolate the boundaries of the classrooms.

Ubiquity and mobility also arise within classrooms, where students can access information through their cell phones. Ubiquity allows the expansion of the content available to students, while enabling dispersion in the classroom, in cases where the tool is not correctly directed. Through the technologies available in cyberculture, it is possible for the teaching process to extend beyond the classrooms, being available at all times, expanding the student's contact in the learning process.

In this light, the central question of this work arises: can smartphones be used as another tool to improve the teaching-learning process? Are there outlined teaching strategies for this use? What is the acceptance or rejection of smartphones by teachers and students for use in the early childhood education classroom?

II. Material And Methods

As for the general treatment of the collected data, the study was guided by a descriptive nature, seeking to describe the corpora, in order to analyze them interpretatively, as well as to seek a factorial analysis of correspondence to indicate different classes of more homogeneous vocabularies presented in the answers. The closer the term gets to the center of the dashed cross, in the graphs presented, the greater the frequency of repetition in the analyzed answers.

The research question was unique, seeking to focus on the need, acceptance/rejection and knowledge of the need to use the smartphone in the classroom, both from the student's and the teacher's point of view. The question was asked to everyone: what do you think about the use of cell phones in the classroom?

The set of different techniques for interpretation, with a view to describing and decoding the components of a system with complexity of meanings, characterized as qualitative research, fits the profile sought in this study. What is intended is the translation and expression of the meaning of the phenomena of the social world, in a subject-world relationship, in which a link between objectivity and subjectivity is created, as expressed by Chizzotti (2006).

It is understood, for the purpose of this study, that it is only possible to understand the possibilities of applying m-learning in the classroom from the description of the needs of the individuals involved in teaching-learning, according to their own experiences (POLIT; HUNGLER, 1995).

Data collection took place through Google forms, voluntarily applied to the interviewees, and sent via the WhatsApp application. The interviewees were divided into three groups: (a) pedagogy students from the Federal University of Tocantins (UFT), Palmas campus, 6th and 7th period students; (b) students in the 2nd and 3rd year of high school at Escola Profa. Elisângela Glória Cardoso; (c) teachers of the 2nd and 3rd year of high school at Escola Profa. Elisângela Glória Cardoso.

The question provided in the questionnaire precedes the object of this dissertation, being seen as the very assumption of confrontation, which allows us to find the obstacles derived from possible resistance or even the acceptance and need to apply the cell phone in the classroom from the perspective of those involved in the teaching and learning process.

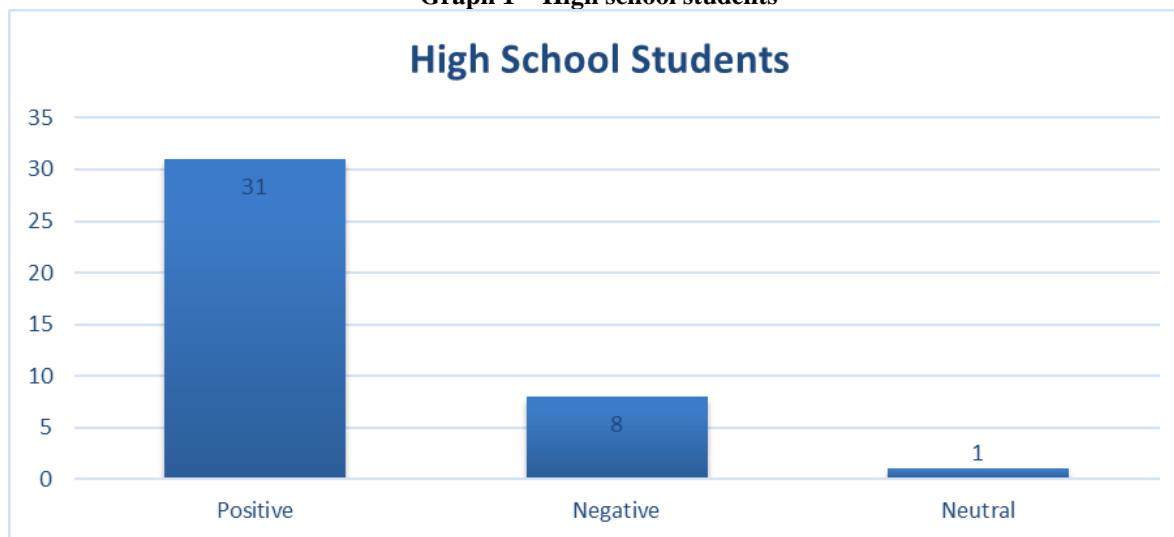
Notwithstanding all the advantages pointed out in the course of this research regarding the use of smartphones in the classroom, it is essential to diagnose the acceptability of the resource, or even the need already felt in educational environments in which *m-learning* is not yet applied, so that a possible need to encourage the use of the tool can be ascertained.

It is imperative to understand that there is a differentiated process when there is the imposition of a new technology, and when, on the contrary, there is a need already visualized by teachers and students, as was said when the paradigm of resistance and acceptance of these new technologies was argued.

III. Result

Among the answers analyzed, in a universe of 40 responses, 77.5% of the students (31) understand the use of cell phones as positive, 20% of students (8) as negative, and only 2.5% (1) did not take an assertive position on the use of cell phones in the classroom.

Graph 1 – High school students



Source: prepared by the authors, 2024.

Certainly, the analysis made above extracts one of the central scopes to be sought in the questionnaire: the acceptance or rejection of students to the new technology. In this aspect, a clear trend of acceptance and a small resistance is perceived, although it is not an absolute analysis of the students' perception, given the complexity that may exist in conditioning the answers.

An example is answer No. 18 of the form, in which the student answered:

Well, I believe that if used correctly, the use of cell phones has a positive impact on the classroom, since the range of information that this device has access to through the internet can contribute to the enrichment of the content worked on in the classroom. I believe that the cell phone can be a great ally for the teacher and the student in the learning process.

What can be seen is that, despite being a positive response, in the analysis of the spectrum of acceptance/rejection of *m-learning*, there are constraints in the response. Among the items listed, there is a condition, the correct use of the cell phone, which can be identified with the need for direction and not just the release of the smartphone. As positive factors, the following are identified: range of information and content enrichment.

Among the negative answers identified in items 1, 7, 10, 15, 20, 21, 25 and 30, we have in common the students' evaluations of the possibility of loss of focus, lack of preparation of students and lack of training of teachers. Some answers, because they are excessively laconic, only demonstrate a rejection of technology without specific details about the correlated whys.

Answer No. 10 illustrates the arguments for rejecting technology when the student says: "I think it takes away the focus after you take the focus back to return the same focus takes a long time, it can be used in specific classes as an experience" (sic). In the context of the supposed lack of preparation of teachers, there is also respondent no. 21, who says "The teacher does not have the ability to work with this technology... He only knows whats and Facebook" (sic).

In addition to the rejection of some students for fear of losing focus, it is also perceived the issue related to the lack of specific ability, from the student's point of view, for the administration and use of this tool in the most appropriate way by the teacher in the classroom. It does not seem to be the cyberspace itself a barrier, but rather the fear of the way of using this technology and the ability to handle it the negative conditioning factors for these students.

A factorial analysis of correspondence with the answers sent by the students was also carried out, resulting in Figure 2, in which it was possible to identify common words of great repetition in the text, such as: social, interact, complex, tool, useful, new process, develop, network, knowledge. Although in isolation they may seem disconnected, these words demonstrate the central idea of greater relevance pointed out in the analyzed answers, referring to the greater scope identified in relation to the acceptance of students, and even more, the desire to expand the possibilities of teaching and research.

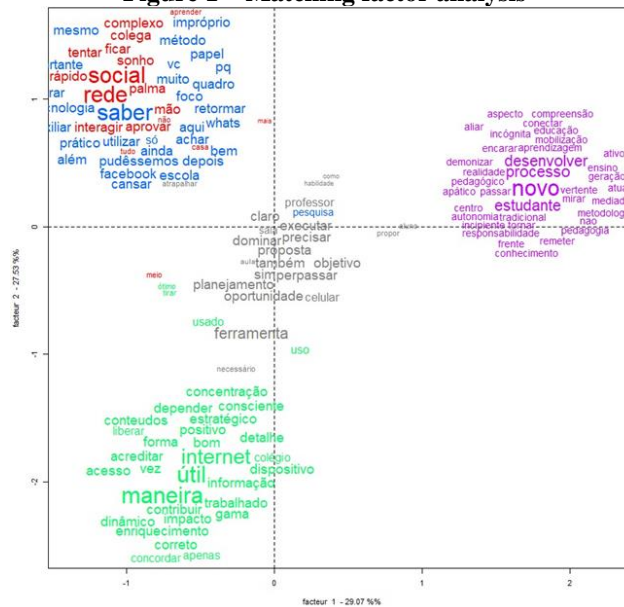
It can be seen in some answers the usefulness envisioned by the student in the use of the cell phone to overcome educational deficiencies, as predicted by Unesco itself, as benefits of *m-learning* in schools, as in the case of answer no. 23, when the student says "It would be great if we could use it in research, tests, the library does not have books for all of us and the computer lab is still small" (sic).

In 17.5% of the answers (7), it was identified as part of the justification for the use of smartphones in the classroom the expansion of the possibilities involved in the research carried out by the students, in one answer only the use to overcome the lack of books was identified. In any case, the lack of a computer lab, or its insufficiency, can be seen as one of the motivating factors for positive responses, in a relevant percentage.

The continuity of the study made possible by smartphones could also be identified in some answers, in which students indicated that they already use the equipment for research and studies at home and perceived the lack of use of the tool in the classroom as well (answers 16 and 32).

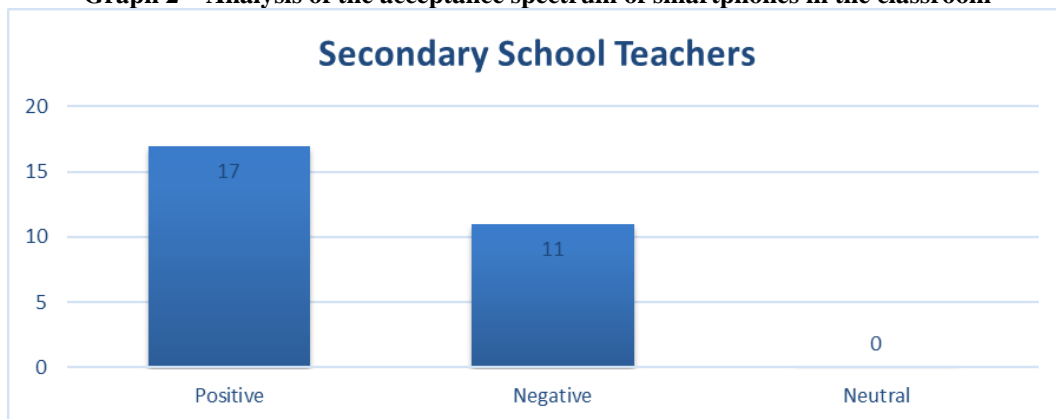
The universe of answers among the teachers to whom the question was referred was 29 teachers. The first analysis carried out, following the method planned here, was regarding the acceptance or rejection of the use of *m-learning* in schools. It was found that 58.62% (17) of the teachers interviewed positively evaluate the use of smartphones in the classroom, while 41.38% (11) of the teachers reject the technological instrument.

Figure 1 – Matching factor analysis



Source: prepared by the authors, 2024.

Graph 2 – Analysis of the acceptance spectrum of smartphones in the classroom



Source: prepared by the authors, 2024.

The evaluation, as can be seen, although it was more favorable, in percentage terms, the adoption of the tool showed a much higher number of rejections by educators. Several factors were pointed out for rejection, but most of them were around a common aspect: the possibility of student dispersion. The question was a common point in 6 of the negative answers, a percentage representation of 54.5%, representing a common point among the rejections.

To exemplify the question, we have answer no. 22:

I am against the use of cell phones in the classroom. Once in the environment where the teaching that aims at the learning, educational or academic formation of the student is applied, *everything that generates entertainment, distraction* to the point of snatching the attention and focus of both parties (teacher and student), will only get in the way (no emphasis in the answer).

The teacher, in his answer, demonstrates a belief that is detached from what has already been researched regarding the use of guided technology in the classroom, demonstrating a prejudice that is reproduced, with greater or lesser argumentation, in the other teachers who were resistant to the use of cell phones in the classroom. Certainly this would become an important point for the application of technology: convincing in order to remove prejudices with the use of smartphones in the classroom.

Among the positive responses, a common point identified was the need for training and guidance for the use of the tool, items that were common in 47.06% of the positive responses. It is possible to infer, therefore, that even if these teachers are favorable, there is a concern about the training of teachers for the correct direction of the tool in the classroom.

Illustratively, answer No. 7 shows the concerns related to training for the correct targeting of cell phone technology in the classroom:

An excellent tool for the learning of our students. But it is extremely necessary that teachers *know how to use* and get the most out of it. Knowledge and technology is a perfect marriage for our students.

Regarding the factor analysis of correspondence of the answers (Figure 4), it is possible to identify groups of words in common, in well-divided spectrums, such as:

- ☐ Negative evaluation: prohibit, disperse, concentration, hinders, interfere, unnecessary, focus;
- ☐ Positive evaluation: didactics, training, teaching, facilitates, economical, important, tool, connection, aggregates;
- ☐ Common assessments: research, concentration, focus, preparedness, performance.

The common point between the answers, although with a different scope, demonstrates the need for training and awareness of teachers prior to any application of technology, enabling the correct understanding of *m-learning* in view of the improvement of teachers regarding the uses and possibilities of cyberculture in the classroom and outside it, in the teaching and learning processes.

There are answers, as in the case of No. 13, which demonstrate the lack of knowledge of some teachers regarding the possibilities given by the targeted use of smartphones in the classroom. The professor states:

I see it as a confrontation for the teacher in the face of planning and its applicability. Dispersing attention and involvement in the interaction of the teaching-learning process, as well as interfering in the teacher/student relationship.

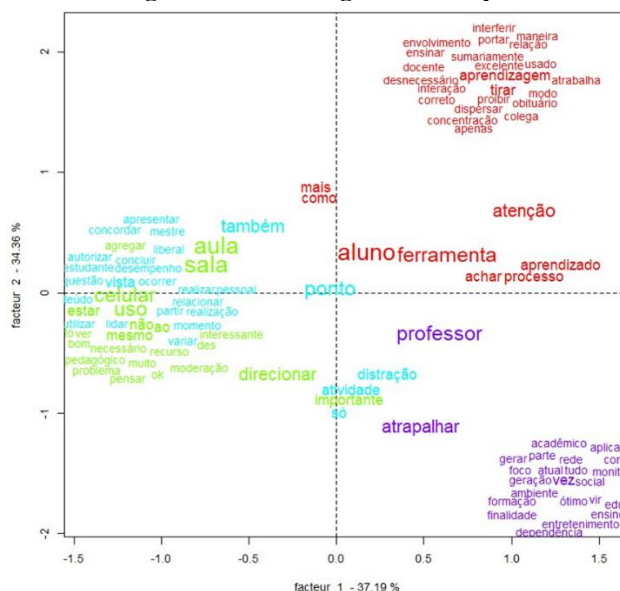
The negative view of the tool, as demonstrated, is permeated by the very lack of knowledge of the possibilities of use, the awareness about the possibilities of aggregating, in the classroom, the instrument, in a guided way, for the enhancement of the teaching and learning processes and also, contrary to the view presented, to expand the interaction and teacher-student relationship, beyond the spatial and temporal limitations of the classroom.

There are other answers that demonstrate, even more thoroughly, the lack of knowledge about the possibilities of *m-learning*, which must be faced in the case of applying technologies, so that the teacher's resistance does not prevent the correct use of the instrument. Among the answers against the use, No. 1 is preemptory: "Incompatible with the purpose.... of the environment.... it should be forbidden for sure." Answer 10 presents a concern about the deviation of use, and the insecurity of the responding teacher for not knowing ways of using and limiting their deviations: "It gets in the way, because the students use it for other purposes, and not to help them in school performance as content research."

Answer 22 causes concern:

I am against the use of cell phones in the classroom. Once in the environment where the teaching that aims at the learning, educational or academic formation of the student is applied, everything that generates entertainment, distraction to the point of snatching the attention and focus of both parties (teacher and student), will only get in the way.

Figure 2 – Matching factor analysis



Source: prepared by the authors, 2024.

It is observed that the teacher analyzes the smartphone tool as an instrument only aimed at entertainment, and that it causes distraction in the student, making it impossible to focus on classroom activities. Once again, there is a need for training, to bring to the teacher the possibilities that can be achieved through *m-learning*.

As for the positive aspects analyzed, some teachers are open to the process of including smartphones in the classroom as a complementary study tool, and not a substitute, as is the case of interviewee no. 7:

An excellent tool for the learning of our students. But it is extremely necessary that teachers know how to use and get the most out of it. Knowledge and technology is a perfect marriage for our students.

In other answers, there is also a timidity in the acceptance of the smartphone tool, despite the tendency to adopt it in the classroom, as is the case of answer no. 29, when the teacher states: "It can be an important tool, as long as there is awareness work, since the dependence on the current generation of social networks can hinder the process".

It is essential that the teacher, in addition to being aware of the possibilities of use, is also trained to be able to keep the students' focus and act as a true guide in cyberspace. The words attention, their synonyms and antonyms also appear constantly, showing the polarization of teachers' sensations in relation to the use of the tool and the capture or dispersion of attention. Attention (and its synonyms and antonyms) is mentioned in 54.55% of the answers against the use of the cell phone, while in the positive answers it appears in 17.65%. Apparently, for those in favor of the use of cell phones in the classroom, there is no concern with dispersion, as there is the assumption of directed and trained use of the tool.

Among the positive responses, the term learning was used in 29.5% of the times, which demonstrates the idea of linking the smartphone with the learning processes in the classroom. Although the percentage represents positively, it demonstrates the need to broaden the professionals' understanding of the possibilities of extending the teaching and learning process beyond the boundaries of the classrooms, making the educational process not only a well-defined segment of time and space, but a perennial process without spatial and temporal boundaries.

IV. Conclusion

Within this research, it was sought to understand the influences of culture and society in the teaching and learning process, and, essentially, to verify the influences of cyberculture on the adoption of *m-learning*, through smartphones, as instruments of educational improvement.

Initially, a study was carried out on social paradigms and their influence on teaching, in which the path from the transposition of antiquity to modernity and then to post-modernity was touched. The technological revolutions experienced in society, and essentially the forms of communication, were seen as decisive factors in the change of paradigms related to the very structure of education in society.

Technological revolutions, in this aspect, are essential points of convergence that have influenced, throughout the historical trajectory, revolutions in education, some gradual and others disruptive. Since the Metallurgical Revolution, communications in human societies have changed, from the coining of phonetic alphabets, and in the very structure of knowledge transmission, which has passed from orality to writing, allowing a greater accumulation of knowledge, and a greater amplitude.

In this same sense, the revolution brought about by the Gutenberg press changed not only human relations, with the dissemination of knowledge allowed by the serial reproduction of books, but also education, based on the popularization of reading, with knowledge increasingly available to the population. The euphoria for knowledge marked the Gutenberg press, in society a cultural revolution emerged, shaking the structures of institutions that once held knowledge and, consequently, the historical narrative, as in the case of the church.

It was from the diffusion of knowledge resulting from the serial reproduction of books and the democratization derived from it that transformations were catalyzed in Europe and throughout the Western world. In McLuhan's terms, the saturation of knowledge generated by the new technology influenced all the knowledge processes of the time.

The studies, previously informal for the most part, moved to an industrial linearity that repeated the method of production and reproduction of books by means of the press. The straight line of the classroom, the reproduction of knowledge from one to many as in the printing press, the architecture of school buildings began to change, in the face of the cultural revolution that originated, before, the technological revolution.

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