



## Understanding the Use of Drawings in the Process of Teaching Learning for Students of the Computerization

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### ABSTRACT

This article is the result of a project developed in the the Instituto Federal de Educação, Ciência e Tecnologia do Ceará (IFCE) - Campus Cedro called "ComputerizAction" that materializes with the offer of a specific course for the female public in the area of basic informatics and also the digital inclusion of these women. The target audience of the course are women over the age of 40, who are in a time of digital vulnerability and who reside in the city of Cedro-CE. This research aims to understand how the use of drawings - in a process of content abstraction in the subject of Informatics - can help in the teaching of learning of the women participating in the extension course. The present work analyzed the activity of students of the Information Systems (IS) course of the IFCE - Campus Cedro, during the inaugural class of the basic computer science course. In this work, the non-participant observation technique was used.

### KEYWORDS

Creative education. Computerization. Basic informatics.

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## Compreensão do Uso de Desenhos no Processo de Ensino Aprendizagem Para Alunas do Curso Informatização

### RESUMO

Esse artigo é resultado de um Projeto desenvolvido no âmbito do Instituto Federal de Educação, Ciência e Tecnologia do Ceará (IFCE) - *Campus Cedro* denominado "Informatização" que se materializa com a oferta de um curso específico para o público feminino na área de informática básica e também a inclusão digital dessas mulheres. O público-alvo do curso são mulheres com idade superior a 40 anos, que encontram-se em momento de vulnerabilidade digital e que residem na cidade de Cedro-CE. Esta pesquisa tem por objetivo compreender como a utilização de desenhos - em um processo de abstração de conteúdos na disciplina de Informática - pode auxiliar no ensino aprendizagem das mulheres participantes do curso de extensão. O presente trabalho analisou a atividade de alunas do curso de Sistemas de Informação (SI) do IFCE - *Campus Cedro*, durante a aula inaugural do curso de informática básica. Neste trabalho foi utilizada a técnica de observação não participante.

### PALAVRAS-CHAVE

Educação criativa. Informatização. Informática básica.

## Comprensión del uso de Dibujos en el Proceso de Enseñanza Aprendizaje Para Alumnas del Curso Informatización

### RESUMEN

Este artículo es el resultado de un Proyecto desarrollado en el ámbito del Instituto Federal de Educación, Ciencia y Tecnología de Ceará (IFCE) - *Campus Cedro* denominado "Informatización" que se materializa con la oferta de un curso específico para el público femenino en el área de informática básica y la inclusión digital de estas mujeres. El público objetivo del curso son mujeres mayores de 40 años, que se encuentran en un momento de vulnerabilidad digital y que residen en la ciudad de Cedro-CE. Esta investigación tiene por objetivo comprender cómo la utilización de dibujos - en un proceso de abstracción de contenidos en la disciplina de Informática - puede auxiliar en la enseñanza aprendizaje de las mujeres participantes del curso de extensión. El presente trabajo analizó la actividad de alumnas del curso de Sistemas de Información (SI) del IFCE - *Campus Cedro*, durante la clase inaugural del curso de informática básica. En este trabajo se utilizó la técnica de observación no participante.

### PALABRAS CLAVE

Educación creativa. Informatización. Informática básica.

## Introduction

Starting from the understanding that we need to make a qualitative leap regarding the teaching and learning processes for the target audience, this paper aims to understand how the use of drawings - in a process of abstraction of content from the extension course in Basic computer science - can assist in teaching participants learning. For this, our process of obtaining the information took place through non-participant observation in the inaugural class.

The work is necessary to document the methodological practice and resources that can be reused by other educators with similar realities, as well as to encourage teachers and students from other areas to seek new ways of teaching and content abstraction.

To achieve the objective of this research, it is necessary to discuss creative learning, which is a technique which, according to Beineke (2012), the student learns imaginatively making the studies more interesting and pleasant, considering that this method of Learning has a more recent approach that seeks to capture both the teacher's and the students' perspective.

Still referring to learning, Fava (2016) points out that this approach consists of developing teaching methods in which the teacher holds the student's attention using non-traditional means, such as: games developed by the teacher to apply the subject or activities that the teacher student can use their imagination to solve a problem.

When we talk about creative learning, we are talking about learning in which students play at exploring, doing, reflecting, doing and mistakes increase self-confidence (FAVA, 2016). To arrive at this form of learning, the teacher must be open to change, that is, to reinvent himself, as he will be able to develop scenarios that encourage learners to learn.

With this method the student is motivated to develop skills necessary for the completion of their activities reaching a higher performance in the classroom. According to Adalberto (2016), creative learning leads the student to a personal transformation from the gain of new skills and knowledge, which occur through the direct participation of individual or collective works that are relevant to those involved, turning them into creative people capable of performing. any activity in the most diverse contexts. The adoption of this method in educational institutions is necessary for the formation of students capable of solving problems, making the use of creativity as one of the key pieces for success in the job market.

The theories that guide the development and learning processes show that the human subject is built through socially constructed knowledge. Paiva (2016) states that education is happening during the evolution of the subject, and that it is developing a process that is not neutral. Learning and knowledge building turn out to be spontaneous and natural processes, not occurring when something wrong is happening to the individual. School learning should

follow the same path, be something that is produced through interactions between the actors of the process, being primarily pleasurable to the student (BOSSA, 2017).

It should be recognized that traditional pedagogy no longer holds, because its understanding of teaching is based on a non-dialogical process. However, the current teaching model differs little from the methods once presented by liberal theories, students are being educated in a standardized manner, still sit in neat rows and must obey and listen to an "authority" on the subject, and of having to prove that they acquired the information passed through an evaluative test (BERGMANN, 2012).

For a moment, we want to point out that there is no a priori recipe to be followed to achieve satisfactory classroom results (BERGMANN, 2012). Attention should be directed from the teacher to the student. From the objective conditions of his reality, the teacher can be a creative subject in order to create learning scenarios in which students can learn what the educator masters.

When we mention the word student, a thought that almost resembles a child image appears almost instantly (BORGES, 2009), we declare student here as any subject who is willing to learn.

Technology has entered society as a whole, where everything is slowly becoming computerized. In this regard, individuals are increasingly creating dependencies on electronic resources, which leads to the need to master these resources (ZENI et al, 2013). This need consumes the various age groups, which inclusion becomes easier in the early age groups because children are already born in this reality, but it harms the older age groups.

Ages over 40 end up being more affected because technology was not natural when these people began to learn and adapt to the environment in which they live. Many times the difficulty of these subjects, leads to a digital exclusion, either because they can not use a computer, an ATM, a smartphone, among other things or for not having access to information recorded and disseminated through these equipment via the Internet.

Given that technology enables subjects to become more interrelated in an electronic community, they can foster relationships with relatives and friends, or even meet distant people in an environment of exchange of information and ideas, where one learns together and reduces isolation bringing a community experience (ZENI et al, 2013).

Thus, it is necessary to discuss and address these possibilities of digital inclusion in the educational environment, so that everyone can have at least access to the basics of computing.

## Methodology

The present work analyzed the activity of students of the Bachelor of Information Systems (BSI) course of the Ceará Federal Institute of Education, Science and Technology - Cedro campus, during the inaugural class of the extension course in basic informatics for women with age. over 40 years. The extension project was devised by the students who make up binary girls, which is a group formed to demonstrate women's interest in computing.

In this work the non-participant observation technique was used. For Marconi and Lakatos (2017), the observation technique helps the researcher to know and get evidence about goals that individuals do not have discernment, but that guide their behavior, and in the case of non-participant observation, the researcher does not interact. with the reality studied.

The inaugural class was held on November 3, 2017 at the IFCE Digital Inclusion Center (CID) - Cedro campus. The ICD has 10 Windows 8 Operating System (OS) microcomputers. At the moment, the researchers observed the event of the class, which was attended by 04 students from the BSI course, the mentor teacher of the extension course and 09 students from the extension course. The class was moved by the presentations of the subjects who would lead it and the contents that would be viewed during the course.

During the last 40 minutes of the class, the educators - BSI teacher and students - handed out a blank A4 sheet and colored pencils to each of the 9 extension students and asked the extension students to draw something that represented the meaning of Information Technology (IT) for them. Upon completion of the drawings - which lasted 15 minutes - the students were asked to transfer the paper drawing to the paint tool available on the Windows 8 Operating System (OS), and finally the students presented their drawings to everyone in the room.

At the time of the presentations, the researchers closely observed the drawings, their meanings and the feelings involved.

## Analysis of Results

During the non-participant observation, the students of the extension course commented on the importance of the course for their lives. Precisely because the activity of representing technology through design has fostered this subject. Some a priori were unsure what to draw on the sheet, but after starting the debate among themselves, they began to better understand how to represent this aspect of their lives.

**Figure 1. (a)** presents a smartphone, which represents the student's link to technology. She did not want such a modern mobile phone, but the market now offers these models, which made her move out of her comfort zone by buying a technology she understands,

within that paradigm this motivated her to seek the course to upgrade more about this new technological reality.

In **Figure 1. (b)** we have the representation of a television remote control which for this student - who is around 60 years old - at the time this change occurred represented a major technological advance by allowing to change channels even though away from the device, which referred to technology as a way to bring comfort to people. Therefore, in the image she associates with a house and a tree that is related to its creation in the site (rural zone).

In **Figure 1. (c)** the student referenced several technology-related images demonstrating the impact, presence, and control that technology has on people's lives. Since she emphasized the issue of control, taking into account that although the technological innovations presented by her in the design (automatic gate, car with alarm, fan and robot) are bringing comfort to people's daily lives, also how this is all related to control, not only physical control (electronic equipment) but the dependence on which the individual is currently linking technology. How dependent she feels on technology for the simplest activities of her daily life.

In **Figure 1. (d)** we can see the representation of a Wi-Fi signal in waves and with the question marks, exclamation and end. For the student the wave propagation is directly related to her growing doubts about this technology, the exclamation represents the answers she expects to find, which is why she sought the computer extension course and the end point is related to her hope. to answer your questions or to adapt to this new technological reality without having to rely more on your children's help for simple activities related to new technologies.

**Figure 1. (e)** shows not only the representation of the student's meaning of technology but also what she wants in her future. Work and use various sophisticated equipment including Apple brand in their daily lives, ascend professionally and financially through mastery of this area of knowledge which she decided to invest at first through the course Computerization. Thus, giving the meaning of 'opportunity' to technology.

In Figure 1. (f) we can see the terrestrial globe, two people communicating on opposite sides of it through the signal waves provided by satellite technology. Thus, she wanted to allude to the ease of communication and knowledge exchange and access to information enabled by technology, how beneficial this can be to building a new knowledge network. But it also stressed the impression that one has to be close to those who are far away but distant from those who are near. And as despite having so much knowledge available the younger people do not seem to delve into anything, as if they acquired a little of each but superficially.

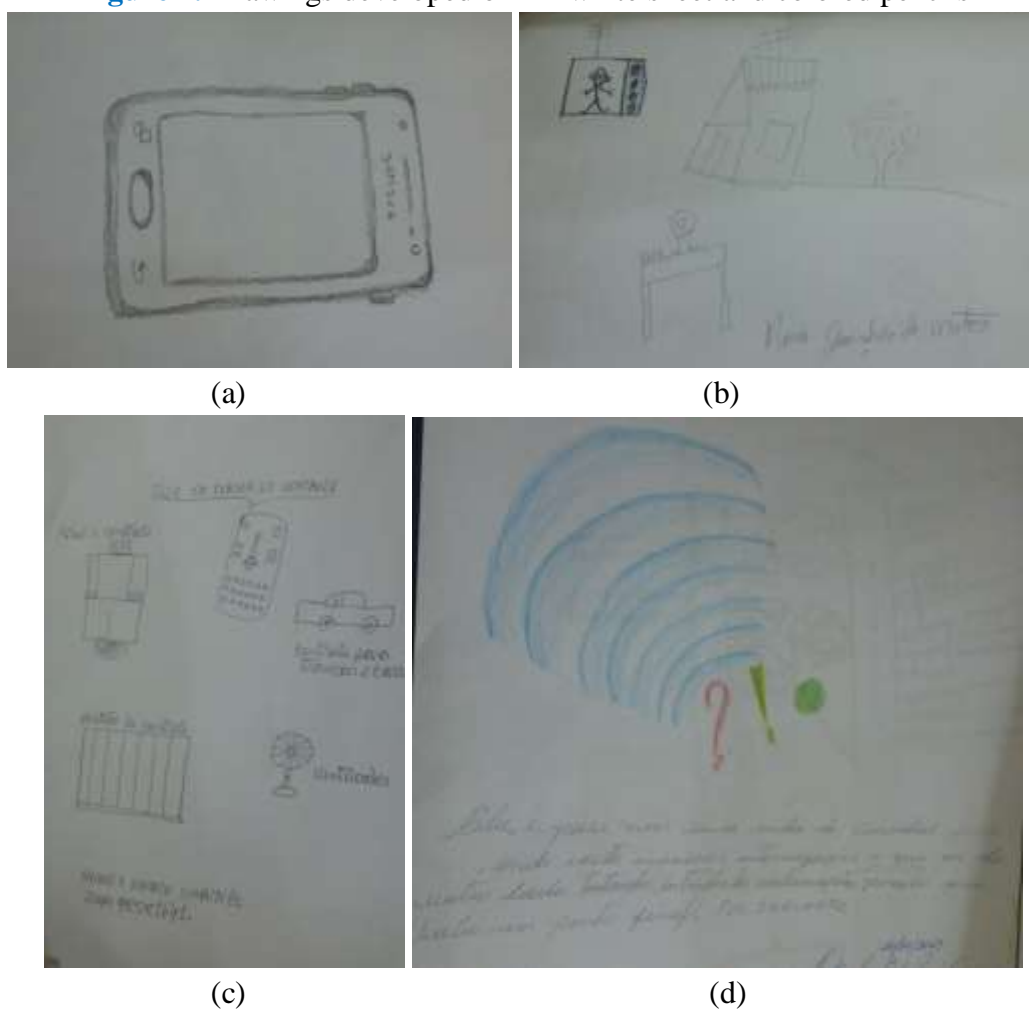
After the first step, the next step was to reproduce the drawing made on paper using the paint tool. More time was devoted to this activity as some of the participants had little or

no experience with the drawing tool. For most of them the computer is seen as a working tool, whether professional or academic and expensive equipment. Therefore, it is little used as a form of leisure by them. With the help of the students who make up the group Binary Girls, the ladies learned the basic techniques of using the tool to reproduce their drawings.

In an overview of Figure 2, it is noted that some drawings were clearly redone, although some elements were left out due to the students' little experience with the tool. As can be seen from Figure 2. (a), (b), (c) and (e).

Some showed a higher difficulty in manipulating the mouse, for them the exception was made to manipulate the tool without sticking to the drawing so that they developed affinity and made it possible to increase their motor capacity using the peripheral. Even so, they wanted to draw a picture related to technology representation. **Figure 2. (d)** represents a balloon indicating communication, and the symbols are analogous to another language, thus technology as an alternative form of expression.

**Figure 1.** Drawings developed on A4 white sheet and colored pencils





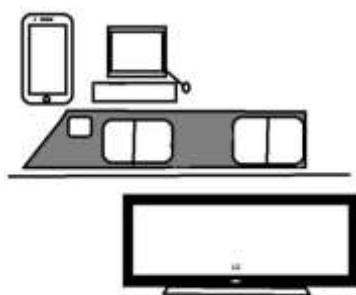
(e)



(f)

Source: the authors.

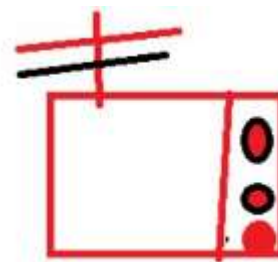
**Figure 2.** Drawings developed in the paint tool.



(a)



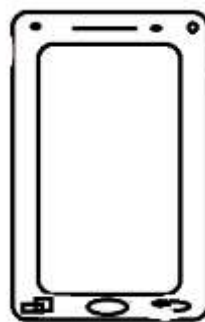
(b)



(c)



(d)



(e)



(f)

Source: the authors.

**In Figure 2. (f)** the student wanted to demonstrate that even with the difficulty of using the mouse or drawing tool features, she was enjoying the activity, mainly because she had the opportunity to manipulate the features freely offered.



## Conclusions

Through the non-participant observation of the students of the extension course in informatics it can be noticed through their pictographic representations and comments while developing the activity, that learning to manipulate the present technologies is closely linked to the sense of freedom making them independent. the goodwill of others to perform daily activities such as using ATMs, using social networks, search engines and the most modern technological equipment such as smartphones, smart TVs and the computer itself.

In addition to independence, technology for them also means comfort, communication and control. Be in control of yourself through the mastery of technology, that is, the feeling of being controlled by technology for not knowing its full potential. Thus, they showed awareness of the positive and negative aspects provided by technological advances. Fear of negative aspects is one of the motivating factors in seeking knowledge about the proper use of this area of knowledge.

The objective of this work was achieved when it was understood that the use of drawings in an abstraction process in the teaching-learning process to explain the concept of Information Technology can be used successfully. In the inaugural class of the extension course it was possible to see through the private joy of each of the classes, the importance that they gave to technology and the fact that, being excluded from the technological environment - for not knowing or mastering it - it bothers them. It was also found that through the drawings, the extension students could abstract the concept of technology from the inside out, which can help them to remember all the conversations about Information Technology, remembering only their “particular art”.

As future research, this specific group of students will be monitored to evaluate how they will use the knowledge acquired during the extension course and which aspects of their lives will improve.

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