

CRITICAL THINKING TO BUILD CREATIVE SOLUTIONS: PROLEARN4ALL PROJECT CONTRIBUTIONS

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1. INTRODUCTION

The Learning Products for ALL (ProLearn4ALL) is a project created to increase the knowledge of primary school children on Special Educational Needs (SEN) in a recreational-pedagogical way. The project has been carried out by a consortium of Social Sciences, Education and Arts Faculties, conceiving a collaborative platform where students, professors and researchers create synergies of knowledge for the benefit of local communities in what regards to social inclusion.

This process grounded on Problem Based Learning (PBL) methodologies has as its main phases: conceptualization and prototype of the products; pilot test; revision of the outcome, reformulation and validation; and, making and dissemination. The strategies applied encouraged the team to find creative and critical possible solutions to develop a kit with products that would make children aware of SEN.

This paper aims to present the PBL methodology as an active process to develop critical thinking in order to propose prototype solutions for non-routine problems (Ulger, 2018).

2. METODOLOGY

For the Prolearn4ALL project, a kit was developed with different types of ludic-pedagogical items, such as books or games that aim to make children more conscious about differences on others. During the products conceptualization and prototype phase, to contextualize the four major domains of disability, students in the areas of Social Sciences and Education were challenged to freely create products that highlighted the characteristics of each domain. In this sense, the students proposed the creation of characters, in order to represent specific types of disability (motor, visual, hearing, intellectual). A text was created for each character, as a way of presenting them, focusing on their main features. In order to transmit a positive message, there were no explicit comments about each character's condition, reinforcing their differences as specific characteristics and their main abilities.

Based on the texts, students in the areas of Illustration and Graphic Production made several illustration narratives in Leporello format. The students were asked to create ludic pedagogical and accessible work to raise awareness of young children on SEN. The Leporellos were developed with cut-out techniques and simplified shapes. Regarding color, the chromatic palettes were tested to function as contrasts (complementarity, saturation, temperature). As part of the methodology used, students were challenged to put themselves in the places of people with disability by using specific restrictions, created as thematic introductions to the proposed problems. In this sense, the prototypes production was made with a higher level of conscience as students were simultaneously placed in the roles of creators and users.

Working on a Leporello for deafness, all students were invited to use headphones, in classes, in order to experience lower levels of hearing or no hearing ability while working creatively, inhibiting or not allowing verbal communication between each other and between themselves and the teacher. While working, students had to find alternative ways to communicate ideas and images without speaking.

Working on a Leporello for blindness, the students were invited to create simple and expressive work by cutting silhouettes and textures with scissors. While blindfolded, they also tried to identify through tact the work produced by the colleagues.

Working on a Leporello for mobility difficulties, the text describes a child who is in a wheelchair. As one of the class students was bound to a wheelchair in his daily life, his shared experience served as a leading example.

The presence of a student with motor disability as well as some other students that have siblings and friends with autism was an asset during production, helping to a better understanding of some particularities of people with SEN. The recognition of specific characteristics and difficulties, contributed to the creation of the graphic products with an added value. By working with these specific points of view, testing possible solutions, discussing the work in progress with each student and with the whole class, the graphic products gained specific characteristics, such as in its size, its format and way of book openings.

Placing the students in a position of experiencing some amount of disability, through the creation of restrictions, stimulated a continuous reflection on these people's features and their possible differences, namely: about the use or not of complex forms that influence visual and haptic reading when in composition; about the use of color and contrast; about the amount of relief to be created, the ratio of tactile readability to the size of each character and the spacing between the characters, also allow the reflection about tactile reading of information presented simultaneously on the front and on the back of paper sheets.

These considerations, generated during and after several phases of exploring and production, allowed a constant process of validation and exclusion of proposals. Reflecting while producing allows to find different ways to explore materials and achieve improved solutions. Reflecting on the production act allows to analyze the choices and tests carried out, pointing to conclusions. In this sense, sketches, mock-ups, prototypes have emerged as means to test and establish hypotheses in the quest for communication. Experimentation, often intuitive and casual, was tested and created knowledge, "there is a two-way relationship between the research problem, the goals, and the associated research questions and/or hypotheses" (Ellis & Levy, 2008, p.20).

The working method allowed the creation of differentiated solutions for each of the books that intends to contextualize the four major domains of disability, by considering the proposed goals to achieve, the continuous exploration of themes and specific restrictions, the feedback, and graphic accessibility issues. This method fed a production that became conscious and that progressively (step by step) constructed the proper body of product. A body impossible to imagine in the beginning of the project, that emerges as a consequence of the successive search for creative and critical solutions.

3. FINAL CONSIDERATIONS

The ProLearn4ALL project sought, through a problem-based methodology, to stimulate critical thinking in higher education students as producers of creative solutions that met two purposes: raising the awareness of primary school children for difference in human being, and the construction of accessible products in multiformat.

"The starting point for learning is a problem, not a theory" (Hallinger & Bridges, 2016, p.3). The process of trying to solve illustration and communication problems by creating empathy towards the people that are the target audience, resulted in graphic objects that allowed students growing as individuals and as creatives. By allowing the work to find individual paths and possible solutions in a creative, critical and pondered way, the students progressively showed less concern with the

application of preconceived formulas, placing their focus on the individual development of each product and idea. Solving problems by first experiencing restrictions helped finding different research paths and different graphic solutions, helping each student to find specific variations and interests during the development of their proposals.

These students became active performers in the process of finding ways to solve nonroutine problems, instead of adopting a passive stand and apply previously tested methods and solutions that had already been implemented by others.

4. REFERENCES

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