

Preschoolers developing words and worlds

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Abstract: This is a participatory project developed in a Portuguese kindergarten and organized into two phases. The first is the development of a multidisciplinary activity plan made for and with children. The goal is to work with children in a TALK area inside the classroom to improve language, and to initiate them into Information Communication Technologies (ICT) skills promoting Media Education (ME) as well. In Portugal, ICT integration is rarely implemented at kindergarten age, and frequently uses dependent technologies (requiring adult assistance). On the other hand, in literature tangible interfaces are considered a good approach to fulfill child abilities and start digital literacy. The second phase intends to update a low-cost manipulative to the same end: a digital flannel board. Nevertheless, children are its design builders, and as co-researchers they will plan, execute, explore, play and evaluate their own interface.

Introduction

This paper consists of a participatory project with preschoolers. It began in a kindergarten from a Private Institution of Social Solidarity, in the vicinities of Braga, Portugal. It is in a rural area, often isolated and marked by emigration, where there are low rates of birth and literacy [Lopes 01].

It started with an exploratory observation in which informal talks with educators and children took place to identify their needs. On one hand, children wish to be heard, to participate and are willing to work with technological materials; on the other hand, teachers expect to find more support and training in this experience, in order to be better prepared and adjust their approach to the ICT content area [field note] - as is expected under Portuguese curriculum guidelines [M.Edu.97; M.Edu.09]. However, educators fear the innovation, the material's fragile features and believe they lack sufficient training - Marta, one of the kindergarten teachers who joined the project said - *Our institution does not have any technological resources, they are expensive and fragile, and I don't have enough training for teaching ICT*; for that reason ICT activities never took place in this center [field note].

According to Amante [07], Valdozende's case is not unique. Indeed, since ICT integration in preschools is unusual, this paper could be a useful contribution in the area of ICT practices. In general, Portuguese kindergarten institutions have limited commitment to ICT, probably because they are mainly private and poorly supported by the Ministry of Education [OECD 06]. Also, in preschool education, there is a lack of equipment [Amante 07] and when it exists, it is inadequate to meet the needs and abilities of these children, who have not yet mastered formal writing [field note].

However, tangible interfaces (TI), physical low-cost objects with computational properties and simplified language, are an alternative to expand children learning - as it is in project TOK [Sylla et al.11a].

Challenged by this Portuguese kindergarten case, where children and teachers are not familiar with technologies or making use of tangible interfaces [Sylla et al.11b; Marshall 07], the Project Training Autonomous Languages in Kindergarten (TALK) will be initiated [HLM].

This project is a participatory action research initiative [Coutinho 11], and therefore an effort at interventions will be made in order to produce the construction of new knowledge and learning in children. Summarizing, in light of the discussion on the meaning of literacy and digital literacy, a plan of activities will be presented and justified. It consists of several transitional elements, some more metaphorical than others (see Designing an Activity Plan), as in the case of Papert's turtles [Papert 80] (that were made to develop mathematical concepts). Children will be able to play, explore, learn and evaluate [Resnick 07] with this collaborative construction of an interface that promotes ICT skills.

Besides the main products of an action research project, which are positive changes in the participants [Coutinho 11], the other expected byproduct is the digital manipulative that will result from the transformation of a flannel board manipulative into a tangible flannel board interface [HLM].

The flannel board, a low-cost manipulative that has long been used at different grade levels for storytelling [Niérci 91], particularly in kindergartens [Diller 03], offers children free exploration and reconstruction of ideas. It

probably appeared in the fifties, and some authors consider it as a complement of the blackboard. A flannel board is composed by a base and flannel figures. The base may have any aspect or configuration, provided that it is rigid, (e.g. card) and typically flannel and felt are used. Figures can be of any shape. If made of felt, flannel or wool, just a slight pressure is needed to be attach them to the base; if made of any other material, sandpaper or Velcro will serve the same purpose (fig. 1/2) [HLM].

Figure n.1 –TALK flannel board overview, foldable back cover in felt, with flannel figures and pocket



Figure n.2 – Storytelling with a flannel board

The TALK project intends to update the flannel board, which is thought to enhance storytelling. It is known for enhancing children's communication skills and likewise it will also promote ME and ICT literacy by broadening children's words and worlds. In the end, only one interface will be built and tested according to the children's decision (see Design a Digital Flannel Board).

Conceptual Framework for TALK

Since our study intends to contribute to the research on the field of Childhood Studies and Social and Cultural Development, the theoretical framework will focus on the Freireian model of emancipatory literacy [Freire & Macedo 87] and on children's play [Drummond 98].

Developing Functional and Critical literacy

Literacy is a multidisciplinary area of study with several approaches [Beach et al.05]. For decades, Paulo Freire struggled for the cause of freedom through literacy education [Freire 00]. He considered literacy as a means to promote freedom and citizenship, in which "literacy becomes a meaningful construct to the degree that is viewed as a set of practices that functions to either empower or disempower people" [Freire & Macedo 87:14].

Literate people are those who recognize and understand multiple discourses [Freire & Macedo 87]. Also Giroux stated that literacy is reading words and worlds [in Freire & Macedo 87]. Although distinctions are made between different forms of literacy by different authors, the ones that we will highlight are functional and critical literacy.

Since 1997, multiple forms of language and communication have been listed in Portuguese Guidelines for Preschool Education (OCPE) including ICT and ME. Its approach for writing does not necessarily predict formal writing; instead children are allowed to read and decode reality, and determine their value and use [M.Edu.97] Thus we are in the presence of functional literacy (training and using language skills) [Freire & Macedo 87].

Interacting and operating with some ICT resources and different forms of registry and recording will enable children to master communication skills and some of the grammar of these resources (e.g. play, delete, pause), which may arise later at TI.

The educator's task is to help children to gain confidence in themselves, in their own world, but also to let them become amazed and experience new worlds [M.Edu.97]. It is positive to stimulate children's hearing and reading, with critical sense, even if it is not yet a formal one [Making the Grade 09]. However, according to the recommendations of the European Union, education should emphasize child safety and safety behaviors towards the media [EU Recommendations]. For that reason, aiming at ME, an effort at critical sense in all child productions and sharing will be made.

TALK also intends to enhance individual identities and expressions in order to give voice to children and to promote children as a social group with rights of participation [Fernandes 05]. Thus the project promotes the relationships between children as a group and social and cultural development activities will be emphasized. Dealing

with digital recorders and other audio technologies implies specific conditions for it to be a true participant project, therefore a TALK-area inside the classroom will be created [Gallagher 06].

Learning with *action learning* and children play

In this project, symbolic play will have the greatest relevance. For instance, Drummond considered play and imagination fundamental in preschool. “Imagination is both necessary and universal” [Drummond 98: p.342]; it is part of human intelligence, and needs to be cultivated, all of which implies that both intelligence and feelings must be developed in the pedagogical process [Drummond 98]. Thus imagination and playing are design goals for TALK and will have to be part of the initiative, not only because they help children to assert themselves both as individuals and as a group, but also because imagination is implicit in TALK activities such as acting, playing and inventing new games freely, like messaging ideas, objects and thoughts.

Like Drummond, the Reggio Emilia approach is a reference for the TALK project, the pedagogical model emphasis on the *Hundred Languages of Children*, in other words, “children are eager to express themselves in a plurality of symbolic languages ...[they] are open to exchanges and a reciprocity as deeds and acts of love they not only want to receive but also want to offer” [Edwards et al.93: p.101-2].

Preschool Design and Technology content area is not well established in Portugal or in its OCPE. TALK will focus on this gap, providing children with pedagogical play, critical reflection and productions rebuilding, through cards, exchanges of messages, words and number games and voice recording, professions areas and its materials (from the year Pedagogical Project). This will allow investigators to get in touch with some of the children’s worlds and children to get to know new worlds.

This way, the knowledge construction expects cooperation, collaboration, interactivity and dialogue, which for so long have been described as potential learning and are today’s school challenges [Coutinho & Alves 10]. For that, kindergarten learning and curriculum are well known, as Resnick [07] emphasized in lifelong kindergarten experiences.

Designing an Activity Plan –A Multidisciplinary Perspective

Creating a safe TALK space with ICT. Preschool education is considered the first stage of lifelong learning [M.Edu.97]. For its importance, this learning process should be orientated for an entire life [Making the Grade 09], ICT have tools that promote spaces for dialogue and democracy and both are needed from an early age [Fernandes 05; Moss 06] as the TALK area. Assuming that no one educates anyone, no one educates himself, but that men are educated by each other, mediated by the world [Freire & Macedo 87] and that some ICT tools are collaborative, the social aspect of learning will also be made [Coutinho & Alves 10]. For that reason, the construction of a physical and virtual learning network will be planned. This will be done by a closed network classroom, which will simulate larger networks, to ensure the proper compliance with OCPE and EU care in safeguarding the use of ICT and education for the media.

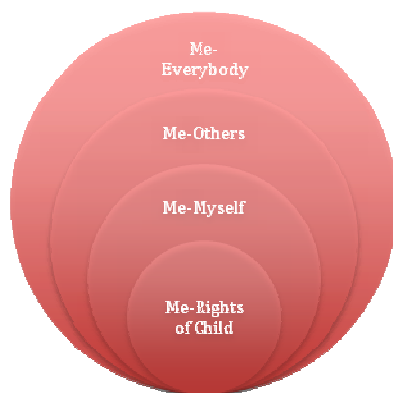


Figure n.3 – Growing circles of knowledge (of the world)

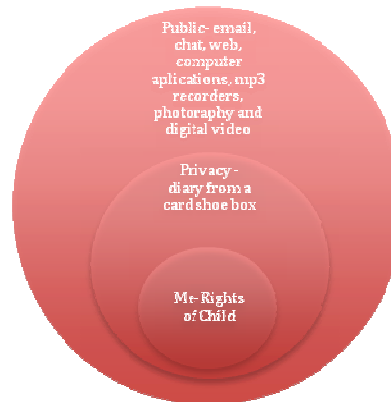


Figure n.4 – Growing circles of learning

Growing circles. One of the goals of preschool education is to safely include children in wider circles/worlds [M.Edu.97] (fig.n.3/4). Subsequently, and taking Macedo’s experience examples, the activity plan that we propose will advance from individuals to pairs and then to the wider group. It will always start with what

children know, their worlds and thoughts. “Deciphering the word flowered naturally from reading my particular world; it was not something superimposed on it. I learned to read and write on the ground of my in my backyard of my house, in the shade of the mango trees with the words of my world rather than from the wider world of my parents. The earth was my backyard, the sticks my chalk.” [Freire & Macedo 87: p.32]. The learning process will start on an individual dimension, like wills, dreams or secrets, to become representations and ideas from social consciousness from the class group [Freire & Macedo 87] (fig. n.3).

Valuing all voices. We intend to value the individual and creative languages by developing an educational action towards words and worlds of every child, as Reggio Emilia’s preschool model had stated by considering that a child, a rich child, can express himself with a hundred languages [Edwards et al.98]. For this, an effort to emphasize the use of different languages such as oral, written, pictorial and digital will be made.

Project Stages (fig.4)

1. Child as a subject of rights: Rights and duties of the child; authorized consent and signature collection of children [Fernandes 05], presentation and collection of new project proposals for TALK.
2. Creation of individual identity: 2.1. From a cardboard shoe box. Projecting what each one is, feelings, dreams and desires, as in a self portrait 2.2. The secrets and privacy – support from children's literature [Cavalcanti 06].
3. Me and the others [Sarmiento et al.11] - Communication, social act, sharing of messages and notes, ideas, thoughts, email, how the dialogue enriches us. Support from children's literature and strategies for social animation.
4. Me and everybody [Sarmiento et al.11] - the power of one and all, speak with one voice, chat, sense of democracy and participation.
5. Evaluating results and selection of the materials and resources that best suit the study [Fernandes 05].
6. Construction and interaction with the digital flannel board digital (TALK - phase 2)

Design Process of a Digital Flannel Board

The flannel board has been known as a very versatile resource [Niérci 91], just like TALK, that allows children a micro-network, simulating larger networks, where it is possible to have a diary, asynchronous communication through e-mail and a forum. This simulation, accomplishes guidance intents to help children to develop skills in ME. As Resnick suggested, “children need new toys to think with”, toys that are flexible enough and that enable children to construct their multiple thoughts [Resnick 07]. TALK, a digital manipulative flannel board that updates email, diary, forum and TALK talent, allows users to easily create, re-create, interact, share and learn with their own digital content.

TALK transports and transforms the flannel board’s educative qualities to the twenty-first century, in order to give it digital characteristics, however, it will be a low-cost one with layers, folders, collage and overlays of fabrics, crayons, felt pens, sandpaper, paper, buttons and glue. Plastically, it is also possible to create their self-portraits, or other creations, like toys and softies. TALK components are: a flannel board, 4 layers, several flannel figures or softies (which correspond to each child in the classroom), action buttons, warning lights. Children can choose the appropriate layer depending on the type of TALK communication desired, and adjust their behavior accordingly to a more private or public nature of the communication [HLM].

The use of TALK, can allow preschoolers to take early contact with TI and ICT skills such as using a voice diary, a voice email, or a forum. At all times, physical and virtual interactions are experienced.

The functioning principle in every layer of TALK is a simple syntax in which the sender records an audio and selects an individual or group receiver, except with the diary layer, in which the recording is not to be shared. The buttons to perform the tasks are identical to the ones of any audio interface for recording, playing, deleting, forwarding, plus one button for sending the message. The purpose of different layers is to allow the appropriate kind of audio recording, as well as different addressing possibilities for each function. The following functions could be suitable for using TALK in a kindergarten:

Net-Mural/chat - a computer network that belongs to everyone. Topics can be launched by anyone, for the class or just a few. E.g.: for the teacher to solve a dispute between children and ask what happened, to decide the next study trip, etc. It is a space for sharing, discussion and clarification. Works with the base combined with the sender and recording figures. It can be added to another thematic paper layer, provided it has the respective openings, so each student can interpret their opinion and express it in other ways.

Diary - it is personal and intimate. For customization and an even more private appearance, children could create their own diary layer. Works with the individual figure and record buttons.

Voice mail - a method for exchanging digital audio messages from an author to one or more receivers.

Talent Talk - This contest is for everyone, rhymes, anecdotes, poems, legends, music, and songs. Children record their performance and share it with the group. Children can later evaluate it by attaching a star softie to the board to express that they “like” it, and comment using the recording function.

As a result, by imagining and building their own figures to support their expression, by decorating each layer, and by using TALK in every way, children will be developing their literacy and social education, in a playful and appealing way.

Final Remarks

The rapid evolution of ICT has provoked an updating of the concept of literacy all across the world. There is a growing investment and recognition of ICT as an area of knowledge that is essential for everyday activities. ICT, as a content area in kindergarten is rather new in Portugal – since 2009. However, since 1997 it has been represented at the curricular level. Contradictory, it is not commonly regarded in educational practices and in the equipment of schools with a set of devices that are needed and adequate for children.

Among the numerous updates of the concept of literacy, it is important to note critical literacy, as it implies reflection and judgment. As for digital literacy, many authors, educational policies and associations defending the rights of children, consider this critical judgment as necessary and urgent to implement.

On the other hand, another major development regards Educational Studies, in which children self-assuming as a social actors with its own voice. The Reggio Emilia model proves to be pioneering while children have an effective participation through languages they already have mastered.

So with TALK, a multidisciplinary approach of Social and Cultural Development will be proposed that promotes literacy with digital resources from proposals suggested and devised by teachers and students, according to their own languages and capabilities.

The first stage of TALK project is now presented. It consists of a transitional learning process for TI based on a digital flannel board, and its design process. It empowers children and their languages, by learning ICT skills and simulating wider networks on the web. Finally, we want to highlight the democratic spirit in TALK, or this would not be a participatory action research.

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