MEDIA AND ICT AS PROMOTERS OF SCHOOL READINESS: BELIEFS FROM PARENTS AND YOUNG CHILDREN

Carla Sousa

CICANT (Centre for Research in Applied Communication, Culture and New Technologies) Universidade Lusófona de Humanidades e Tecnologias, Lisbon, Portugal
carla.patricia.sousa@ulusofona.pt

Abstract

The present study aims to explore the results of an educational practice that implemented ICT as a promoter of School Readiness (SR) in pre-schoolers from an economically disadvantaged area. It intends to: a) Document the effectiveness of the practice in terms of concrete and measurable SR outcomes; b) Characterize the possible drivers and barriers of implementing such practice in preschool, gathering the perceptions of children and their parents.

The intervention took place in a public preschool in Lisbon surroundings, during 4 months (16 sessions of 60 minutes each). The final sample includes 22 preschoolers and 12 parents.

The mixed methods research design included scales, systematic observation and interviews with both children and parents.

Main results emphasize: the improvement of SR in children, with statistically significant results between pre and post intervention assessment; the perception of a high educational value attributed to the intervention by both children and parents; and the beliefs of parents about ICT, mainly grounded on risks, emerging from their notion of being less empowered than their children in using it. These results also highlight the discussion on how to empower parents with lower educational levels to raise children in a highly digital world.

Keywords: Children; Parents; ICT; Media; School Readiness.

Introduction

School Readiness (SR) is a broad and complex concept with a considerable number of different definitions and discussions around the conditions for its promotion (Britto, 2012, p. 4). Although there are several specifi aspects in each definition there is almost consensual that SR represents a composite of the readiness of an individual child and that of the environment into which she/he enters when starting school (Blair & Raver, 2015; Kagan & Neuman, 1997). Moreover, SR is understood as a multidimensional and complex concept (Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006; Hughes, White, Foley, & Devine, 2018; Majzub & Rashid, 2012), where three different dimensions must work in tandem, namely: (1) children's readiness for school, focusing on learning and development; (2) schools' readiness for children, focusing on the school environment and practices that support the transition into primary school, and (3) families' and communities' readiness for school, focusing on parents and caregivers attitudes towards this transition (Britto, 2012, p. 7).

The present study aims to explore the results of an educational practice that implemented ICT as a promoter of SR in preschoolers from an economically disadvantaged area. It intends to: a) Document the effectiveness of the practice in terms of concrete and measurable SR outcomes; b) Characterize the possible drivers and barriers of implementing such practice in preschool, gathering the perceptions of children and their parents.

Research Design

To operationalize the above defined research aims, a multi-method research design was adopted, allowing this research to better understand the phenomena, while operating at different levels of the educational ecosystem (Elliott, 2007; Tobin & Ritchie, 2012; Vittadini, Carlo, Gilje, Laursen; Murru, & Schrøder, 2014).

The mixed methods research design included: a) Baseline and endline assessment of preschoolers using Pré-Escolar - Scales of Preschool Diagnosis (Cruz, 1993) to evaluate SR, and semi-structured interviews, to gather data about their perceptions on ICT, media, SR and also on the project itself; b) Observation grids filled in each session, to systematize data about the most frequent expressed behaviors, perceptions and difficulties of children; c) Semi-structured interviews to parents, after the end of the intervention, about their main beliefs on the role of media and ICT in their children's lives, perceived risks and opportunities, and about their experience in cooperating in the project's activities. All the phases of this research design are represented in Figure 1.

Session 1	Session 2-15	Session 1	
Baseline Assessment -Scales of Pre-school Diagnosis -Semi-sctructured interviews	Observation grids fillin	*Endline Assessment* -Scales of Pre-school Diagnosis -Semi-sctructured interviews	Semi-structured interviews with parents
Intervention (4 months/ 16 sessions x 60 minutes)			

Scheme of the adopted Research Design

The Pré-Escolar - Scales of Preschool Diagnosis (Cruz, 1993) is a tool for the assessment of the basic components involved in the school learning process. Its main aim is to evaluate each children maturity to begin the formal schooling process, being developed to be used at the end of preschool. The application of the scale takes around 60 minutes. The scale subtests allow partial assessments in the following areas: verbal (with a maximum possible score of 16); quantitative concepts (with a maximum possible score of 14); auditory memory (with a maximum possible score of 7); shape constancy (with a maximum possible score of 12); space positioning (with a maximum possible score of 14); spatial orientation (with a maximum possible score of 16); visuomotor coordination (with a maximum possible score of 12); and figure-ground discrimination (with a maximum possible s ore of 9).

The scale is adapted and validated to the Portuguese population, with a moderated internal consistency, with a Cronbach's alpha ranging between .32 e .95 (N = 758).

Intervention

The intervention was held during the 2016/2017 school year, in a pre-school in Lisbon surroundings. Weekly, the group of students was divided in two subgroups, of eleven students each, to attend to an atelier of school readiness promotion, during 60 minutes.

The intervention was based in the first dimension of SR, as defined by Britto (2012, p.7) as the children's readiness for school, focusing on children's learning and development factors. The main intervention axis were defined considering the three domains that are framed in this dimension of SR, namely: learned behaviors; attitudes and emotional competence, and developmental maturation (Britto, 2012, p. 10).

As described by Macdonald and McCartan (2014), there are several main areas that have been adopted as focus in interventions aiming to promote SR. In this study, the main emphasized areas are: social and emotional development; approaches to learning; and cognition and general knowledge.

The main tools or materials used in this intervention were ICT/media based, as well as the projects developed by children. Videogames were an important tool to stimulate cognition. Small animations were mainly used to stimulate emotional development. Project-based learning (PBL) was used to promote the approaches to learning area, including small searches on the web and content production, using tools, such as Microsoft PowerPoint or Microsoft Paint. The promotion of social development was aimed by working in groups in each project, as well as by presenting the works to the rest of the group. It is relevant to highlight that these skills are not independent or mutually exclusive. Therefore, regardless of this detailed aimed, the areas of competence were promoted in an interconnected manner.

The projects developed by children were simple and adapted to their development level. The main themes approached in the projects were related with future, professions and life projects. Another relevant aspect of the intervention is that each task developed by children was accompanied by a critical analysis and/or refl ction activity, based on the idea that the processes in which children make meanings and construct their own understanding of their world is often more important than the final outcome (Tay-Lim, 2011).

Sample

In this study, a convenience sampling procedure was adopted. A sample of 22 children from a preschool class were included. This preschool was part of a public school in Lisbon surroundings classified by the Ministry of Education as an educational area of priority in terms of intervention and characterized by households: with low socio-economic status; employment precariousness, or outright unemployment; food shortages; fragile health and hygiene conditions; problems of social exclusion; and a high rate of ethnic diversity. Considering the school's pedagogical project, the main problems are lack of interest and discipline, weak engagement in the learning process, low attendance and frequent failures in each grade. The final sample was composed by 22 preschoolers, aged between 5 and 6 years old (M = 5,50; SD = 0,51), seven females and 15 males. Afterwards, the parents or educators of each child were contacted by the school director, in order to be interviewed at the end of the intervention. The final sample of parents was composed by 12 parents (mothers, father and one aunt) aged between 20 and 39 (M = 25,33; SD = 4,84), nine females and three males. The parents have between 0 and 12 completed years of schooling, with an average of fi e completed years.

Data Analysis

The gathered data was analyzed in two distinct manners. Data from Pré-Escolar - Scales of Preschool Diagnosis (Cruz, 1993) were analyzed first considering the guidelines manual of this measure, considering the defined dimensions, and after using IBM SPPS, version 20. Results from each dimension don't follow the normality criteria, hence results between baseline and endline were analysed using Wilcoxon signed ranks test.
Data from the semi-structured interviews to children in baseline and endline and the semi-structured interviews to parents were analysed using a content analysis procedure, with a specificall developed coding system, and the NVIVO software, version 11.

Results

The results from Pré-Escolar - Scales of Preschool Diagnosis (Cruz, 1993) show the existence of statistically significant differences, between baseline and endline assessment scores, for all the dimensions of the scale, as shown in Table 1. These results include the existence of a statistically significant difference between the total score of the scale (p = .000), between pre intervention assessment (M = 59,36; SD = 20,29) and post intervention assessment (M = 63,73; SD = 19,258).

Table 1.
Results from baseline and endline assessment (N = 22)

	Baseline		Baseline		p
	M	SD	M	SD	
Verbal	10,59	3,64	10,86	3,56	0.34
Quantitative concepts	8,45	3,59	8,77	3,39	.008
Auditory Memory	3,32	2,23	3,64	2,08	.008
Shape Constancy	7,55	2,90	7,95	2,71	.011
Space Positioning	8,36	4,11	9,18	3,97	.000
Spatial Orientation	9,73	4,72	10,54	4,55	.000
Visuomotor Coordination	6,55	3,34	7,50	3,14	.000
Figure-ground	4,82	2,68	5,27	2,622	.007
Scale Total	59,36	20,29	63,73	19,258	.000

When triangulating these data with the content analysis from the observation grids it is possible to highlight the decrease in the prevalence of behaviors coded as "difficult in developing the task" or as "difficulties in language", throughout the intervention. In session 2, for example, the most prevalent coding is "difficulties in language" (14% of all the coded observed behaviors) and in session 14 the most prevalent coding is "successful completion of the project" (21% of all the coded observed behaviors).
By analysing the engagement in the sessions, it is also possible to highlight the higher frequency of engagement behavioral expressions in tasks associated with media usage, like playing a game or watching an animation, than in tasks associated with media production, like creating a small Microsoft PowerPoint presentation. Nevertheless, the engagement seems to increase throughout the intervention too. For example, in session three the most prevalent coding is "lack of attention" (19% of all the coded observed behaviors), but in session 11 the most prevalent coding is "having fun" (23% of

all the coded observed behaviors), followed by "engaged in the task" (17% of all the coded observed behaviors).

Another result from the analysis of the observation grids is related with autonomy. While in sessions two, three and four the "autonomous performing of task" ranged between 4% and 7% of all the coded observed behaviors, in sessions 13, 14 and 15 the same coding ranged between 20% and 23%.

In the field of constraints for this ICT based intervention in preschools, it is important to highlight the prevalence of situations coded in the grids as: "constraints with computer's availability" (5% of all the coded material); "constraints with Wi-Fi network" (4%) or "constraints with room availability" (2%). The behavior of the participants was also a challenge and it infl - enced the following of each session's planned activities. Nevertheless, it was frequently used as a motto for the next session. For example, an anger issue in one of the sessions was used as an example in the next session's emotional development activity. The attendance to the sessions was also a challenge, with some participants missing more than two sessions.

The semi-structured interviews with children, included in the baseline assessment highlighted the beliefs of children about activities like media production, web searching, using computers, mainly considered as "too difficult or "too difficult for children" (33% of all the coded answers). The endline semi-structured interviews emphasized the kid's assessment of their own experience in the sessions. When asked about their feelings on the intervention all the answers had a positive connotation. The most referred words are represented in Figure 2.

Figure 2. *Word cloud of beliefs about the intervention*

In both baseline and endline interviews, kids' beliefs about ICT and media were mainly associated with terms like "funny", "interesting" and "cool". Nevertheless, their possible pedagogical value was never referred autonomously, and these beliefs are mainly associated with "recreational" usages. When specificall asked about their perceived learning gains with the intervention, all the kids agreed that they have learned, with some interesting beliefs like "I learned more than in the normal days", referring to

the days were there are no intervention sessions.

The semi-structured interviews with parents also highlighted the perceived educational value attributed to the intervention. The main parents' beliefs about this are associated with the value of this intervention in engaging their children in school activities, more than the "traditional" approaches. A relevant example of this is from a parent who said, when asked about the intervention: "This can be an important chance for them to learn and have fun. She always sees school as boring and I'm worried she doesn't finish school. I don't want her to be a homeless, but to have a nice job". Thirty nine percent of the parents' beliefs about the intervention were coded as "greater engagement" or "funnier educational practices".

When asked about ICT and media in children's daily life, parents tended to emphasize the risks of their usage, such as dangerous content in the web (18% of all the coded material), addiction (15% of all the coded material), diminished social contact with peers and/or family (12% of all the coded material) or violence (6% of all the coded material). Aligned with these perspectives, 66% of the parents referred a very specifi concern about their lack of skills or knowledge to mediate the relationship of their children with technology, frequently referring that their children have a higher level of knowledge in this field than themsel es.

Discussion

The present study aimed to explore the results of an educational practice that implemented ICT and media as promoters of School Readiness (SR) in preschoolers from an economically disadvantaged area. The obtained results highlight the effectiveness of this practice, with statistical significant differences between the assessment scores, pre and post intervention. This intervention can be considered even more effective and feasible, as these outcomes are aligning with observation data documenting children's engagement in the process and progressive autonomy in ICT/media related tasks. This frames these findings not only in terms of quantitative outcomes, but also in terms of a comprehensive and progressive learning process.

The main drivers to the implementation of this ICT based intervention to promote SR are related with the educational value attributed by parents and children to it, recognizing its role not only in the promotion of competences, but mainly in increasing the engagement in the formal schooling process. Children perceived this intervention as funny, associating it with happiness, learning and friendship, highlighting the relevance of playfulness and collaborative work in ICT/media based interventions.

The main documented barriers result from children's and parent's attitudes and beliefs, as well as from the school environment variables. Dealing with ICT and mainly with content production is perceived by

children as too difficul . Moreover, constraints associated with computers, wi-fi network or space availability in schools can strongly condition the implementation of a technological educational approach in the preschool. Parents' beliefs about the relationship between children and technology are mainly associated with risks and danger. These beliefs are also framed in the perceived lack of competence of parents to mediate their kids' usage of technology, frequently associated with the idea that their children are more capable in this type of usage than themselves. This result highlights the relevance of evaluating the environment when studying the implementation of a pedagogical approach to promote SR. When framing this aspect with the third dimension of SR, as conceptualized by Britto (2012, p. 7), it is possible to say that even if this is an effective practice in terms of specifi learning outcomes, its broader implementation would require the involvement of parents and their empowerment in this field

Future studies must involve parents and families, as well as teachers and other stakeholders of the educational process, not only informing them, but also to train them in these issues. Moreover, similar studies including experimental research designs and larger samples could be important to legitimate the SR improvements as a result of ICT/media based interventions, and not as results of other factors, like childhood natural development processes, for example.

Acknowledgements

References

Blair, C., & Raver, C. C. (2015). School readiness and self-regulation: a developmental psychobiological approach. *Annual Review of Psychology, 3*(66), 711-731. DOI: 10.1146/annurev-psych-010814-015221

Britto, P. R. (2012). *School Readiness: A Conceptual Framework.* New York, USA: United Nations Children's Fund (UNICEF).

Cruz, M. V. (1993). *Pré-Escolar: Provas de Diagnóstico Pré-Escolar.* Lisbon, Portugal: Hogrefe.

Elliott, J. (2007). Multimethod approaches in educational research. *International Journal of Disability, Development and Education, 51*(2), 135-149. DOI: 10.1080/10349120410001687364

Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. *Early Childhood Research Quarterly, 21*(4), 431-454. DOI: 10.1016/j.ecresq.2006.09.005

Hughes, C., White, N., Foley, S., & Devine, R. T. (2018). Family support and gains in school readiness: A longitudinal study. *British Journal of Educational Psychology, 88(2*), 284-299. DOI: 10.1111/bjep.12188

Kagan, S. L., & Neuman, M. J. (1997). Defining and implementing school readiness: Challenges for families, early care and education, and schools. In R. P. Weissberg, T. P. Gullotta, R. L. Hampton, B. A. Ryan, & G. R. Adams (Eds.), *Healthy Children 2010: Establishing Preventive Services - Issues in Children's and Families' Lives,* (pp. 61-96.) Thousand Oaks, USA: SAGE.

Macdonald, G., & McCartan, C. J. (2014). Centre-based early education interventions for improving school readiness. *Cochrane Database of Systematic Reviews, 1*. DOI: 10.1002/14651858.CD010913

Majzub, R. M., & Rashid, A. A. (2012). School Readiness Among Preschool Children. *Procedia – Social and Behavioral Sciences, 46*, 3524-3529. DOI: 10.1016/j.sbspro.2012.06.098

Tay-Lim, J. (2011). Developing young children's critical thinking skills through conversations. Paper presented at *ERAS Conference,* Singapore. Singapore: Educational Research Association of Singapore.

Tobin, K., & Ritchie, S. M. (2012). Multi-Method, Multi-Theoretical, Multi-Level Research in the Learning Sciences. *The Asia-Pacific Education Researcher, 21(*1), 117-129.

Vittadini, N., Carlo, S., Gilje, Ø., Laursen, D., Murru, M. F., & Schrøder, K. C. (2014). Multi-method and Innovative Approaches to Researching the Learning and Social Practices of Young Digital Users. *International Journal of Learning and Media, 4*(2), 33-45. DOI: 10.1162/IJLM_a_00093