ACTIVITIES WITH PARENTS ON THE COMPUTER: SCIENCE TEACHERS' VIEWS

João C. Paiva¹, Carla Morais[1], and Luciano Moreira²
[1]CIQUP, UEC, DQB, Faculdade de Ciências, Universidade do Porto, Porto, Portugal
[2]CIQUP, DEI, Faculdade de Engenharia, Universidade do Porto, Porto, Portugal

An ecological framework, named activities with parents on the computer (APC), was proposed in order to promote the collaboration between school and home as well as new literacies. In this study, we address teachers' views on APC. Seven teachers who have attended training courses (pre- or in-service) were inquired via email. Their statements were submitted to a content analysis. Results revealed a plethora of reasons why APC was not being used, including technological, socio-economic, and educational policy reasons. The findings urge us to think of activities with parents on the Internet, in order to favour the usage of mobile devices, especially in disadvantaged milieus. Besides training, teachers' mindsets should open so as to accept the amplification of their field of action and an interaction and collaboration with other community partners.

Keywords: collaborative construction of knowledge, computer-based tasks

SCHOOL AND HOME COLLABORATION: AN ECOLOGICAL FRAMEWORK

Nowadays, society expects teachers to be key players in fostering collaboration and bridging school and home contexts. When tackling such a challenge, they report benefits and hurdles (Hoover-Dempsey, Walker, Jones, & Reed, 2002). Even if technology alone is not the solution for all the barriers, it might help to develop new literacies (Leu, Kinzer, Coiro, Castek, & Henry, 2013), besides scientific literacy. That is the goal of the ecological framework named activities with parents on the computer (APC).

APC builds on Bronfenbrenner's (1979) ecological model and on the techno sub-system proposed by Johnson and Puplampu (2008) (Figure 1). In an early study, we have defined APC as "pedagogical tasks – based on socially relevant disciplinary contents – adopted or designed, assigned and evaluated by teachers, aiming to promote home and school connection, parents and students collaboration, digital and domain-specific literacy skills" (Paiva, Morais, & Moreira, in press).

In Figure 2, the actors at the vertices of the triangle are teachers, students and parents. Each side represents a different microsystem (school; home; parents and teachers meetings). If, at the very heart of the triangle, we introduce APC, we may find a way to improve access to home or school, and also to transform the traditional roles of each actor. APC becomes a true mesosystem.

In our seminal work (Paiva et al., in press), teachers showed mixed feelings or ambivalent attitudes towards APC. Teachers who undertook training on APC acknowledged their value, but seemed reluctant in applying them in their professional practice (Paiva, Morais, Amaral-Rosa, Moreira & Eichler, 2016).

In the current study, we tried to gain more knowledge about what were the teachers' views on APC after they had attended training courses. We wanted to know if they had used APC with their students, and, if they had not, what kind of reasons would they present to explain their decision.
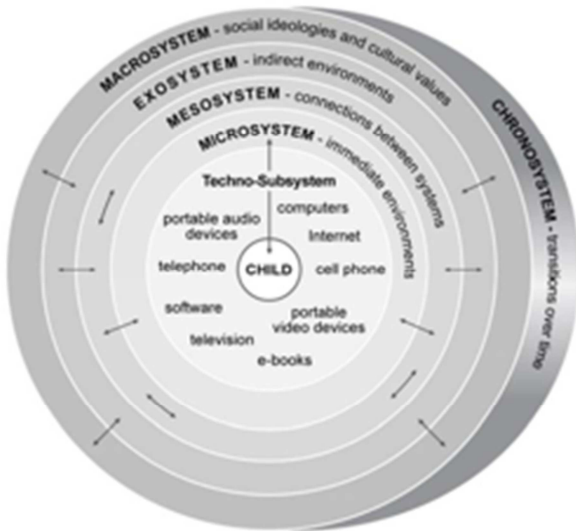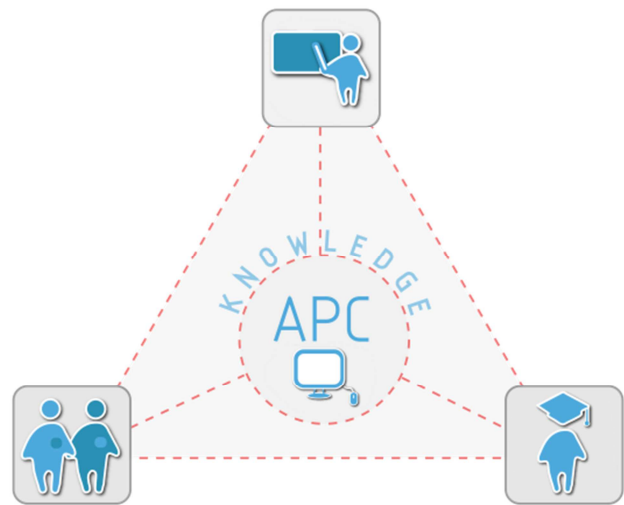
Figure 1. Techno-subsystem (Johnson & Puplumpu, 2008)   Figure 2. APC ecological framework (Paiva, et al., in press)

METHODS

The study included eight female teachers that answered an open-ended questionnaire sent by email, two to three years after attending a course on multimedia in science education, which included a topic on APC. Five teachers were Portuguese and two were Brazilian. Their statements were submitted to a content analysis.

RESULTS

To begin with, it must be said that none of the seven teachers have used APC after the course. Teachers referred a plethora of reasons in order to explain why that happened. The more general one was the scarcity of opportunities for implementing APC. Teachers also pointed out more specific reasons: (a) lack of computers and broadband access, either at school or at home; (b) socio-economic status; and (c) inequality.

If students come from different *milieus* and not all of them have computers available, then, according to the teachers, APC would only reinforce the gap between those who have a computer and those who do not. If they were to use APC one day, it would be because of their value for (a) bridging school and home contexts, (b) increasing digital literacy, and (c) contributing for the collaborative construction of knowledge. One teacher claimed that APC would work fine at primary school or with high achievement classes at secondary school. The lack of parental support at home was referred by two teachers but with different meanings: on the one hand, as a motive for implementing APC, but, on the other hand, an excuse for not implementing it.

To wrap up, reasons for not using APC are rooted in technological, socio-economic, and educational policy fields. All these reasons converge in the measure that they exempt teachers' professional practice. An exception to this externalization of control in using APC can be found in a brief statement from one of the participants that said that she was not ready to move on from her comfort zone. On the other hand, reasons for using APC come only from the education policy goals (e.g., increasing digital literacy).

DISCUSSION

We should not be surprised to learn that teachers have not used APC. This result is in line with the low level

of behavioural intention of usage observed in the study by Paiva, et al. (2016). Nor should we be discouraged: digital technologies are highly challenging for teachers (Koehler & Mishra, 2009) and often encounter resistance (Donnelly, McGarr, & O'Reilly, 2011). Teachers did not claim that parents would not participate in APC if they were invited for them. Instead, they referred that there would not have been proper conditions to engage them even if they wanted to. Either the digital gap is greater than some scholars want to believe or teachers are not considering the usage of mobile devices which are most likely to be found among people with lower socio-economic status (Chen, 2015) and, therefore, could be mobilized for teaching purposes. In order to favour a broader understanding, perhaps we should talk of API, i.e, activities with partners on the Internet.

Although APC can be presented as a useful strategy to help teachers reach families and address curricular topics, the current findings require us to adjust and improve training design. Moreover, they urge for a change in teachers' mindsets so that APC, as much as other digital technologies, may be perceived as an opportunity for acting upon disadvantaged *milieus* and not as a hurdle. This means that teachers need to accept the amplification of their scope of action, as well as the interaction and collaboration with other community partners. Certainly, one needs to conduct further research in order to understand how to empower teachers in the process of elaborating or adapting, implementing and evaluating APC, identifying the means through which teachers can configure their practice and their role in a generative way.

ACKNOWLEDGEMENT

REFERENCES

Bronfenbrenner, U. (1979). *The ecology of human development*. Cambridge, MA: Harvard University Press.

Chen, W. (2014). A moveable feast: do mobile media technologies mobilize or normalize cultural participation? *Human Communication Research*, *41*(1), 82-101.

Donnelly, D., McGarr, O., & O'Reilly, J. (2011). A framework for teachers' integration of ICT into their classroom practice. *Computers & Education*, *57*(2), 1469-1483.

Hoover-Dempsey, K., Walker, J. M. T., Jones, K. P., & Reed, R. P. (2002). Teachers involving parents (TIP): Results of an in-service teacher education program for enhancing parent involvement. *Teaching and Teacher Education*, *18*, 843-867.

Johnson, G., & Puplampu, K. (2008). Internet use during childhood and the ecological techno-subsystem. Canadian *Journal Of Learning And Technology / La Revue Canadienne De L'Apprentissage Et De La Technologie, 34*(1).

Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)? *Contemporary issues in technology and teacher education*, *9*(1), 60-70.

Leu, D. J., Kinzer, C. K., Coiro, J., Castek, J., & Henry, L. A. (2013). New literacies: A dual level theory of the changing nature of literacy, instruction, and assessment. In Alvermann, D.E., Unrau, N.J., & Ruddell, R.B. (Eds.), *Theoretical models and processes of reading* (6th ed.) (pp. 1150-1181). Newark, DE: International Reading Association.

Paiva, J. C., Morais, C., & Moreira, L. (in press). Activities with Parents on the Computer: an ecological framework. *Journal of Education Technology & Society*.

Paiva, J. C., Morais, C., Amaral-Rosa, M., Moreira, L., & Eichler, M. (2016). Desenvolvimento profissional e cooperação internacional para professores de química: avaliação da intenção de mudança pedagógica após formação continuada no Porto, Portugal. *Química Nova*. doi: 10.21577/0100-4042.20160179