



PEDAGOGY AS A *TECHNÉ*: MEANINGFUL ICT INTEGRATION IN FORMAL LEARNING SCENARIOS

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Abstract

This paper presents a framework developed by JP-inspiring knowledge with different stakeholders that aims at the creation, preparation and evaluation of ICT integrative projects in formal learning scenarios. This proposal served as a basis for master training on meaningful pedagogical strategies with ICT, in several countries: Angola, Bolivia, East Timor, El Salvador, Ivory Coast, Jordan, Peru, Portugal, and Puerto Rico. Each of these training projects targeted different stakeholders: elements from Ministries of Education and Technologies, Pedagogic Specialists, Curricula Designers and Teachers. Its general structure was designed inside and outside classrooms, not only with teachers and students, but also with school directors, parents and ICT companies. Here we present the main characteristics of this framework – the ik-Model – and the process through which it is being conceived as a relevant pedagogic transformational element. ICTs are no more conceived and integrated as tools or resources in learning scenarios, but as contexts. This perspective challenges not only the way they may be thought inside those spaces, but also the way people look at their own role in this process. Finally, we discuss how this approach acts towards a reconfiguration of pedagogy as a *Techné* and how this requalifies teachers' momentum within most of the changing processes of actuality.

The origins of ik-Model

The technological modernization of schools has been an up to date issue in politics and academic educational debates. To assume that technology must be present in schools assuring an equality of conditions for learners to learn and learning to happen is an argument commonly used in policies' agenda. Some arguments following this trend focus the growing presence of ICT in most children's everyday life. Given the fact that schools are conceived as natural contexts, those arguments state that they have responsibilities on helping students dealing with challenges ICT pose, both in their present and future lives. Some other arguments are concerned with equal opportunities and school's compromise in what concerns preventing social gaps reproduction. Some academic literature points out not only a gradient perspective of *good / bad* effects, but a non-simple correlation, where context plays a fundamental role (Gigler, 2011, 2004; Willms, 2006; Avgerou, 2001; Walsham, 1993). While studies reflect upon ICTs potential to generate socio-economic and political opportunities for developing countries, reducing the "digital divide" (Cullen et al., 2011; Gigler & Simmons,

2002; Pohjola, 2002; Braga, 1998), some other investigations focus on the gaps ICTs reinforce, reproducing the actual differences (Law, 2009; Wade, 2002; Gumucio, 2001; Castells, 1998; Panos, 1998). In fact, some studies do even mention that ICTs may lead to exclusion of those who don't have access to them and to dominance from the part of those that control them (Karsenti, 2009). Although these perspectives show different approaches to this topic, it seems quite consentaneous that using ICTs with intentionality may lead to better strategic life choices, an increase on literacy levels (ibd.) and a reinforcement of real freedoms (Sen, 1999), agency and functioning (Kabeer, 1999). That intentionality has education change at its centre (UNESCO, 2014).

When we generally talk about new technologies integration in the particular context of educational systems, a mixture of enthusiasm about modernization and scepticism about learning possibilities tends to characterize the attitude of many educational agents. Delivering the best technological solutions to schools and classrooms is certainly not the issue to be addressed; conditions for an effective use of technology are needed and that is why methodologies must be challenged. The capacity to take risks usually favours the emergence of new narratives and new patterns of action and thinking. This request makes it crucial to have a basis of conceptualization, implementation and monitoring that considers the different components that such a transformation comprehends. As UNESCO (2013a) reminds us, the educational sector is composed by educational decision makers, administrators, teachers, students and parents, as well as by other concerned parties, that contribute to the accomplishment of educational goals. This picture seems quite sufficient to understand how difficult the attempt to map and link the interests and perspectives of all these stakeholders can be.

It's also mandatory that different sectors engage to better answer the challenges that fast changes on larger systems – including technological environments – are posing to citizens in their different living scenarios. Companies such as the Portuguese JP-inspiring knowledge (JP-ik) succeeded in providing high quality technological devices for education all over the world, but soon the challenge turned into the participation in the great momentum of educational transformation. A *product-perspective* could no longer be maintained and JP-ik became a Service's company, where project-consultancy-in-context and stakeholders training – aiming a meaningful and contextualized technological integration – are seen as crucial pieces along with equipment development, delivery, technical support and maintenance. Therefore, JP-ik Pedagogical Department centres its mission in the development of pedagogic methodologies towards a comprehensive ICT integration, particularly in formal educational systems. Its work is grounded on field studies and it is developed with different intervenient: stakeholders, implementers and beneficiaries. In a project-based approach to a large-scale ICT integration in educational systems, all these elements participate in a collective construction, implicitly switching their roles. We cannot conceive stakeholders as unique decision-makers that identify who the targets will be and which strategies should be implemented. All the interveners are expected to contribute to a global vision and to address some questions to the elements that are playing in the other layers.

In this paper we are presenting a model for ICT integration that JP-ik has developed with educational agents worldwide within this collaborative and multilayer collective approach. This model respects the idea that current ICTs shape multiple contexts in contemporary postmodern societies. Following Lewin's theory of psychological fields (Bronfenbrenner, 1977; Lewin, 1917, 1931, 1935), Bronfenbrenner (1994) presented the ecological environment as a set of structures that now enables us to think about communication technologies as those ecological environments that challenge standards, norms, attitudes and living patterns at all systemic levels. The ik-Model puts signification at the heart of its dynamical structure because it is the expression of the highest contextual engagement.

This framework tries to grasp the web of interests that the question of ICT integration in different fields of activity raises and that some other models also try to address from different perspectives. If we look at the beneficiaries' level of integration, usually teachers are the main figures to be entailed. The *TPACK* Framework, proposed by Koehler and Mishra (2005) systematizes the knowledge domains (and its particular combinations) – Content, Pedagogical and Technological Knowledge – that are fundamental for teachers to successfully integrate new technologies in learning activities. It is centred in the implementation phase of ICT in education and it focus its main users. The capacity to endure in this implementation and improve learning scenarios can also be measured by the *SAMR Model* (Puentedura, 2013).

Some other models refer to a macrosystemic vision, as the *UNESCO ICT Competency Framework for Teachers* that entails different components for a contextualized integration: i) policy level and the capacity of understanding ICT in education; ii) curriculum and assessment; iii) pedagogy; iv) ICT as tools; v) organization and administration and vi) teacher professional learning. This framework enables the stages of planning, survey, analysis, localization and development, where the national strategy or policy is identified, in terms of innovation implementations in schools and teacher's professional development (UNESCO, 2013b). In the same manner, the Intel Education Transformation Model is a comprehensive framework that has the improvement of educational systems as its main goal. It sets student success at the heart of educational transformation and it covers different layers that include leadership and policy, as well as research evaluation, teachers' professional development, curriculum & assessment, information communications technology and sustainable resourcing (Intel Education, 2013).

The proposal made by JP-ik, the ik-Model, does not pretend to be an alternative to the models referred here. In fact, this is a framework created in context, throughout a year, close to different educational players: one ERTE-MoE Coordinator, seven DRE'S-MoE stakeholders, eight municipalities' stakeholders, six school cluster principals, one principal assistant, twenty nine primary teachers, thirty seven parents and seventy six students. After a phase of data collection on representations, attitudes and levels of ICT integration (Paiva et al., 2012; CoSN, 2013), six pedagogical consultants were placed in six schools throughout a school trimester, in different regions of Portugal. The aim of this work was the development of a strategy for ICT meaningful integration with teachers in their own learning scenarios. Each activity was designed in terms of particular criteria and its dynamics and effects were thought within a

community of practices comprised of teachers engaging this “best integrative practices” pilot. For all these teachers, the technological modernization of their classrooms requested innovative pedagogical practices, but only because knowledge was at the centre of this negotiation. All participants of a learning environment were seen as part of the knowledge continuum, where both students and teachers were expected to be “emancipated spectators” – using Rancière’s (2008) concept of spectatorship – , and that meant that students and teachers could not be separated from their capacity of knowing and acting. Therefore, learning was put at the centre of the classroom and meaning at the heart of contextual learning design.

This pilot gave us relevant insights on how digital literacy is affecting the daily routines of teachers, students and families. As a prior gain, it favoured the quality of the exchange between children and technologies’ generative potential, as students finally perceived technologies as a legitimate learning channel, becoming more autonomous, assertive and differentiated on their usages. The strategic axis of the intervention successfully helped to signify school contents within the needs of daily life. It also confronted institutional boundaries for learning, as the data meaningful transfer – amongst students with different ages and between those students and their parents – became stronger.

As technology development wheel spins fast – but sociopolitical opportunities persist – digital divide consecutively emerge. Therefore, an approach that focus the generative capability to learn stands for propulsion towards the new. It may foster the individual capability to spontaneously exert a greater autonomy, critics and engagement connecting different opportunities settings and making them confront their own weaknesses and strengths.

The ik-Model framework

This framework was conceived in order to guide different stages of the technological integration process in formal education and it is differently operationalized in each one of those phases. The ik-Model acts as a reference to i) the design, development and implementation of a project, either at a macro level or considering a specific learning environment; ii) the training – capacity building or even empowerment – of different stakeholders, including elements from the Ministry of Education, Pedagogical Coordinators, Teachers, Parents or Students; and iii) the monitoring and evaluation of the project, revealing its capacity to produce specific gains and enabling to recognize the particular conditions in which they are produced.

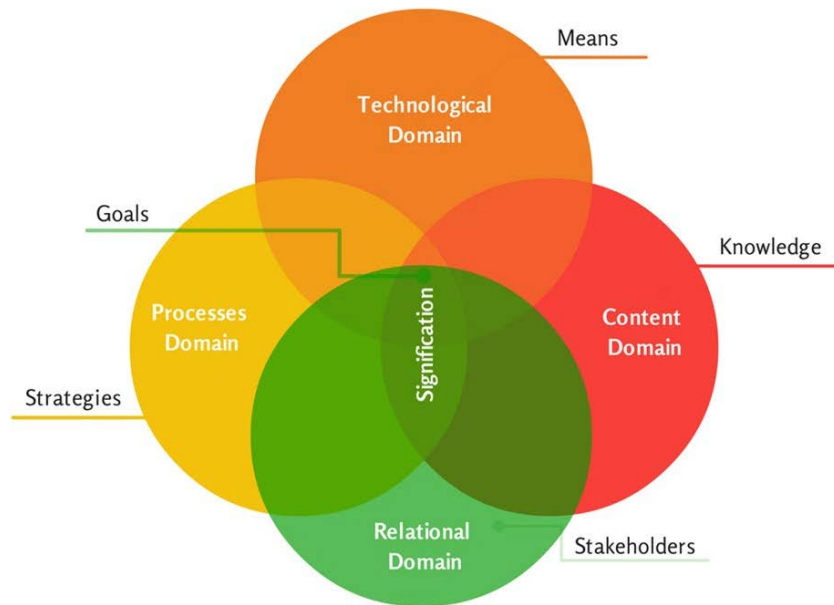


Figure 1. The ik-Model: a framework for ICT meaningful integration in learning scenarios

This proposal considers technological domain as one of five parts when we think on ICT meaningful integration on the different sectors of activity. This **Technological Domain** considers the resources and technological tools that can be used to achieve specific goals and that obviously has to do with media literacy. The capacity to choose the most accurate *medium* to fulfil a specific interest is a challenge to which stakeholders and all the intervenient have to answer in order to accomplish meaning through particular strategies and processes. This immediately shows that each one of these parts are elliptical as they take into account all the others. The **Content Domain** includes the educational challenges that are transformed into learning goals, knowledge and skills that are expected to be addressed in educational formal scenarios. The curricular infusion of larger goals and meaningful information through ICT usage is therefore intentionally considered as the main pedagogical strategy. These domains enable us to select the type of content and resources that accurately fit to those learning aims, always remembering the the ones involved and their real capacities, as well as the perspectives and roles (the implicit or the explicit ones) they assume within the process. The **Relational Domain** considers not only the stakeholders and beneficiaries, but also the larger community in which the project will take place and the way it creates attitudes that can favour or compromise a deep and shared engagement. So this component does not only focus intervenient's explicit interests, but also networks' structure, dynamics and its tacit discourse layer. Through this approach we may understand processes of resistance or commitment from within. In fact, the **Process Domain** crosses all the above mentioned components and it comprises the strategies and the methodologies that are used in order to achieve specific goals, while reinforcing engagement processes. Only the intersection between these components and the extent to which each one is intentionally revised in all the others enables us to create **Signification** as the upmost value of any developmental approach. When signification dynamic is considered we are not acting outside the collective capacity to participate in the

meaning event, neither using a previous heuristic for learning and acting. The expectations can go beyond particular outcomes and communities can connect to other views, other opportunities and other significant elements.

In fact, a chronic mark of western studies has been the externalized interpretation of the others' needs. Not only disadvantage "communities lack access to information and knowledge, but at the same time, policymakers in capital cities lack knowledge about the local and cultural context of the poor and marginalized groups" (Gigler, 2004, p.4). This assumption was confirmed during the qualitative study on the Portuguese Technological Plan impact: some interviews with teachers and elements from educational political sectors show a clear discursive gap between them, which deepens if we go through other community's layers. Here we do not only face the question of how "to give voice" to those people; we deal with a problem of discourse legitimacy. But why do these difficulties persist, if they clearly raise political concerns and if they cause problems at an appropriation level? From a political point of view, as Habermas shows us, these centric models – based on the tolerance and knowledge of the empowered ones – are rather disturbing and they collapse communication and interaction at all layers. Changes conceived within these principles may be of low value or remain a will from a few.

So, when we propose an organic and flexible structure, like the ik-Model, we may address the challenges of different subjective realities and appeal to the explicit and tacit requests of several educational systems. That has happened when we tested this methodology abroad, training elements from the Ministry of Education of different countries, with distinct priorities. For instance, in Bolivia we've worked with a totally cooperative model – the Socio-Communitarian Productive Model – and in Peru differentiation and personalization, aligned with 1:1 ICT integration, where main issues for further educational investments. The same approach was also used to train teachers from Angola, East Timor, El Salvador, Ivory Coast, Jordan, Portugal and Puerto Rico. Each domain was taken into account bearing in mind the main national educational challenges of each country and its different communities; all the strategy was therefore aligned to work on several themes, such as absenteeism and young marginalization, communities' literacy, learning transfer, motivation, performance and behaviour regulation.

Perspectives on learning, pedagogy and *techné*

With the framework presented here, educability is again posed as a potential outcome to all the participant in a learning process. This anthropological perspective comprehends Daignault's idea (2008) that educability has an intimate relationship with *techné*, as will and agency expression towards pedagogical intervention through technological media. So, pedagogy is for teachers the only way through which their own perfectibility can be thought. Within a structural framework that envisions signification as the only understandable product of a collective effort we may also reconsider teachers' social status. The shift that an ecological educational innovation assumes creates the opportunity to reconfigure visions, roles and tasks. Pedagogy becomes teachers' *techné* through which a prospective vision can be driven. It

also gives teachers the confidence to deal with the challenges that a strong and pluri-dynamic technological turn poses to their contexts, in particular to formal learning scenarios. This theoretical and strategic replacement of pedagogy impacts educational systems on deep levels. It allows formal education to deal with the challenges that are posed inside and outside school borders as really their own.

Facing the streaming of technological change and the way it discloses phenomenological intersection with the question of meaning making, it seems that only facing learning to learn as the ethic and unique compromise of educational formal systems some of the main issues of the contemporary big data societies can have a place to be intentionally explored. This way we may understand the problem posed by conceptualizations that threaten the flux of methodological improvement as they are based on problematic assumptions. That is the case of the usually misunderstood concept of “digital native”. In fact, it doesn’t mean that the new generations – that are the formal beneficiaries of educational systems – and the older ones – constituted by educational agents –, dwell within a gap. That space is the one that matters as it gives power to those agents back. When we talk about “digital native” we are not talking about “digital genetics”; in fact we are calling the attention to the acculturation system that raises those natives. If so, we can no more leave to the random living experience the opportunity of confronting with assertive affective-cognitive tools the problems that technologies of mass communication reveal. This enhances the perception of each educational figure towards a new demanding role that, simultaneously, is an empowering one. A framework like the ik-Model enables an all community to conceive and plan on these terms its own educability – that means we can inhabit an idea of perfectibility that extends the educational project to a whole idea of humanity. A vision following this trend favours a mindset change in what concerns technological integration within learning formal spaces. A utilitarian perspective on devices and resources gives place to a new capacity of understanding technological media as active participants of contexts creation. These new ecosystems are profoundly challenged by their own *dis-placement* and to let sense break through them seems to be the main challenge of formal education in the upcoming years.

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