MICRO-INNOVATIONS AND STAKEHOLDERS ENGAGEMENT AS DRIVERS FOR SYSTEMIC CHANGE IN ICT-SUPPORTED LEARNING

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Abstract

The paper discusses the findings and the lessons learnt of two research projects that have worked to understand how to support mainstreaming and scalability of ICT for learning in Europe. These are the VISIR project, which explored how scouting grassroots micro-innovation practices can help to successfully mainstream the potential of ICT to contribute to change in education, and the HoTEL project, which worked on how to appropriately engage stakeholders in supporting innovation in the field of ICT for learning. Building on the main findings of these projects as well as on other recent attempts to valorise innovation in education, the paper presents some ideas targeted to decision makers, researchers and practitioners, as possible starting points for future bottom-up efforts of innovation valorisation in the field of ICT-supported learning.

The time has come to scale-up ICT-supported learning

A number of recent studies show that ICT is increasingly used in learning settings throughout Europe form school education to higher education to vocational training and adult learning, with different degrees of penetration in different sectors of E&T and in different countries (Aceto et al., 2014). At the same time, some national ICT-for-learning policies are having an impact on the level of innovation that the Lisbon strategy and the ET2020 strategy have set as one of the main targets for the European society in 2020. The evolution of the concept of ICT for learning in the European policy discourse, mainly brought forward by the European Commission, shows how the official "narrative" has moved from a strongly technology-driven experimental-like niche at the time of the DELTA and ESPRIT programmes in the late 90s, to a more mature phase where the main aim was to develop new solutions able to reach as much learners as possible – during the period 2002-2010 with the eLearning Action Plan – to the present phase, where the key policy objective is scalability.

The European Commission policy priority is clear: "Evidence indicates that the EU-wide experiences on innovative learning need to be scaled up into all classrooms, reach all learners and teachers/trainers at all levels of education and training. A full uptake of new technologies and OER requires more than boosting experimentations across Europe" (European Commission, 2013a, 2013b). Clearly, the European Commission wants to go beyond experimentations, and to put in place the conditions for mainstreaming the meaningful and

high-impact use of ICT for learning in all possible lifelong learning settings. This focus on scalability clearly responds to a recognised mismatch between the potential of ICT to support the desired change in education and the reality in most European countries, where education is in fact far from having fully embedded the potential of new technologies, to improve the efficiency, accessibility and equity of training and learning systems.

The VISIR lesson: micro-innovation matters

The rationale of the VISIR project (www.visir-network.eu), which was supported by the European Commission under the LLP Programme, is that in order to uncap the potential of ICT for learning as a driver of change for our economies and societies, we need to move from fragmentation and piloting to effective systematic adoption. To address this need, the project has addressed three major gaps: the "understanding gap", the "networking gap", and the "mainstreaming gap" of ICT for learning in Europe. In this light, VISIR represents a rather unprecedented networking effort, bringing together seven European networks and one research institution: the MENON Network, the European Association for Adult Learning (EADL), the European Distance and E-learning Network (EDEN), the European Foundation for Management Development (EFMD), the European Learning Industry Group (ELIG), the European Interest Group on Creativity and Innovation (EICI), The European Foundation for Quality in e-Learning (EFQUEL), and K.U. Leuven.

In its three years of work, VISIR has produced and validated a long-term vision on the contribution of ICT for transforming education and training systems towards 2020, though the analysis of the following eleven "domains of change": Aims of Learning Systems, Content and Competences, Orchestration of learning, Valuing Learning, Assessment, Funding and Governance, Integration, Inclusiveness, Teaching, Quality and Learning spaces. Further, four broad stakeholders consultations have been run, collecting more than 7,000 opinion, where the project findings have been validated with the broad community of e-learning practitioners in Europe. Finally, two mainstreaming seminars were organised in 2013 and 2014, in collaboration with other projects working in the field of ICT for learning, in the Committee of the Regions in Brussels, reaching more than 200 participants and engaging a different range of stakeholders, from policy makers to researchers to grassroots innovators.

The "grand challenge" that VISIR has tackled is the mainstreaming gap of ICT-for-learning innovation in Europe: on the one side a lot of spontaneous innovation exists in Europe at different levels, on the other the cases of successful large-scale adoption are extremely limited. To better understand this gap, the VISIR consortium has been discussing together with flesh-and-bone innovators – during all the project events and online – the underlying conditions for scalability and mainstreaming, focussing on the needed incentive to change from both a policy and an institutional perspective and on the limits of current innovation approaches in the field of education, the increasing massive availability of ICT tools, with an increase usability.

VISIR has tackled the above problem from a rather new standpoint, that is by focussing on *micro-innovation practices*: in a nutshell, innovative experience that are micro in terms of implementation scope, size of idea-generator, and degree of actual change, but that bear a very high impact potential. The project has first identified and mapped – according to emerging trends – some 120 practices, to then select the most promising and representative 23 cases. These cases, which can be browsed in the www.visir-network.eu site, span from school education to adult and informal learning, including cases with a high degree of ICT use and other that use technology in a very simple – but smart – way. Target groups are as varied as possible: from school pupils having to learn biology, to medical doctors dealing with particular problems, to software development students working collaboratively and cross-assessing each other, to truck drivers learning just what they need to know in a particular moment, to elderly citizens being socially included through blogging, just to make some examples.

If we look at the 23 most representative cases selected by VISIR, some development patterns seem to emerge, that tell us something on what characterises micro innovation ideas with high potential. First, successful micro-innovators are not replicating current approaches, on the contrary they are typically proposing something genuinely new in terms of pedagogy and use of technology. Second, innovators seem to be prizing interactive and collaborative approaches: almost all the selected cases are built on some kind of collaboration scheme, and have a high degree of interactivity. Third, in all the cases technology works as an enabler, that is to say a means to an end: in some cases the technology used is absolutely simple and affordable, what is innovative is not the ICT solution but the use that the cases is making of it. Fourth, it clearly appears that Public-Private Partnerships (PPP) encourage innovation: even if the VISIR research team was not looking specifically for PPP-based cases, we found that a high degree of the selected cases are built on these kinds of partnerships. This finding is in line with the conclusions of a number of recent reports (UNESCO, 2014; United Nations, 2014), which converge on the fact that encouraging stable, long-term private investment can have a positive impact on sustaining innovation in education and that sustainable projects are searching for capital, but new channels and innovative financial instruments are needed to link the two.

The HoTEL lesson: Stakeholders matter

Similarly to VISIR, the HoTEL project (www.hotel-project.eu, supported by the Seventh Framework Programme of the EU) aimed to design and test a mechanism to support innovations – and innovators – in the field of Technology Enhanced Learning (TEL) to move from the pilot and experimental phase to broader mainstream and adoption.

One of the starting points of HoTEL is that ICT for learning does not need an "innovation model", since – as it appears from the heterogeneity of the VISIR micro innovation cases – trying to codify all the possible innovation paths in a sector such as education would only bring additional rigidity to the system. What is needed – in the HoTEL view – is an attempt to design an "Innovation support model". While an innovation model conceptualises the

different steps and processes that bring innovations to be generated, adopted, incorporated in use, scaled up and eventually exploited in commercial or institutional ways, an Innovation Support Model refers to the way a "professional body" of analysts and stakeholders representing users categories, advisors, fund raisers, institutional and private investors, etc. can help innovators to succeed, or to succeed more quickly than they could do without this support. In the field of TEL, innovation may frequently start in a classroom or in a community of practice, or may be the result of massive use of a technology not born for educational purpose: this means that any "innovation support model" must fit into the variety of modes and contexts in which innovation may emerge, and have different, adaptable ways to support it.

The main purpose of HoTEL has therefore been to design, test and improve an effective way to support innovators using ICT in learning settings, which may correspond to different innovation models co-existing in the TEL field. In order to do this the project selected a set of innovators and innovations to be accompanied, for a period of time, through a series of interactions with experts, stakeholders' representatives and other critical colleagues who have concretely contributed to strengthen the success prospective of these innovations and contextually reflect on the proposed support in terms of content, process, outcomes and potential impact.

The *HoTEL Innovation Support Model (ISM)*, a well-codified process capable of i) providing decision makers with an analytical framework to classify TEL innovations and properly understand their advantage/contribution and potential within their action context, ii) helping innovators to properly formulate their ideas in a way which aids a possible innovation uptake and iii) assisting innovators in developing strategies to improve their innovation's diffusion/adoption potential. The proposed IEM is not composed of prescriptive actions, but rather of a set of three adaptable phases, which can be implemented through a set of eight practical steps, as in the picture below.
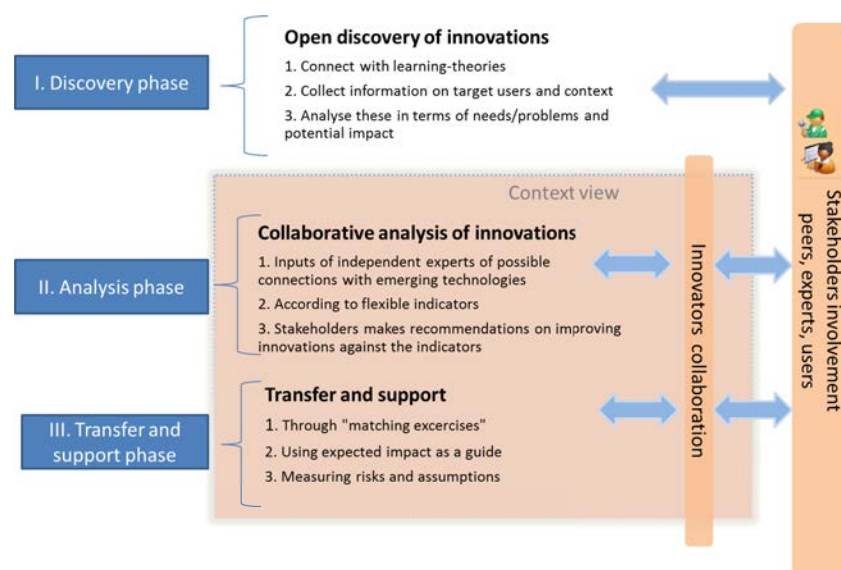

Figure 1. Main elements of the HoTEL Innovation Support Model

The ISM on its general conceptualization is composed of three phases. First, a discovery phase, where an innovation is discovered and described in a structure format so that different innovations can be compared with each other, and where added value is provided by connecting with learning theories and by supporting the innovation leader in context exploration and in stakeholders (including main "influencers") identification. Second, an analysis phase, where the innovation is be analysed from a full multistakeholder view, through a number of flexible protocols with macro categories of analysis such as the context of the innovation, the impact of the innovation, the stakeholders involved, the process of development of the innovation, the serendipitous elements in innovation, or the unique nature of the innovation. Third, a transfer and support phase, aiming to support an innovation either to be transferred to another context or to be further developed and scaled within the same context. During the process, a number of matching exercises need to be done, e.g. mapping stakeholders from the originating context to the new context, isolating critical success factors for the innovation and transferring them to the new context, etc.

An in-depth analysis of innovation models applied to the ICT for learning domain (HoTEL Consortium, 2014) has brought to the conclusion that different methods and steps need to be taken to analyse TEL innovations according to their nature (incremental, disruptive or systemic) and their types (technical -technology push, business – market pull, learning practices – bottom-up and social – social needs pull). Further, successful innovations need to take into consideration: i) the integrated design process and the organizational architecture of the institution that adopts the innovation (e.g. to a company, a learning institution such as a University, a school or a professional organization; ii) the design and implementation of the "product, services, practice"; and iii) the design and implementation of new technologies (du Preez & Lou, 2008). A lot of very good ideas or even pilot products in TEL, whether they are coming from technology push, or practices (market pull) or research they often fail to be successfully adopted and mainstreamed. A successful management of the innovation process (from idea to market) and a good understanding of the different innovation models are needed in order to guide this process from the stage of an idea to adoption and mainstreaming.

TEL being such a complex domain, it is safe to argue that the majority of TEL innovations would require the sharing of ideas, contributions and collaboration of efforts from research, technology, practitioners, including software and learning solutions developers. That is why the main result of the HOTEL is that support to innovation in the field of ICT for learning can take different forms – of which the ISM proposed by the project is just one attempt – but must rely on stakeholders' engagement. The road to success for a TEL innovation depends in fact to a large extent on the possibility to be understood and supported by some categories of stakeholders that change with the context (e.g. industrial investors, school leaders, publishers, policy makers, teachers' networks, student associations, consultants, et cetera). Not all of them might ultimately influence every kind of TEL innovation with similar leverage, but it is important to consider the full spectrum of involved interests to select the most crucial

representatives of stakeholders to discuss and support the innovation development. Furthermore, what appears a big success in a certain context may not work in another context (e.g. country, socio-economic environment, organization, or sector). It is therefore fundamental to identify not only "what works" but also "where" and "under which conditions", distinguishing between success factors that are relatively "unique", specific to the context, and others that can more easily be found or reproduced in other contexts. And it is important to do this by engaging as many relevant stakeholders as possible.

The road ahead

The main result arising from a throughout analysis of the VISIR and HoTEL innovations is that, whilst educational systems are trying to responded to policy initiatives that aim to stimulate innovation and promote modernisation such as the Opening Up Education initiative of the European Commission quoted at the beginning of the paper, there is evidence that institutional education environments are often inherently conservative, slow to change and not supportive to grassroots innovation. Educational settings are still mostly working in a reproductive rather than transformative mode, and are too often based on organisational cultures which are hierarchical, segmented, slow in response to external change and based on an ethic of conservatism.

These considerations are in line with the findings of some recent reports in the field. Similarly to VISIR and HoTEL, a recent report on innovation in Europe by NESTA and Lisbon Council (2013) stresses that policy in the field of education and training should include a strong experimental component, trying out new policy tools, such as funding clusters of innovators, promoting competitions and new funding schemes, and award high-impact projects by providing sustainable funding mechanisms which go beyond the typical two-years project lifecycle.

A recent IPTS study (Panagiotis, Law & Punie, 2013) – based on case studies having already achieved a significant degree of scale and impact – identifies four principles that differentiate the strategic effectiveness of different innovation initiatives. First, the report confirms that there is no single recipe for innovation in the field of TEL and that there is no one size fits all solution to innovation: each case might have its own features and route to scalability and mainstreaming. Second, ecological diversity of innovations seem to foster scalability – the more the stakeholders are involved, the more the potential for scalability. Third, leadership for strategic alignment as a necessary condition for scalability brings to a need for a strong coordination, as diversity and multiple pathways can be a richness but also a risk in terms of effectiveness. Last, as stressed by HoTEL, multi-level, system-wide connectivity and strategic partnerships can help to mobilize resources, increase problem-solving capacity and solicit both tangible and intangible support.

Also the recently published *Beyond prototypes* report (TEL, 2014), which focuses on enabling innovation in TEL with a special attention on the UK context, is in line with our reasoning. This report stresses the "bricolage" dimensions of innovation in TEL, defined as "a productive

and creative innovation process that involves bringing together and adapting technologies and pedagogies, experimentation to generate further insights and a willingness to engage with local communities and practices" (TEL, 2014, p.6). The VISIR and HoTEL experiences fully confirm this view, as well as the consideration that TEL is a complex system where communities, technologies, learning practices and pedagogy interact. Recommending the need for meaningful innovation in TEL (with long term objectives and making sure that the adopted innovations have as a scope a positive impact on educational change), the report outlines the key role played by the context where the innovation is to be introduced and highlights the importance of collaboration processes to ensure the success of the innovation.

The work done by VISIR and HoTEL, complemented by the findings of these other researches, can help us drawing some recommendations targeted to all those actors in charge of scouting and supporting innovation adoption and scalability, contributing to the change process "from the bottom", meaning from a micro-innovation perspective, and "from around", meaning from a stakeholders' engagement viewpoint.

First, while certainly continuing looking at large scale policy option brought about by the Open Education and MOOCs movements, the EU as well as Members States should continue to support and fund grassroots innovation in teaching and learning, in the frame of its new Erasmus+ and Horizon2020 programmes as well as through the European Social Fund.

Second, innovation support systems should be consistently supporting innovators and innovation-friendly environments, by working both on tearing down systemic barriers to bottom-up innovation ideas and at recognising and rewarding the work of individual grassroots innovators.

Third, given the current economic crisis affecting Europe and determining often budget cuts in the field of education, new options for funding should be investigated, such as crowdfunding for grassroots innovation in teaching and learning. This could complement public funding and at the same time enhance an entrepreneurial spirit in institutions and actors traditionally not akin to entrepreneurship. The fact of relying on private funding that is provided by the "crowd" and not only or necessarily by private companies (with potential business interests in education) could overcome the historical resistance of education to the use of private investment for a public good.

Fourth, any innovation support attempt should take the innovation's "multi-stakeholder ecosystem" into account, with different stakeholder representatives according to the nature of the innovation proposed, analysing and even testing the proposed innovation from a multi-perspective approach, identifying all the strengths and the weaknesses from each relevant stakeholder's perspective. This test might be either practical, on the ground, with real users and in a real context-setting or theoretical, with a deep-thinking test bench by experts and qualified users.

In conclusion, active engagement of stakeholders and valorisation of grassroots micro innovation ideas should be two pillars of any innovation support strategy in the field of ICT-enhanced learning. If micro innovation support is a strategy that has been proving to work for example in the US, "inclusive strategies" would represent a unique feature of a European vision in support to innovation, as happens for example in the Living Labs concept. With respect to existing approaches, we propose that stakeholders should not just be expected to "comment" or "validate" a specific innovation, but should be the real engine of the process, especially since the TEL landscape is populated not only by single "grassroots" innovators but also by market and institutional forces and since more than often innovation is a societal need.

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