Change Management: Blended Learning Adoption in a Large Network of European Universities

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Abstract: We report in this paper on a multiyear endeavour within the EIT (European Institute of Innovation and Technology) Digital community, during which EIT Digital built an international community of Innovation and Entrepreneurship ("I&E") teachers at Master level by implementing a blended learning strategy. We see this challenge as a case in change management, which could offer relevant insight to run similar initiatives of blending learning adoption as an enabler to developing pedagogical cooperation in networks of universities with real impact on practices. Through the lenses of change management theory, we describe and analyse the methods that allowed EIT Digital to create and enhance a community of "teacher-producers" in order to develop and deploy blended education from scratch. EIT Digital, a Knowledge and Innovation Community of the European Institute of Innovation and Technology (EIT), provides IT education at Master's level since 2013 and in association with its around 20 member universities, including a strong "Innovation & Entrepreneurship" ("I&E") education component. EIT Digital developed a blended learning strategy whose originality came from the fact that some of the teachers are also producers on behalf of the entire community, receiving associated co-funding and technical support from EIT Digital. More specifically, teachers actively took part to the production agenda, according to which producers were chosen within the community to create and deliver the agreed online contents. EIT Digital library now encompasses more than 500 basic online contents ("nuggets") covering most topics relevant for I&E education at the graduate level, from basic business model introductions to complex technology transfer strategies. This amounts to more than 45 hours' worth of videos along with dozens of written cases, quizzes and other forms of online/offline assignments. Depending on the various universities' contexts, different blending strategies were deployed, which had practical consequences on the global EIT Digital development. The heterogeneity of the universities' profiles probably significantly increased the value of the EIT Digital network which proved relevant with regards to blended learning adoption, while EIT Digital's change management strategy contributed significantly to uplifting the I&E education offered at the member universities, notably giving momentum to its I&E teacher community.

Keywords: Blended learning, Change management, Community of Practice, User-Innovators, Teacher-Producers

1. Introduction

In a context where multiple reports (e.g. Barnes et al., 2007) pointed towards a general decrease of the attention span of digital native students in traditional classrooms, also in relation probably to multitasking in a multiscreen environment (Kaiser Family Foundation, 2005), recent years saw an accelerating evolution towards blended education. However, such change evolution is most likely strongly correlated with teachers and professors' involvement, who can picture blended learning as associated with workload increase, as being of yet unproven effectiveness or as potentially affecting their careers in uncertain ways since they might or might not gain recognition for their blended learning achievements (Humbert, 2007). Conversely, important drivers can be achieved in this respect by improving trust in the technical infrastructure used to support online content or by bringing-in early-adopters in order to foster the development of blended education within a faculty (Porter et al., 2016).

In this paper, we report on a successful multiyear endeavour, within the EIT Digital community, that built an international community of I&E (Innovation and Entrepreneurship) teachers at Master level through implementing a blended learning strategy. More in particular, we describe and analyse the methods that allowed EIT Digital to create and enhance a community of "*teacher-producers"* to achieve blended education from scratch.

2. Innovation and Entrepreneurship Education at EIT Digital

Part of the mission of EIT Digital, a Knowledge and Innovation Community from the EIT, an independent body funded by the European Union and set up in 2008, is to provide IT education at the Master's and Doctorate levels in association with its member universities including strong "Innovation & Entrepreneurship" ("I&E") minor (existing since 2013) that represents 30 ECTS (European Credits Transfer System) in a 120 ECTS 2-year Master's program, i.e. 25% of the credits to graduate. In this context, the EIT Digital I&E education community had to address the challenge of implementing a homogeneous I&E Minor within different Master's programs in a network of progressively up to around 20 transdisciplinary European universities over 9 Member States, which notably implied building a community of teachers and professors from all these universities. In a context where online education was more popular than ever, it was decided to develop a blended learning strategy whose originality came from the fact that some of the teachers that belonged to the community would also be producers on behalf of the entire community, receiving associated funding from EIT Digital, being coordinated by one of them, while the technical infrastructure and the dissemination and use of the resources produced would also receive support from EIT Digital. Notably through bimestrial coordination meetings, producers are forming a blended learning triangle with students and teachers (Stoycheva et al. 2017). More specifically, teachers and students were invited to come and give feedback on the online content production. They could also actively take part to the production agenda, the choice being made that only few producers would be chosen to create and deliver the agreed online contents. The emphasis was put on the modularity of the online content developed to foster integration within the existing programs that were "going blended". Therefore, the piece of content called "nuggets" were made short and straight to the point, with added descriptor documents to the attention of the teachers for smoother adoption. These nuggets are bricks to build a blended learning course. EIT Digital library is now more than 500 nuggets covering from basic business model introduction to the most complexed technology transfer strategies. As this paper is written, this amounts to more than 45 hours' worth of videos along with dozens of written cases, quizzes and other form of online/offline assignments.

EIT Digital's Master's programs were structured by several overarching learning outcomes (OLO, see Annex 1), that specified which knowledge and capabilities students should acquire throughout the program, and here, independently from the university they belonged to. However, considering the various constraints faced by different universities in different countries, the program could not be fully standardized, which resulted in a so-called "glocalization" of the program (see Figure 1).

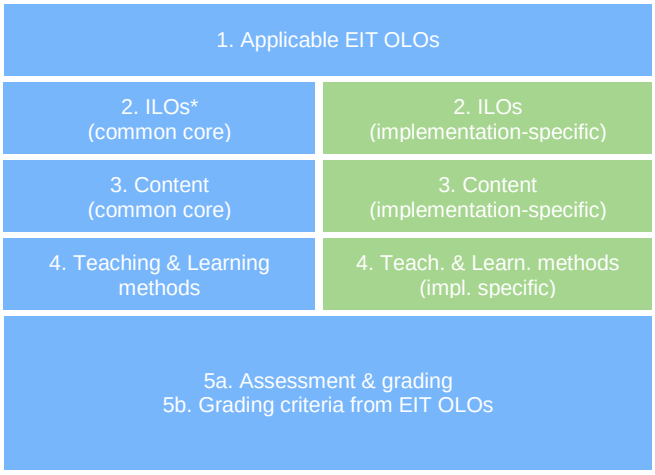

Figure 1. *"Glocalization"* of EIT Digital Master's program.
(* Intended learning outcomes)

This architecture, together with more detailed specifications shared by all universities member of EIT Digital for each course, secures interoperability between the different universities, a condition to student exchanges, while steps 5a and 5b (assessment and grading) guaranteed that OLO requirements were fully met which is mostly enabled by the blending learning approach. In the meantime, leeway was given to the teachers to implement their specific objectives, content and teaching methods (Bonifacio, Angeli, Stoycheva, 2017). This leeway was also needed to foster innovation within the community, avoiding the EIT Digital standards to restrict teacher's initiatives (Brown, Duguid 2000).

As hinted before, a considerable amount of effort was made to support the teachers in this digital transformation, analysed as a case study in change management. Acknowledging the relevance of Kotter's 8-Step Process for Leading Change (Kotter 1995), we analyse how this EIT Digital initiative achieved creating a sense of urgency and forming a powerful guiding coalition through the recruitment of opinion leaders within each university. Another key element in EIT Digital strategy was lowering the switching costs of "going blended", notably by providing strong technical support, the costs of information system switching being a huge factor with respect to user resistance (Kim & Kankanhalli 2009). Last but not least, EIT Digital improved the perceived value for the universities of "going blended" *in a network* compared to the perceived value of going blended on their own.

3. Leading change

3.1 Creating a sense of urgency

Evidence (Opinion way, 2015) of increasing need for innovation and entrepreneurship education are still piling up. The numerous success stories of start-ups led to a positive public opinion with respect to entrepreneurship, which was not always the case, and which has been now trending for the last couple of years. In this context, there appeared a competitive advantage in offering innovation and entrepreneurship education applying pressure to do so. However, many universities, often technically-oriented, had neither the competencies nor material resources to create related courses, although some felt compelled to develop them nonetheless. It was in this context of urgency that EIT Digital stepped in and offered its critical assets.

3.2 Getting opinion leaders within university

Creating the core group of the EIT Digital community was one of the very first tasks tackled by EIT Digital. This core group would be leading the change within the universities while also contributing to EIT Digital by providing feedbacks. The core group is composed of so-called *local coordinators*, each of them being attached to one university in EIT Digital's network. Each university proposed its own local coordinator validated by EIT Digital, based on motivation and prior experience in education and notably innovation and entrepreneurship education, but not only; a particular attention was devoted to promote a diversity of profiles within this core group: local coordinators ranged from entrepreneurs to pure academic profiles and from "soft" to "hard" sciences. At a global level, it enriched the EIT Digital network, hence increasing its perceived

value from the point of view of potential newcomer universities. These coordinators were key people to push the EIT Digital agenda forward and to promote its blended-learning strategy.

Moreover, some local coordinators endorsed the role of content producers, with the support of the whole group. While it was relatively unusual for teachers to use content from teacher-producers at other universities, mutual trust and the belonging to a community of practice allowed this approach to succeed, supported by regular physical meetings (5 or 6 per year at various members' university in Europe) with a mandatory and close feedback loop: e.g., analysing which characteristics of pedagogical videos increases student's attention span most, which kind of assignments and therefore grading setup is the most appropriate in which situation, etc. EIT Digital's local I&E Coordinators and more generally EIT Digital's I&E teachers, and even more specifically its teacher-producers of online I&E content, were nothing else than *lead users,* as defined by von Hippel (1986), coming up with innovative ways of teaching and contributing also to their diffusion. Whereas the diffusion of user-innovations is known to face severe difficulties due to the extra costs associated with preparing user innovations for appropriate diffusion, and to a lack of incentives faced by user-innovators with regard to bearing these costs (von Hippel & DeMonaco, 2013), these costs and incentives were precisely and structurally addressed by EIT Digital thanks to a dedicated budget for production and coherently, with procedures and frameworks put in place by the teacher-producer team.

In this context, content production was co-constructed by combining top-down needs defined by EIT Digital management with bottom-up suggestions by lead users and was dispatched among producers who shared same guidelines and work ethics, so that production quality was standardized while accounting for the specific skills of each producer. To summarize, EIT Digital hybridized top-down processes, enforcing OLOs and guidelines for content production with bottom-up ones, nurturing its production plan and overall strategy with lead users' feedback.

4. Reducing switching costs

4.1 Infrastructure support: enabling tools and dedicated infrastructure

Another key parameter in change management has to do with switching costs. These are of several types when it comes to implementing blended learning. From an educational point of view, programs simply evolve, which implies additional workloads, experimentations and more generally adaptation work. Furthermore, blended learning also opens up new way of making assignments and grading. In the case of EIT Digital, this went to the point where students of different universities took the same assignments, while the grading would be centralized to one university – which raised institutional issues that had to be anticipated and negotiated between partner universities. As an example, EIT Digital organizes several summer schools each year on the campuses of several partner universities, mixing students from the whole EIT Digital network for which it is part of their compulsory modules. And while centralizing grading with its information system support, EIT Digital also enabled students that are not collocated to work on group projects.

To get teachers on board, they needed to be guaranteed that the tools and dedicated IT infrastructure were up to date and well-adapted, in order to effectively support the blended learning. At the very least, it meant a secured repository that provided basic features to share content with students. EIT Digital then provided a complete learning management system (LMS) and, in the context of online I&E content production, developed additional functionalities to ease the switching process for users such as search tools to browse through the contents quickly, tools to manage online assignments and also monitoring capabilities. Moreover, contents produced were always packaged with additional documents to enhance the teacher's ability to deliver the course, such as written descriptions, suggested assignments and suggested additional pedagogical material.

4.2 Blended learning models and self-selection

Much like in industries where price discrimination is practiced and users self-select among a menu of choices according to their own non-necessarily revealed preferences, EIT Digital could not know beforehand which blended learning model among those possible were the best suited for each university. Depending on their legacy with regards to innovation and entrepreneurship education, depending on their current adoption of IT tools within their work processes, their need for specifications with respect to blended education varied. EIT Digital offered different models, more or less loosely-coupled blending model, so that the choice made by

university should, by design, optimize the switching costs/expected value balance from the university point of view. The blending models used by EIT Digital are described in Table 1 below.

Table 1. EIT Digital's blending models

Flipped classroom	Online contents are delivered to students before class and then discussed in class
Blended online course	Pre-packaged online contents with assignments that may be associated with supervised sessions in class
Online Starter-Kits	Modules online contents with assessment to be used in short-span contexts such as summer schools
Online Case Studies	Online cases to be viewed before and/or during class to foster discussion
Independent levelling-up	Online content made available before class to bring some students up to the level for the class
Online repository	Online packages made available to cover students' specific needs for a course or for their self interest

This had practical implications for EIT Digital, the very first one being that contents must be sufficiently modular in order to adapt to a variety of situation, meaning that a given piece of content must not refer to another and should be self-explanatory. Practically, this implied relatively concise videos, called "nuggets" within the EIT Digital community, and stand-alone assignments where the nuggets were typically associated and "pre-packaged" depending on the blending model chosen (see table 1). The second consequence was that not all blending models demonstrated the same benefits to EIT Digital in terms of having structural impact on the I&E education implementations and practices at universities so preferred (most tightly-coupled models) blending models, namely flipped classroom, blended online course and online Case Studies, were subject to specific additional support. In this context, key performance indicators (KPIs) were defined to measure blended learning adoption within universities, such as the percentage of courses that were blended and the number of students attending these courses. These were mostly quantitative KPIs since better refined qualitative KPIs would demand significantly closer monitoring which was hardly attainable in that time. Nowadays, new monitoring capabilities are being developed based on the higher quantity and better quality of data harvested through the LMS.

5. Increasing perceived value

5.1 EIT Digital network

The most immediate value that EIT Digital brought to the table was its large European ecosystem that was not only composed of several high-profile universities but also of many global and local companies from most European countries. It thus offered a better connection to the industry, which could be lacking from many universities' points of view, all the more so in the context of addressing innovation and entrepreneurship education. Furthermore, innovation and entrepreneurship being highly transverse topics, each university brought different key elements depending on its specialization: technological skills, marketing or management, etc., which allowed for a broader spectrum of courses on innovation and entrepreneurship than any single university could have developed alone. As mentioned above, lead users coming up with new teaching methods, enabled by blended learning, belonged to a community where they shared their practices with EIT Digital itself but also with the other members of the community, hence increasing the value of the EIT Digital network for the all stakeholders.

The heterogeneity in itself of universities proved to be a valuable asset and definitely made an argument for joining the community for newcomer universities that did not adopted blending learning yet, and for which EIT Digital can invert the equation between expected costs and rewards of adoption.

At the very beginning, positive network externalities were not as strong as of today. To make up for that, the scheme that first universities were actually co-developing online pedagogical content rather than straight up outsourcing it from EIT Digital incentivized the former to be their own first early adopters, effectively building a network of users.

5.2 Education regulation and blended learning

Although numerous papers are advocating the benefits of blended learning (Garrison, Kanuka (2004), Graham et al. (2005)), the theoretical value of which seems indisputable, its practical value could be impacted by regulations, a particularly relevant topic in Europe. In the European system, the accreditation of higher education is based on ECTS which corresponds to student's working time within a program. From there, questions immediately arise: what should be the ratio between working time spent online or in class? Would a 1-hour video equal a 1-hour physical lecture? There is no consensus yet on how online or offline should be valued comparatively, even if EIT Digital, advocating blended learning education, would tend to value 1 hour online + 1 hour offline more than either 2 hours online or 2 hours offline. With the current definition of ECTS, these are considered equal, which does not incentivize educational programs to be more blended oriented when considering these ECTS matters, which are top priority matters when designing a program. Blended learning would gain value if that issue was addressed and notably if research would offer further evidence and support in this respect notably through on-going and future experiments.

6. Conclusion & Further steps

Taking advantage of the challenging context that universities faced with regards to setting up entrepreneurship and innovation education programs, EIT Digital created a community where they could embrace blended learning thanks to a multi-dimensional change management strategy, as an enabler to pedagogical development cooperation within networks of universities, with real impact on practices. Setting up an international community of teachers-producers was key in this respect, serving as a core group to lead change within an averse-to-change system, increasing the perceived value of the network and effectively enabling better blended learning adoption. IT infrastructure support should also not be neglected and information system has to evolve accordingly to fulfil the needs created by the blended approach, requiring planning to be able to connect with each partner's information system which is a mandatory step to convince teachers to embrace of this digital transformation. In general, we hope that this case study contribute to the analysis of how blended learning can diffuse and be adopted more widely within networks of universities.

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Annex 1 : EIT Digital Master Schools OLOs for Masters programmes (from EIT Label Handbook, 2017)

Value judgments and sustainability competencies (EIT OLO 1)
The ability to identify the short- and long-term future consequences of plans and decisions from an integrated scientific, ethical and intergenerational perspective and to merge this into a solution-focused approach, moving towards a sustainable society.

Entrepreneurship skills and competencies (EIT OLO 2)
The ability to translate innovations into feasible business solutions.

Creativity skills and competencies (EIT OLO 3)
The ability to think beyond boundaries and systematically explore and generate new ideas.

Innovation skills and competencies (EIT OLO 4)
The ability to use knowledge, ideas and technology to create new or significantly improved products, services, processes, policies, new business models or jobs.

Research skills and competencies (EIT OLO 5)
The ability to use cutting-edge research methods, processes and techniques towards new venture creation and growth and to apply these also in cross-disciplinary teams and contexts.

Intellectual transforming skills and competencies (EIT OLO 6)
The ability to transform practical experiences into research problems and challenges.

Leadership skills and competencies (EIT OLO 7)
The ability of decision-making and leadership, based on a holistic understanding of the contributions of higher education, research, and business to value creation, in limited sized teams and contexts.