From Enthusiasm to Strategy: Four Critical Factors to Sustain the Development of Technology Enhanced Learning in Educational Organizations

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Abstract

At a time when Massive Open Online Courses (MOOCs) are making headlines in the education world, I will explore in this paper which factors are essential to sustain the integration and the development of E-learning or Technology Enhanced Learning in educational organizations. After providing an extensive definition of E-learning and arguing why an E-learning strategy is required, I will look at two analytical frameworks to comprehend the challenges faced. The first analytical framework, the Actor Network Theory (ANT) enables us to understand that IT, ICT and E-learning are about complexity, interaction, agency and power. The second analytical framework by Andreu and Ciborra (1996) will give us at the practical level of each organization, a template on which successful implementation of E-learning may be designed. Finally, based on my experience and two examples, four critical factors will be singled out: 1) Collaborative working practices, 2) Leadership, 3) User friendly technology and 4) Support.

1. Introduction

Massive Open Online Courses (MOOCs) are an "attack on education business" claims French Sociologist Dominique Boullier (2012). They are only part of "an avalanche […] and the revolution ahead" reply Barber, Donnelly and Rizvi (2013) from the multimedia company Pearson. Their British employer, one of the largest book publishers in the world has turned itself into a serious contender in online learning solutions when it purchased last October for $650m EmbanetCompass, a leading US provider (Pearson, 2013). British universities are preparing their counter attack for Autumn 2013. They created Futurelearn (2013) which was launched last December. Eighteen of them including the universities of Southampton and Warwick have joined forces with the British Library and the Open University, the leader in distance education in the UK. The almighty Coursera (2013) with to date, 62 universities across the world, has been joined only by a handful of European higher education institutions including two British ones, the Universities of London and Edinburgh.

I entirely agree with Dominique Boullier (2012) when he emphatically wrote last December: "The massive commercial war on education is now launched and everyone is supposed to adopt a strategy to counter it". Based on my personal experience and two examples that I will detail in this paper, I will argue that Technology Enhanced Education or commonly referred as E-learning here, must be underpinned first of all, by an explicit and defined teaching and learning approach shared across the organization. In my opinion, the lack of an explicit pedagogy is the first and most single impediment to the development of E-learning. Thanks to Zupan (2009) I will then explain why an E-learning strategy is required. Two analytical frameworks, very different from one another, will be explored. The Actor Network Theory will help us to understand the effects of specific IT artefacts such as PCs, software and the "power" of technology, in which I will include E-learning. Through Andreu and Ciborra's analysis of the role of IT in firms (1996), I will suggest how their contribution can be understood by educational institutions to establish core capabilities in E-learning. Finally I will single out the four critical factors necessary to ensure that e-learning is embraced and implemented by an educational organization as a whole, inclusive of all its members, teachers, students, support staff and parents alike.

2. An extensive definition of E-learning

Although MOOCs are not yet fully fledged distance learning courses, they already play an innovative role, albeit limited at the moment, in the education landscape as hundreds of students are very appreciative of their existence. MOOCs are only the latest development in terms of online educational resources. Let's not forget the huge success of iTunesU and YouTube, the smart elegance of Mendeley and Prezi, the simplicity of Showbeyond.com and the reliability of ScreenR, free and almost unlimited storage on Dropbox to mention just a few. We should also cite the many foundations, museums and media, such as the BBC Bitesize for K-12 sector or The Economist, purveyors of outstanding content as well as the hundreds, the thousands of individuals, who create for no financial gain, unique pedagogical resources to help children and parents struggling with school homework.

With so much content, so many tools, software and applications available to students and instructors alike, where can all this possibly fit into the digital landscape of education ? From a faculty or a teacher's point of view, students spend far too much time texting or playing games from their smartphones, chatting on Facebook during lectures and, all too often, submitting their essays at the last minute cutting and pasting the most poorly edited Wikipedia entries. Is it because of their youth and subsequent lack of maturity or does it say something about our teaching?

For the purpose of this paper, I am defining E-learning in the widest possible sense to include both online distance learning and blended learning, Technology Enhanced Education and Technology Enhanced Learning. That is, any online resources such as E-books, websites… online interactive activities like quizzes, wikis, blogs…which can be integrated into the syllabus, and can be undertaken inside and outside the classroom. With the exception of the occasional examination setting where students may still write with a pen, academic communication skills are fast becoming totally mediated by a PC or a laptop/ tablet as well as

the World Wide Web which offers the wealth of sources and resources we mentioned earlier. British universities have also been concerned for a while with their students' academic communication skills. Secker, Coonan, Webster et al (2013) are promoting ANCIL – A New Curriculum for Information Literacy. Coonan and Secker (2011) show in their mapping of the Information Literacy Landscape how "academic literacies", "information literacy" "media literacy", "new literacies" and "digital literacy" are overlapping one another. For example, academic writing is part of academic literacies as well as information literacy as students are required to reference their researched essay based on academically published evidence. The search skills acquired by students are part of both information literacy and digital literacy because they exclusively use online search engines etc… Therefore, I also include all the literacies mentioned above by Secker and Coonan (2012) in our extensive definition of E-learning because they are mediated by Information and Communication Technologies (ICT).

3. Learning as Doing versus Teaching as Telling

Before establishing an E-learning strategy, an educational organization needs to assess which pedagogical approach or teaching and learning approach its courses and teaching are based on. The lack of consensus regarding the adoption of an overarching theory in teaching and learning will impact deeply not only on the type of online resources and activities that will be developed, but also their success amongst students. The focus on online resources as opposed to activities may show that the learning process is centered on the primacy of teaching as opposed to the needs and engagement of the learner.

All too often so called "E-learning" is reduced to a set of online recorded lectures complemented by quizzes or multiple choice questionnaires. These do help and support students in many ways, but they are falling short of our expectations. By reducing E-learning to the above, we are failing to grasp a fundamental premise: learning is an essentially active process. Whilst recording lectures, many universities still expect hundreds, yes hundreds of students to physically sit through them, assuming on one hand that all academics can be a Socratic performer in front of 300 students, whilst deploring that the same students in the same lecture hall will be checking their Facebook account on their laptop or tablet. But then again, in the same way some Wikipedia entries are of outstanding quality, Facebook is also used by students to support their peers in their studies. Educational organizations must acknowledge that students also use social networking tools to exchange knowledge and practice exam questions. Universities are also to be reminded that learning is indeed a social activity. Fortunately, as I will show later, some schools and universities are grasping the opportunities offered by other social networking tool such as Elgg, E-portfolio software like Mahara or PebblePad, to develop pedagogical activities centered on the learner (Tandem learning in foreign languages, reflective learning in accredited work placements etc…).

In my opinion, too few educational institutions seem to be aware that a paradigm change has occurred in education (Laurillard, 2002). A radical shift has taken place from "teaching as telling" (tell-practice-test) to "learning as doing" with the learner defined as an active agent. A plethora of pedagogical models such as problem-based learning, situated learning, meta-cognition, social constructivism, collaborative learning… have been developed over the last

fifty years to reflect this fundamental change. All are defining learning as an essentially active process. This is no accident that Australian IT specialist Martin Dougiamas (1998) found Constructivism to be the most appropriate learning theory on which to underpin its E-learning platform. This was to become Moodle, one of the most popular open source VLE to date in both Britain and France.

4. The need for an E-learning strategy

Educational organizations in Britain often appear to rely on a few dedicated and enthusiastic teaching or academic staff to introduce and sustain e-learning. Supported by IT specialist staff and by instructional technologists in large universities, these enthusiastic teachers or academics sometimes called E-learning Champions (BECTA, 2005) or E-learning Co-ordinators (University of Kent, 2007) work tirelessly selecting and testing new software with their students, devising interactive activities, disseminating best practice, training and supporting time poor colleagues overwhelmed either by the latest changes introduced by the British Government in the K 12 sector or if they are academics, these will under pressure to demonstrate the "impact" of their research work to maximise future government funding. The appointment of E-learning champions might well be the most appropriate way to introduce ICTs at an early stage in schools and universities. However, the scope of this approach is very limited, should the organization for example, as a whole, aim to fulfil the needs of all its staff and students alike; thoroughly review its investment in hardware and software or equally; design a teaching and learning framework for a safer and more ethical use of ICTs including social networking and file sharing. I argue with Zupan (2009), that every educational organization should design as well as review regularly its e-learning strategy in the light of its pedagogical model and the changing needs of its students and teaching staff.

Zupan (2009) points out that schools and universities need to design an E-learning strategy for the following reasons. First, in designing such a strategy, they have to clarify the purpose of technology (Laurillard, 2002) and define their pedagogical model accordingly. Is the organization's teaching and learning approach centered on the needs of the learner or on the primacy of teaching and lecturing? This is an important step as this will determine how ICT will be directed and managed. Second, institutions must establish at which stage technology enhanced learning is. Some institutions will be surprised to find out how little confidence their teaching staff have with technology, when in fact they are much more knowledgeable than they think. Institutions might also discover that their students' IT skills are not as sophisticated as Prensky (2001) and many others first thought. Then, in the next stage advised by Zupan (2009) the success factors that will enable change will have to be established. McPherson & Nunez (2004) mapped out a multitude of factors affecting the implementation of E-learning (Fig. 1). I will single out, later on, four critical success factors. Finally, as Zupan (2009) concludes, an E-learning strategy will help institutions to align the interests of its stakeholders (faculty, students, administration, and so on) and establish an ongoing evaluation.

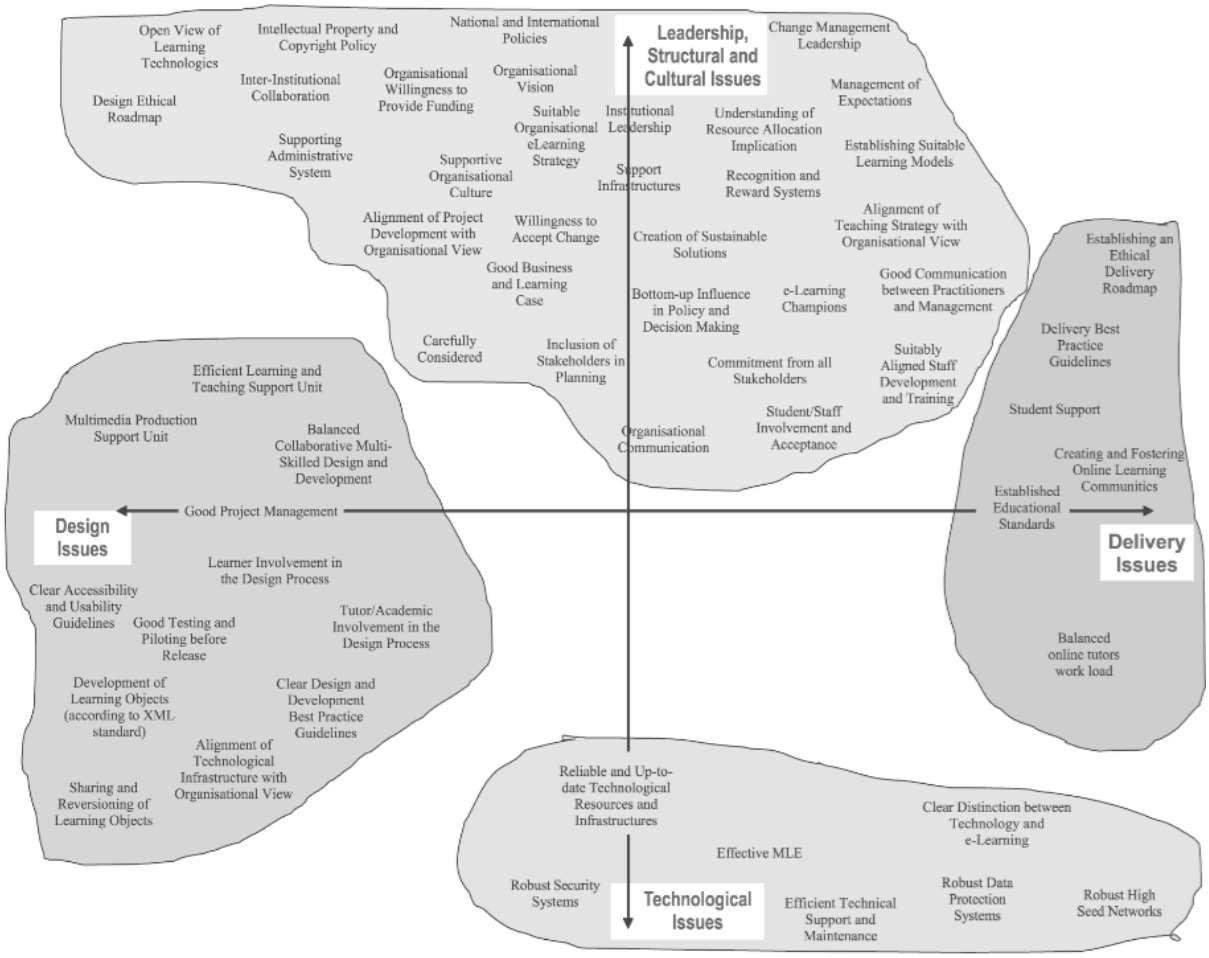

Fig. 1. McPherson & Nunez (2004) Mapping Success Factors in E-learning

Even when e-learning is underpinned by a sound teaching and learning approach, how is it that e-learning can be so time consuming and complex to implement? Why do some projects or initiatives appear to encounter many obstacles often small, yet significant enough to grind the project to a halt, causing major delays and a huge amount of frustration? On the other hand, many of us are puzzled when an small institution faculty, or a single individual, all with modest resources appear to be ahead of the game and deliver the most original, engaging, innovative E-learning ? Why do some fail when others succeed?

Two analytical frameworks will help us to understand the challenges faced. The first one, the Actor Network Theory (ANT) helps us to understand that IT, ICT and E-learning are much more than just about technology and pedagogy. They are about complexity, interaction, agency and power. Then, the second analytical framework by Andreu and Ciborra (1996) will give us at the practical level of each organization, a template on which successful implementation of E-learning may be designed.

5. Actor Network Theory

Actor Network Theory (ANT) was developed in the 1980's by French and British scholars in Science and Technologies Studies (STS). From an analytical point of view as a

theory of the "social", ANT helps us for example to appreciate how science progresses and scientists work (Callon, 1986; Latour and Woolgar, 1979), to understand the collapse of the Soviet Union (Law, 1992), or to comprehend the multi-layered connections between reality and the so called emerging virtual worlds (Woolgar, 2002). The first radical assertion ANT is making is the following: we must not separate, when analyzing the "social", people from objects; we must not differentiate human beings from the "stuff" they surround themselves with, from the relationships, as well as the most basic connections with objects, people are immersed in. ANT argues that human beings define themselves, and exclusively so, by the social situation they are in, by the social interactions they necessarily generate.

According to ANT, outside the "social", people are nothing. Law (1992) asserts "*people are who they are because they are a patterned network of heterogeneous materials"*. By materials ANT means literally everything: "*people, machines, animals, texts, money, architectures… any material you care to mention".* At the core of the "social" which "*is nothing more than patterned networks of heterogeneous materials"*, lie interactions, all sorts and type of interactions between heterogeneous materials, which in turn as "Actor Network" have agency, that is the "capacity, the condition, or state of acting or of exerting power" (Merriam-Webster, 2013). However, Law (1992) specifies that ANT defines power "*as a (concealed or misrepresented) effect, rather than power as a set of causes"*.

E-learning under the guises of a MOOC or a VLE is an Actor Network, a complex web of connections and interactions. These may include human beings such as students, teaching assistants, the professor lecturing, the instructional designers, as well as objects such as campus PCs and students' laptops, videos, course text resources, quizzes, a combination of open source and proprietary software, email accounts and often Facebook… Most of the time, all it takes is the simple click of the mouse, once the username and password have been entered. This is because ANT says, complexity has "punctualised", compressed to an ultimate degree of accessibility and apparent simplicity. "*Punctualised resources offer a way of drawing quickly on the networks of the social without having to deal with endless complexity"* (Law 1992).

When we first integrated Wimba voice recording boards (Roger, 2006) onto our VLE (Moodle – The London School of Economics-LSE), we logically wanted to use expensive USB headsets to produce recordings of the highest quality. Unfortunately these USB sets whatever the brand used proved to be most troublesome and unreliable. Sometimes they would work perfectly, sometimes they would not. We realized that the issue was not due to the brand of headsets, or the type of PCs but simply the PC's USB ports. These were used so often by students' USB memory sticks, they were unable to read systemically USB headsets. A chat with a member of staff at the local electronic store solved our conundrum: the basic and cheapest 2 jack headset would always work and in fact, produce voice recording of the highest quality (Lingard, 2008). Thanks to this, from then on, LSE students were able to practice and develop their speaking skills in foreign languages because Moodle (and subsequently Wimba voiceboards) became at LSE "*a relatively stable network […] one*

embodied in and performed by a range of durable materials" (Law, 1992). The same might be argued one day about MOOCs.

6. The role of E-learning in organisational learning and core capabilities development

In their analysis of the role of IT in organizations through the resource-based view of the firm (RBVF), Andreu and Ciborra (1996) provide a useful analytical framework to any educational organizations whose strategically aims make E-learning a core capability. Andreu and Ciborra (1996) demonstrate how IT participates in the organizational process that transforms resources into capabilities and eventually into core capacities. As they put it, RBVF "*focuses on the firm's resources and capabilities to understand business strategy and provides direction to strategy formulation*". In Figure 3, they divide the organizational context in three different levels: Resources, Capabilities and Core Capabilities. Amit and Schoemaker (1993 cited in Andreu and Ciborra, 1996 p.112) point out that:

"*Capabilities* refer to a firm's capacity to deploy *Resources*, usually in combination, using organizational processes, to effect a desired end […] Unlike *Resources*, *Capabilities* are based on developing, carrying and exchanging information through the firm's human capital".

For Andreu and Ciborra (1996), three essential loops transform and translate Resources (ie World leading professors, IT software…) into Core Capabilities (ie MOOCs). The first loop, the Routinization Loop is enacted by Working Practices. The second loop, the Capability Loop is controlled by Management Actions. The third and last loop, the Strategic Loop ensures that Core Capabilities are in line with the Organization's values and mission.

I argue here that E-learning can play the same participative role in educational organizations as IT does in firms according to Andreu and Ciborra (1996). As IT artifacts like spreadsheets or word processing, IT systems such as Document, Project or Customer Relations Management are used on a daily basis by administrative staff in educational organizations, E-learning is also integrated to one degree or another in the daily teaching and learning activities of brick and mortar schools and universities. As a consequence, E-learning is being transformed from a resource (any online resources) into a capability (VLE organizing resources coupled with activities) which in turn can become a core capability and the source of competitive advantages for an educational organization. In my opinion, this explains why and how MIT, Harvard and many other US universities are developing MOOCS.

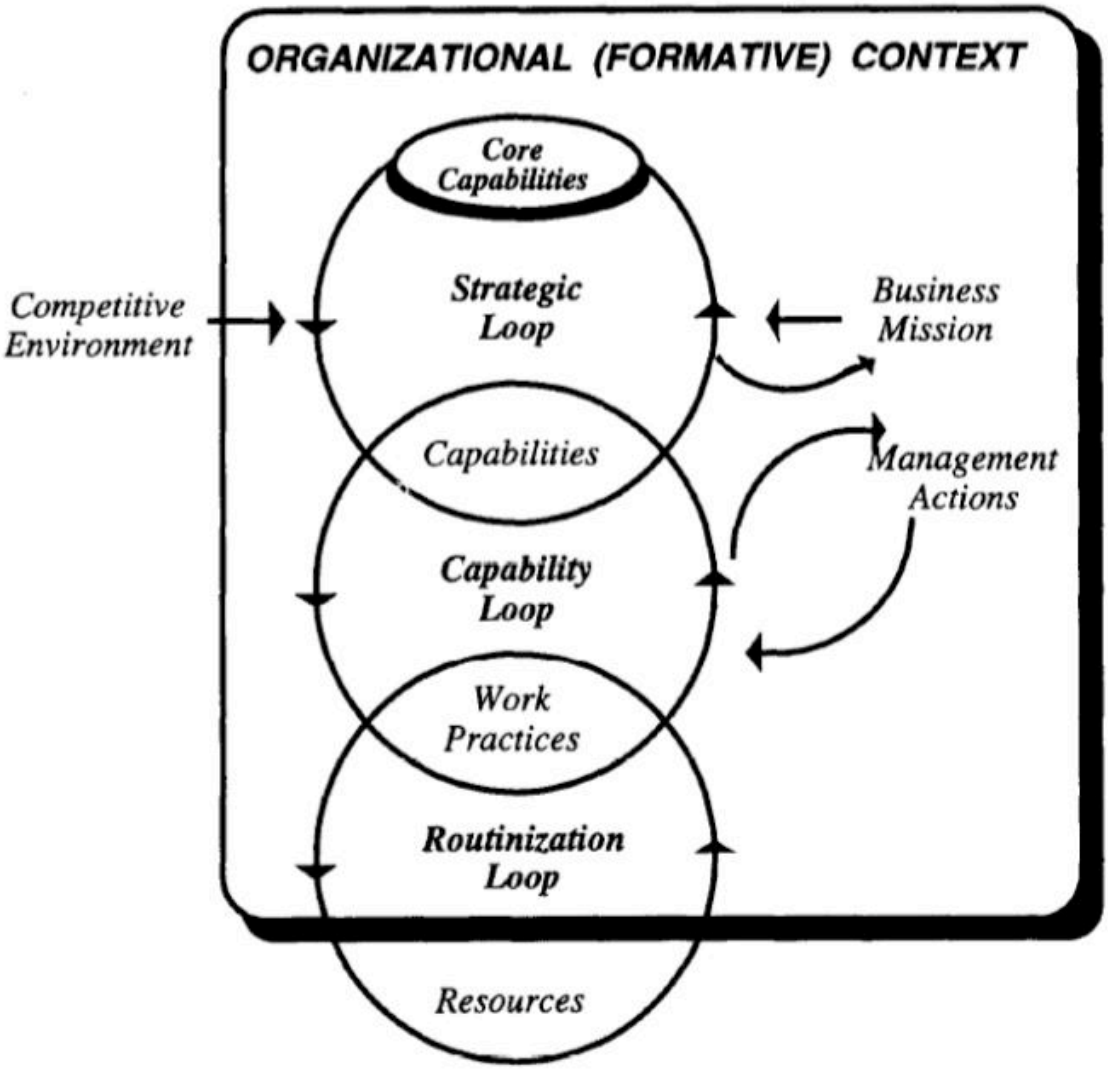

Fig. 2. Andreu and Ciborra (1996) Basic learning processes in the core capabilities formation process

The two following examples will show how E-learning can be successfully developed thanks to Andreu and Ciborra (1996). The first example will be about Paris Descartes a large university based in the French capital and specializing in Health, Bio and Medical Sciences, Mathematics, IT, Law and Social Sciences. The second example will focus on a small faculty teaching Modern Languages and English to degree level at the London School of Economics, UK. Paris Descartes has made e-learning a core capability. The French university has succeeded on many fronts when its neighbours are still struggling with the development of online resources and activities. Paris Descartes has set up a "Médiathèque", an online repository to archive media artifacts making them accessible to its students and staff. It has also been using Moodle extensively as a VLE in medical studies, one of its most demanding and challenging undergraduate courses in France as the number of eligible students is strictly limited. Students are keeping the faculty on their toes ensuring that resources are regularly up to date on the VLE. Paris Descartes has also innovated by using open source ELLG to establish a portfolio system "les Carnets 2", which has turned out to be more popular as a social network. Out of 34.000 students over several sites across the capital, over 14.000 are

registered users utilizing the "Carnets" to create revision and study groups, advertise flat sharing vacancies and share cooking recipes. "Les Carnets 2" provide staff and students with a relatively safe digital identity, bound and regulated by the country's stringent data protection and privacy laws. Paris Descartes has integrated the learning dimension in organizing on a yearly basis a conference on E-learning "la Journée Numérique" (JUM13) where staff showcase their innovative practice and share their experience with academics from other universities as well as members of the public. Internally Paris Descartes holds regular staff training and "show and share" sessions across the different faculties.

At the level of a small faculty, staff at LSE Language Centre have demonstrated how a learning activity, digital storytelling can be initiated in one subject (French) and then be implemented in other languages, as well as in other educational organizations such as schools (Watts and Forder, 2012). In terms of Core Capabilities, the Language Centre has to ensure that LSE students develop their ability in communicating in a foreign language at degree level (UK UG level 6). This requires the combination of language skills (Speaking, Listening, Reading, Writing) and subject knowledge (Economy, Politics…) through a set of pedagogical activities which are, as much as possible, engaging and personalized, underpinned by "learning as doing". Digital Storytelling was first introduced to the author, LSE member of staff at the time, by Dr Stéphane Charitos from Columbia University during a training session at Columbia University Global Center in Paris. As *Resources*, the Center for Digital Storytelling in Berkeley, California (2013) provides all the know-how required for storytelling. This was then adapted by LSE teachers for the specific purposes of foreign language learning. Integrating standard tasks in foreign language learning such as describing and commenting on meaningful pictures, with the purpose to then, document, create and record a personal story narrated by the student in the foreign language. This proved to be a very successful activity.

Last but not least, the Teaching and Learning Facilitators from the LSE Language Centre and the Learning Technologists from LSE Centre for Learning Technology played a key role in both the Routinization Loop and the Capability Loop to support the teaching staff across the different languages taught. In the Capability Loop, they provide valuable advice and support in order to make sure that there are no technological or IT obstacles for students to undertake this activity.

7. Conclusion : Four critical factors to sustain E-learning

ANT as well as Andreu and Ciborra (1996) provided earlier in this paper, two complex analytical frameworks. ANT helps to understand the effects of IT artifacts and systems in organizations and society at large. Andreu and Ciborra's focus on the role of IT in core capabilities development in organizations and MacPherson and Nunez map out the numerous success factors playing a part in E-learning implementation. Based on my experience and the two examples described above, I have singled out the following four critical factors ensuring the integration and the sustainable development of E-learning in educational organizations (Fig. 3): a) Collaborative working practices, b) Leadership, c) User friendly technology, d) Support.

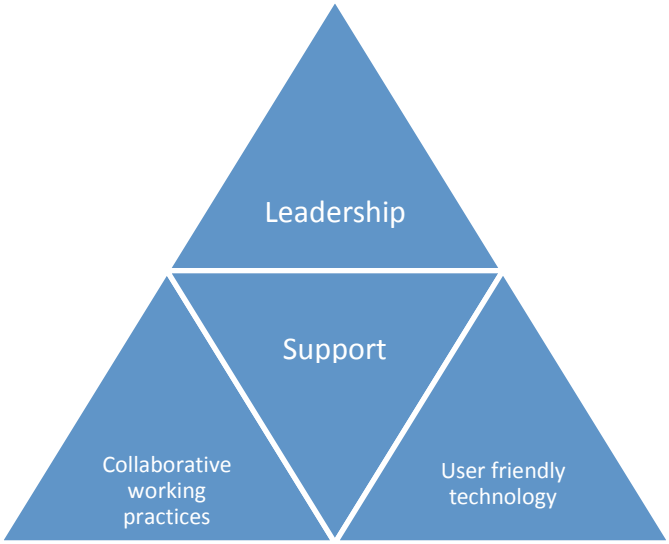

Fig. 3. Four critical factors sustaining E-learning

a) Working practices *must be* collaborative as technology implementation is complex and time consuming. Collaboration is a real challenge for a profession and system as a whole where teachers and academics don't work in a team based office environment. When in schools teachers spend the majority of their time, on their own in front of their class. Outside school time, they spend a lot of time preparing their teaching and assessing their students' work, again on their own. In universities, academics especially in Arts, Humanities and Social Sciences mostly work individually to carry out their teaching and produce their research. Teachers and academics tend to be solitary professionals. The disruption caused by technology and its inherent complexity, as well as a fast changing environment, require them to work with their colleagues, as part of a team.

b) The organization's leadership takes responsibility not just by defining the strategic aims of E-learning, it has also to ensure that adequate staff and resources are available for the implementation of the E-learning strategy. The Senior Management Team must lead by example and implement collaborative working practices themselves. They need to consult widely their staff to make sure their vision and actions are shared by the institution as a whole. Vision and strategies are not diktats imposed from above.

c) Technology must be user friendly to the school or the university adopting and developing E-learning (Koulopoulos, 2008). Which VLE or E-learning solutions will be considered user friendly will emerge through piloting and testing, along with incremental development? The Senior Management Team may let the teaching faculty decide what they want to use, offer them different options, trust them and support them. Teachers and lecturers ought to let students to figure out as much as possible what they feel comfortable to use. PowerPoint or Prezi, Showbeyond or iMovie, it should be up to students to choose. As a teacher, I shall assess a student's presentation

or story for the quality of its content, as long as my attention is not impeded by too much gadgetry.

d) Finally, support is essential. It is at the core of successful delivery. Support is reciprocal and occurs across the institution's organizational or functional boundaries between different services like the library, IT services, registry, learning technology support… and faculties. Training is funded by the organization and "show and share" sessions may take place regularly. A school or university is by essence a learning organization, it seems peculiar that many teaching staff have stopped wanting to learn, learn from their own colleagues, learn from the latest developments in teaching and learning. It is the responsibility of leadership that all members of staff are given opportunities to work together and develop themselves as professionals to ensure that they are able support and deliver the mission of the organization.

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