Reviewing Traces of Virtual Campuses: Looking for Critical Success Factors

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Abstract: The paper describes the concepts of Virtual Campus and Virtual Mobility and refers to several past and present projects and initiatives in the field. Through these previous experiences, a shift of concepts is noticed: from the fully online Virtual Campus to Virtual Mobility, whereby the more traditional universities open their borders and "blended models" gain more and more interest. To redefine the concept of Virtual Campus in order for it to be applicable to the changed educational needs of today, the Re.ViCa project has been set-up und funded by the European Commission. The project makes an inventory and systematically reviews cross-institutional Virtual Campuses of the past decade. In this paper we look more detailed for critical success factors for virtual campuses. After a empirical data-collection with 17 worldwide recognized experts in the e-learning field we describe 29 factors that are of main importance for large scale e-learnng initiatives in general.

Through the experience of past and present projects that have been exploring and refining the concepts of Virtual Campus and Virtual Mobility a gradual shift of concepts is noticed: from the "well-defined" clear, 100% online Virtual Campus to Virtual Mobility, whereby the more traditional universities open their borders, collaborate supra/intra institutionally and often (inter)nationally, and/or involve non-traditional students through e-learning. Actually, there is no strict definition of Virtual Campus or Virtual Mobility anymore. Every campus becomes a Virtual Campus, and every mobility has some form of Virtual Mobility included. "Blended models" gain more and more interest and attention.

All in all, there seems to be a common feeling that a redefinition of the "Virtual Campus" concept is necessary, in order for it to be applicable to the educational needs of today. While numerous Virtual Campus initiatives in the past decade have gained experience and know-how, there is a striking lack of validation and dissemination of this knowledge. Detailed and consolidated information on Virtual Campuses is hard to come by. The European Commission acknowledged this need and has in for example the General Calls for Proposals in the Lifelong Learning Programme 2006 and 2008 attached specific priority to projects which are aiming at systematically reviewing existing Virtual Campus and Virtual Mobility projects or experiences, and supporting the development and dissemination of replicable solutions and approaches to help establishing and sustaining Virtual Campuses at European level. The Re.ViCa project has been set-up with this aim. This two-year project makes an inventory and reviews institution-wide and cross-institution Virtual Campus initiatives (the so-called "Major E-Learning Initiatives") of the past decade within higher education at European, national and regional levels and is not only looking at currently operational Virtual Campuses, but also at the legacy and impact of those initiatives that have ceased activities ("Failed E-Learning Initiatives"), such as the UkeUniversity and the Interactive University in Scotland.

The phenomenon of Virtual Campuses – dead or alive – is studied along a broad range of parameters taking into account the several classifications that have already been proposed by others. The project thereby synthesises and updates earlier work on critical success factors for e-universities and more generally for major change in scale and scope of e-learning.

A feature not common in EU projects is that it is contrasting its in-depth studies of European cases to selected non-European initiatives also, feeding the outcomes of this effort into a set of findings that can be used for future European initiatives.

The desktop research makes use of previous publications, research and activities in the field and takes into account previous project results in which Virtual Campuses have been studied and/or developed. Re.ViCa can amongst others build upon the partners' experience with and involvement in Virtual Mobility and Virtual Campus projects (e.g. cEVU, e-LERU, VENUS, REVE, MASSIVE, BEING MOBILE, BENVIC…) and initiatives (e.g. Finnish Virtual University, UNINETTUNO, UkeUniversity, Open University of the Netherlands) and use their privileged strategic positions to collect vital information and open it up for the wider community of the European Higher Education Area. The information gathered during the desktop research phase is validated by the numerous discussion sessions that Re.ViCa organises with different stakeholder and interest groups throughout the project. To bring in this outsiders point of view into the research, the partnership has set up an International Advisory Committee made up of about 20 European and non-European (from South Africa, Australia, Canada, Latin

America,…) policy makers and renowned experts in the field. The IAC Committee members provide important access opportunities to global expertise and research in respect to Virtual Campuses. The experts are invited at key moments in the project to stimulate dialogue, share knowledge and to comment on the Re.ViCa research in progress.

All results of the research are published on a wiki, which will be open for the public in spring 2009 (see http://www.virtualcampuses.eu). In this paper we focus on the analysis of Critical Success Factors (CSF's) based on expert opinions and knowledge.

Definition of virtual campus and virtual mobility

The phrase "virtual campus" became prominent around 1997 (the first workshop on this was organized by Mason and Bacsich of the Open University at Edmedia 1996 in Boston), when various universities launched their versions of a virtual campus. It is often applied to a single university which has a virtual university "fringe" round a physical campus, but there are also some totally virtual campuses (such as the Open University of Catalonia Spain). The Benchmarking of Virtual Campuses (BENVIC) project was one of the earliest projects funded by the European Commission addressing the issue of benchmarking Virtual Campuses. In the BENVIC project the Virtual Campus concept is referred to as "a specific format of distance education and on-line learning in which students, teaching staff and even university administrative and technical staff mainly 'meet' or communicate through technical links" (http://www.benvic.odl.org/indexpr.html).
The following classification was proposed (http://www.benvic.odl.org/typology.htm):

- Virtual Class: Teaching and learning is happening in a virtual environment for campus based students or/and distance learners. The virtual environment could be an on-line (digital) learning environment as an add-on to the traditional face-to-face knowledge transfer in physical class rooms or as a completely stand-alone e-learning system for off-campus students. It could also be any other technology supported way of knowledge sharing, e.g. using videoconferencing to link local groups of learners with an expert at a distance.
- Virtual Campus: Next to virtual classes this includes also research communication and collaboration as well as scientific services to the society at large, like contract research and consultancy for companies and governmental bodies. This means that the virtual environment is not only meant for learning, but other activities are taking place, e.g. remote use of expensive laboratory equipment for research purposes.
- Virtual University: In this case most, perhaps all of the university working processes are virtualized. Student registration, student and staff administration, eventually examination and creditation, or any other administrative procedure are all taking place and supported in the virtual environment.

Virtual Mobility can be defined as "The use of information and communication technologies (ICT) to obtain the same benefits as one would have with physical mobility but without the need to travel" (http://www.elearningeuropa.info). But a more elaborated definition is: "Virtual Mobility is a form of learning which consists of virtual components through a fully ICT supported learning environment that includes cross-border collaboration with people from different backgrounds and cultures working and studying together, having, as its main purpose, the enhancement of intercultural understanding and the exchange of knowledge" (Bijnens H. et al., 2006, 26). Based on this definition four main types of Virtual Mobility activities are identified. The typology is mainly based on the type of activity and the circumstances in which the Virtual Mobility activity takes place:

- A virtual course or seminar: Learners in a higher education institute engage in Virtual Mobility for a single course (as part of a whole study programme) or a seminar (series) and the rest of their learning activities take place face-to-face in a traditional way (Bijnens H. et al., 2006, 29).
- A whole virtual study programme: Hereby an entire virtual study programme is offered at one higher education institute, giving students from different countries the chance to take this programme without having to go abroad for a whole academic year (Bijnens H. et al., 2006, 33).
- A virtual student placement: Student placements are organised between a higher education institute and a company (sometimes in a different country). In the virtual equivalent students are using ICT to support their internship, giving them a real-life experience in a corporate setting without the necessity to move from the campus to the company or to relocate to another country for a certain period of time, and providing them with a practical preparation for new ways of working through (international) collaborative team work (Bijnens H. et al., 2006, 33).
- Virtual support activities to physical exchange: Virtual Mobility enables both better preparation and follow-up of students who participate in physical exchange programs. Preparatory activities could include student selection at a distance through video- or web conferencing (for checking social and language skills) and on-line language and cultural integration courses. Follow-up activities will help students to keep in touch with their peers,

scattered around the world, to finish their common research work and/or paper work. They could also take on the form of a so-called 'Virtual Alumni' organisation, to foster life-long friendships and networks (Bijnens H. et al., 2006, 33-34).

In Re.ViCa we aim to take virtual campus and virtual mobility as synonymous with large-scale e-learning initiatives. This avoids the issue of giving distance e-learning a privileged position over campus-based e-learning but begs the question of what is large-scale? An e-learning initiative in a university - or consortium of universities - is major if it has many (but not necessarily all) of the characteristics as stated in table 1.

Table 1. Characteristics of large-scale e-learning initiatives

It requires at least one per cent of the institutional budget (this is a rule of thumb taken from Activity Based Costing theory that it is pointless to track from the top any initiatives below that level of expenditure)
The person responsible (as the majority proportion of his/her job) for leading that initiative has a rank and salary at least equivalent to that of a university full professor at Head of Department level, or equivalent rank of administrative or technical staff (usually an Assistant Director) - and ideally that of Dean or full Director
There is a specific department to manage and deliver the iniative with a degree of autonomy from mainstream IT, library, pedagogic or quality structures
Progress of the initiative is overseen by a Steering Group chaired by one of the most senior managers in the institution
The iniative is part of the institution's business plan and is not totally dependent on any particular externally funded project
There are strategy, planning and operational documents defining the initiative and regularly updated
The head of the institution will from time to time in senior meetings be notified of progress and problems with the initiative
The head of the institution is able to discuss the iniative in general terms with equivalent heads of other institutions - in the way that he/she would be able to discuss a new library, laboratory or similar large-scale development

For this sort of large scale initiatives we looked for CSF's and tried to answer the question what makes it successful or makes it fail.

Approach

There have been many projects which have been looking for CSF's. In this project we first carried out desktop research and learned from other projects (for an overview and download of the reports and literature, see the project website) and came to a list of 99 CSF's. In spring 2008 the first International Advisory Committee Meeting took place at the EDEN Annual Conference in Lisbon, Portugal. In this meeting the experts worked in teams on this list, bringing it back to 29 essential factors. This 29 CSF's for large e-learning initiatives are labeled into three categories. First we distinguish factors that are mainly on an organizational level, these are more often strategy-and management issues (see table 2). The second level is the work floor level, dealing with issues that immediately effect the daily performance of people working in this e-learning initiative (see table 3). The third and last level is the service level. This involves factors that somehow have an influence on (internal or external) clients (see table 4) of the e-learning initiative.
In an second meeting, at the ONLINE EDUCA Annual Conference in Berlin, December 2008, we let the International Advisory Committee (N= 17) vote on the 29 CSF's, using an electronic voting system in which they could give an opinion about the factors whether they must be kept or removed from the list of . The categories to answer on were: 1. must be removed, 2. should be removed, 3. no view, 4. should be kept and 5. must be kept. After

each voting there was the possibility to have an discussion on that criterion. The data collection resulted in a quantitative part (the voting) and an qualitative part (the discussion).

Table 2. Variables on the organizational level

Organizational level

Organizational Learning (OLG)- The institution is a learning organization on all core aspects of e-learning.
Leadership in e-Learning (LEL) - The capability of leaders to make decisions regarding e-learning is fully developed.
e-Learning Strategy (ELS) - The organization regularly updates it's e-Learning Strategy. That strategy is integrated with an learning- and teaching strategy (and all other related strategies such as IT etc).
Management Style (HYB)- The management style is a hybrid of academic and corporate, accepted by staff.
Quality Assurance (QAS) - Conformance to external quality agency precepts for the country or region, and to institutional guidelines for e-learning within an overarching methodology of quality (for example EFQM or other)
Planning Annually (PLA) – There is an integrated annual planning process for e-learning that is integrated with overall course planning.
Staff Recognition and Reward (SRR) - All e-learning experts have been explicitly recognized and rewarded (in a financial way) appropriate to their contribution to the institution, with a regular appraisal process.
Collaboration for e-Learning (CFE) - The institution has a reasoned approach to collaboration at various levels to gain additional benefit from sharing e-learning material, methodologies and systems (for example within an OER approach or via other methods, not excluding payment).
Costs (CNL) – The institution uses a costing system based on principles of activity-based costing (and that is used throughout the institution).
Foresight (FOR) - The institution has look-ahead capability and for example developmental labs so that new styles of e-learning can be to some extent predicted and piloted.
Brand Management (BMG) - The institution has a reasoned approach to managing its brand.
Market Research (MRE) - Market research is done centrally and in or on behalf of all departments, and is aware of e-learning aspects; it is updated annually or prior to major program planning.
Selling (SEL) - The institution has widespread skill in selling e-learning and the theory to support the skills.

Table 3. Variables on the work floor level

Work floor Level

Decisions on Programs (DPG) – There is effective decision-making for e-learning across the whole institution, including variations when justified.
Decisions on Projects (DPR) - There is effective decision-making for e-learning across the whole institution and in departments.
Collaboration Roles (COL) - In each collaboration, the roles and responsibilities of each collaborative partner are clearly defined and the procedures always followed.
Dissemination Internal (DIN) - The institution has a systematic managed process of internal dissemination of good practice.
Academic Workload (AWK) – The work planning system recognizes the main differences that e-learning courses have from traditional.
Technical Support to Staff (TSS) - All staff engaged in the e-learning process have "nearby" fast-response technical support.
Security (SEC) - The institution has a system where security breaches are known to occur very rarely, and when they do they are fixed fast (which allows staff and students to carry out their authorized duties easily and efficiently).
Performance (PER) - All e-learning systems operate in their uptime within documented and accepted response guidelines.
Reliability (REL) -The e-learning system is highly reliable - typically 0.999 (99.9% availability on a 24x7x365 basis).

Table 4. Variables on the service level

Service Level
Student Understanding of System (SUS) - Students have good understanding of the rules governing assignment submission, feedback, plagiarism, costs, attendance, etc and always act on them.
Student Help Desk (SDH) - The institution's Student Help Desk is deemed as best practice.
Student Satisfaction (SAT) - The institution has an annual Student Satisfaction survey which explicitly addresses the main e-learning issues of relevance to students.
Employer Engagement (EEN) - The institution has a managed approach to involvement of employers of students in creating or updating courses to be delivered to their employees which include appropriate amounts of e-learning.
Usability (USA) - All services usable, with internal evidence to justify this.
Training (TRG) - All staff is trained in use of the e-learning system, appropriate to job type – and retrained when needed.
Organization (ORG) - An organizational unit to support e-learning exists and that is fit for purpose – (typically with a Director-level institution manager in charge and links to support teams in departments).

Results

In this section we present the results from the voting and the discussion afterwards. Due to limited space in this paper we will take out the highlights of the discussion.

The first surprising issue on the organizational level was that some experts think that leadership in e-learning (LEL) is not a CSF. There was some discussion about the notion of "leadership" and what makes a good leaders. There was also a discussion whether success of large e-learning initiatives do rely so much on individuals. On the other hand, there are some projects to improve leadership in e-learning. There was a reference to eLearning leadership projects carried out between South Africa and the Netherlands (for more info see ReVica website). In the end, the conclusion was that leadership still can be seen as an CSF. The qualitative data supports this idea. Related to that, there was also a discussion on the importance of an e-learning strategy (ELS). The questions was whether e-learning can properly be considered a strategy at all, particularly as e-learning becomes more and more mainstream. Must there be a separate e-learning strategy or is it part of normal learning strategy at an institution? The importance of strategies in general was discussed as well as the lack of distinction between e-learning and learning in general. The suggestion was to distinguish between strategic and operational goals when it comes to e-learning strategy. For now, e-learning strategy is still a CSF, and to emphasize its importance, it is treated as a separate strategy. In the future e-learning can probably be included in a general learning strategy. There was quite some discussion about Management Style (HYB) with many IAC members suggesting it be dropped. The validity of this factor was also questioned. There was some concern that it was in fact two questions in one, asking about style and acceptance. Everybody agreed on the fact that the management style has to be accepted by staff, but certainly not that it has to be hybrid between academic and corporate. A mixed reactions from IAC also for the Staff Recognition and Reward (SRR) factor . Issues raised here were related to the distinctions between research and teaching . The problem is that many educational institutions reward only research and not the teaching tasks of staff. There were some thoughts about the importance of intrinsic and extrinsic motivation. Giving teachers in e-learning initiatives enough time to deal with e-learning, would be seen as a first big step forward. On the variable Foresight (FOR) there were varied reactions by IAC, with a tendency to keep it as CSF. The suggestion was to delete "development labs" because it is not clear whether individual institutions need to have this type of capability. The variables Brand Management (BMG) and Selling (SEL) were viewed rather negatively by the IAC with issues raised in relation to the use of the term 'selling' instead of 'promoting'. It was suggested that the difficulties may be related to specific markets and contexts, some e-learning initiatives don't sell, some do. There was a mixed discussion ensued covering several topics; the distinction between brand and content and a debate about what is meant by 'reasonable'. It became clear that commercial factors like these are not seen as CSF though the eyes of e-learning experts.

Table 5. Results on the organizational level

VOTING (in %)	1	2	3	4	5
Organisational Learning (OLG)		6	18	**59**	18
Leadership in e-Learning (LEL)	6		6	35	**53**
E-Learning Strategy (ELS)		12		35	**53**
Management Style (HYB)	12	**35**	**35**	12	6
Quality Assurance (QAS)				**75**	25
Planning Annually (PLA)		12	24	**47**	18
Staff Recognition and Reward (SRR)		18	29	**47**	6
Collaboration for e-learning (CFE)	6		24	**59**	12
Costs (CNL)		6	6	31	**50**
Foresight (FOR)	18	6		**65**	12
Brand management (BMG)	6	22	**39**		33
Market Research (MRE)	17	6	28	39	11
Selling (SEL)	31	12	**38**	19	

The results of the CSF's on the work floor level show some differences on the importance of decisions on projects (DPG). Experts who voted for the removal of this CSF from the list, mainly think that this factor is not specific for e-learning initiatives. It is important for every project. The same was said for Collaboration Roles (COL). In each collaboration, the roles and responsibilities of each collaborative partner have to be clearly defined, that is not specific for e-learning projects. The discussion arose whether about the definition of CSF's. It was concluded that CSF's are not only variables for success but also failure factors. And although some factors are not typical for E-learning initiatives but more broad, not taking them into account would let the e-learning initiative fail. There were some experts who had some problems with Reliability (REL). Systems and software do not have to have a 99.9% availability on a 24x7x365 basis. It depends on the context, the institute and situations. Some institutes do not need to have their system up at night or during the weekend.

Table 6. Results on the work floor level

VOTING (in %)	1	2	**3**	4	5
Decisions on Programs (DPG)			29	**59**	12
Decisions on Projects (DPR)	8	8	8	**50**	25
Collaboration Roles (COL)	17	17	**28**	**28**	11
Dissemination Internal (DIN).		7		**50**	43
Academic Workload (AWK)		6	6	**56**	33
Technical Support to Staff (TSS)		6	6	**61**	28
Security (SEC)		21	**29**	**29**	21
Performance (PER)		6	33	**56**	6
Reliability (REL)	12		24	24	**41**

The results of the voting and the discussion on the service level showed some issues on the Student Understanding of System (SUS). The qquestion was raised as to how this could be measured. On Student Satisfaction (SAT) there were some remarks on the use of the term 'annual', the suggestion was made to change it to 'systematic' instead. On Employer Engagement (EEN) there were mixed reactions from IAC. The discussion addressed questions related to the acceptance of eLearning by some employers, some see E-learning as low quality learning with low value. There was also the fact that the terminology used in this criterion is a bit confusing. With the last factor Organization (ORG) the discussion revolved around the need to keep the term 'fit for purpose' and the fact that not all institutions have a separate unit.

Table 7. Results on the work floor level

VOTING (in %)	*1*	*2*	*3*	*4*	*5*
Student Understanding of System (SUS)		13	20	27	**40**
Student Help Desk (SDH)		13	13	33	**40**
Student Satisfaction (SAT)	6	6	6	29	**53**
Employer Engagement (EEN)		24	**35**	**35**	6
Usability (USA)		6	**44**	25	25
Training (TRG)		7		**47**	**47**
Organization (ORG)		25	6	31	**38**

Conclusions

From the research in Re.VICA a lot can be learned. First of all, throughout the world there are so many specific situations, contexts and people working in the e-learning field. And although that every situation is unique, one can generalize on success factors and failures. It has shown us that the e-learning community, as other communities, does not take the time for that. That is a pity. Many mistakes are made more often. Mistakes that could have been fore come, if we would have known of the experiences of others. We also see that different countries run projects dealing with the same problems and topics. Cooperation would have been a good idea. If we only had known of it. That is the goal of the Re.VICA project. To provide an overview on all these issues and projects. For this opportunity we thank the European Commission for their support and insight. In the paper we tried to generalize on critical success factors in e-learning initiatives. We let experts, with a worldwide reputation, decide on the importance. We see that, although there are differences, on most factors they agree. We learned also that experts most of the time have an academic focus. Valuing commercial variables as branding and marketing of e-learning initiatives as low importance is probably an exponent of that. We also noticed that the experts discussion was mainly on the organizational level and not on the work floor or service level. Probably that it due to the fact that on an organizational level there are more strategic (and more academic) issues of main importance. And that is their field. We continue to work on Re.VICA. Next to this listing of CSF's we work on more elaborated case study-descriptions of successful and unsuccessful large e-learning initiatives.

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