



LAUREA
UNIVERSITY OF APPLIED SCIENCES

Prime Mover

Blended Service Design Approach in Designing A Wiki Portal for Open Collaboration

Srinivasan, Kiruthika

2012 Leppävaara

Laurea University of Applied Sciences
Leppävaara

**Blended Service Design Approach in Designing a Wiki
Portal for Open Collaboration**

Kiruthika Srinivasan
Degree Programme in
Service Innovation & Design
Master's Thesis
May, 2012

Kiruthika Srinivasan

Blended Service Design Approach in Designing a Wiki Portal for Open Collaboration

Year	2012	Pages	154
------	------	-------	-----

The world of education is moving towards an open and virtual model of learning supported by the availability of wide spread Open Educational Resources (OER) on the internet. In the world of social media communication, open, rapid and boundary free activities that promote interaction and collaboration with their peers are becoming an integral part of how students learn. As a result, many educators are moving away from instructor - centered methods of teaching to more contextual learning and real - world, problem - solving techniques. The new Web provides the tools and technologies such as Web 2.0 and social media that foster interaction, collaboration, and contribution. Web 2.0 applications such as Wikis provide the technological support for groups to move toward collective intelligence in a learning environment. The challenge, however, lies in the process of seeking out such a user centric, Web 2.0 and social media based tool, as the most economical and innovative tool for open collaborative purposes, particularly for the use of international research projects, with a wide range geographically dispersed users. The concepts of design thinking, participatory action research and interdisciplinary service design become essential in designing and implementing a Web 2.0 based environment for professional and collaborative activities. This thesis is a reflection of an explorative learning journey of designing and implementing a Web 2.0 based wiki portal for open collaborative learning purposes, for a European research project, using a blended service design process. The blended service design process had a combination of action research, service design and website design methodologies. This thesis documents the blended service design process used in the wiki portal development and as well proposes a framework based on the concept of “crowdsourcing” towards the sustainable development of the wiki portal.

Key words: Action research, interdisciplinary service design, service design tools, open collaboration, Open Educational Resources (OER), wikis

Table of Contents

1	Introduction	7
1.1	Background of the thesis.....	10
1.2	Motivation for the thesis.....	12
1.3	Purpose of the thesis	13
1.4	Structure of the thesis	14
2	Review of literature	15
2.1	Co-creation.....	15
2.2	Design and Service Design - Definitions, Approaches and Processes.....	16
2.2.1	Design and Service Design - Definitions	16
2.2.2	Design and Service Design - Approaches	17
2.2.3	Design and Service Design - Processes.....	19
2.3	Open Collaboration	23
2.4	Open Educational Resources (OER)	25
2.5	Social media and Social networks	27
2.6	Web 2.0	28
2.7	Wiki.....	29
2.7.1	Wikiversity.....	30
2.8	Service design tool kit.....	31
2.8.1	Action research	31
2.8.2	Computer-Mediated-Communication (CMC) tools	34
2.8.3	Focus groups	34
2.8.4	Idea Sketches	35
2.8.5	Ideation & Brainstorming	36
2.8.6	Observation.....	36
2.8.7	Prototypes	37
2.8.8	Qualitative interviews.....	38
2.8.9	Qualitative research	39
2.8.10	Questionnaires	40
2.8.11	Service staging	40
2.8.12	SWOT	40
2.8.13	Usability testing	40
2.8.14	User experience maps	41
2.8.15	Value maps	42
3	Service Development Process.....	43
3.1	Blended service design process.....	43
3.1.1	Project organization	45
3.1.2	Service design phases.....	46

3.2	Exploration phase	47
3.2.1	Design goal	47
3.2.2	Design process	47
3.2.2.1	Initiation of self- ideation process	48
3.2.2.2	Development of Action Plan.....	50
3.2.2.3	Development of framework for the portal.....	51
3.2.3	Key design outcomes	53
3.3	Creation phase.....	54
3.3.1	Design goal	54
3.3.2	Design Process	55
3.3.2.1	Development of portal layout.....	55
3.3.2.2	Plan for portal content taxonomy	57
3.3.3	Key design outcome.....	60
3.4	Reflection phase.....	61
3.4.1	Design goal	61
3.4.2	Design Process	61
3.4.2.1	Preliminary portal prototype.....	61
3.4.2.2	Service staging.....	65
3.4.2.3	Iterations in portal design	66
3.4.3	Key design outcomes	71
3.5	Implementation phase.....	72
3.5.1	Design goals	72
3.5.2	Design Process	72
3.5.2.1	Usability testing	73
3.5.2.2	Pre-launch usability testing	73
3.5.2.3	Soft launching the portal	77
3.5.2.4	Post-launch usability testing	78
3.5.3	Key design outcomes	81
3.6	Evaluation on the service concept and strategy for sustainable development	82
4	Reflections and Conclusions.....	86
4.1	Action research in the service development process	86
4.2	Interdisciplinary approach to service design	88
4.3	Impact of service design tools	92
4.4	Personal Learning	94
4.5	Limitations	94
4.6	Recommendations.....	95
4.7	Conclusions	95
	Figures	107

Tables 108
Appendices 109

1 Introduction

*“Assume a world where teachers and learners have **free access to high-quality educational resources, independent of their location.** Assume further that many of these resources are **collaboratively produced, and localized and adjusted for the learner’s specific needs and context.** Assume that the cost of producing and maintaining these resources would be distributed across a large number of actors and countries. Assume further that **the costs were declining rapidly and, for practical purposes, could be considered be negligible.** **Such a world exists, today, in a laboratory scale. In the next several years, it will become possible in a scale that will radically change the ways in which we learn and create knowledge.** One element in this change is **open access to educational resources”** - Tuomi (2006, 3).*

In the world of social media communication, open, rapid and boundary free activities that promote interaction and collaboration with their peers are becoming an integral part of how students learn. As a result, many educators are moving away from instructor - centered methods of teaching to more contextual learning and real - world, problem - solving techniques. According to Lightner et al (2007, cited in West & West, 2009) the new Web provides the tools and technologies that can support educators in creating a rich, collaborative learning atmosphere in their online classrooms. West & West (2009) express astonishment with the growth of next - generation collaborative Web tools such as blogs, social networks, and wikis and assert the interests of educators in discovering ways to harness these technologies effectively, both to improve online learning and to promote critical thinking and collaboration. Jovanović et al (2009, 273) emphasis on leveraging new paradigms based on interactions derived from open, ubiquitous, and socially oriented services for creating, maintaining and sharing the knowledge through Intelligent Learning Environments (ILEs).

According to Conole (2011) there is little doubt that the open, social and participatory media enable new forms of communication and collaboration for both the learners and teachers, provide mechanisms for sharing and discussing learning and teaching ideas. Martinez (2010, 75) stresses the importance of tapping into a broad base of open materials that can enrich classroom instruction, for educators. She believes that teachers can take advantage of materials provided by nonprofit organizations such as museums that upload digital images, videos, and audio materials to the Internet for use by the public. In her point of view, these tools facilitate self-organization among educators and learners, providing a bottom-up option for collaborative learning to complement existing centrally organized and designed learning networks.

Fischer & Konomi (2007, 340) raise the fundamental question concerning what it means to learn in the 21st century in which powerful tools are available 'anywhere at any time' for many intellectual activities - allowing people to have instant access to facts, assisting people in spelling, doing arithmetic, memorizing experiences, making sense of a large amount of information, connecting and collaborating with others, and performing numerous other intellectual activities. Kane & Fichman (2009, 2) express their thoughts on the new generation of Internet-based collaborative Web 2.0 (O'Reilly, 2007, 17) tools, which represent opportunities for people to collaborate and share knowledge in important new ways.

Web 2.0 tools foster interaction, collaboration, and contribution. An essential feature is user generated content, enabling sharing, co-creating, co-editing, and co-construction of knowledge reflecting the collective intelligence of the users. Fernando (2010, 500 & 511) opines that social media technologies in their very nature are extensions of the human faculty of exchange and collaboration. In Fernando's views, community driven and information-centric new social media technologies like Face Book, Twitter, YouTube and Wikipedia, have tremendous potential for corporations to facilitate communities for knowledge exchange. According to Gunawardena et al (2009, 5-6) Web 2.0 applications such as Wikis provide the technological support for groups to move toward collective intelligence in a learning environment, a shared space in which a group of individuals can develop a community, discuss an issue of interest, and reflect on practice. Kane & Fichman (2009, 16) explain that the value of wikis to collaboration is not restricted to the creation of new collaborative opportunities but in providing a more robust forum for existing collaboration. They describe the fact that the short-term benefits enabled by wikis for supporting existing processes may also enable new collaborative capabilities for the future by establishing a standard for collaboration in the discipline. For instance, a common wiki platform can facilitate research among collaborators at multiple universities by providing an information repository for research teams working on a common project, hosting common files, research notes, and relevant references.

It can be comprehended from the above mentioned views, that the world of education is moving towards an open and virtual model of learning and that this model is supported by the availability of wide spread Open Educational Resources (OER) on the internet. The challenge, however, lies in the process of seeking out such user centric, Web 2.0 and social media based tools (for example, wikis) as the most economical and innovative tools for Open Collaborative Learning (OCL). It becomes inevitable to introduce the concept of design thinking at this point to direct our attention to the principles and guiding processes that will aid in designing and implementing one such Web 2.0 based environment for professional and collaborative learning. To quote Brown (2009, 4) on design thinking, "it begins with skills designers have learned over many decades in their quest to match human needs with available technical resources within the practical constraints of business. By integrating what is desirable from a

human's point of view with what are technologically feasible and economically viable, designers have been able to create the products that we enjoy today. Design thinking takes the next step of putting these tools into the hands of people who may have never thought of themselves as designers and apply them to a vastly greater range of problems". Brown augments design thinking as the "ability to be intuitive, to recognize patterns, to construct ideas that have emotional meaning as well as functionality, to express ourselves in media other than words or symbols".

Could the power of design thinking help us in this regard, when we attempt to exploit the technological tools for designing an open environment as a web based service?. What kinds of disciplines are needed to be brought together in such a developmental task? Is there a model to follow while designing new collaborative services? Perhaps, we can find our answers from the thoughts of Meroni & Sangiorgi (2011, 207) when they describe the concept of 'designing for services', in which designers "develop new service ideas and explore their social, economic and technological feasibility working with people and within interdisciplinary teams". They further state the aim of 'designing for services' as transforming "existing service delivery models into the new 'open source' and distributed paradigm that relies on social networks and collaborative solutions".

This thesis is a reflection of the author's experience in her explorative journey of designing and implementing a Web 2.0 based wiki portal for open collaborative learning purposes, for a European research project using a blended service design process. The blended service design process had a combination of methodologies of action research, service design and website design. Her adaptation of the action research paradigm in involving the stakeholders in a cyclic, participatory and reflective process, embracing of an iterative service design methodology to co-create with the users and the use of various service design tools to generate users' insights, are well documented in the thesis. The following illustration (Figure - 1) summarizes the thesis framework, based on the service development work that was carried out for the European research project.

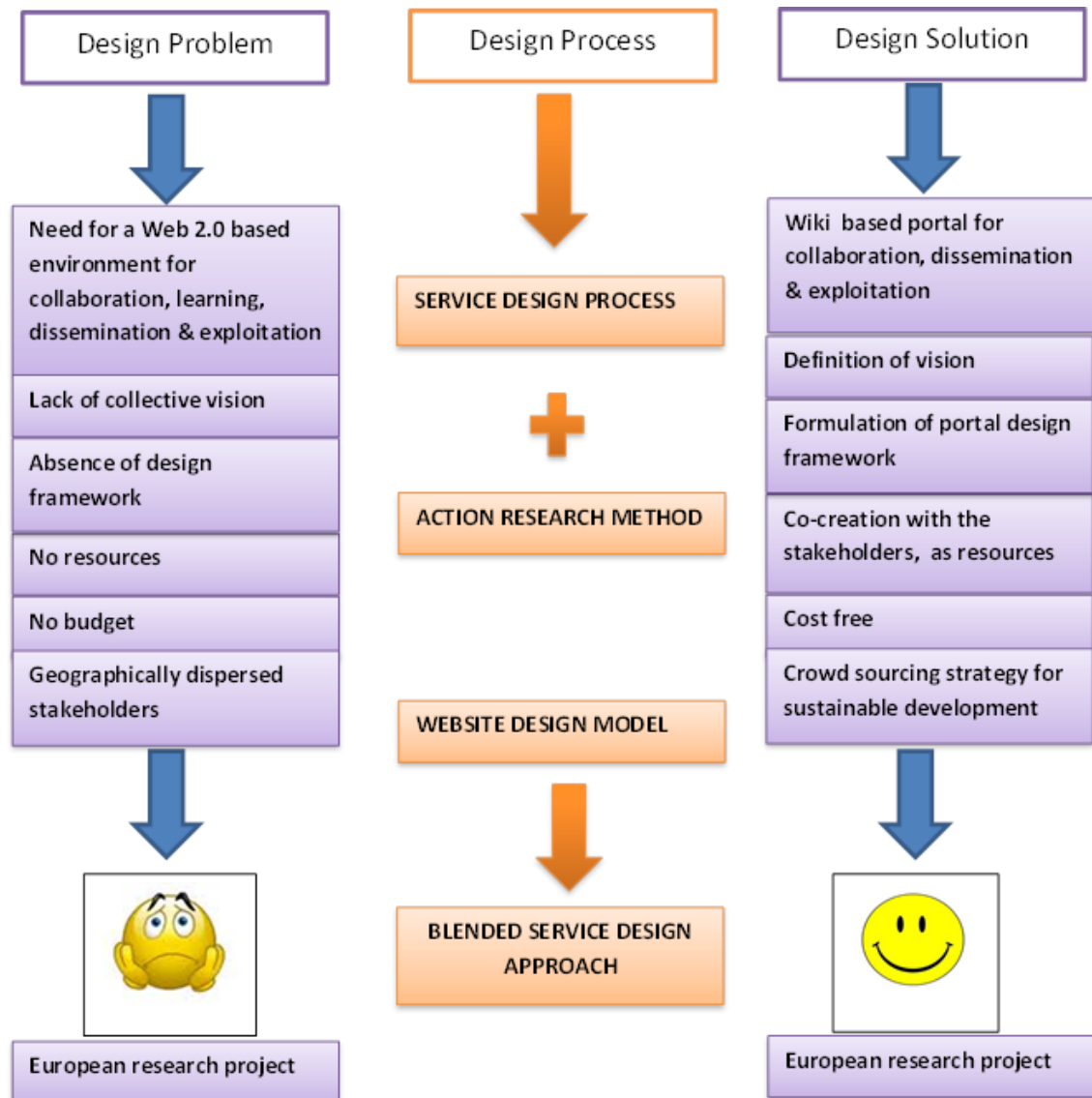


Figure 1: Framework of the thesis (Srinivasan, 2012)

To expand the understanding of the readers, an overview of the European research project for which the open collaborative portal was developed is given in the background.

1.1 Background of the thesis

The background of this thesis is a European Union - Life Long Learning (EU-LLP) research project called 'Creative Activities in Learning for Innovation'. From this point forward, the acronym 'CAL4INO' will be used in the thesis, to refer to this project. According to CAL4INO (2010), creative learning for innovation represents an integral aspect of entrepreneurship - one of the lifelong learning competencies. CAL4INO addresses both creative learning for students and creative teaching by educators. It proposes to investigate the role of creative

learning activities to enhance innovation by blending design, technology and business through creative activities, synthesizing diverse perspectives, experiences and skills. CAL4INO leverages internationally recognized programs to develop training modules for creativity and innovation and measurement instruments to benchmark outcomes through pan-European pilot demonstrations in 6 countries. Complementing conventional valorization methods, CAL4INO aims to launch a peer-reviewed journal supported with Web 2.0 social networks for sustainable organic growth (CAL4INO, 2010, 42-44).

CAL4INO has partners from 6 European countries, responsible for the 10 work packages. The project partners and the themes of the work packages are presented in Table - 1

S.NO	Partners	Work package
1	Riga International School of Economics and Business Administration - Latvia	Project Management & Pilot Demonstrations and Impact Survey
2	University of Piraeus Research Center - Greece	Quality Assurance
3	Schumpeter School of Business - Germany	Desk Research and Needs Survey
4	University of Cambridge - UK	Research Methodology, Tools and Comparative Analysis
5	Queen's University Management School - Belfast	Training Module Development for Benchmarking Best Practices
6	Laurea University of Applied Sciences - Finland	Web 2.0 tools and Social Networks
7	COTEC - Portugal	Synthesis and Validation
8	Emerald Group Publishing Limited - UK	Dissemination
9	Scottish Institute for Enterprise - Scotland, UK	Exploitation

Table 1: Partners & Work Packages of CAL4INO (CAL4INO, 2010)

The author was responsible for the research and developmental activities for the work package on 'Web 2.0 tools and Social Networks' in the capacity of the Project Manager. The objective of the work package was "to create an extended ecosystem dedicated to creativity, innovation and entrepreneurship based on Web 2.0-enabled social networks, capable of organic growth, viral multiplication and sustainability" (CAL4INO, 2010, 120).

The overall objectives of the work package included:

- Facilitating collaboration among the CAL4INO community by exploiting emerging Web 2.0 and social networks (Facebook, Second Life, YouTube, Skype, Twitter, etc.) to attract and connect individual users, communities of practice and organizations
- Modifying one of the partners' website to enable seamless linkages with other portals and content ("cloud" network), to bring out an online journal
- Facilitating, surveys, peer reviews, Delphi cycles, collaborative authoring and dissemination
- Providing real-time "value added" content by web broadcasting training sessions and international conferences enabling virtual participation and interactive feedback
- Providing longer term support and tracking of training participants
- Connecting formal institutional sources of innovation, knowledge and assistance such as Higher Educational Institutions, associations, incubators and research parks, design and other creative industry companies, high tech companies, ministries, and other actors at local, national, EU levels.
- Identifying and replicating successful social network initiatives for facilitating "open innovation"

The specific objectives included,

- To lead and coordinate the development of Web 2.0 enabled "Social Network Site - (SNS), a social media system for creativity and innovation" (CALINO, 2010, 121), to increase transnational communication and productive networking
- To include social media tools used by CAL4INO community into the SNS
- To develop a sustainable model for project exploitation and dissemination outside the CAL4INO community

1.2 Motivation for the thesis

Given this background of the project, the author was faced with the challenge of designing a Web 2.0 based interactive website, referred as the 'Extended Social Network Site' (CALINO, 2010, 121) linking other partners' websites and content with the CAL4INO website and allowing easy linking with additional websites, social networks and social media tools. Additional challenges to this design task were the lack of collective vision from the project partners for the website, non-allocation of technical resources, lack of usability specifications and a nil budget.

Brown (2009, 4) describes the 'power of design thinking' as a means of transforming organizations and inspiring innovation. In his view, "design thinking begins with skills designers have learned over many decades in their quest to match human needs with available technical re-

sources within the practical constraints of business. By integrating what is feasible and economically viable, designers have been able to create the products we enjoy today. Design thinking taps into capacities we all have but that are overlooked by more conventional problem solving practices. Design thinking is fundamentally an exploratory process”. Stamm (2008, 16&17) defines design as the conscious decision-making process by which information (an idea) is transformed into an outcome, be it tangible (product) or intangible (service). He adds that design is about doing things consciously, comparing alternatives to select the best possible solution and exploring and experimenting.

Personal motivation for the thesis arises from the author’s professional obligation to design the website, as a service development for the CAL4INO project, within the given operational and financial constraints. The author’s extensive knowledge in the field of service design and interests in service design tools also enriched her motivation to document the service development work as her thesis for the Master’s in Service Innovation and Design. More precisely, this thesis is a thoughtful description of the reflections and outcomes recorded by the author during the service development process, in which she explored, experimented and delivered practical solutions, by embracing a blended service design process.

1.3 Purpose of the thesis

Mollerup (2004, 12) states that the purpose of design is doing things better, improving a situation and making a positive difference. According to Nobel Laureate Herbert Simon, design is a means to reach a goal. The actual goal of the developmental project involved,

- Designing and developing a Web 2.0 based system with features for,
 - Internal project communication and collaboration for CAL4INO
 - Linking to other Web 2.0 and social media tools used by project partners
 - Open collaborative learning and,
 - Sustainable exploitation and dissemination outside the CAL4INO community

The purpose of the thesis is directly derived from the service design process that was implemented to achieve the actual goal. The purpose of the thesis therefore, is,

- To adapt a blended model of service design towards designing a wiki based portal¹ for CAL4INO, as a Web 2.0 based service, for the purpose of open collaboration

¹ Portal is a “marketing term used to describe a web site that serves as a starting point to other destinations or activities on the World Wide Web”. Portals commonly provide services such as email, online chat forums and original content (Mann & Stewart, 2000, 220).

- To describe and document the service design process implemented to create the wiki portal
- To propose a model based on ‘crowd sourcing’ for the sustainable development of the wiki portal
- To reflect on the components and impact of the blended service design approach in developing a web based service
- To produce the various documents and evidences on project management and communication, created during the service development process

1.4 Structure of the thesis

The thesis follows mainly the form of the ‘Multiform thesis’ (Guilland, 2010) with the inclusion of review articles, project management documents, presentation of prototypes and other evidences of communication created during the service development process. The structure of the thesis is presented in Table - 2

Chapter	Contents
1. Introduction	1. Introduction, back ground, motivation and purpose of the thesis
2. Review of literature	1. Definition of terms & description of key concepts 2. Brief review on the design tools used in the project
3. Service development process	1. Summary of Blended model of service design 2. Design goal, process & key outcomes of the four phases of service design 3. ‘Crowd sourcing’ strategy for sustainable development of the wiki portal
4. Reflections & Conclusions	1. Reflections 2. Limitations 3. Recommendations 4. Conclusions

Table 2: Structure of the thesis

2 Review of literature

Definitions of key terms and short descriptions of important concepts relevant to the thesis are presented in this section.

2.1 Co-creation

According to Sanders^a and Stappers (2008, 2) co-creation is a very broad term with applications ranging from the physical to the metaphysical and from the material to the spiritual. They refer to co-creation as “any act of collective creativity, i.e. creativity that is shared by two or more people”. Randall et al (2011, 5&6) review co-creation in the following four dimensions:

- “Co-creation is an evolutionary process that occurs not only between the firm and the customer but also among the community of customers
- Co-creation inherently implies, and possibly subsumes, trust and commitment
- Co-creation influences satisfaction for relational customers
- Co-creation influences future intention due to increased satisfaction”

Cheng (2009, 14) discusses about the contemporary concept of ‘population-oriented co-creation’ by means of ‘Digital connections²’, as the philosophical core of the new service scaling and transformation. From their study on co-creation on a virtual context, Harwood and Garry (2010) suggest that “consumers are able to take ownership, define and create their own post-product consumption experience, and, through a collaborative - often implicit - process between firm and consumer, continually modify and ‘co-evolve’ the product in an ongoing and iterative process”. In this thesis, the term co-creation is used while referring to the collaborative design activities with the stakeholders and users and generic collaborative activities by users in open online environments.

² Digital Connection is a paradigm by which the customer, provider, and supplier resources are configured to realize certain value propositions. The way it is designed and implemented can help classify and characterize the types of service systems that co-create and deliver the service (Cheng, 2010,15)

2.2 Design and Service Design - Definitions, Approaches and Processes

It is quite appropriate to think the principles of design and service design as the two sides of the same coin, with their similarities, relevance, interrelationships and symbiotic synergies. The use of the combination of these two concepts is inevitable in the determination of the positive and favored outcome of any design project. Hence, the concepts of design and service design are reviewed in combination and in terms of their definitions, approaches and processes and presented below.

2.2.1 Design and Service Design - Definitions

“Design’ is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end” (Cox, 2005, 2). “It is a process... and a protocol to see, shape, and build” (Serrat, 2010). The combined views of Acha (2006, 3) and Poggenpohl & Sato (2009, 140) depict design as the provider of solution perspectives to problems and a translator of understanding and expectations of (organizational) users. Design is perceived to be ‘giving a form’ (Mager^a, 2004, 27), an ‘instrument’ (Acha, 2006, 7), a ‘tool for innovation’ (Bitard & Basset (2008), and a process of ‘active construction with clear, step by step progressions’ (Lopes, 2009, 21&23).

Services are “deeds, processes and performances” (Zeithaml, Bitner & Gremler, 2006). “Services are the application of specialized competences (knowledge and skills) through deeds, processes and performances for the benefit of another entity or the entity itself” (Lusch & Vargo, 2006, 43). A service is a means of delivering value to customers by facilitating outcomes customers want to achieve without the ownership of specific costs and risks (ITIL, 2008, 6). Cheng (2009, 7) provides a comprehensive definition of service as “co-creation of value between service systems (customers, providers, etc.), and service systems resources (the dynamic configurations of people, technology, organizations, and shared information) connected internally and externally by value propositions”. Meroni & Sangiorgi (2011, 11) point out that services in their different forms and characteristics have developed a fundamental role for the growth and sustainability of innovation and competitiveness while Santos et al (2009, 2) note that a great range of services are people intensive or knowledge intensive.

In the perception of Saco & Gonclaves (2010, 161) service design “is fundamentally interdisciplinary and multipurpose, which incorporates elements and tools from several domains to attain objectives of customer satisfaction or appreciation, designer satisfaction or sense of accomplishment, problem resolution, economic and environmental sustainability, and practical beauty (beauty that works)” . According to Moritz (2005), it is the “design of overall experi-

ence of a service as well as the design of process & strategy to provide that service”. Hollins (2006) is of the opinion that service design can be both tangible and intangible which can involve artifacts and other things including communication, environment and behaviours. He affirms that, “service design invariably must be consistent, easy to use and be strategically applied”.

The various definitions of design, service and service design, imply that these are united by the generic characteristics of process, strategy, and value co-creation by the providers and users. The design decides the success of the service when it is skillfully incorporated into the process of developing and delivering a service. On the other hand, the success of the design is realized during every productive and rewarding outcome of the service whenever it provides a holistic experience of the value of the service to the user. Based on the outcomes of a design workshop, Thenint (2008) considers design to be,

- “Human centered - as it turns inventions into innovations which meet people’s needs, aspirations and abilities.
- Problem solving - for it’s the ability to synthesize for holistic solutions.
- Co-creation - as it facilitates cross-disciplinary innovation processes and interactions between economy, user needs and engineering, and,
- Visionary - design also consists in imagining and visualizing possible futures and scenarios to support strategic decision making and requires intuitive capability”.

It can be summarized that the considerations on design mentioned by Thenint could be ultimately applied to the process of service design as well.

2.2.2 Design and Service Design - Approaches

Design and service design, in combination are approached and applied in varied contexts, processes, and methods in various service design projects. Some of the contemporary approaches to design and service design are ‘Human Centered Design - HCD’ (Steen, 2008, 16), ‘Co-design’ (Näkki & Virtanen, 2008, 91), ‘Human Technology Interaction Design - HTI’ & ‘Life-Based Design - LBD’ (Leikas, 2009, 4), ‘User Experience Design - UED’ (Sutcliffe, 2010, 25&31), ‘Experience Based Design - EBD’ (Bate and Robert, 2007), ‘Holistic Design’ (Stevens et al, 2003, 210), ‘Experience design’ (Moritz, 2005, 55), and ‘User Centered Design’ (Spillers, 2007).

The Creative Industries Research and Applications Centre (CiRAC, 2005, 25) in Australia, describes design itself as a process for approaching the achievement of excellence in innovation in a production, manufacturing or business field. It further states that, design is “how well

groups of people organize themselves to deliver new products and services and design”. Akama (2009, 5) believes placing emphasis on human-centered, experiential and holistic approaches to designing services and systems will be the ideal models towards service design. However, he also admits that the ideal models are harder to manifest in reality even for well - intended, socially - focused organization.

Kimbell (2011, 45) presents two different approaches towards service design; “The first is between understanding of design, either as problem solving that aims to realize what has already been conceived of, or as an exploratory enquiry involving constructing understanding about what is being designed, involving end users and others in creating meaning. The second is a tension between the view that the distinction between goods and services matters significantly, or that service is better understood as a fundamental activity with multiple actors within a value constellation”. Kimbell’s approach to service design is presented in Figure - 2

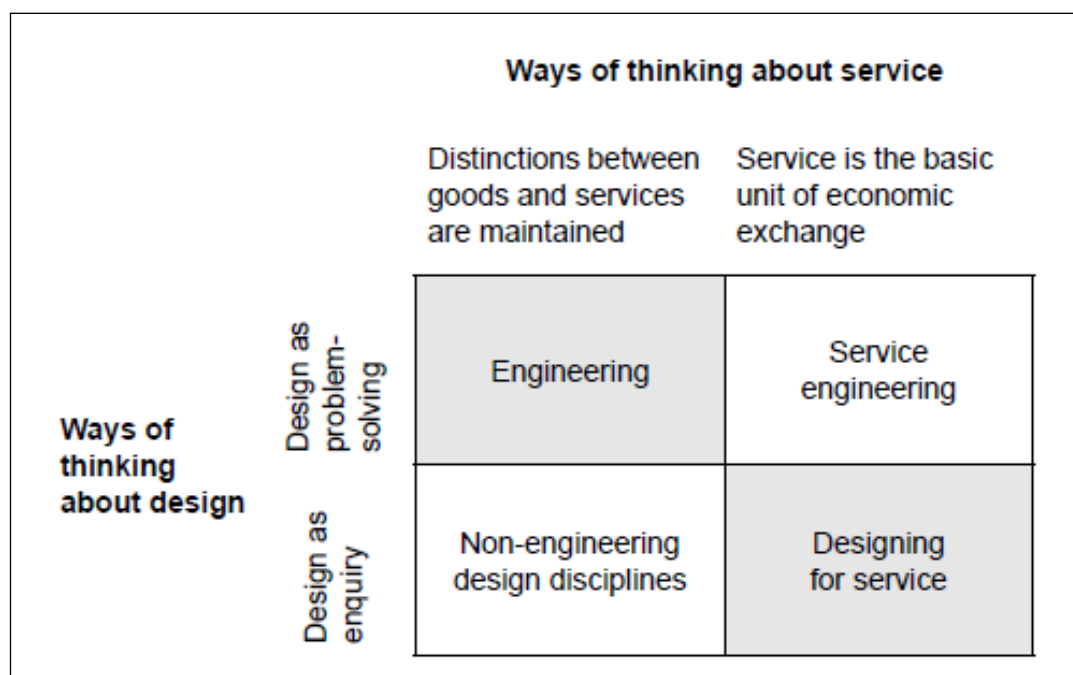


Figure 2: Approaches to service design (Kimbell, 2011)

Steen (2008, 26-32) considers the differences among the worlds of designers, researchers and users and proposes a ‘Human-Centered Design Approach’ (Figure - 3) as a means of bringing these three worlds together. Steen’s ‘Human-Centered Design Approach’ has six different directions, namely, participatory design, applied ethnography, lead user approach, contextual design, co-design and empathic design.

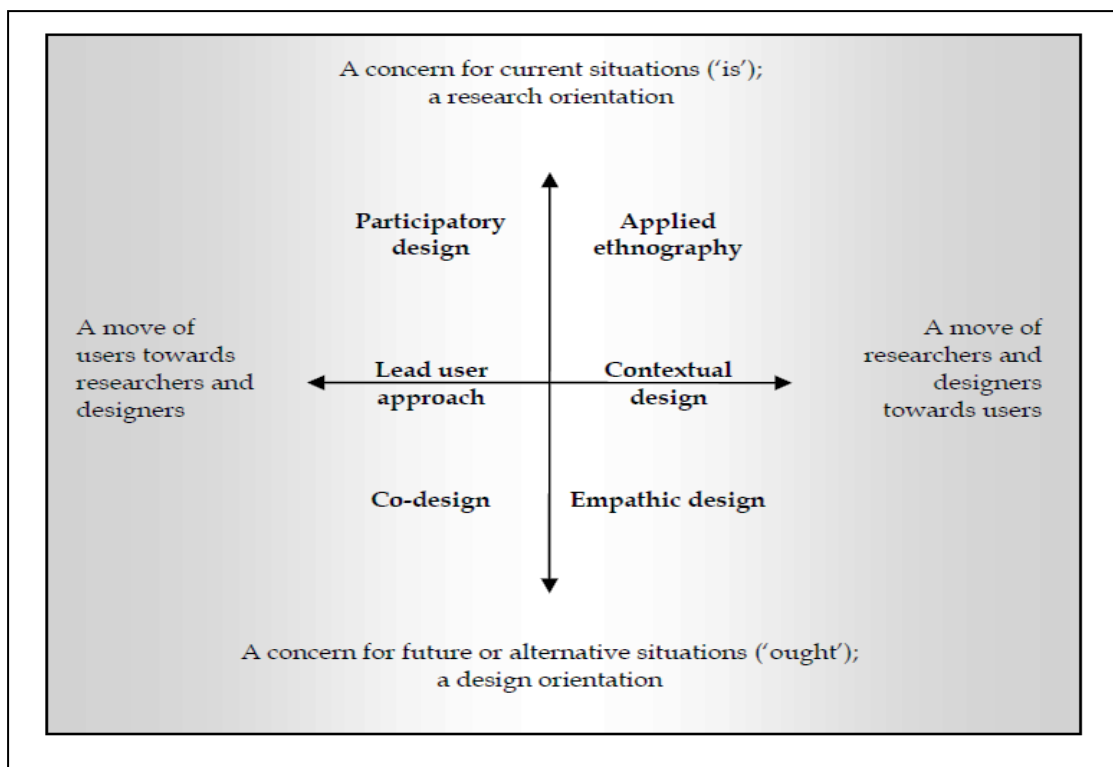


Figure 3: Human centered approach to service design (Steen, 2008)

Sanders^b (2006, 4) discusses design approaches in terms of 'design led' and 'research led'. She distinguishes the approaches further on the basis of seeing the users either as subjects/'reactive performers' (expert mindset) or as co-creators (participatory mindset).

2.2.3 Design and Service Design - Processes

Iterative and systematic process is a common element in both the design and the service design methodologies. Mollerup (2004, 18) refers to design as a strategic development process and as a way of seeing problems and their solutions whereas the service design processes "drive and support divergence, convergence as well as selection" (Holmid, 2007, 8). CiRAC (2005, 26) reiterate the fact that design is an iterative process, where testing and retesting of assumptions, concepts and prototypes prior to implementation is quite common. The Design Institute of Australia relates the word 'design' to any "process where an outcome is being planned rather than relying on chance". The steps in the design process as given by Mollerup is given in Figure - 4

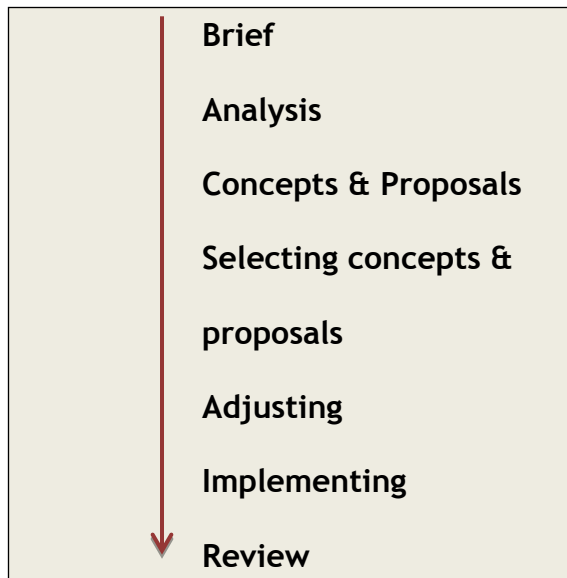


Figure 4: Design Process (Mollerup, 2004)

The processes for ‘design’ are generically logical and systematic and focus on the order of the of the actions, documentation and deliverable, whereas the ‘service design’ processes demand the “presence of shared human qualities among project stakeholders, subsequent discussions, and relationship building” (Akama, 2009, 9). According to Goldstein et al (2002, 132) the ‘service concept’ is an important foundation to build the service delivery system and as well to evaluate the services. Lawson (2005, 33&34) in his explorative analysis on bringing out a ‘route maps of the design process’ presents three views on the design process (Figure-5), which is a relative perspective in all the different design processes.

- “Analysis involving the exploration of relationships, looking for patterns in the information available, and the classification of objectives. Analysis is the ordering and structuring of the problem
- Synthesis, characterized by an attempt to move forward and create a response to the problem - the generation of solutions
- Appraisal involving the critical evaluation of suggested solutions against the objectives identified in the analysis phase”

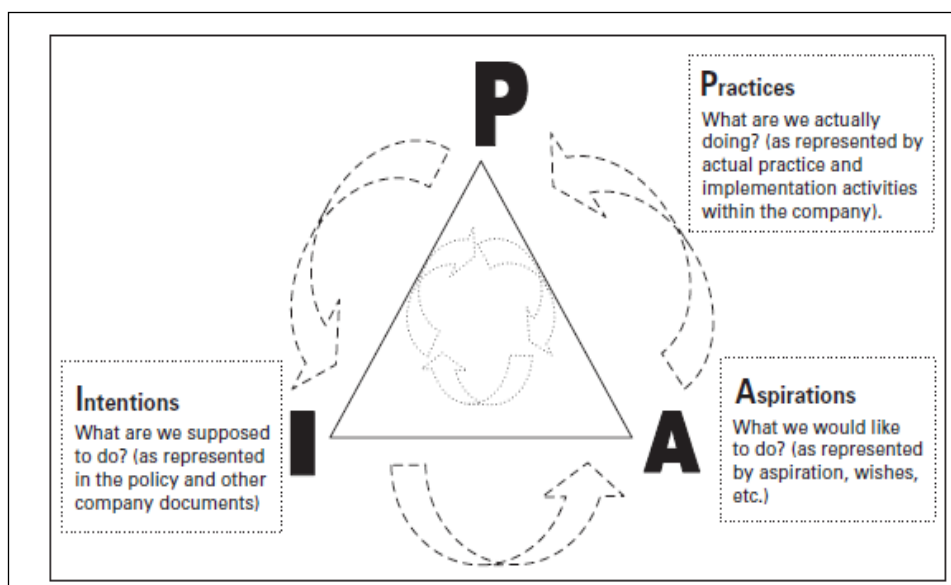


Figure 5: Three views on design process (Lawson, 2005)

The following thoughts from the service design literature summarize the overview of the service design processes,

- The different service design methods are united by the five principles of service design thinking stated by Stickdorn & Schneider (2010, 34) - 'User-centric, co-creative, sequencing, evidencing and holistic'
- The SD processes are only a navigational tool for the designers and the phases, though they are logical and systematic, they are not necessarily sequential (Lawson, 2005, 39&40)
- The processes are derived more by 'design thinking' (Lockwood, 2010, 11, Owen, 2006) and 'thinking about design' ((Lawson, 2005, 39&40)
- " Learning through practice is a perpetual process that can enable designers to innovate as they encounter changing contexts and conditions and the service design processes and methods should never be severed from its complex human and situational contexts" (Akama, 2009, 9&10)
- Service design is the process of creating 'service encounters' (Bitner et al, 2000, 2&10; Aminoff et al, 2010, 9) or user-centric touch points and defining how they interact with each other and with the user (Design Council, UK, 4)
- The fundamental behavioral science principles of human interactions can be translated directly into service design in order to create an impact of heightened awareness (Cook et al, 2002, 171)

A number of methods or processes have been proposed by various authors for designing services. An overview of five service design processes is illustrated in Figure - 6

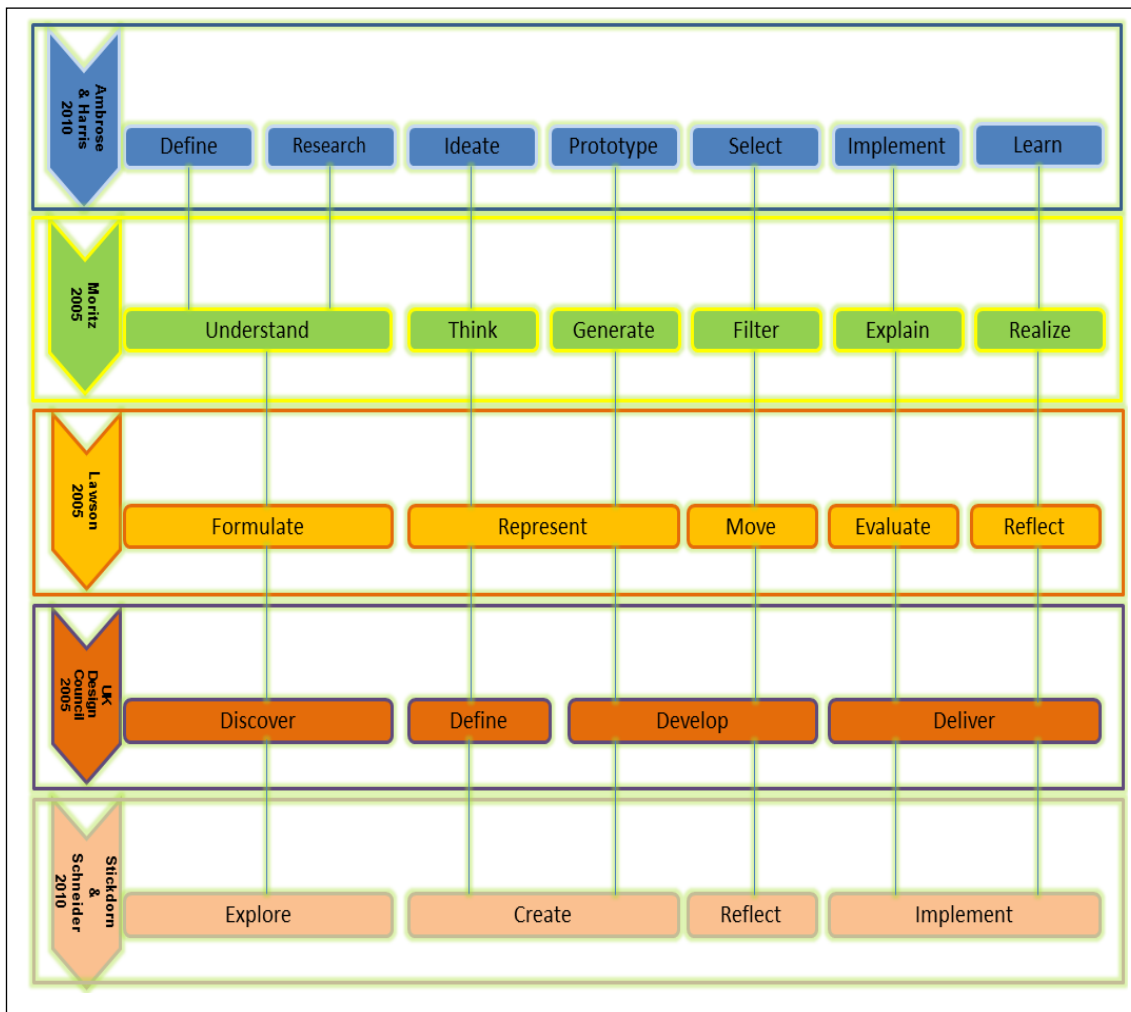


Figure 6: An overview of five service design methods (Srinivasan, 2012)

The process for ‘design’ and ‘service design’ are different and yet, similar. Reflecting the expression by Freire & Sangiorgi (2010, 2) “Services that are by definition co-produced are good examples of the new value co-creation model. In this context Design has the great opportunity to bring value and meaning generation at the heart of its activity”. The integration of design and service design processes is given a holistic and wider perspective by Holmid (2007, 1-8) during his analysis of the “common ground and differentiation” between interaction design and service design processes. Holmid’s analysis is based on two frameworks, one that defined the orders of design (in terms of design objects, such as signs, products, actions and thought), and the other that differentiated interaction design and industrial design (in terms of design process, material and deliverable). The conclusions from his study can be excerpted as follow,

- “Service design processes are highly explorative, and somewhat analytical
- Service design production is highly physical, highly virtual, and highly ongoing
- Service design materials are highly tangible and highly virtual
- Service design dimensionality is somewhat spatial, highly temporal, and highly social
- Service design aesthetics are somewhat experiential, highly visual, and highly active
- Service design deliverable scope is somewhat product, highly use, highly performance
- Service design deliverables are somewhat final, highly customizable, and highly dynamic.
- Service design customers are highly mass- market, highly organizational support, and highly customer’s customer”

From the comparisons and analyses, Holmid concludes that service design is interdependent on other design disciplines in terms of analytical processes, depictive representations, experiential aesthetics and product deliverables. It is beneficial and practical to consider the design disciplines as integrative disciplines where service design can be functional to integrate the actions and thoughts of the users, the designers and the providers.

2.3 Open Collaboration

Tapscott^a and Williams (2006, 20&21) associate the term ‘openness’ with candor, transparency, freedom, flexibility, expansiveness, engagement and access. In the views of West and West (2009, 23), “openness is an invitation to scrutiny by others. It is the attitude that invites collaboration and seeks out feedback and improvement from others. Being open requires a relinquishing of the self and an appreciation for networking, diversity, new ideas, and alternative approaches to learning and solving problems”. “Collaboration involves an intricate blending of skills, temperaments, efforts and sometimes personalities to realize a shared vision of something new and useful. Collaboration creates an environment where the partners can push their boundaries and integrate their differing personal characteristics. Interactions among partners create new properties that build on each other toward creative outcomes, identities, and relational possibilities” (Moran & John-Steiner, 2004, 11&21). Lockwood (2010, 12) believes that in collaboration constraints are removed and great ideas can emerge. Collaboration can be synchronous or asynchronous and ad hoc or structured (Davies, 2004, 6). Combining the views on ‘open’ and ‘collaboration’, ‘open collaboration’ can be defined as collaboration in an open, shared and transparent online environment. Online learning environments are considered to promote collaboration and they can enhance collaborative learning in higher education by providing shared workspaces where learners can work together on authentic problems (Strijbos et al, 2004, cited in Mäkitalo, 2006, 18). Brewer (2011) in his blog article discusses about the ‘open collaboration paradigm’ as “the ability to see and con-

nect with people, resources, and institutional supports (also known as “social currency”)³. He believes that this paradigm will shape “the occurrence of innovations and the beneficiaries of new technologies and ideas”. Open collaboration concept is interpreted, extended and explained in different contexts by various authors. One of the most notable concepts is the ‘COIN’ or the ‘Collaborative Open Innovation Networks’ developed by Gloor (2006, 4, 127&128). Gloor defines ‘COIN’ as “a cyber-team of self-motivated people with a collective vision, enabled by the Web to collaborate in achieving a common goal by sharing ideas, information, and work. In a COIN, knowledge workers collaborate and share in internal transparency”. Gloor further classifies COIN’s into,

- “Collaborative interest networks (CINs) - comprising people who share the same interests but do little actual work together in a virtual team
- Collaborative learning networks (CLNs) - comprising people who come together in a community and share not only a common interest but also common knowledge and a common practice
- Collaborative knowledge network (CKN)—a high-speed feedback loop in which the innovative results of COINs are immediately taken up and tested, refined or rejected by learning and interest networks, and fed back to the originating COINs”

Open collaboration can also be associated with the ‘Social Learning’ - learning and collaboration by means of social networks and social software, a concept defined by Bingham & Conner (2010, 6). A study by Konstantinidis et al (2009, 280) on the applicability of “three dimensional multi-user, open source, virtual environments’ for supporting collaborative learning³ suggest that these environments can be successfully used for open collaborative learning by modifying and integrating them with more technical features. Green (2010, 6) comes up with the concept of the world of ‘Anywhere’ to mean the growth of ‘virtual collaboration’ enhanced with the combination of common digital network, broadband demand and wireless ubiquity, in the emerging world of connectivity.

³ Konstantinidis et al (2009, 280) define ‘collaborative learning’ as the “general term used for describing educational practices based on the simultaneous cognitive and mental effort of multiple students or/ and educators”. “Collaborative learning represents an educational approach to teaching and learning which involves groups of learners that are working together for solving a problem, completing a task, or creating a product” (Gorghiu et al, 2011, 579)

2.4 Open Educational Resources (OER)

Atkins et al (2007, 4) define Open Educational Resources (OER) as “ teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others (but not necessarily for commercial use). Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge”. According to Bissell and Boyle (2007, 5) open Courseware initiatives have become part of an escalating OER movement. Open resources Like Wikipedia and open-source software, transform the conditions of teaching and learning by demonstrating the power of resources that invite participation and that enable contributions to be combined, disassembled, and shared. Saphire (2008, 1) states the following four ‘R’s as the main types of activities enabled by OER’s,

- “Reuse - Use the work verbatim, just exactly as you found it
- Rework - Alter or transform the work so that it better meets your needs
- Remix - Combine the (verbatim or altered) work with other works to better meet your needs
- Redistribute - Share the verbatim work, the reworked work, or the remixed work with others”

Schuer, R., & Mulder (2009, 67&68) list the characteristics of an OER project called ‘OpenER’ founded by the University of Netherland,

- “OpenER is flexible, open, time independent and easily accessible
- OpenER requires an individual to invest time and effort, but not to incur any out-of-pocket expenses
- OpenER is simple and inexpensive for the learner to use, due to the involvement of technology in OER
- OpenER gives the individual the opportunity to become familiar with studying at higher educational level without having to make an immediate financial investment. Also, the learning is self-paced and so ‘stress free’
- OpenER is compatible with the goal of using e-learning to achieve the strategic objective of promoting maximum participation in education. It both complements and facilitates access to e-learning”

Tuomi (2006, 33) presents a five point view on OER's in Figure -7

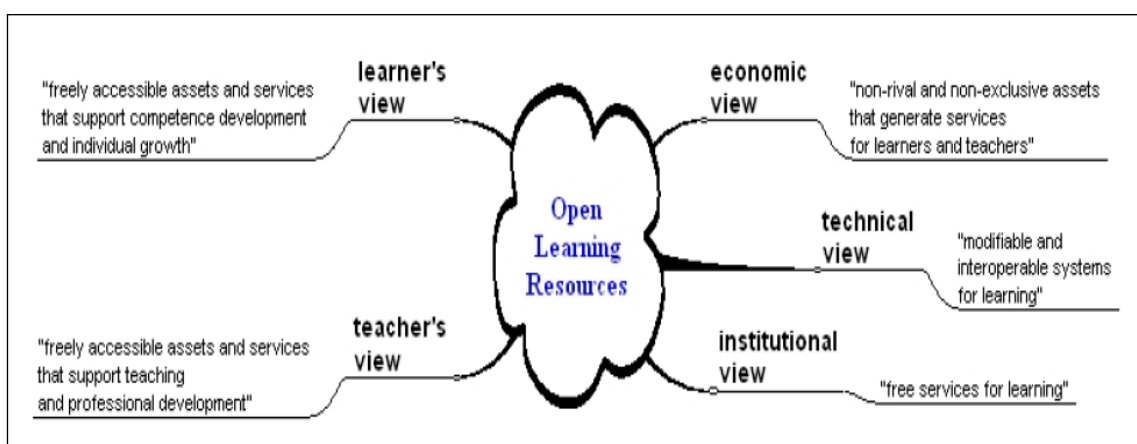


Figure 7: Five point views on OER (Tuomi, 2006)

The impact of open educational resource initiatives is potentially huge for learners, educators and educational institutions (Tuomi, 2006, 3). Sharing knowledge through making educational resources openly and freely available is a powerful means to support the development of both learning societies and knowledge societies (Antoni, 2009, 6). Universities like the The Massachusetts Institute of Technology (MIT), serve as the leading examples of the OER revolution by joining OER movement in 2007 and making the syllabus, content and all the learning materials of all the 1,800 (currently 2100) courses available to everyone by posting on the Web (Tapscott^b, 2009, 138&139). A list of very useful OER's are compiled in and presented in Table - 3.

S.No	OER Resource	Nature of resources
1	OER Commons	Free to use books and learning materials from all around the world. Specialize in school resources developed around USA URL: http://www.oercommons.org/
2	OER Research	Exclusive collection of research content on OER URL: http://oer.issuelab.org/research
3	OER University	Free learning university founded by a consortium of universities. Academic credits for a reduced fee is available for students and the education is using OER URL: http://wikieducator.org/OER_university/Home
4	UNESCO's OER Resource	Links to OER projects, resources, wikis and organizations worldwide. URL: http://www.unesco.org/new/en/communication-and-information/access-to-knowledge/open-educational-resources/
5	OER Infokit	Resources on all aspects of OER and many useful links URL: https://openeducationalresources.pbworks.com/w/page/24836480/Home
6	OER Finder	Quick and easy way to find OER courses and learning materials URL: http://www.opencontent.org/ocwfinder/
7	MIT Open course ware	Open access to content of all the 2100 courses in the Massachusetts Institute of Technology. URL: http://ocw.mit.edu/index.htm
8	Open Courseware Consortium	Open educational content created by the collaborative efforts of a number of organizations URL: http://www.ocwconsortium.org/
9	Creative Commons' OER Wiki	Case studies on OER from all around the world URL: http://wiki.creativecommons.org/OER
10	Connexions	Educational materials in the form of modules that can be organized as courses, books and reports that can be viewed, shared, and used URL. http://cnx.org/
11	OpenED	Free and open courseware offered to organizations, who can add their services for free or for a fee to the course participants URL: http://www.open-ed.eu/index.php?option=com_content&view=article&id=44:planning&catid=25:the-opened-20-project&Itemid=59
12	Cloudworks	Open communities or 'clouds' on various topics related to learning and teaching ideas and experience URL: http://cloudworks.ac.uk/

Table 3: List of useful OER resources

2.5 Social media and Social networks

Bell (2010, 1) provides the following description of social media: “social media is media designed to be disseminated through social interaction, created using highly accessible and scalable publishing techniques. Social media supports the human need for social interaction with technology, transforming broadcast media monologues into social media dialogues. It supports the democratization of knowledge and information, transforming people from content consumers into content producers”. Kaplan & Haenlein (2010, 59) and Riley (2011, 2)

present a classification of Social Media by their characteristics: “collaborative projects, blogs, content communities, social networking sites, virtual game worlds, and virtual social worlds”. A social networking website, as defined by Wikipedia, is “a website that allows for social networks to be made and opens up different forms of communication”. A social network site is one that will provide the users the tools to interact with other members through various Web-based means, as well as to create, find, and connect with common interest subgroups within the larger social networking site membership groups (Porto & Kipta, 2011, 204). Lincoln (2009, 134) defines social networks as “structures which map out the relationships between individuals”. Boyd and Ellison (2007, 210) classify social network sites based on their offerings that allow individuals to “(1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system”. There are many different types of social networking websites available in the World Wide Web which allows users to communicate in a variety of different ways (Albors et al, 2008, 200). Messaging friends, uploading photos and video, listening to music, writing blogs, dating and playing games are some of the most common forms of communication in social networks. Social networks offer the common feature of creating and sharing a personal profile, which is then used to find and make friends online (Gunawardena, et al, 2009, 4). Facebook, Myspace, LinkedIn, Orkut, YouTube, Twitter and Ning are some of the popular social networking sites. Social networks and online communities can have tremendous positive effects in organizations that enable information to be shared leading to better morale, shared responsibility, and more creative solutions to problems (Howard, 2010, 50)

2.6 Web 2.0

The evolution of the Internet has aided the growth of the new Web with rich tools to organize, create value, and compete. The new Web, which has opened the doors to a worldwide explosion of participation, ubiquitous platform of computation and collaboration, can also be called as the Web 2.0, the living Web, the Hypernet, the active Web and the read/write Web (Tapscott^a & Williams, 2006, 19). Web 2.0 is “the term referring to the second generation of Web development used to create and share content in real time” (Chatfield, 2009, 26). “The term Web 2.0 predominantly refers to features of the internet that grew out of a paradigm shift: one that moved away from a one-way read-only and published internet environment (now referred to as Web 1.0) to a many-way participative environment (Web 2.0)” (Norman, 2010, 5).

“Web 2.0 is the network as platform, spanning all connected devices. Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and re-

mixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences" (O'Reilly, 2007, 17). O'Reilly coined the term Web 2.0 in 2005 and formulated seven essential Web 2.0 principles, which are listed below:

1. The Web as platform - Providing framework for the users to develop new web services
2. Harnessing collective intelligence - Using hyperlinking as the foundation to create value by collective usage
3. Data is the next Intel inside - Database management is a core competency of Web 2.0 companies and the relevance data is essential
4. End of the software release cycle - Software is delivered as a service, not as a product
5. Lightweight programming models - Simplicity in software is fundamental
6. Software above the level of a single device - Software is no longer limited to the Personal Computer (PC) platform and can be extended to all web-enabled services
7. Rich user experiences - Multimedia content and Graphical User Interface (GUI) style application experiences

Kwan (2009, 4) believes that these principles are evident that Web 2.0 is based on a platform for sharing and participation, where user driven collaboration builds success. The term Web 2.0 is used in the thesis to refer to tools or services which are interactive, open and aid in user-generated content.

2.7 Wiki

The wiki concept was invented by Ward Cunningham in 1995 as a means to develop collaborative web pages freely by any user. According to Davies (2004, 7) wiki is a "collaborative workspace where everybody has the ability to add to, amend and organize the content as they see fit". Porto & Kipta (2011, 204) recognize the multiple functionality users in wikis: "users can read wiki as content consumer, use a wiki as a personal content organizer, or join a multiuser wiki as part of a community of collaborators, content creators, reviewers, and editors". From the collective views of Tapscott^b (2009, 138), Chatfield (2009, 18&22), Richardson (2009, 57&58), Barrett (2009, 3), Lih (2009, 1-55) and Leuf & Cunningham (2001, 14-36), the following essentials facts about Wikis can be understood.

- The word 'wiki' originated from the Hawaiian word 'Wikiwiki' meaning fast, speedy, to hurry, hasten, quick, fast and swift. The wikis earned this name by being quick and easy to use by anyone

- A wiki is a freely expandable collection of interlinked Web 'pages', a hypertext system for storing and modifying information - a database, where each page is editable by any user
- The users can edit any page or create new pages within the wiki website, using simple web browsers, without any extra add-ons
- Wiki pages typically contain hyperlinks which provide click paths to pages that deal with the mechanics of browsing and modifying the wiki content
- Most of the wikis contain 'edit pages' which stores all the edited and previous versions of the wiki page and as well the 'edit history' information
- Wikis are majorly classified into three types; Content wikis (database of resources like Wikipedia), process wikis (for businesses and organizations with set processes for mass collaboration like Intellipedia) and community wikis (based around a community of individuals who participate in the same basic activities. Importance is given to maintaining relationships. Memory Alpha, a Star Trek wiki is a good example for a community wiki). However, Poole and Grudin (2010) also explain the term "enterprise wiki" as a blanket term describing three different genres of wiki: *single contributor wikis, group or team wikis, and internal-use encyclopedias* emulating Wikipedia.

Wikis have become a popular online collaboration platform (Fong & Aghai, 2010) because of their collaboration spaces and inherently democratic properties (Leuf & Cunningham, 2001, 16&17). The collaborative and participative properties of wikis lead Tapscott^a (2006, 11) to propose the concept 'wikinomics'⁴, which explains how the growing accessibility of information technologies that encourage collaboration, value creation, and participation by people, help in "innovation and wealth creation within every sector of economy".

2.7.1 Wikiversity

Wikiversity (www.wikiversity.org) is a wiki devoted to education and it is founded by Wikimedia, who have gifted Wikipedia to the world (Riley, 2011, 60). It is a project to create learning resources, learning projects, and research for use in all levels, types, and styles of education from pre-school to university, including professional training and informal learning. Teachers, students, and researchers welcomed in Wikiversity to join in creating open educational resources and collaborative learning communities (Wikiversity, 2012). At the time of preparing this thesis, there were 18,209 learning resources in Wikiversity portals available in 11 languages. The resources and the languages are being developed continuously.

⁴ This is a combination of the words 'wiki' and 'economics' (Cambridge Business English dictionary)

2.8 Service design tool kit

“Great services do not exist by accident. They have to be carefully planned and designed. Service design is the means to achieve this” (ITIL, 2008, 10&108). Many tools and services can be used to assist with the design of the services and their associated components, covering all aspects of design (ITIL, 2008, 10&108). While mapping the landscape of service design, Saco & Gonclaves (2010, 161) express the opinion that the application of tools is situational and depends on the type of service design project, availability of resources and the project objectives. A variety of service design tools were used in the service development process described in this thesis, along with the action research methodology. A brief review of the research methods and design tools are presented in the following section.

2.8.1 Action research

Action research integrates research and action (Somekh, 2006, as cited in McIntosh, 2010, 38). Action research has been traditionally defined as an approach to research that is based on a collaborative problem-solving relationship between researcher and client which aims at both solving a problem and generating new knowledge and it is about research and action (Coghlan & Brannick, 2001, 3). Hence, “action research is interactive and is ‘the most demanding and far - reaching method of case study research’, which can include all types of data gathering methods, but requires the total involvement of the researcher” (Gummesson, 2000, as cited in Coghlan & Brannick, 2001, 7).

One of the strengths of action research is that it accepts the diverse perspectives of different stakeholders - the “theory” each will hold to explain how and why events occur as they do - and find ways of incorporating them into mutually acceptable ways of understanding events that enable them to work toward a resolution of the problem investigated. Action research, therefore, ultimately focuses on the events that are meaningful for stakeholders (Stringer, 2007, 204). Action research is a methodology that recognizes that the researcher, as a fellow human being interacting with others within a social context, is necessarily an implicit part of the research. Action research is also a cyclical, reflexive process that advocates continued learning and development (Rae, 2007).

The research process used in this thesis is an action research process exhibiting the traits of exploratory research⁵ design. In his article on 'Action research in education' Adams (2006) states that action research is used when there is a need to implement a new initiative and a need to find a way to sort out the concerns that offer practical solutions. It is a practical approach to professional inquiry in any social situation. In his view, action research has two aspects; "The starting point is to sort out a problem or issue in practice; to this extent an action researcher seeks a solution. But the process can also be used as a deliberate attempt to understand practice better - a traditional research attitude". Westlander (2006, as cited in Svensson & Nielsen, 2006, 54) suggests an alternative action research methodology by taking the *desired* future situation as a starting point instead of the immediate problem. According to Westlander, the planning phase should contain work to specify the *desired* conditions in terms of systems theory (*idealized design*) and according to them find out which means and resources should be used. She believes that the representation of the desirable future conditions (and not the present problem) ought to inspire and direct the choice of solution. The process should go from rather vague ideas of future and vague conceptions of ways to find more and more precise methods - a sharpening of an initially coarse means - goal thinking.

Costello (2003, 10) outlines an action research framework that has been produced by Denscombe^a (1998, 60, as cited in Costello, 2003, 10). The framework illustrates (Figure - 8) the cyclical process in action research with five elements. It involves beginning with professional practice and reflecting critically on it, leading to the identification of a particular problem or issues that requires research. When this enquiry has been completed, the findings from the research become the starting point for the development of an action plan. Strategic planning leads to instigating change (action), which impacts on professional practice.

⁵ Exploratory research is performed when the researcher knows little about the problem or opportunity. It is meant to discover new relationships, patterns, themes, ideas and so on. Thus it is not intended to test specific research hypotheses. Exploratory research is particularly useful in industries, for instance in developing highly innovative new products (Hair Jr et al., 2011, 147).

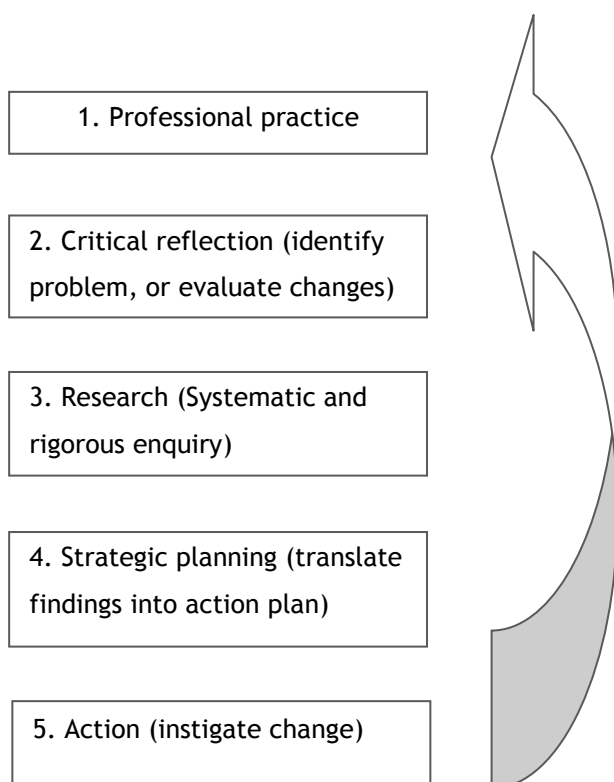


Figure 8: Cyclical process in action research (Denscombe^a, 1998, as cited in Costello, 2003)

The research process for the thesis started with bringing together all the stakeholders of CAL4INO in order to produce a collective vision to design a rather vaguely described ‘Extended Social Network Site’ (CALINO, 2010, 121). Intensive research followed afterwards to find a suitable Web 2.0 based online environment. The author performed the tasks of an action researcher, leading the research and design process with the stakeholders as the co-designers. The research and design process produced new knowledge in the fields of Web 2.0 and social media tools, and brought in myriads of learning resources on innovation and entrepreneurship, which benefitted the professional practice of every stakeholder involved in the process. The discovery of Wikiversity (www.wikiversity.org) as the domain to build the portal for open collaborative activities also instilled a change of mindset towards the utilization of OER environments as effective mediums for international, collaborative project management. Hence the author believes that the thesis strongly matches the description of action research provided by Svensson & Nielsen (2006, 13) which is rephrased as “action research must have an *action* component, that is the research should support a normative *change* in one way or another (in problem solving, developmental work, restructuring etc.) while at the same time producing new knowledge”.

2.8.2 Computer-Mediated-Communication (CMC) tools

Mann & Stewart (2000, 2&216) throw light on the practical benefits of incorporating Computer-Mediated-Communication (CMC) methodologies such as web browsers, emails, chats and conferencing into qualitative research designs. They define CMC as “the direct use of computers in a text based communication process”. They state that the developments in the technologies offer the exciting prospect of Internet based communication (and hence research) with a far wider spectrum of socio-economic groups and nationalities than is currently available. According to Markham (2005, 794) Internet technologies have the potential to shift the ways in which qualitative researchers collect, make sense of, and represent data. Eriksson and Kovalainen (2010, 110) believe that electronic research, including electronic research literatures, online research methods, electronic data, and software for making the analysis, provides novel and inspiring ways of conducting qualitative research in business studies. Fontana and Frey (2005, 721) predict that virtual spaces will become the setting for interviews in the future.

Houghton et al (2003, 27) observe the increased interests in the use of email as a method of obtaining information for epidemiological and other research purposes and for surveying opinion. De Laat and Lally (2004, 132) explain the role of emails in the creative process as “updating on progress, asking questions and providing reminders, general scheduling and ongoing discussion”. Selwyn & Robson (1998) confer that e-mail as a research tool potentially offers researchers many advantages such as easy access to world-wide samples, low administration costs (both financially and temporally) and its unobtrusiveness and 'friendliness' to respondents. However, they also express caution that e-mail's application as a research tool is constrained by its limited and biased population of users and lack of tacit communication. In this study emails and Skype online conference were used quite frequently as tools for research and interviews, along with the Internet research. Wide geographical access to huge volumes of data, operating at a global level (Denscombe^b, 2004, 41) and cost and time saving (Nguyen, 2007), were the real time benefits realized with the use of these tools. Combining these tools with face-to-face interaction methods such as focus groups was found to be effective in bringing out the stakeholders' insights.

2.8.3 Focus groups

Focus groups are a type of qualitative research method which involves semi-structured interviews with an exploratory research approach (Hair Jr et al, 2011, 191). Focus group interviews offer opportunities for direct contact with subjects and utility (Clough & Nutbrown, 2007, 91). Focus groups, as data collection method, take many different forms, such as discussion groups, focused interviews, group interviewing (Stringer, 2007, 73) and group research, and often used in business studies.

Gauri & Gronhaug (2005, 140&141) explain the methodology of conducting a focus groups which involves interviews with a group of normally 6-10 people, who discuss a particular topic/issue under the direction of a moderator. The discussion may last from half an hour to around two hours. The moderator plays an important role in keeping the discussion on the focus issue and secure interaction between the focus group members. The focus groups produce include very rich and in-depth data which is normally difficult to obtain using other methods such as surveys.

According to Collins (2010, 126) the main purpose of a focus group is to gain insight by listening to a group of people from the appropriate target market talk about specific issues of interest. The interviewer creates a supportive environment, asking focused questions to encourage discussion and the expression of differing opinions and points of view. The advantage of the focus group interviews are that this method is socially oriented, studying participants in an atmosphere more natural than artificial experimental circumstances and more relaxed than a one-to-one interview (Marshall & Rossman, 2006, 114). On a contemporary context, Liamputtong (2011, 162) discusses about conducting two types of 'virtual focus groups' using Internet communication methodologies, namely synchronous (real-time) and non- synchronous (non-real-time). Focus groups were used in two instances in this research, whenever there was a possibility to meet all the CAL4INO partners, face-to face. Focus groups were realized to be efficient in decision making quickly and clarifying design issues in real time.

2.8.4 Idea Sketches

According to Buxton (2007, 139) sketches and prototypes are instantiations of the design concept, serving different purposes, and therefore concentrated at different stages of the design process. Sketches dominate the early stages of ideation, whereas prototypes are more concentrated at the later stages where they are converging with the design funnel. Meroni & Sangiorgi (2011, 250) describe idea sketches as "simple tools of formats to visualize initial ideas as a sketch or an image. These ideas can represent completely new service solutions, improvements in the interactions or individual touch-points. They can suggest the appearance and functioning of the proposal and add simple notes to better understand the nature of the problem and of the solutions". In the views of Ambrose and Harris (2010, 76) a detailed sketch can form the basis of a prototype. Sketching is perhaps most often associated with the ideation stage to rapidly outline possible design solutions and create a visual representation of ideas as they are generated. Steen (2008, 102) also describes the use of idea sketches in a telecom application design project for police officers. Idea sketches were used in the study to draw rough sketches of the wiki portal, based on the ideas from the stakeholders.

2.8.5 Ideation & Brainstorming

Ideation or idea generation is the process of generation of new ideas. Zeithaml et al (2009, 259) mention formal brainstorming, solicitation of ideas from employees and customers, lead user research and learning about competitors' offerings as the most common approaches for idea generation. Jones & Samalionis (2010, 188) state that it takes time for a team to understand the nuances of the problems and develop meaningful frameworks that can structure ideation. Best (2010, 149) describes the use of "innovation triggers" for ideation activities. In his thoughtful view, the innovation triggers should provide useful information in order to inspire designers and others to ideate.

"Brainstorming and other ideation techniques are used to generate alternative solutions and opportunities quickly. They identify the most interesting or important ideas to take forward as part of the design process" (Innovateuk.org). Brainstorming is a way to come up with many ideas in a short period, by working in a group (Collins, 2010, 29). Stamm (cited in Collins, 2010, 28) describes brainstorming as "the conscious generation of ideas is often the starting point of an innovation journey". Stamm believes that brainstorming is one of the most widely used techniques to support idea generation. Gray et al (2010, 78) have come up with an interesting brainstorming game called '3-12-3' brainstorming, where a time of 3 minutes is given to create a pool of observations, 12 minutes for combining the observations into rough concepts and another 3 minutes for presenting the concepts. They believe that this game works well in generating new ideas and in improving existing ones. Ideation and brainstorming were used as the core methods in different occasions during the design process used for this thesis, to bring out the insights from the stakeholders.

2.8.6 Observation

"Observation is a method of collecting empirical data by human, mechanical, electrical or electronic means. The researcher may or may not have direct contact with the people who are being observed" (Eriksson & Kovalainen, 2010, 86). According to Denscombe^b (2004, 192) observation offers the social researcher a distinct way of collecting data as it draws on the direct evidence of the eye to witness events first hand. Eriksson & Kovalainen (2010, 86) describe the different types of observation methods through four dimensions:

- "Participant and non-participant observation, depending on whether the researcher is part of the situation they are studying or not
- Obtrusive and non-obtrusive, or disguised or non-disguised observation, depending on whether the research participants know that they are being observed or not
- Observation in natural and contrived settings, observation, depending on whether action is observed where it is occurring 'naturally' or in a contrived setting

- Structured or non-structured observation, observation, depending on whether a checklist determines what is being observed, or not”

Denscombe^b (2004, 192) also makes note of the ‘systematic observation’ which is normally linked with the production of quantitative data, and the use of statistical analysis. Boeije (2010, 58) defines participant observation as a “classical research strategy in both cultural anthropology and sociology”. He elaborates it “as an approach to research, which takes place in everyday situations than in laboratory conditions”. Participant observation is also known as ‘field work’.

Angrosino (2005, 732) lists three levels of specificity for forms of observational research, which are,

- Descriptive observation - a procedure that yields a large amount of data, some of which will prove to be irrelevant
- Focused observation - the researcher only looks at the material that is pertinent to the issue at hand, often concentrating on well-defined categories of group activity, and
- Selective observation - focusing on a specific form of a more general category

Structured and focused non-participant method of observation was used in this study as a form of usability tests to observe the users while they navigated through the wiki portal. The observation method helped identify problems in the navigational features.

2.8.7 Prototypes

Prototyping a design is a common practice in a number of design fields and prototypes can help the learning cycle. Enactment of prototyping of the elements of a service can help reduce the less tangible nature of a service or a service concept (Wild, 2007, 12). “Prototypes can be used to test the technical feasibility of a design idea to see if it works as a physical object. Prototypes can also test the visual aspects of the design by presenting them, as they would be produced. This provides the opportunity to test where pertinent, a design in three dimensions” (Ambrose & Harris, 2010, 22). Sketches, prototypes, models, simulations and demos have a huge role to play in the design processes, product development, and innovation (Buxton, 2007, 409). According to Lockwood (2010, 12) prototypes can be concept sketches, rough physical mock-ups, or stories - or roleplaying storyboards, for a service design and they always include a form of visualization. Prototypes include a variety of design representations ranging from mockups/ concept demonstrators with limited scripted functionality to partial software implementations that can demonstrate interaction and user experiences (Sutcliffe, 2010, 20). Saco & Gonclaves (2010, 170) while describing the service strategies for design practitioners, offer “prototyping as a vehicle for dialogue” as one of the four strategies. They

emphasis on keeping the prototypes transparent to all the actors during the design process and making them “available to discussion and dialogue, both internally in relation to teamwork and externally in relation to clients”. An elaborate account of the practical use of prototypes in the portal design is presented in Chapter - 3.

2.8.8 Qualitative interviews

Interviews are often considered the best data collection methods and they can be done via mail, telephone or in person (Gauri & Gronhaug, 2005, 132). Qualitative interviews may supply a more profound understanding of the experiences made by customers with service providers and further allow for a deeper insight in the customer’s desires and needs which are not being reflected in the organization (Mager^a, 2004, 36). According to Collins (2010, 134) interviewing is a technique that is primarily used to gain understanding of the underlying reasons and motivations for people’s attitudes, preferences or behavior. Arhippainen (2009, 194) state that the interviews are especially effective when gathering subjective experiences. Interviews can be undertaken on a personal one-to-one basis or in a group. Interviews can be structured, semi-structured or unstructured. Eriksson and Kovalainen (2010, 80) provide a summary of the three different types of qualitative interviews;

- Structured and standardized - the same standardized, pre-established questions for all participants with a limited set of response categories. “There is little room for variation in response except where open-ended questions may be used” (Fontana & Frey, 2005, 702)
- Guided and semi-structured - provide outline of topics, issues, or themes, but variation in wording and sequence. According to Flick (2005, 81) the contents of the semi-structured or semi-standardized interviews are reconstructed. The interview guide mentions several topical areas, each of which is introduced by an open questions and ended by a confrontational question. The interview is focused by asking certain questions but with scope for the respondent to express himself or herself at length (Collins, 2010, 134). Semi-structured interviews have an overall structure and direction but allow a lot of flexibility to include unstructured questioning (Hair Jr et al., 2011, 191).
- Unstructured, informal, open and narrative interviews - some guiding questions or core concepts to start with, but freedom to move the conversation in any direction of interest that may come up. This is also called as an in-depth interview (Collins, 2010, 134). Qualitative, in-depth interviews typically are much more like conversations than formal events with predetermined response categories (Marshall & Rossman, 2006, 101). This allows the researcher to elicit the information by engaging the interviewee in free and open discussion on the topic of interest (Hair Jr et al., 2011, 194).

In a blog post on ethnography, Madrigal (2009) mentions of a 'superior form' of interviews known as 'contextual interviews'. He explains that, "contextual interviews are interviews that are conducted in the context in which the behavior of interest occurs", which allows the researcher to understand the person's environment and get actual demonstrations of behaviors of interest and helps the interviewee to remember specific details about performing actions. Collins (2010, 136) offers telephone interviews as alternatives to the personal, face-to-face interviews. According to Collins, it is relatively cheap and quick and can cover reasonably large numbers of people, organizations and geographic areas. The major advantage of interviews is its adaptability, but the disadvantage is its time consumption (Bell, 2006, 157). Both guided, and semi structured and unstructured and open interviews were used in the thesis process.

2.8.9 Qualitative research

Qualitative research means any type of research that produces findings not arrived by statistical procedures or other means of quantification (Strauss & Corbin, 1998, 10). Qualitative research is a mixture of the rationale, explorative and intuitive, where the skills and experience of the researcher play an important role in the analysis of data (Gauri & Gronhaug, 2005, 110). Silverman (2005, 15) asserts that qualitative research involves a variety of quite different approaches and advises the researchers to make pragmatic choices between research methodologies according to the research problem and model. Qualitative researchers rely typically on four methods for gathering information: (a) participating in the setting, (b) observing directly, (c) interviewing in depth, and (d) analyzing documents and material culture (Marshall & Rossman, 2006, 97). Qualitative methods are embedded in the research process, and are best understood and described using a processual perspective (Flick, 2005, 1). Qualitative data is generally collected using some type of unstructured interviews or observation. Focus groups and in-depth interviews are frequently applied qualitative research approaches. In qualitative research hypotheses are less frequently developed. Rather than proposing the hypotheses, the researcher is guided by the conceptual framework in collecting data to identify concepts and ideas. Thus the data collection interacts with the conceptual framework to move the research toward its conclusion. At some point in the data collection the researcher begins identifying the common themes, organizes them into patterns which are then summarized into a set of findings and ultimately conclusions (Hair Jr et al., 2011, 145&146). The design process executed for this thesis utilized a combination of qualitative research tools and brought out a qualitative, blended approach to service design methodology.

2.8.10 Questionnaires

Questionnaires can be used as a method on their own right or as a basis for interviewing or a telephone survey. They can be posted, emailed or faxed and therefore can cover a large number of people or organizations. Questionnaires allow plenty of time for the respondent to formulate their responses and avoid any interviewer bias (Collins, 2010, 128). Hair Jr et al (2011, 255) classify the questions used in the questionnaire as 'close-ended' and 'open-ended'. They explain that the respondents are given the option of choosing from a number of predetermined answers in the close-ended questionnaires. The respondents are free to answer in their own words in the open-ended questionnaires, as the questions place no constraints on them. Flick (2005, 81) suggests the use of 'theory driven, hypotheses-directed questions' in semi-standardized interviews, in which the researcher asks questions oriented to the scientific literature about the topic or based on his or her theoretical presuppositions. For the purpose of the thesis, open-ended questionnaires were used.

2.8.11 Service staging

A major task of service design is to create a material evidence of a sensually perceivable service reality for the customer, in line with service strategy (Mager^a, 2004, 44). "Service staging is the physical acting out of scenarios and prototypes. Those participating in service staging will usually act out an encounter that one of the team has experienced, or explore a prototype situation" (Stickdorn & Schneider, 2010, 194).

2.8.12 SWOT

SWOT is an analytic model used to evaluate a business in terms of strengths, weaknesses, opportunities and threats (Frye, 2010). SWOT analysis can be performed on a product, on a service, a company or even on an individual. SWOT analysis is a long-standing technique of what is going right with respect to a desired end state and as well as what could be improved (Gray et al, 2010, 212). McNaught et al (2006, 1-8) used eight SWOT analyses in an e-learning project. Their findings recommend the use of SWOT as a strategy in an iterative way to build on and refine understandings, processes and the quality of products, services and web development projects. In this thesis SWOT was used as a post launch usability testing tool to assess the strengths and weaknesses of the wiki portal.

2.8.13 Usability testing

Gaffney (1999) defines usability testing as "a technique for ensuring that the intended users of a system can carry out the intended tasks efficiently, effectively and satisfactorily". Usability testing it is carried out pre-release so that any significant issues identified can be ad-

dressed”. It can also be carried out at various stages of the design process. “The basic idea of usability testing is to gauge the users’ success with a product while allowing them to step back and comment about their experience with it (Kuniavsky, 2003, 464). He explains that usability tests help identify problems people have with one’s website and reveals difficult interfaces and confusing language. Kuniavsky also lists down four major steps in the process of conducting a usability test,

- i. Defining the audience and their goals
- ii. Creating tasks that address those goals
- iii. Getting the right people
- iv. Watching them try to perform the tasks

A basic usability test was conducted by combining the observation, questionnaire and interview methods. The practical implementation of the test is explained in Chapter-3.

2.8.14 User experience maps

“Journey mapping (or experience mapping) is an ethnographic research method that focuses on tracing the customer’s “journey” as he or she interacts with an organization while in the process of receiving a service, with special attention to emotional highs and lows. Experience mapping is used with the objective of identifying needs that customers are often unable to articulate” (Liedtka & Ogilvie, 2010, 1). Design Council, UK offers the following thoughts on user journey mapping: “A User Journey Map is a visual representation of a user’s journey through a service, showing all the different interactions they have. It takes the users’ point of view and explains their actual experience of the service, in terms of ‘magic moments’ (working parts of the service) and the ‘pain points’ (parts that need improvements). The aims of the user journey maps are to,

- “Identify the key elements of a service.
- Understand the links between all the different elements over time.
- Identify problems areas in a service or areas where new things can be added.
- Create empathy with different types of users”

Kuniavsky (2003, 43&44) emphasizes three general categories of work when creating a user experience for websites and other information management products,

1. “*Information architecture* is the process of creating an underlying organization system for information the product is trying to convey
2. *Interaction design* is the way that structure is presented to its users and
3. *Identify design* amplifies the product’s personality and attraction”

Stickdorn & Schneider (2010, 158) recommends to construct a customer journey map by identifying and defining the user interaction touch points. In their opinion, interviews, or self-documentation or self-tracking by the users will help to generate the users' insights. A modified version of user journey map produced by the author can be viewed in Chapter-3.

2.8.15 Value maps

Value mapping is a technique of building a visual matrix that quickly and clearly defines areas of interests for a service, a product, a plan or a website. It helps one to visualize quickly, the things that are valued by others like the members of a team, a department or stakeholders (Gray et al, 2010, 221). Value mapping is usually done by asking people to plot their choice feature or value point (for example in stick notes) against a matrix. . Kuniavsky (2003, 305) mentions a technique called 'value survey' to investigate what people find important, for example to design a marketing campaign. Lee and Lin (2011, 735) conclude in their study on developing 'Heuristic Value Maps (HVM) in health care that HVMs can help with the evaluation of current services to see if they fulfill the consumers' needs and produce value. Also HVM's can help the healthcare institutions in transforming their operating direction and resources in order to create consumer value, by recognizing the value to each consumer. In this Wiki portal development process value maps were used to find the value offering by the portal, as identified by the new users and the stakeholders.

3 Service Development Process

3.1 Blended service design process

Service design offers many opportunities for innovation and helps make better decisions when integrating new technologies and new approaches (Bedford & Lee, 2010, 204). The blended service development process implemented in this study was comprised of three key elements, which are illustrated below (Figure - 9).

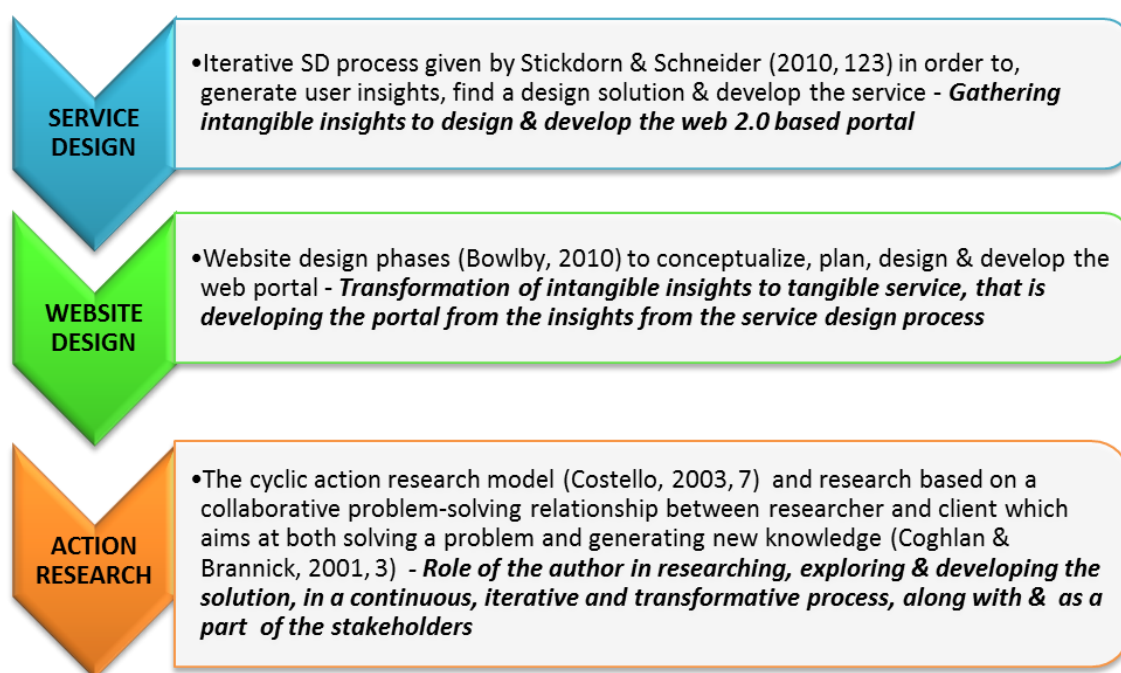


Figure 9: Blended service design process (Srinivasan, 2012)

The ultimate goal of the development project was to design and develop an interactive Web 2.0 based system for the educators and trainers involved in the CAL4INO project, for collaborative knowledge sharing and learning activities. The theme, vision, purpose and practicalities to develop the Web 2.0 based system were unclear and unexplained during the beginning of the project. There was no clarity as to understand if the 'Web 2.0 based system' meant a website, a social network, a portal or any other form of online collaborative system. It was imperative for the author to embrace the iterative process of service design to lead the stakeholders in a systematic process to ideate, plan and design a functional web based system. The basic principles of designing a website, adapted from Bowlby (2010) was applied along with the service design process given by (Stickdorn & Schneider, 2010, 123) in the service development process. The combination of these two design processes was effective in

transforming the stakeholders' insights from the service design process to, concrete plans, layouts, system maps & prototypes, which were finally molded into a functional web portal with the needed features for collaborative learning activities.

As the project started with a “practical, problem solving approach” (Costello, 2003, 5), in terms of solving the problem of creating a collaborative web system without any specifications and budget, the author inevitably adapted the action research methodology throughout the project. According to O'Brien (1998), “action research is known by many other names, including participatory research, collaborative inquiry, emancipatory research, action learning, and contextual action research. Put simply, action research is “learning by doing” - a group of people identify a problem, do something to resolve it, see how successful their efforts were, and if not satisfied, try again”. O'Brien (1998) implies that the action researcher may need to adopt many different roles at various stages of the process “to produce a mutually agreeable outcome for all participants, with the process being maintained by them afterwards”. The choice of action research methodology has been essential and eventual as the author had to carry out the development process as one of the stakeholders in the CAL4INO project and could not function as a researcher or a designer from outside. O'Brien's thoughts were well integrated in the author's adaptation of roles of an action researcher in working with the CAL4INO project group in the following context,

- Researching on various Web 2.0 based tools and social media tools to create the Web 2.0 based system (planner, leader, researcher and facilitator)
- Exploring alternatives that would best suit building an 'open and free' collaborative Web 2.0 based system (innovator, listener, observer and planner) and
- Iterative activities in planning & designing the Web 2.0 based system (designer and reporter)

An overall summary of the blended service design process implemented in the project is presented in Table - 4 with the project time line. The different phases in the service design process, website development & action research methodologies are distinguished to broaden the understanding of the readers.

Month	Service Design stage	Website Design stage	Action Research phase	Design tools	Practical Outcomes	Design Evidence	Communication Evidence
October 2010 - December 2010	EXPLORATION	PLAN	PLAN	1.Questionnaires 2.Interviews 3.Idea sketches 4.Ideation/Braintorming 5.Focus groups	1. Draft action plan for the website 2. Alternative solution for website - a free and open, multilingual wiki based portal 3. Framework for the portal	1. Idea sketches	1. Email questionnaires 2.Draft action plan for the website 3. Slides from ideation meeting 4.Photos from focus group
Framework & action plan for the portal							
December 2010 - February 2011	CREATION	DESIGN	ACT	1.Interviews/Braintorming 2. Idea sketches 3.Paper prototypes	1.Final system map 2.Taxonomy structure	1. Draft sketches of system map	1. Photos, poster & brochure from 'Project Day' event
Final Layout & Taxonomy for the portal							
February 2011 - Mid of March 2011	REFLECTION	DEVELOP	OBSERVE	1.Functional prototype 2.Service staging 3.Focus groups	1. Functional portal - preliminary version 2. CAL4INO sub page	1. Screen shots of iterative versions of portal	1.Ideation slides from service staging 2.Minutes from the CAL4INO meeting showing the approval for portal design
First functional portal							
Mid of March 2011 - End of April 2011	IMPLEMENTATION	LAUNCH	REFLECT	1. Observation 2.Interviews 3.Questionnaire 4.Value maps 5.User experience maps 6.SWOT	1. Soft launch of portal 2. Evaluation & feedback 3. Strategy for further development	1.Screen shots of portal 2.Value maps 3.User experience maps 4.SWOT table 5. Illustration of crowd sourcing strategy	1. Photos from usability testing 2.Questionnaire 3.Slides & photos from Learning by Developing day presentation 4.Final project report for CAL4INO
Soft launch of portal & Evaluation							

Table 4: Summary of the blended service design process

3.1.1 Project organization

The developmental project involved multiple partners from the CAL4INO project as the primary stakeholders of the service. The author set up an expert panel for Web 2.0 and social media tools to assure the quality assurance for the service design process and as well to gather their insights for the iterations of the design of the Web 2.0 based system. The internal project team had a project director, a number of educators and trainers from the field of entrepreneurship, a technical advisor and a technical intern. The author functioned as the project manager and lead designer. The project organization is illustrated in Figure - 10.

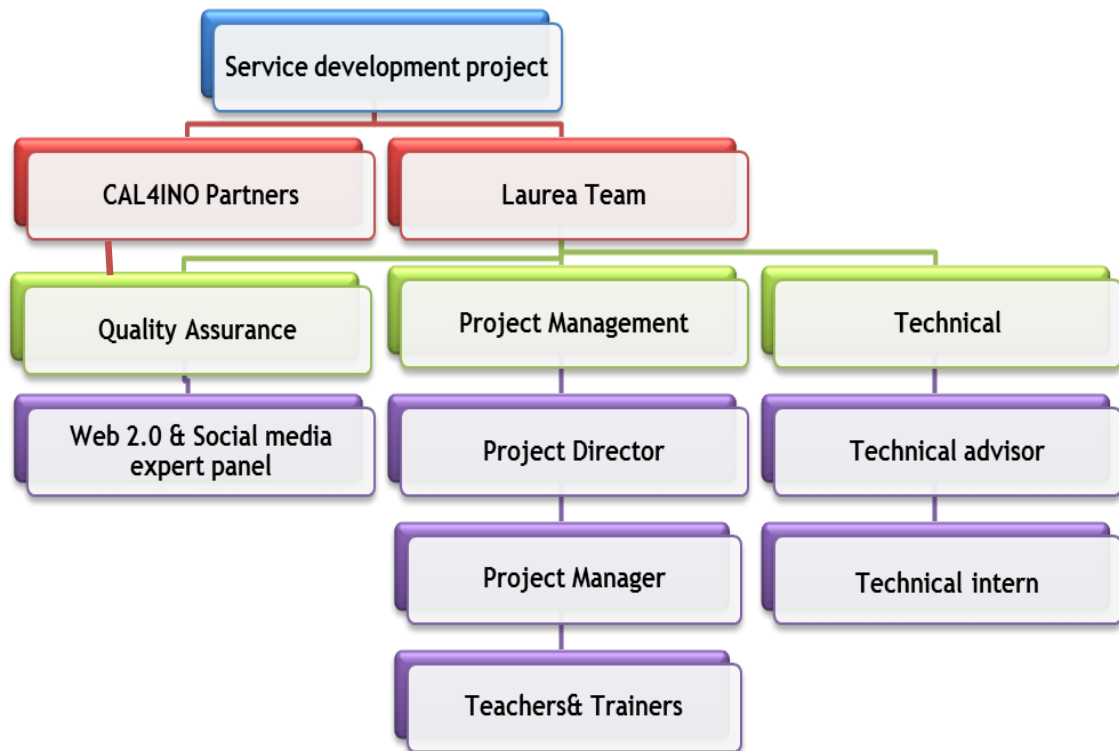


Figure 10: Project organization

3.1.2 Service design phases

The iterative model of service design given by Stickdorn & Schneider (2010, 122&123) was adapted for this service development project. Stickdorn & Schneider (2010, 123) state that, “the iterative four steps of exploration, creation, reflection and implementation are a very basic approach to structure such a complex design process”. The iterative model adapted from Stickdorn & Schneider (2010, 122&123) is illustrated in Figure - 11.



Figure 11: Iterative service design model (adapted from Stickdorn & Schneider, 2010)

The design goals, the design process and the key outcomes are described for each of the four phases in the following sections.

3.2 Exploration phase

3.2.1 Design goal

The design goal in the exploration phase was, to define, the vision, purpose, target group and theme for the web 2.0 based system. Explicitly, the design goal was to generate user insights in order to give a concrete shape to the abstract description of ‘Extended Social Network Site’ or a ‘Web 2.0 based system for creativity, innovation and entrepreneurship’ (CAL4INO, 2010, 120), that was expected to be developed as a deliverable for CAL4INO.

3.2.2 Design process

According to Stickdorn & Schneider (2010, 127), the exploration phase of the service design has three important tasks,

- i. Understanding the problem in the perspective of the organization or the customer
- ii. Identifying the real problem by means of understanding the customer insights and,
- iii. Visualizing the intangible insights in order to promote a sense of possibility within the design team and the stakeholders

3.2.2.1 Initiation of self- ideation process

The exploration phase of the project started with the objective of gaining qualitative insights on the stakeholders' perception of the Web 2.0 based system to be developed. Importance was given to understand their expectations, needs, ideas, themes and features with relevance to the Web 2.0 based system. The period of the exploration phase was from October 2010 to December 2010. An intensive desk research and internet research was carried out, to have a broad understanding of various research methodologies, design tools, website design process, Web 2.0 tools, social networks and collaborative learning. Search for an open and free to build online tool was done simultaneously. The stakeholders were not involved in the very early stage of desk research, as the author felt the need to have a deep understanding of the work package herself first, before she could approach them and lead them through the ideation process. This self-learning phase proved essential in her role as the lead action researcher, to facilitate, initiate, ideate, share, design and develop the web based system in the subsequent development process. More importantly, this intensive reading and researching process, lead her to the discovery of a number of open collaborative environments, which in turn directed the whole service development process towards designing an open, collaborative environment for learning and dissemination activities.

The author also carefully read and reviewed the requirements stated for the Web 2.0 based system, by the CAL4INO project group. She also maintained a project diary meticulously, to record the dates, notes and other qualitative content from the interactions with the stakeholders. The notes from the diary helped the author to go back, read, review, research and elaborate on the ideas. In many occasions the diary helped to compare the notes from the previous interviews and to plan the second or the third iterative interviews. The importance of maintaining a project diary or a record of documents can be understood from the views of Stringer (2007, 78). Stringer states that the researchers can obtain a great deal of information by reviewing documents and records which may include memos, minutes, records, reports, policy statements, plans, evaluation reports etc., and prepare summaries of information that they have acquired and check them for accuracy with the stakeholders. The notes from the author's project diary are shown in Figure - 12.

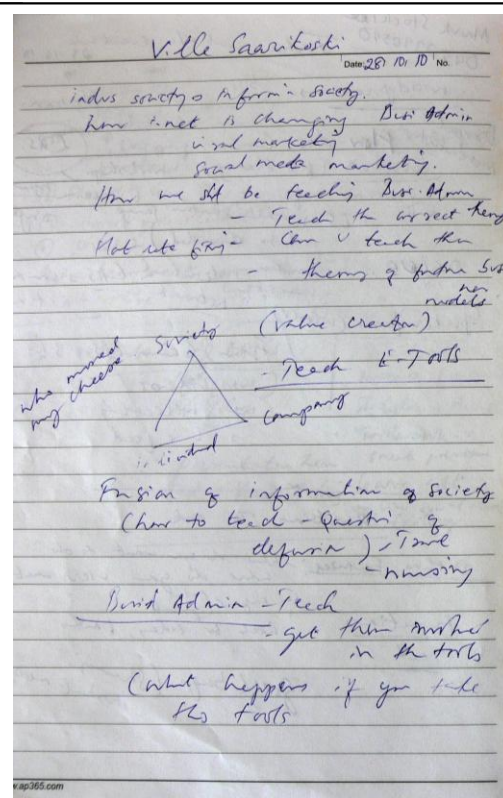
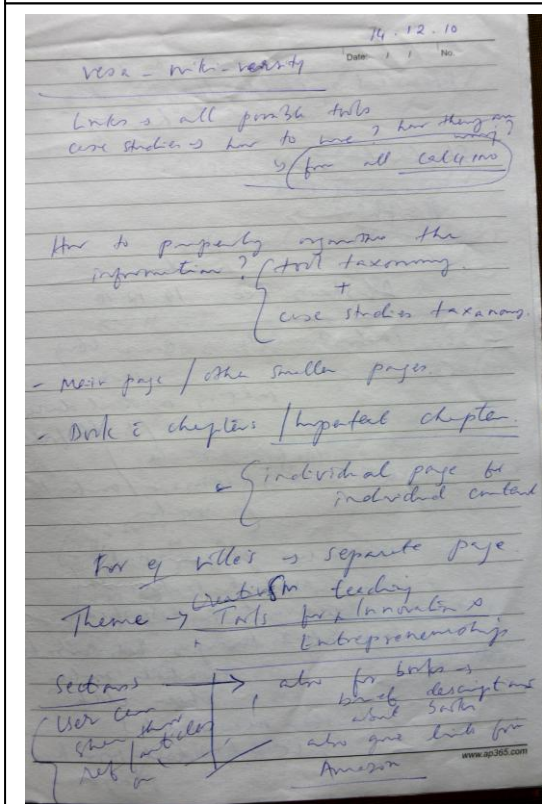
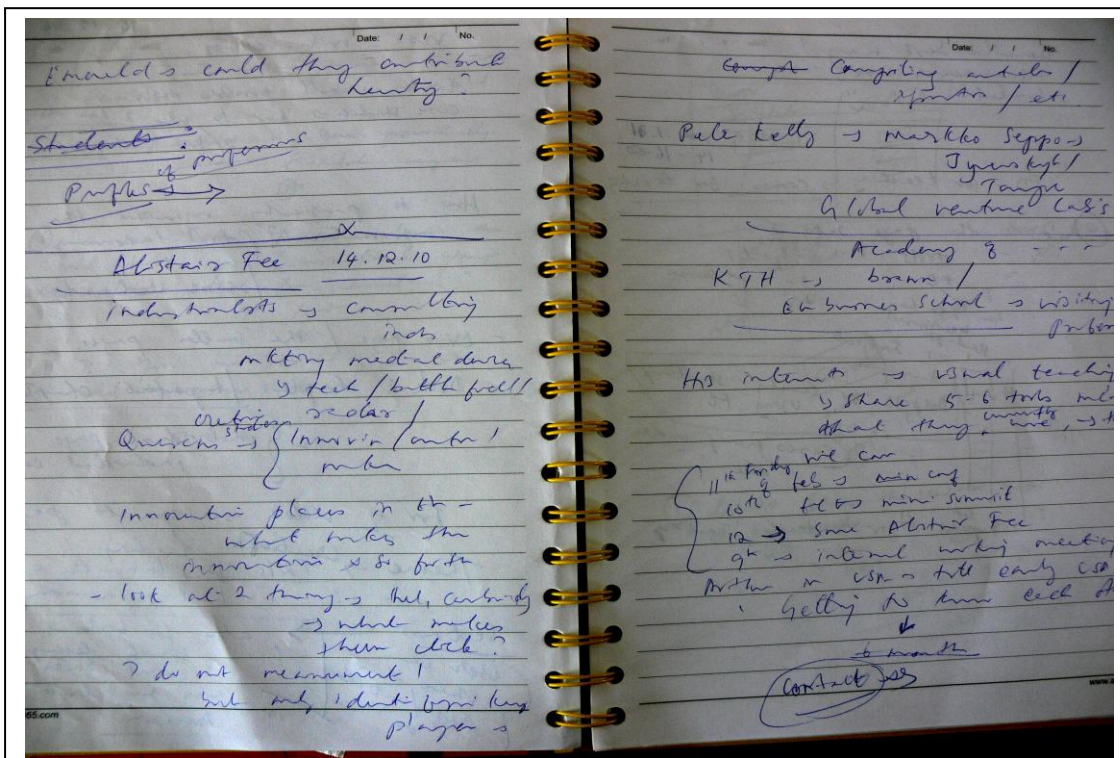


Figure 12: Notes from the project diary

3.2.2.2 Development of Action Plan

In the period following the desk research, experts from the field of Web 2.0 and social media, educators and trainers from the field of entrepreneurship and innovation and the CAL4INO project partners were approached and engaged in various ideation interviews and focus group discussions. An email questionnaire (Appendix - 1) with questions regarding the personal and the organizational use of Web 2.0 and social media tools and the visions and expectations for the Web 2.0 based system to be developed was sent to the CAL4INO members. The email questionnaires were used as the CAL4INO group members were scattered around in 8 cities in 6 European countries. The emails were followed up with interviews through Skype or Adobe Connect web conferencing systems, with the members who preferred to answer the questions orally. An ideation discussion was held with two external stakeholders who were visiting Laurea UAS, along with the internal project team to gain a deep understanding of their ideas and purpose of for the Web 2.0 based system. A few idea sketches (Meroni & Sangiorgi, 2011, 250) on the basic concept for the website were developed as the result of the ideation discussion. The idea sketches (Figure - 13&14) were later used to develop system maps in the creation phase to design the actual layout of the website.

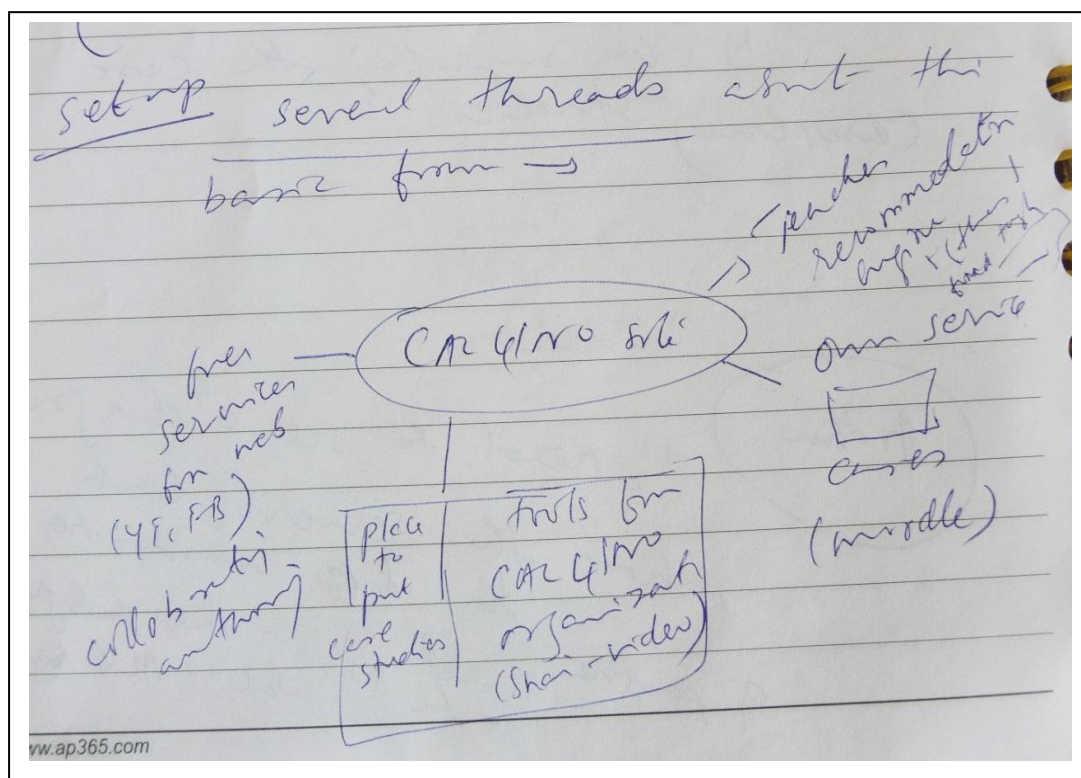


Figure 13: Idea sketch -1

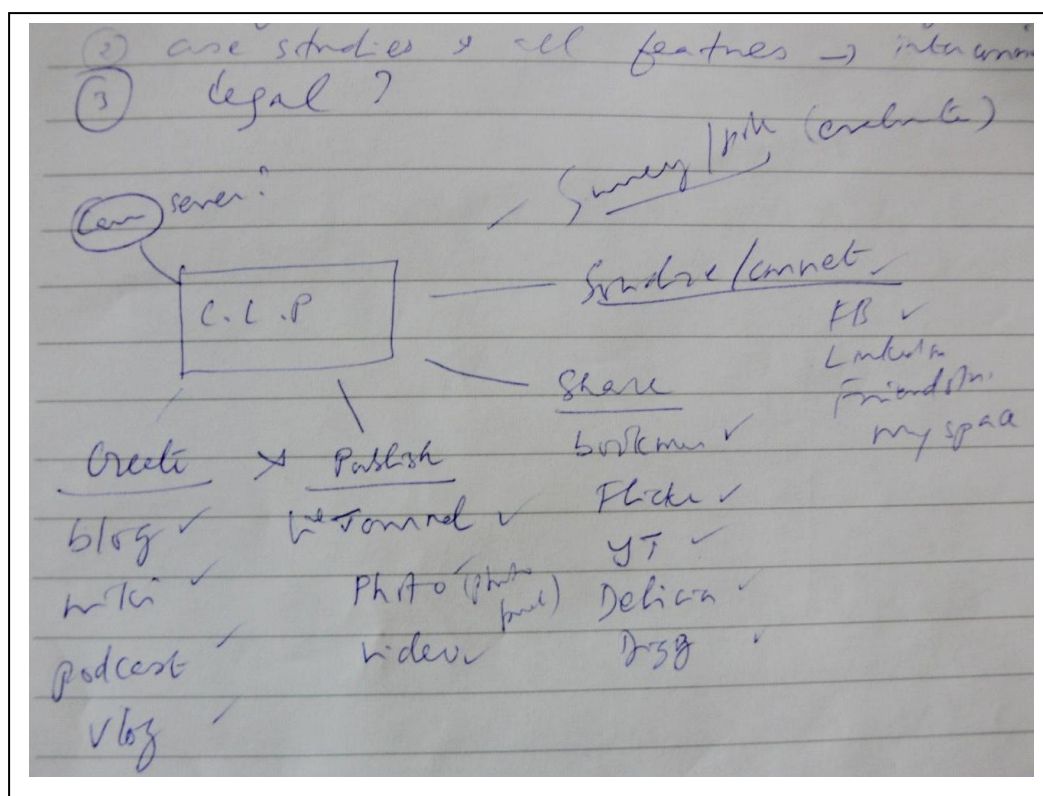


Figure 14: Idea sketch - 2

The ideation discussion was followed by four brainstorming interviews with the internal project team members. The inputs from the ideation discussion and interviews lead to the clarification that the Web 2.0 based system could be either a website or a portal with easy to use features. A draft action plan for the work package was prepared (Appendix - 2) with the approval of the internal project team, in order to convey the idea for the website/portal development to the external CAL4INO members.

3.2.2.3 Development of framework for the portal

As the next step following the development of the action plan, a focus group discussion was planned, to be conducted during the CAL4INO kick-off meeting in October 2010, in Cambridge, United Kingdom. A second questionnaire (Appendix - 3) with questions for the focus group discussion was mailed to the CAL4INO project partners well in advance. A brief ideation presentation (Appendix - 4) was given by the author during the kick-off meeting, as an introduction for the focus group discussion. The focus group discussion was led by the author, acting as the lead researcher for the development of the Web 2.0 based system. The discussion was directed towards the vision, concept and themes for the Web 2.0 based system. The focus group discussion succeeded in outlining the generic framework for the Web 2.0 based sys-

tem and its relevance to the internal communication and dissemination of CAL4INO project activities. Few photos from the focus group discussion are given in Figure - 15



Figure 15: Photos taken during focus group discussion

Intensive desk research was done along with the design activities, throughout the exploration phase. The desk research focused on reviewing a number of e-learning environments, collaborative learning communities, OER repositories, free to build website tools, social media tools and Web 2.0 based interactive websites. As a result of this, Wikiversity (www.wikiversity.org), “a Wikimedia Foundation project devoted to learning resources, learning projects and research, for use in all levels, types, and styles of education” (Wikiversity, 2010) was discovered as the most suitable environment to build the Web 2.0 based system. Wikiversity is described to be a place “where interactive, collaborative and multilingual open educational resources and collaborative learning communities can be created freely and easily” (Wikiversity, 2010). The Web 2.0 based system from this point forward technically means a web portal with a home page and a number of subpages, created in Wikiversity, to be used as an open collaborative environment. The web portal was Web 2.0 based and collaborative, allowing user generated content. It had a number of beneficial attributes such as multilingual, cost free, maintenance free and sustainable, all of which ‘fit like a glove’ to the requirements of CAL4INO. After a number of deliberations and iterations, the theme for the collaborative portal was selected to be ‘Social media tools for teaching innovation and entrepreneurship’.

3.2.3 Key design outcomes

The exploration phase was quite efficient in defining the basic framework for building the website. It translated the abstract description of ‘Extended Social Network Site’ into a concrete web portal with a theme and vision. This phase was also successful in solving the problem of building a website with a null budget, by discovering the open collaborative learning community in Wikiversity. The conclusive outcome from the exploration phase could be stated as the derivation of the framework for designing a web portal for learning resources on social media tools for teaching innovation and entrepreneurship.

Table - 5 summarizes the framework for the collaborative web portal to be designed in the Wikiversity.

Framework for the portal	
1.Vision	<ul style="list-style-type: none"> • To create a collaborative learning portal for educators in the field of innovation & entrepreneurship • To increase their awareness, knowledge and efficient use of web 2.0 and social media tools in teaching and learning
2.Theme/Title	<ul style="list-style-type: none"> • Social media tools for teaching innovation and entrepreneurship
3.Purpose	<ul style="list-style-type: none"> • To provide open educational resources, examples & case studies on social media tools can be used for creative learning & teaching practices • To provide links to such tools and recommendations on how to use them
4.Target group	<ul style="list-style-type: none"> • Primary - Educators/professors/teachers & trainers who teach creative activities and entrepreneurship • Secondary - Anyone in need of learning resources on social media tools, innovation & entrepreneurship
5.Content	<ul style="list-style-type: none"> • Links to OER on social media, innovation & entrepreneurship • Social media tools and examples/recommendations on their use • Case-studies that can be used in teaching directly • A possible Community of Practice for experts in providing creative learning solutions
6.Role of users/target group	<ul style="list-style-type: none"> • Use the content and use the website as a referral tool • Provide new content, i.e. social media tools, examples & referrals, and cases
7.Domain	<ul style="list-style-type: none"> • www.wikiversity.org

Table 5: Design framework for the wiki portal

3.3 Creation phase

3.3.1 Design goal

The design goal was to plan the layout and suitable content for the web portal. The design goal in the creation phase focused on producing a system map for designing the home page and sub-pages and defining the taxonomy for the page content.

3.3.2 Design Process

Stickdorn & Schneider (2010, 130&131) explain the creation phase as “the generative phase” which is “all about testing and retesting ideas and concepts”. In their view, the tasks in the creation phase focus on generating and developing solutions based on the identified problems and in-sights generated in the exploratory phase. The period of the creation phase was from December 2010 to February 2011.

3.3.2.1 Development of portal layout

The creation phase of the design process focused on defining a layout for the wiki portal and as well in planning the taxonomy for the webpage content. Two brainstorming meetings were held with the experts from the field of information technology along with the internal project team about the portal features and navigation. In one of the meetings, the lead partner for CAL4INO from Latvia joined via Skype. The meetings provided insights on the essential features to be built in the portal and the possible types of content. Reiken (2010) states that in any sort of web development project it's essential to draw rough sketches first before any tangible designs are made. He adds that the use of sketch templates for web applications is the most productive and organized way to start one of the most important phase of the application design process.

Using the framework for the wiki portal (derived as the key outcome from the exploration phase) along with the insights from the brainstorming sessions, the author drew idea sketches of the layout for the web portal. Some of the preliminary idea sketches of the portal, drawn during the internal team meetings are presented in Figure - 16 & 17.

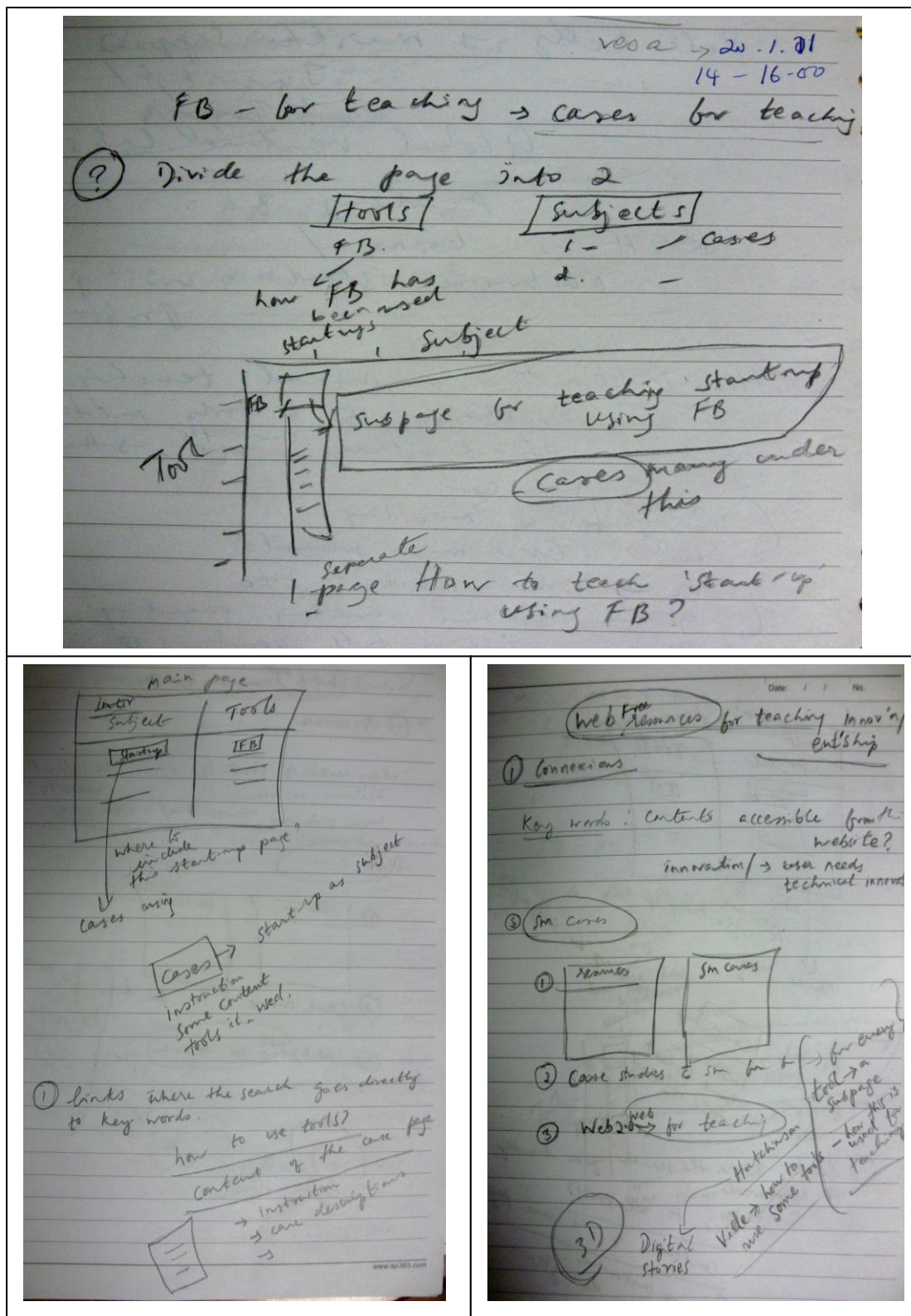


Figure 16: Idea Sketch - 3

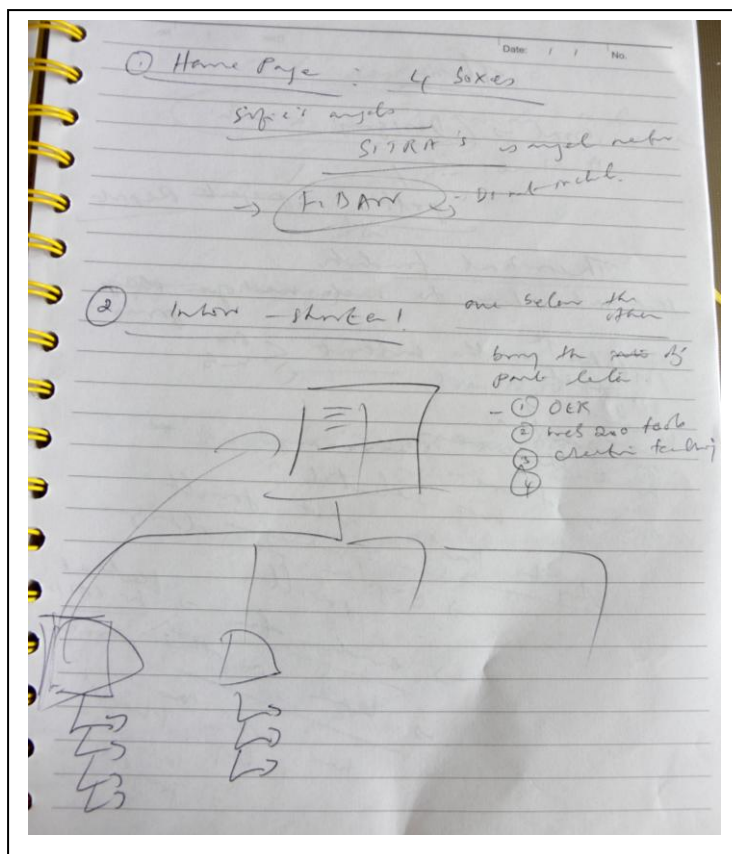


Figure 17: Idea sketch - 4

3.3.2.2 Plan for portal content taxonomy

The most challenging issue that was addressed during the creation phase was the taxonomy for the portal's contents. From the online article on creating an efficient taxonomy by Morrison (2004), the following facts could be excerpted.

- "Taxonomy is the technical term for the guiding principles behind the organization of information" and the basic principle of taxonomy is to "design a logical, organized, efficient web infrastructure"
- "The two key aspects of information taxonomy are taxonomy structure and taxonomy view. Taxonomy structure provides a classification schema for categorizing content within the content management process. Taxonomy view is a conceptual model illustrating the types of information, ideas, and requirements to be presented on the Web. It represents the logical grouping of content visible to a site visitor"
- "The goal of taxonomy is to implement structure in an "unstructured" world of information and the methodology of taxonomy always revolves around the three key factors of information architecture: business context, users, and content"

Camarinha-Matos and Afsarmanesh (2004, 197) use the term ‘knowledge ontologies’ as structures to denote the semantic knowledge about the domain knowledge in ‘Collaborative Networked Organizations’. They augment that these are the hierarchical knowledge taxonomies, which help to explain the relationships among the concepts in the field and to exchange potential pieces of information. A selected group of teachers and trainers from the field of innovation and entrepreneurship, from the CAL4INO project group and higher educational institutions in Finland were approached by emails, to gather insights on suitable content for the portal. Desk research was also carried out simultaneously to gather the content for the portal. Iterative discussions were held with the internal project team on organizing the content for the portal. The brainstorming discussions on taxonomy, focused on the following,

- finding out the suitable themes for gathering the content
- planning titles and subtitles to categorize the content
- organizing the themes in the homepage and in subpages
- organizing the different forms of learning resources, such as tools, OER’s, videos, multimedia resources, articles and other documents under the selected themes

As a constructive outcome of the discussions, the following decisions were reached,

- to create the home page with introduction to the CAL4INO project and hyperlinks to Laurea UAS’s website
- to create a subpage devoted to CAL4INO project’s dissemination activities
- to organize the content in the homepage under three main themes, namely ‘open web resources’, ‘web 2.0 tools for teaching’ and ‘creative teaching techniques for teaching innovation and entrepreneurship’

IDEO (2003, 37) mention the use of paper prototyping technique by their team while demonstrating the logic of user interaction design concepts in an in-store inventory database. According to IDEO, paper prototyping involves rapid sketching, lay outing and evaluating, which helps to organize, articulate and visualize the interaction design concepts quickly and efficiently. Based on the insights generated and desk research, two paper prototypes (Figure - 18) for the website were produced, to show the page layout and content taxonomy. The paper prototypes were further reviewed and revised into draft system maps to show the overall layout of the website.

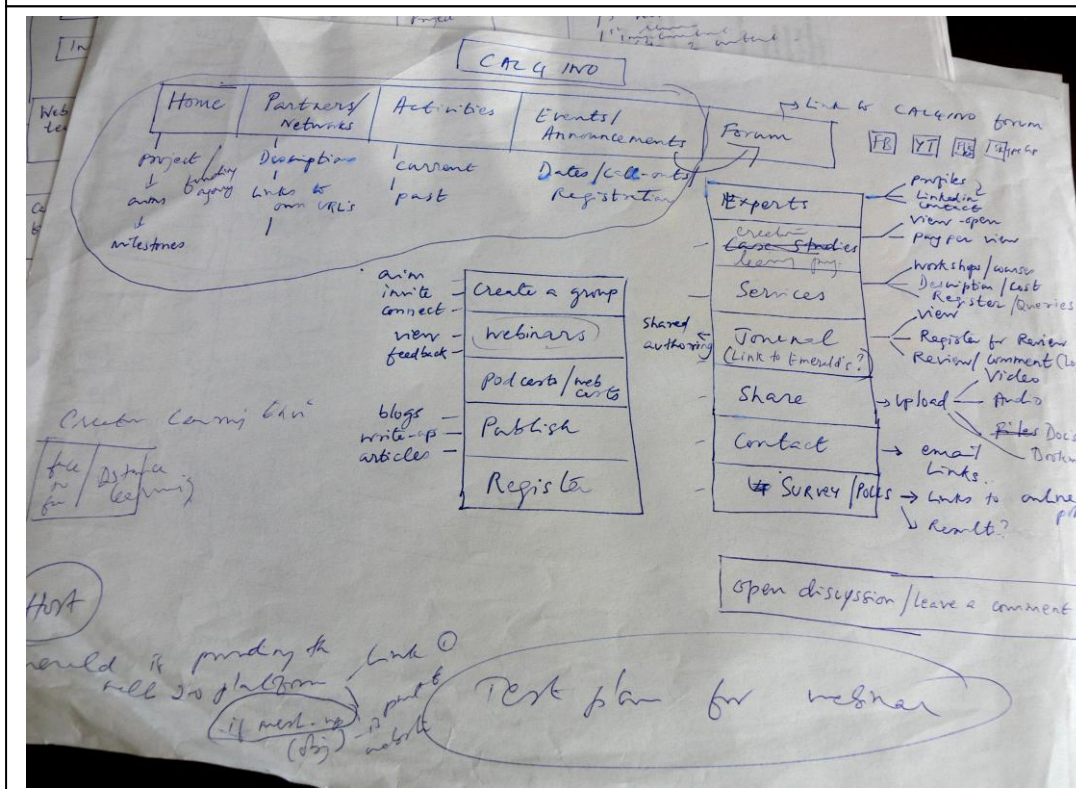
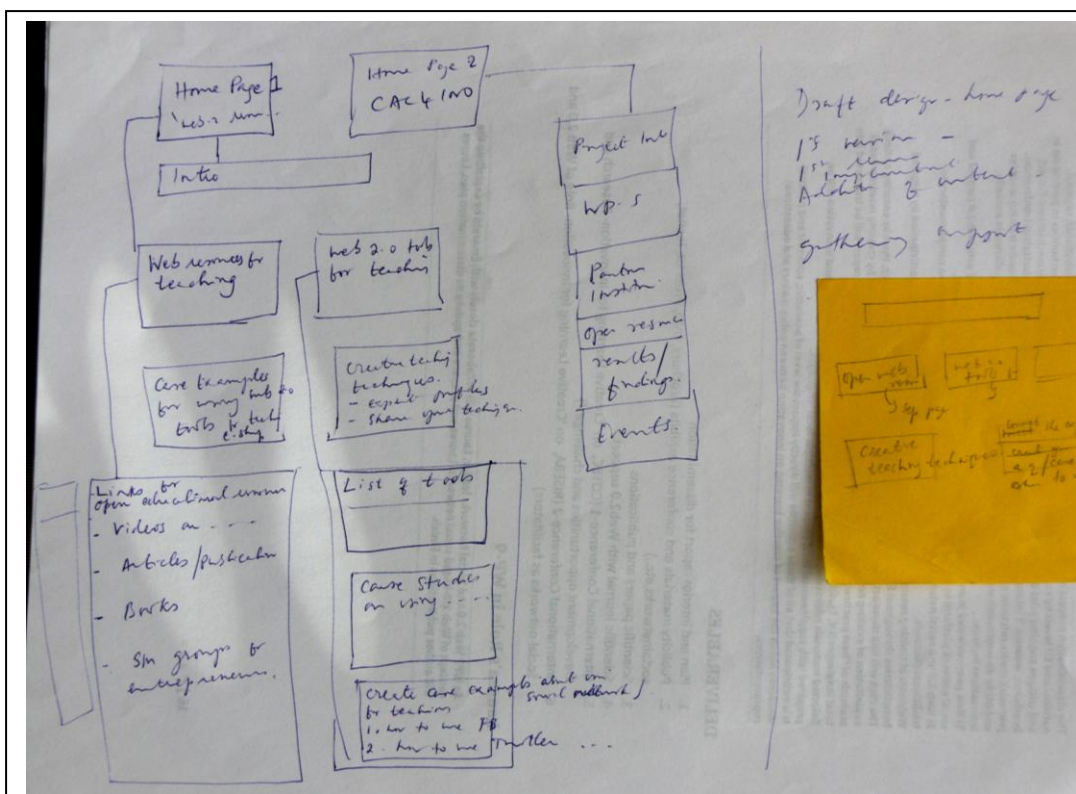


Figure 18: Paper prototypes for the portal layout

3.3.3 Key design outcome

The key outcome from the creation phase was the system map, complete with the home page layout, CAL4INO page layout and the taxonomy structure. The system map proved the success and effectiveness of the creation phase and as well served as the foundation for the actual building of the website in the subsequent reflection phase. The finalized system map is presented in Figure - 19.

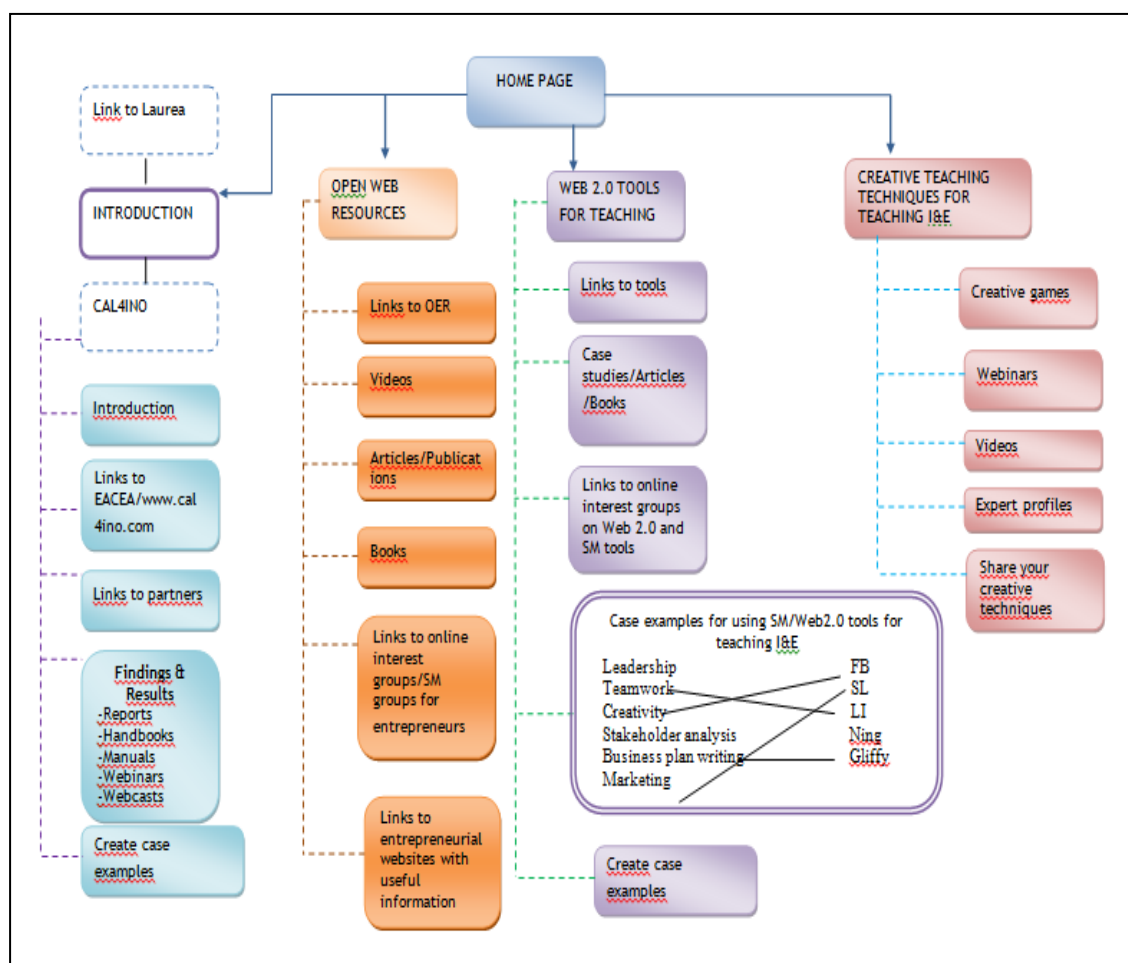


Figure 19: Final system map

The plan to create the web portal for collaborative learning resources was presented in the 'Project Day' event in December 2010, in Laurea UAS, Otaniemi. The communication material used and the photos from the event are given in Appendix - 5.

3.4 Reflection phase

3.4.1 Design goal

The design goal in the reflective phase was to construct the actual web portal in the Wikiversity website (www.wikiversity.org) and to generate initial content for the portal.

3.4.2 Design Process

From the descriptions of Stickdorn & Schneider (2010, 132&133), the following could be comprehended about the reflection phase,

- It involves building on the ideas and concepts from the creation phase and testing them
- The main challenge in the reflection phase is to deal with the intangibility of services and generating the vision of service concept in the minds of the customers
- Prototyping the service concepts “in reality or circumstances close to reality” by means of service staging or role playing is important in this phase

The period of the reflection phase was from February 2011 to the middle of March 2011. The service design process in the reflection phase concentrated on the following activities,

- Creating the actual portal using the system map produced from the creation phase
- Service staging to the primary users and gathering their insights
- Iterative portal construction to complete the portal development and to prepare it for launching

3.4.2.1 Preliminary portal prototype

The author proceeded with the construction of the portal, with the help of a student intern from the department of information technology. In order to build the portal, a detailed analysis of the Wikiversity markup codes⁶ was done. The markup codes were then applied to create the draft versions of the page. Figure - 20 shows two of the very first versions of the portal, during its construction.

⁶ Wiki markup is the syntax and keywords used by the MediaWiki software to format a page (Wikipedia^a)

Webpage Screenshot

Log in / create account

Resource **Discuss** Read Edit View history Search

Why create a Wikiversity account?

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Revision as of 13:24, 3 February 2011 by Laureat (discuss | contribs) (diff) — Older revision | Latest revision (diff) | Newer revision — (diff)

Today's Project

Content is coming soon

Text is available under the Creative Commons Attribution/Share-Alike License; additional terms may apply. See Terms of use for details.

Privacy policy About Wikiversity Disclaimers Mobile view

WIKIMEDIA project Powered by MediaWiki

Community Portal Colloquium News Projects Sandbox Help desk

Toolbox Wikimedia projects Print/export

http://en.wikiversity.org/w/index.php?title=Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship&oldid=887553

Webpage Screenshot

Log in / create account

Resource **Discuss** Read Edit View history Search

Why create a Wikiversity account?

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Revision as of 09:22, 4 February 2011 by Laureat (discuss | contribs) (diff) — Older revision | Latest revision (diff) | Newer revision — (diff)

Contents [hide]

- Cal4ino
- Open Web Sources
- Note
- Open Web Sources

Cal4ino

Boxes for Wikiversity lesson pages

==Fancy boxes==
 ;Templates for boxes
 ;This page shows templates that you can use to create boxes for lessons.

Open Web Sources

Cal4ino
 Open Web Sources
 #Open Web Sources

Note

Browser dependent
 Some browsers will not see rounded corners. Rather the corners will appear square.

Width
 Width of the boxes can be specified using the parameter **width** e.g., for 50% wide boxes, include `width=50`, i.e.,

Open Web Sources

Text is available under the Creative Commons Attribution/Share-Alike License; additional terms may apply. See Terms of use for details.

Privacy policy About Wikiversity Disclaimers Mobile view

WIKIMEDIA project Powered by MediaWiki

http://en.wikiversity.org/w/index.php?title=Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship&oldid=888031

Figure 20: Two preliminary versions of the portal

“Prototypes include a variety of design representations ranging from mockups and concept demonstrators with limited scripted functionality to partial software implementations that can demonstrate interaction and user experiences” (Sutcliffe, 2010, 20). Saco & Gonclaves (2010, 170) offer “prototyping as a vehicle for dialogue” as one of the four service strategies for design practitioners. They emphasize on keeping the prototypes transparent to all the actors during the design process and making them “available to discussion and dialogue, both internally in relation to teamwork and externally in relation to clients”. The earlier versions of the portal were further elaborated to include the introduction and the themes for the content taxonomy. Figure - 21 shows the appearance of the first functional prototype of the portal after its initial development.

Webpage Screenshot

Log in / create account

Resource [Discuss](#) [Read](#) [Edit](#) [View history](#)

Why create a Wikiversity account?

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Revision as of 11:02, 4 February 2011 by Laureal (discuss | contribs) (diff) — Older revision | Latest revision (diff) | Newer revision — (diff)


Contents [hide]

- 1 Cal4ino
 - 1.1 Introduction
 - 1.2 Web Tools for Teaching
 - 1.3 Open Web Sources
 - 1.4 Creative Teaching Techniques for Teaching
- 2 Open Web Sources
 - 2.1 Links to OER
 - 2.2 Videos
 - 2.3 Articles/Publications
 - 2.4 Books
 - 2.5 Links to online interest groups/SM groups for entrepreneurs
 - 2.6 Links to entrepreneurial websites with useful information
- 3 Web 2.0 Tools for Teaching
 - 3.1 Links to tools
 - 3.2 Case studies/ Articles/ Books
 - 3.3 Links to online interest groups on Web 2.0 and SM tools
 - 3.4 Case studies using SM/WEB 2.0 toolsfor teaching I&E
 - 3.5 Create case examples
- 4 Creative Teaching Techniques for Teaching I&E
 - 4.1 Creative Games
 - 4.2 Webinars
 - 4.3 Videos
 - 4.4 Expert profiles
 - 4.5 Share your creative techniques

Cal4ino

Introduction


Content comes here



Web Tools for Teaching

Content here


- #Web 2.0 Tools for Teaching



Open Web Sources

Content comes here


- #Open Web Sources



Creative Teaching Techniques for Teaching

Content here

- #Creative Teaching Techniques for Teaching I&E



Open Web Sources

Open Web Sources

Links to OER

Links comes here.

Videos

Videos comes here.

Articles/Publications

Articles comes here

Books

Books here.

Links to online interest groups/SM groups for entrepreneurs

Links to online interest groups

Links to entrepreneurial websites with useful information

Links to entrepreneurial websites

Web 2.0 Tools for Teaching

Web 2.0 Tools for Teaching

Links to tools

Links comes here.

Case studies/ Articles/ Books

content here.

Links to online interest groups on Web 2.0 and SM tools

content here.

Case studies using SM/WEB 2.0 toolsfor teaching I&E

content here.

Create case examples

content here.

Creative Teaching Techniques for Teaching I&E

Creative Teaching Techniques for Teaching I&E

Creative Games

Content comes here.

Webinars

content here.

Videos

content here.

Expert profiles



content here.

Share your creative techniques

content here.

Text is available under the [Creative Commons Attribution/Share-Alike License](#), additional terms may apply. See [Terms of use](#) for details.

[Privacy policy](#) [About Wikiversity](#) [Disclaimers](#) [Mobile view](#)

http://en.wikiversity.org/w/index.php?title=Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship&oldid=680800

Figure 21: First functional prototype of the portal

3.4.2.2 Service staging

Mager^b (2006) places importance on creating visible, audible and tangible service evidence in order to communicate with the customer during all the phases of the customer journey. She also states that “the idea of setting the stage”, in other words, service staging, “makes the service tangible”. A service staging to demonstrate the first functional prototype of the portal was organized on the 9th of February 2011, in the second internal CAL4INO project meeting held in Riga, Latvia. A recap of the decisions reached in the kick-off meeting in Cambridge in October 2010 and the plan for the portal following those decisions was presented to the stakeholders. The presentation slides used by the author are given in Appendix - 6. During the service staging, the stakeholders were taken on a short virtual tour of the Wikiversity collaborative learning environment in order to deepen their understanding of the potential and the features of the portal. They were shown the numerous possibilities the Wikiversity domain had, to create collaborative learning portals under many themes for, free of cost. They were then shown the first functional homepage of the collaborative learning portal and were explained the navigational features that were yet to be constructed. The plan to create an exclusive subpage for CAL4INO dissemination activities was well presented. The idea to create a special subpage for a collaborative group of experts in creative teaching techniques was received with enthusiasm.

The service staging was followed by a focus group discussion led by the author. The discussion focused on the suitability of the portal for the collaboration, communication, dissemination and exploitation activities of the CAL4INO project. The suitability of the portal as an alternate to the ‘Extended Social Network Site - SNS’ (CAL4INO, 2010, 121), mentioned in the CAL4INO objectives was also analyzed intensively. The themes for organizing the content and the taxonomy were assessed. The stakeholders expressed concerns and suggestions about generating open and legal content for the portal, the need for education to collaborate and navigate in the portal and the aesthetic appeal of the portal. The focus group discussion was quite intensive with constructive arguments and difference of opinions on the use of social media tools and other web 2.0 tools in education. This posed a challenge to the author to direct the group members to the main line of discussion, resolving and responding to their verbal challenges. The service staging and the focus group discussion lasted for about three hours and produced concrete and valuable feedback for further development of the portal. A suggestion was also made by the stakeholders to create a subpage for a collaborative group of ‘European Innovators’ in the portal. It was decided that the group could be created when a clear vision could be defined for the group and some initial content is provided to the author to design the page. The pictures from the service staging and the focus group discussion are given in Figure - 22.



Figure 22: Photos from service staging

3.4.2.3 Iterations in portal design

A total of ten iterations were done in the portal design, of which 8 were performed in the reflection stage. The iterations were mainly for the aesthetics, taxonomy and navigational features. The impact of iterative development in this phase can followed through by observ-

ing the screen shots of the portal taken during different development stages. The screen shots are presented chronologically in Figures - 23, 24 & 25 .

The screenshot shows the Wikiversity portal layout for the course "Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship". The page includes a navigation sidebar on the left, a main content area with a table of contents, and several highlighted sections in colored boxes:

- Introduction (orange box):** Welcome to the collaborative learning portal on 'Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship'. This learning portal is created by Laurea University of Applied Sciences in Finland. The portal aims to serve as a useful and perpetual deliverable for the EAJCEA LLP project 'CAL4INO (Creative Activities in Learning For Innovation)' in which Laurea University of Applied Sciences is a partner. The objectives of this portal are:
 - To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship.
 - To provide learning resources on various social media tools that can be used for teaching creativity.
 - To serve as a platform for sharing creative activities and teaching techniques practiced by educators for teaching innovation and entrepreneurship.
 - To disseminate the findings and outcomes from the CAL4INO project for the benefit of everyone.
 The collaborative portal will operate without boundaries and aims to act as a 'knowledge network' for educators and enthusiasts working in the field of innovation and entrepreneurship. This portal invites educators and academicians around the world to collaborate and co-create towards a unified mission of creating learning resources that are beneficial to millions of scholars and educators alike.
- Web Tools for Teaching (orange box):** This page contains information on selected social media tools and recommendations on how to use them efficiently in teaching. It will also contain case-studies and teaching resources published in social media that can be taken into use by any teacher at any given time. Practical teaching cases and case examples on the application of different web 2.0 tools for teaching the essential topics under entrepreneurship will be included. Information and links to groups of innovators, entrepreneurs and angel investors which exist in the contemporary social networks are also included.
 - #Web 2.0 Tools for Teaching
- Open Web Sources (green box):** This page provides links to a treasury of teaching resources that are scattered on the internet that could be used by teachers of innovation and entrepreneurship. This also attempts to serve as a handy and quick reference tool for learning contemporary topics under the field of entrepreneurship. In short, this page integrates the vast resources for teaching innovation and entrepreneurship omnipresent in the world of web 2.0 under a universal umbrella for united learning.
 - #Open Web Sources
- Creative Teaching Techniques for Teaching (green box):** CAL4INO proposes to investigate the role of creative learning activities to enhance innovation, using as its frame of reference that groups as teams, not lone "geniuses", develop meaningful innovations by blending design, technology and business through creative activities synthesizing diverse perspectives, experiences and skills. This study focuses on universities and their pivotal role in the modern "knowledge society" (Eisner Strategy) as clusters and ecosystems for fostering creativity and innovation. In contrast to previous research, CAL4INO uses an interdisciplinary systems approach to identify specific conditions and factors that enable, or inhibit, creative innovation considering socio-cultural dimensions and human aspects across multiple sectors and industries. Existing evidence on entrepreneurial learning and enterprise will be extended to more universal creative learning for innovation at technical, social and institutional levels. CAL4INO leverages internationally recognized programs to develop training modules for creativity and innovation and measurement instruments to benchmark outcomes through pan-European pilot demonstrations in 6 countries with appropriate localization for language, socio-cultural and context factors. Surveys will assess needs and impact of creativity competences on innovation. The proposed research will generate the best statistical data of its kind to support recommendations for policy discussions and development based on outputs including validated research methodologies, training modules and best practices handbook. Complementary conventional valorization methods, CAL4INO will launch a peer-reviewed journal supported with Web 2.0 social networks for sustainable organic growth. This page will disseminate the findings and results from CAL4INO for the benefit of the global community.
 - #Creative Teaching Techniques for Teaching I&E
- Open Web Sources (green box):** A list of links categorized by type:
 - Links to OER
 - Links comes here
 - Videos
 - Videos comes here
 - Articles/Publications
 - Articles comes here
 - Books
 - Books here
 - Links to online interest groups/SM groups for entrepreneurs
 - Links to online interest groups
 - Links to entrepreneurial websites with useful information
 - Links to entrepreneurial websites
- Web 2.0 Tools for Teaching (blue box):** A list of links categorized by type:
 - Web 2.0 Tools for Teaching
 - Links to tools
 - Links comes here
 - Case studies/ Articles/ Books
 - content here
 - Links to online interest groups on Web 2.0 and SM tools
 - content here
 - Case studies using SM/WEB 2.0 toolsfor teaching I&E
 - content here
 - Create case examples
 - content here
- Creative Teaching Techniques for Teaching I&E (red box):** A list of links categorized by type:
 - Creative Teaching Techniques for Teaching I&E
 - Creative Games
 - Content comes here
 - Webinars
 - content here
 - Videos
 - content here
 - Expert profiles
 - content here
 - Share your creative techniques
 - content here

At the bottom of the page, there is a footer with the text: "Text is available under the Creative Commons Attribution-ShareAlike License; additional terms may apply. See Terms of use for details." and a "Privacy policy" link.

Figure 23: Portal layout with the introduction of the themes in colored boxes

Webpage Screenshot

Log in / create account

Resource [Discuss](#) [Read](#) [Edit](#) [View history](#)

[Why create a Wikiversity account?](#)

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Revision as of 11:18, 9 March 2011 by [Laurea](#) (discuss | contribs)
(diff) — Older revision | Latest revision (diff) | Newer revision — (diff)

Contents [hide]

- 1 Introduction
- 2 Web 2.0 Tools for Teaching
- 3 Open Web Sources
- 4 Creative Teaching Techniques for Teaching I&E

Web 2.0 Tools for Teaching


This page contains information on selected social media tools and recommendations on how to use them efficiently in teaching. It will also contain case-studies and teaching resources published in social media that can be taken into use by any teacher at any given time. Practical teaching cases and case examples on the application of different web 2.0 tools for teaching the essential topics under entrepreneurship will be included. Information and links to groups of innovators, entrepreneurs and angel investors which exist in the contemporary social networks are also included.

Introduction

Welcome to the collaborative learning portal on 'Web Resources and Social Media tools For Teaching Innovation and Entrepreneurship'. This learning portal is created by Laurea University of Applied Sciences in Finland. The portal aims to serve as a useful and perpetual deliverable for the EACEA -LLP project 'CAL4INO' (Creative Activities in Learning For Innovation) in which Laurea University of Applied Sciences is a partner. The objectives of this portal is:

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship.
2. To provide learning resources on various social media tools that can be used for teaching creatively.
3. To serve as a platform for sharing creative activities and teaching techniques practiced by educators for teaching innovation and entrepreneurship.
4. To disseminate the findings and outcomes from the CAL4INO project for the benefit of everyone.

The collaborative portal will operate without boundaries and aims to act as a 'knowledge network' for educators and enthusiasts serving in the field of innovation and entrepreneurship. This portal invites educators and academicians around the world to collaborate and co-create towards a unified mission of creating learning resources that are beneficial to millions of scholars and educators alike.



File:Eaceea.jpg
Eaceea logo

Open Web Sources

This page provides links to a treasury of teaching resources that are scattered on the internet that could be used by teachers of innovation and entrepreneurship. This also attempts to serve as a handy and quick reference tool for learning contemporary topics under the field of entrepreneurship. In short, this page integrates the vast resources for teaching innovation and entrepreneurship omnipresent in the world of web 2.0 under a universal umbrella for united learning.



Creative Teaching Techniques for Teaching I&E

This is a foundation for a 'creative network' which links creative professionals promoting innovation and entrepreneurship. It will also serve as a platform for sharing creative ways/activities practiced by educators for teaching innovation and entrepreneurship. Games, resources and interesting techniques that could be used to for creative teaching are shared in this page by interested experts. The profiles of creative educators interested in gathering a community of practice for developing creative teaching techniques are shared here.

Category: Pages with broken file links

Text is available under the [Creative Commons Attribution/Share-Alike License](#); additional terms may apply. See [Terms of use](#) for details.

[Privacy policy](#) [About Wikiversity](#) [Disclaimers](#) [Mobile view](#)

http://en.wikiversity.org/w/index.php?title=Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship&oldid=712988

Figure 24: Portal with change in the taxonomy layout

Webpage Screenshot

[Log in / create account](#)

Resource [Discuss](#) [Read](#) [Edit](#) [View history](#)

[Why create a Wikiversity account?](#)

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Revision as of 09:25, 14 March 2011 by [Krutika](#) (discuss | contribs) (diff) ← Older revision | Latest revision (diff) | Newer revision → (diff)

Contents [\[hide\]](#)



- 1 Introduction
- 2 Web 2.0 Tools for Teaching
- 3 Open Web Sources
- 4 Creative Teaching Techniques for Teaching I&E

Introduction

Welcome to the collaborative learning portal on 'Web Resources and Social Media tools For Teaching Innovation and Entrepreneurship'. This learning portal is created by Laurea University of Applied Sciences in Finland. The portal aims to serve as a useful and perpetual deliverable for the EACEA -LLP project 'CAL4INO' (Creative Activities in Learning For Innovation) in which Laurea University of Applied Sciences is a partner. The objectives of this portal is,

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship.
2. To provide learning resources on various social media tools that can be used for teaching creatively.
3. To serve as a platform for sharing creative activities and teaching techniques practiced by educators for teaching innovation and entrepreneurship.
4. To disseminate the findings and outcomes from the CAL4INO project for the benefit of everyone.

The collaborative portal will operate without boundaries and aims to act as a 'knowledge network' for educators and enthusiasts serving in the field of innovation and entrepreneurship. This portal invites educators and academicians around the world to collaborate and co-create towards a unified mission of creating learning resources that are beneficial to millions of scholars and educators alike.

Eacea logo

Web 2.0 Tools for Teaching

This page contains information on selected social media tools and recommendations on how to use them efficiently in teaching. It will also contain case-studies and teaching resources published in social media that can be taken into use by any teacher at any given time. Practical teaching cases and case examples on the application of different web 2.0 tools for teaching the essential topics under entrepreneurship will be included. Information and links to groups of innovators, entrepreneurs and angel investors which exist in the contemporary social networks are also included.

Open Web Sources



This page provides links to a treasury of teaching resources that are scattered on the internet that could be used by teachers of innovation and entrepreneurship. This also attempts to serve as a handy and quick reference tool for learning contemporary topics under the field of entrepreneurship. In short, this page integrates the vast resources for teaching innovation and entrepreneurship omnipresent in the world of web 2.0 under a universal umbrella for united learning.

Creative Teaching Techniques for Teaching I&E

This is a foundation for a 'creative network' which links creative professionals promoting innovation and entrepreneurship. It will also serve as a platform for sharing creative ways/activities practiced by educators for teaching innovation and entrepreneurship. Games, resources and interesting techniques that could be used to for creative teaching are shared in this page by interested experts. The profiles of creative educators interested in gathering a community of practice for developing creative teaching techniques are shared here.

Text is available under the [Creative Commons Attribution/Share-Alike License](#); additional terms may apply. See [Terms of use](#) for details.

[Privacy policy](#) [About Wikiversity](#) [Disclaimers](#) [Mobile view](#)


http://en.wikiversity.org/w/index.php?title=Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship&oldid=715303

Figure 25: Inclusion of colored themes to the changed portal layout

The internal team members were engaged in at least three brief interviews to review the progress of the project and test the portal before and after design iterations. A subpage was constructed exclusively for the dissemination of CAL4INO project and its activities, providing information and hyperlinks to CAL4INO partner institutions. Figure - 26 shows the appearance of the CAL4INO page.

Webpage Screenshot

[Log in / create account](#)



[Resource](#) [Discuss](#) [Read](#) [Edit](#) [View history](#)

[Why create a Wikiversity account?](#)

CAL4INO

CAL4INO(Creative Activities in Learning for Innovation) [edit]

CAL4INO

Introduction [edit]

CAL4INO [proposes](#) to investigate the role of creative learning activities to enhance innovation, using as its frame of reference that people as teams, not lone "geniuses", develop meaningful innovations by blending design, technology and business through creative activities synthesizing diverse perspectives, experiences and skills. This study focuses on universities and their pivotal role in the modern "knowledge society" (Lisbon Strategy) as clusters and ecosystems for fostering creativity and innovation. In contrast to previous research, CAL4INO uses an interdisciplinary systems approach to identify specific conditions and factors that enable, or inhibit, creative innovation considering socio-cultural dimensions and human aspects across multiple sectors and industries. Existing evidence on entrepreneurial learning and enterprise will be extended to more universal creative learning for innovation at technical, social and institutional levels. CAL4INO leverages internationally recognized programs to develop training modules for creativity and innovation and measurement instruments to benchmark outcomes through pan-European pilot demonstrations in 6 countries with appropriate localization for language, socio-cultural and context factors. Surveys will assess needs and impact of creativity competencies on innovation. The proposed research will generate the first statistical data of its kind to support recommendations for policy discussions and development based on outputs including validated research methodologies, training modules and best practices handbook. Complementing conventional valorization methods, CAL4INO will launch a peer-reviewed journal supported with Web 2.0 social networks for sustainable organic growth. This page will disseminate the findings and results from CAL4INO for the benefit of the global community.

CAL4INO CONSORTIUM



1. [Riga International School of Economics and Business Administration](#)
2. [University of Piraeus Research Center](#)
3. [Schumpeter School of Business](#)
4. [University of Cambridge \(UC\)- Center for Entrepreneurial Education](#)
5. [Queen's University Management School](#)
6. [Laurea University of Applied Sciences](#)
7. [COTEC Portugal](#)
8. [Emerald Group Publishing Limited](#)
9. [Scottish Institute for Enterprise](#)

FINDINGS & RESULTS FROM CAL4INO

The research reports, handbooks and manuals created during the CAL4INO project activities will be added here for public dissemination and exploitation.

Categories: [Learning activities](#) | [Innovation](#)

This page was last modified on 5 September 2011, at 18:55.
 Text is available under the [Creative Commons Attribution/Share-Alike License](#); additional terms may apply. See [Terms of use](#) for details.
[Privacy policy](#) [About Wikiversity](#) [Disclaimers](#) [Mobile view](#)


http://en.wikiversity.org/wiki/CAL4INO

Figure 26: CAL4INO subpage in the portal

Another subpage was designed exclusively to create a ‘Community of Practice’ of educators interested in sharing and learning creative teaching techniques. The profiles of the creative educators and links to the creative teaching techniques that they have shared were included in the page. In the future the subpage could include chats, mailing lists and forums. The subpage is shown in Figure - 27.

Webpage Screenshot

Log in / create account



Resource Discuss

Read Edit View history

[Why create a Wikiversity account?](#)

Creative Teaching Techniques for Teaching Innovation & Entrepreneurship-Experts in Creative Teaching & Their Contributions

Experts in Creative Teaching & Their Contributions

This section connects the users of this portal to the extremely creative educators in the field of Innovation and Entrepreneurship. Their contributions on the creative techniques that they have designed and recommend is shared here for educational and non-commercial use. Educators all around the globe are welcome to be a part of this creative group and encouraged to share their creative teaching techniques, recommended readings, favorite educational games etc, in this section.

Dr Peter Kelly [\[edit\]](#)


Senior Lecturer, School of Science, Aalto University MBA (University of Notre Dame USA), PhD (London Business School UK)

Peter Kelly is an award winning entrepreneurship educator and practitioner. He obtained is PhD in Entrepreneurship from London Business School (UK) and an MBA from the University of Notre Dame (USA). Over the past 15 years, he has worked with entrepreneurs in Finland, Sweden, UK, Portugal, Russia, Latvia, Estonia, Norway, Switzerland, and Canada. Since arriving in Finland in 1998, Peter has been the driving force behind entrepreneurship education at Aalto University heading up the Helsinki School of Creative Entrepreneurship, an initiative that involved all the Schools and the largest private donor to Aalto University. During 2010, he held an appointment as Professor of Practice at the School of Art & Design where he developed a rapid opportunity prototyping course to explore the intersection between the disciplines of design and entrepreneurship. Dr Kelly was directly involved in the creation of Europe's first university pre-seed fund and an associated angel network. He is also a business angel.

Peter Kelly's Creative Techniques [\[edit\]](#)

Peter Kelly's creative exercises focus on generating ideas, team building, creating novelty, and handling surprise by exploring how to make something memorable from a fixed set of inputs in a fun way.



- [Effectual Coffee By Peter Kelly](#)
- [Effectual Drinks By Peter Kelly](#)
- [Effectual Meal By Peter Kelly](#)
- [Idea Workshop By Peter Kelly](#)
- [Mobile Creativity By Peter Kelly](#)



Peter Kelly

Categories: [Teaching](#) | [Innovation](#) | [Entrepreneurship](#)

This page was last modified on 15 September 2011, at 16:00.
Text is available under the [Creative Commons Attribution/Share-Alike License](#); additional terms may apply. See [Terms of use](#) for details.
[Privacy policy](#) [About Wikiversity](#) [Disclaimers](#) [Mobile view](#)

http://en.wikiversity.org/wiki/Creative_Teaching_Techniques_for_Teaching_Innovation_%26_Entrepreneurship-Experts_in_Creative_Teaching_%26_Their_Contributions

Figure 27: Subpage for creative educators

3.4.3 Key design outcomes

The reflection phase of the design process proved to be the most decisive phase to progress with the development of the portal. The key design activities conducted during this phase, namely the prototyping, service staging and the focus group discussions produced constructive feedback from the stakeholders towards the refinement and development of the portal. This phase also succeeded in deepening the understanding of the users about the service that is being developed and as well in explaining their roles in making the service sustainable. The significant outcomes from this phase could be listed as,

- The formal approval from the CAL4INO partners for the proposal to create the collaborative learning portal in Wikiversity. The minutes of the internal meeting showing the approval to create the portal, along with written feedback from some of the CAL4INO stakeholders is presented in Appendix - 7

- The creation of CAL4INO subpage and the page for creative educators
- The development of the functional portal with numerous possibilities for sustainable development

3.5 Implementation phase

3.5.1 Design goals

The goals in the implementation phase were,

- To launch the portal and
- To gather user feedback on the portal design, content and navigation
- To hand over the portal to the CAL4INO group for further development and content generation

3.5.2 Design Process

It is implicit from the elucidation of the implementation phase by Stickdorn & Schneider (2010, 134&135) that this phase is about implementing the service concept and managing the process of change that the implementation brings about. In their point of view, communicating the concept clearly becomes vital in this phase and it is necessary to include the “emotional aspects” of service, in terms of “desired customer experience”. The authors suggest that the change in the implementation be followed by another exploration to evaluate the progress of the service, which leads to the iterative process of service design. The period of the implementation phase was from the middle of March 2011 to the end of April 2011.

In the user experience model called ‘The elements of user experience’, developed while designing websites, Garrett (2010, 254) describes strategy, scope, structure, skeleton and surface as the five essential elements of designing user experience. The service design process in the implementation phase addressed the element of ‘structure’ as Garrett had termed it, which requires attention to issues of interaction design and includes the informational aspect of the product (in this case, the portal), solving the problems of information architecture and organizing and arranging the information in a way that is understandable for people. In other words the design tools used in this phase focused on iterating and evaluating the navigational features, reviewing and refining page design and understanding the user experience. Precisely, this phase was carried out as the concluding part of gathering feedback, evaluating the strengths and weaknesses of the portal and framing suggestions for further development.

3.5.2.1 Usability testing

Gaffney (1999) defines usability testing as “a technique for ensuring that the intended users of a system can carry out the intended tasks efficiently, effectively and satisfactorily”. She explains that the usability testing is usually carried out in the pre-release stage, to identify any significant issues. Usability testing can also be carried out at various stages of the design process. The guidelines from the U.S. Department of Health and Human Services (www.usability.gov) on usability testing, suggest that the usability testing carried out with the users help to identify usability problems and collect insights on participant's satisfaction with the product. In the tests, the users will try to complete typical tasks while observers watch, listen and takes notes. As usability tests are an integral part of any user centric, interaction design, basic usability tests were conducted before and after the launch of the portal. The feedback and evaluation from the usability tests were used to frame the developmental suggestions for the sustainable development of the portal. Questionnaires, observation, interviews, SWOT tests, user experience mapping and value mapping were used as the tools for the usability testing.

3.5.2.2 Pre-launch usability testing

Bell (2009, 225) observes the challenges for navigation design in social application, as each user will have a unique personal view of the content. Bell also emphasizes the need to make the users understand the organization of information in the site in order to help them find relevant people and content. The usability tests before the launch were carried out with the internal project team members and with a few external members. They were asked to perform simple tasks in the portal namely, browsing, navigating, searching, editing and uploading the content. They were observed silently while they performed these tasks. Figure - 28 shows the members in action during the usability testing.

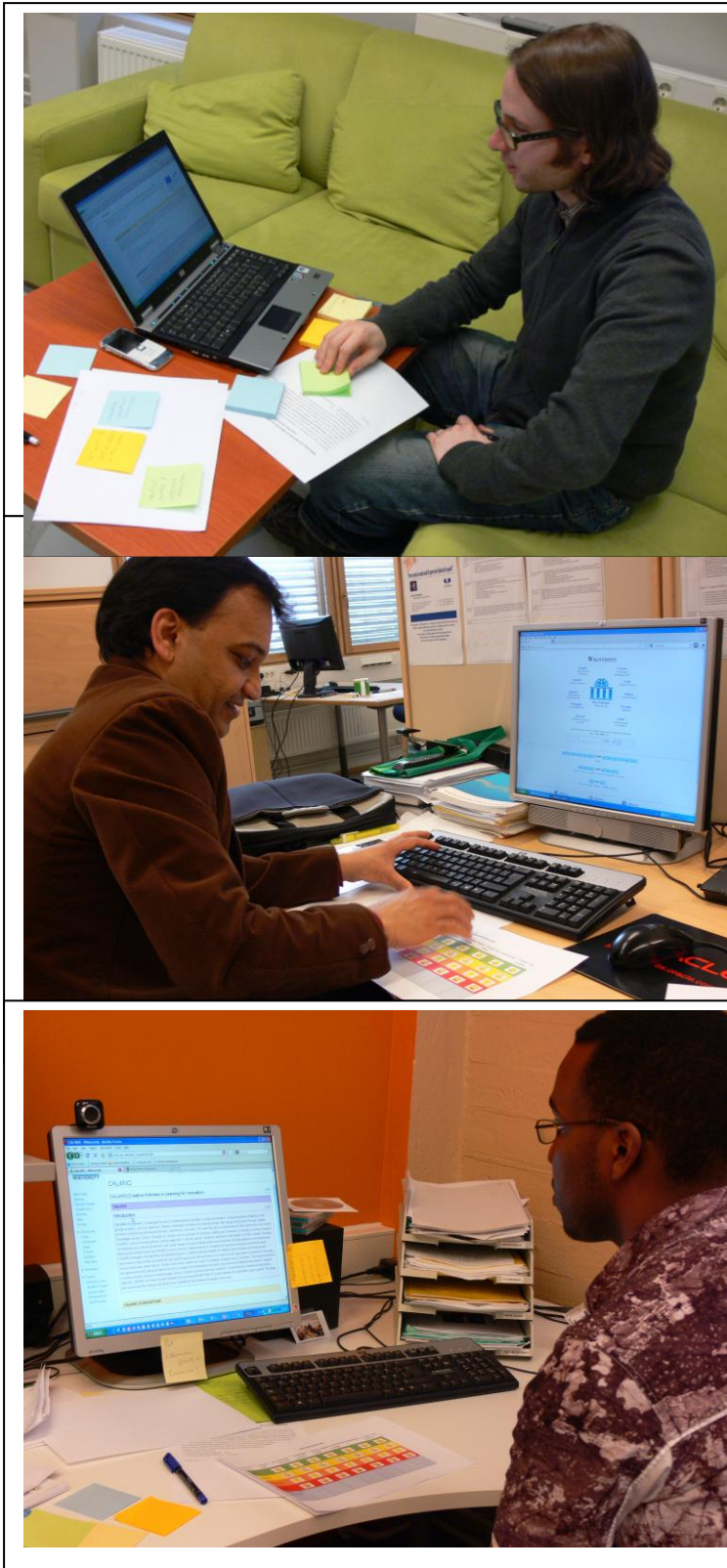


Figure 28: Pictures from usability testing

After the completion of the tasks in the usability testing, they were interviewed using a questionnaire (Appendix- 8) with questions on the relevance and features of the portal. Based on their feedback in terms of aesthetics, the order and appearance of the topics of content and the features for hyperlinking and opening the subpages, the portal design were revised and redesigned. The iterative changes made in the portal design are presented in Figures - 29, 30 & 31.

Webpage Screenshot

Wikiversity

Main Page
Browse
Recent changes
Guided tours
Random
Help
Donate

Community
Portal
Colloquium
News
Projects
Sandbox
Help desk

Wikimedia projects

Print/export

Resource **Discuss** Read Edit View history Search

Log in / create account

Why create a Wikiversity account?

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship



Revision as of 11:57, 18 March 2011 by 193.166.246.194 (discuss)
(diff) ← Older revision | Latest revision (diff) | Newer revision → (diff)

Contents [hide]

- 1 Introduction
- 2 Web 2.0 Tools for Teaching
- 3 Open Web Sources
- 4 Creative Teaching Techniques for Teaching I&E

Introduction

Welcome to the collaborative learning portal on **'Web Resources and Social Media tools For Teaching Innovation and Entrepreneurship'**. This learning portal is created by [Laurea University of Applied Sciences](#) in Finland. The portal aims to serve as a useful and perpetual deliverable for the [EACEA](#) - LLP project **'CAL4INO'** (**Creative Activities in Learning For Innovation**) in which [Laurea University of Applied Sciences](#) is a partner.

 
Lifelong Learning Programme
Eaces logo

Web 2.0 Tools for Teaching

Web 2.0 Tools for Teaching

This page contains information on selected **social media tools** and **recommendations on how to use them efficiently in teaching**. It will also contain **case studies and teaching resources** published in social media that can be taken into use by any teacher at any given time. Practical teaching cases and case examples on the **application of different web 2.0 tools for teaching** the essential topics under entrepreneurship will be included. Information and links to groups of innovators, entrepreneurs and angel investors which exist in the contemporary social networks are also included.

- [Links to tools](#)
- [Case studies/ Articles/ Books](#)
- [Online interest groups on Web 2.0 and Social Media tools](#)
- [Case examples for using Social Media/Web 2.0 tools for teaching Innovation & Entrepreneurship](#)
- [Create case examples](#)

Open Web Sources

Open Web Sources

This page provides links to a **treasury of teaching resources** that are scattered on the internet that could be **used by teachers of innovation and entrepreneurship**. This also attempts to serve as a handy and quick reference tool for learning contemporary topics under the field of entrepreneurship. In short, this page integrates the vast resources for teaching innovation and entrepreneurship omnipresent in the world of web 2.0 under a universal umbrella for united learning.

Creative Teaching Techniques for Teaching I&E

Creative Teaching Techniques for Teaching I&E

This is a foundation for a **'creative network'** which **links creative professionals promoting innovation and entrepreneurship**. It will also serve as a **platform for sharing creative ways/activities** practiced by educators for teaching innovation and entrepreneurship. Games, resources and interesting techniques that could be used for creative teaching are shared in this page by interested experts. The profiles of creative educators interested in gathering a **community of practice for developing creative teaching techniques** are shared here.

Objectives of this learning portal



The objectives of this portal is,

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship.
2. To provide learning resources on various social media tools that can be used for teaching creatively.
3. To serve as a platform for sharing creative activities and teaching techniques practiced by educators for teaching innovation and entrepreneurship.
4. To disseminate the findings and outcomes from the CAL4INO project for the benefit of everyone.

The collaborative portal will operate without boundaries and aims to act as a **'knowledge network'** for educators and enthusiasts serving in the field of innovation and entrepreneurship. This portal invites educators and academicians around the world to collaborate and co-create towards a unified mission of creating learning resources that are beneficial to millions of scholars and educators alike.

Text is available under the [Creative Commons Attribution/Share-Alike License](#); additional terms may apply. See [Terms of use](#) for details.

Privacy policy About Wikiversity Disclaimers Mobile view

http://en.wikiversity.org/w/index.php?title=Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship&oldid=717280

Figure 29: Portal with partial hyperlinks to the themes

Webpage Screenshot

Log in / create account

Resource **Discuss** Read Edit View history Search



Why create a Wikiversity account?

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Revision as of 13:23, 18 March 2011 by Kiruthika (discuss | contribs)
(diff — Older revision | Latest revision (diff) | Newer revision — (diff))

Introduction

Welcome to the collaborative learning portal on **'Web Resources and Social Media tools For Teaching Innovation and Entrepreneurship'**. This learning portal is created by [Laurea University of Applied Sciences](#) in Finland. The portal aims to serve as a useful and perpetual deliverable for the [EACEA](#) - LLP project **'CAL4INO'** (**Creative Activities in Learning For Innovation**) in which [Laurea University of Applied Sciences](#) is a partner.

Lifelong Learning Programme
Eacea logo

Web 2.0 Tools for Teaching

This page contains information on selected **social media tools and recommendations on how to use them efficiently in teaching**. It will also contain **case-studies and teaching resources published in social media** that can be taken into use by any teacher at any given time. Practical teaching cases and case examples on the **application of different web 2.0 tools for teaching** the essential topics under entrepreneurship will be included. Information and links to groups of innovators, entrepreneurs and angel investors which exist in the contemporary social networks are also included.

- [Links to tools](#)
- [Case studies/ Articles/ Books](#)
- [Online interest groups on Web 2.0 and Social Media tools](#)
- [Case examples for using Social Media/Web 2.0 tools for teaching Innovation & Entrepreneurship](#)
- [Create case examples](#)

Open Web Sources

This page provides links to a **treasury of teaching resources** that are scattered on the internet that could be **used by teachers of innovation and entrepreneurship**. This also attempts to serve as a handy and quick reference tool for learning contemporary topics under the field of entrepreneurship. In short, this page integrates the vast resources for teaching innovation and entrepreneurship omnipresent in the world of web 2.0 under a universal umbrella for united learning.

- [Open Educational Resources](#)
- [Open Web Resources For Teaching Innovation & Entrepreneurship](#)
- [Online interest groups/Social Media groups/Angel Investor groups for entrepreneurs](#)
- [Entrepreneurial websites with useful information](#)
- [Articles/Publications/Videos/Books](#)

Creative Teaching Techniques for Teaching I&E

This is a foundation for a **'creative network'** which **links creative professionals promoting innovation and entrepreneurship**. It will also serve as a **platform for sharing creative ways/activities** practiced by educators for teaching innovation and entrepreneurship. Games, resources and interesting techniques that could be used for creative teaching are shared in this page by interested experts. The profiles of creative educators interested in gathering a **community of practice for developing creative teaching techniques** are shared here.

- [Creative games](#)
- [Experts in Creative Teaching & Their Contributions](#)
- [Webinars & Videos](#)

Objectives of this learning portal



The objectives of this portal is,

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship.
2. To provide learning resources on various social media tools that can be used for teaching creatively.
3. To serve as a platform for sharing creative activities and teaching techniques practiced by educators for teaching innovation and entrepreneurship.
4. To disseminate the findings and outcomes from the CAL4INO project for the benefit of everyone.

The collaborative portal will operate without boundaries and aims to act as a **'knowledge network'** for educators and enthusiasts serving in the field of innovation and entrepreneurship. This portal invites educators and academicians around the world to collaborate and co-create towards a unified mission of creating learning resources that are beneficial to millions of scholars and educators alike.

Text is available under the [Creative Commons Attribution/Share-Alike License](#); additional terms may apply. See [Terms of use](#) for details.

[Privacy policy](#) [About Wikiversity](#) [Disclaimers](#) [Mobile view](#)





http://en.wikiversity.org/w/index.php?title=Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship&oldid=717348

Figure 30: Portal with insertion of direct hyperlinks to all the sub topics

Webpage Screenshot

[Log in / create account](#)



WIKIVERSITY

Resource Discuss

Read Edit View history

[Why create a Wikiversity account?](#)

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Introduction [edit]

Welcome to the collaborative learning portal on 'Web Resources and Social Media tools For Teaching Innovation and Entrepreneurship'. The objectives of this portal is,

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship.
2. To provide learning resources on various social media tools that can be used for teaching creatively.
3. To serve as a platform for sharing creative activities and teaching techniques practiced by educators
4. To disseminate the findings and outcomes from the CAL4INO (Creative Activities in Learning For Innovation) project for the benefit of everyone.

Web 2.0 Tools for Teaching

This page contains information on selected **social media tools and recommendations on how to use them efficiently in teaching**. It will also contain **case-studies and teaching resources** published in social media that can be taken into use by any teacher at any given time. Practical teaching cases and case examples on the **application of different web 2.0 tools for teaching** the essential topics under entrepreneurship will be included. Information and links to groups of innovators, entrepreneurs and angel investors which exist in the contemporary social networks are also included.

- Links to tools
- Case studies/ Articles/ Books
- Online interest groups on Web 2.0 and Social Media tools
- Case examples for using Social Media/Web 2.0 tools for teaching Innovation & Entrepreneurship
- Create case examples

Open Web Sources

This page provides links to a **treasury of teaching resources** that are scattered on the internet that could be **used by teachers of innovation and entrepreneurship**. This also attempts to serve as a handy and quick reference tool for learning contemporary topics under the field of entrepreneurship. In short, this page integrates the vast resources for teaching innovation and entrepreneurship omnipresent in the world of web 2.0 under a universal umbrella for united learning.

- Open Educational Resources
- Open Web Resources For Teaching Innovation & Entrepreneurship
- Online interest groups/Social Media groups/Angel Investor groups for entrepreneurs
- Entrepreneurial websites with useful information
- Articles/Publications/Videos/Books

Creative Teaching Techniques for Teaching I&E



This is a foundation for a 'creative network' which **links creative professionals promoting innovation and entrepreneurship**. It will also serve as a **platform for sharing creative ways/activities** practiced by educators for teaching innovation and entrepreneurship. Games, resources and interesting techniques that could be used for creative teaching are shared in this page by interested experts. The profiles of creative educators interested in gathering a **community of practice for developing creative teaching techniques** are shared here.

- Creative games
- Experts in Creative Teaching & Their Contributions
- Webinars & Videos

About this learning portal

This learning portal is created by [Laurea University of Applied Sciences](#) in Finland. The portal aims to serve as a useful and perpetual deliverable for the [EACEA - LLP](#) project 'CAL4INO' (**Creative Activities in Learning For Innovation**) in which Laurea University of Applied Sciences is a partner.



The collaborative portal will operate without boundaries and aims to act as a '**knowledge network**' for educators and enthusiasts serving in the field of innovation and entrepreneurship. This portal invites educators and academicians around the world to collaborate and co-create towards a unified mission of creating learning resources that are beneficial to millions of scholars and educators alike.

This page was last modified on 12 April 2011, at 06:20.

Text is available under the [Creative Commons Attribution/Share-Alike License](#); additional terms may apply. See [Terms of use](#) for details.

[Privacy policy](#) [About Wikiversity](#) [Disclaimers](#) [Mobile view](#)

http://en.wikiversity.org/wiki/Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship

Figure 31: Final version of the portal during soft launch

3.5.2.3 Soft launching the portal

Wikipedia^b defines soft launching as “the release of a website, hotel, or other product or service to a limited audience. It is a method for gathering data on a product's usage and acceptance in the marketplace, before making it generally available as a hard launch or grand opening”. Smith (2011) presents the following thoughts on soft launching of a website; “a soft launch is a type of release for hardware, software, and websites where the product is re-

leased incrementally with little fanfare, initially to a limited audience. Soft launches are especially common with websites, to which new features can easily be introduced. A soft launch can be a valuable tool for a website". Bell (2009, 330) also considers the soft launching of websites as important, so as to make sure that the site makes sense to more than the development team. Since the portal was built as the foundation for sustainable development and content generation primarily for the CAL4INO project partners, soft launching was decided to be the most suitable method to launch the portal, as a means to gather the stakeholders' feedback for further improvement. The portal with significant initial content was soft launched on the 13th of April 2011, to the CAL4INO project partners, internal project team and to a number of educators in the field of innovation and entrepreneurship. On the same day of its launch, it was also introduced to the audience in the Learning by Developing seminar, organized in Laurea University of Applied Sciences, Tikkurila. The slides and the photos from the seminar are given in Appendix - 9

3.5.2.4 Post-launch usability testing

The post-launch usability testing included a variety of evaluation tools, to capture the efficiency of the portal, as a sustainable service for CAL4INO. The same questionnaire (Appendix - 8) used during the pre-launch usability testing was emailed to all the external CAL4INO partners. The members were requested to visit the portal, navigate, edit, add content and use the hyperlinks to find content, before they answered the questions. They were contacted using Skype and telephones, afterwards for a brief interview.

Value mapping means building a visual matrix that quickly and clearly defines the value, features and functions of interest of a service, a product, a plan or a website (Gray et al, 2010, 221). In order to visualize the value of the portal in the eyes of the new users who were not part of any of the developmental activities, the value mapping technique was applied. Six to ten members, inclusive of students and teachers in the Laurea campus were approached. They were navigated through the portal for a few minutes. They were asked to post stick notes of the attributes that they felt as the values of the portal. Some of the value maps developed by them are given in Figure - 32.

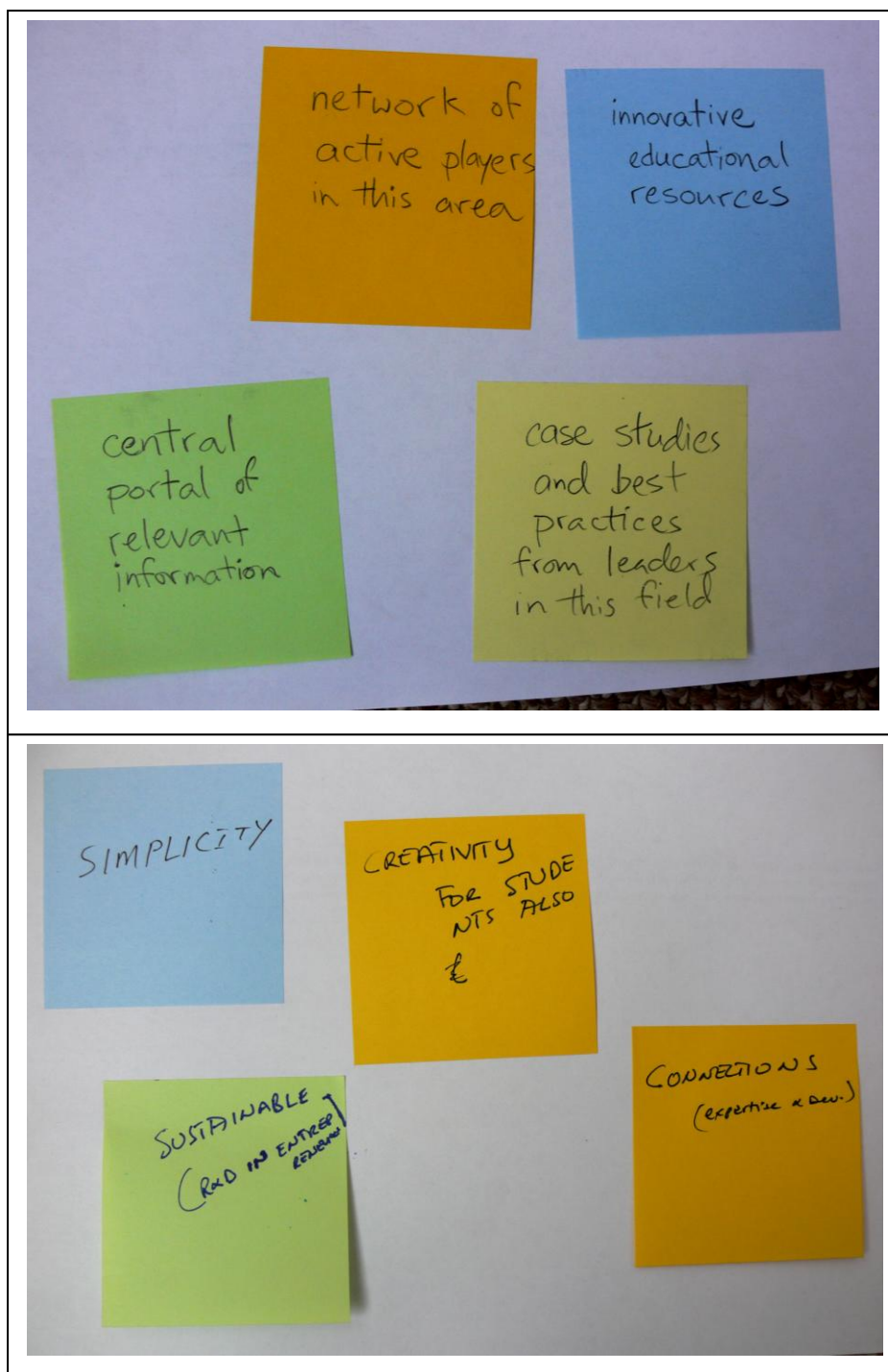


Figure 32: Value maps from feedback

Rockwell (2010, 227) imply the importance of evaluative research techniques, such as usability testing and customer (or user) journey mapping research in understanding design effectiveness and identifying areas for improvement, with relevance to brand satisfaction. Bedford

& Lee (2010, 200) mention customer experience mapping as a useful means of probing and uncovering opportunities to design a better service. A user experience map was designed using smileys to track the experience of the users while they browsed through the portal. The tasks which were expressed to be difficult for the users were noted, for further improvement. The user experience map with the experience in navigating through the portal, tracked by three of the users is given in Figure - 33.





























Customer Process	1.Finding the page	2.Homepage observation	3.Homepage navigation	4.Finding CAL4INO subpage	5.Following other subpages	6.Following links	7.Overall user experience
Easy							
Need help							
Can be better							
Difficult							
Points for improvement	Clone the page in Wikipedia Market/popularize in social & academic networks Add the link in all the partner websites	Make it appealing with more multimedia content/images Shorten descriptions for links	Navigation bars could be introduced in all the subpages to come back to the main page				Satisfactory. Could be made interesting by adding aesthetic elements

Figure 33: User experience map generated during evaluation

SWOT is a versatile assessment tool and it is an acronym for Strengths, Weaknesses, Opportunities and Threats. In a complex project on the development and evaluation of educational websites, McNaught et al (2006, 8) observed the iterative use of SWOT as a way to build on and refine the understanding, processes and the quality of products and services. A SWOT table was included as part of the feedback questionnaire. The users were requested to list the SWOT of the website considering its technical features and as well its service features to the CAL4INO project. Inputs from the value mapping, user experience mapping were combined to produce a collective SWOT table. The SWOT developed is given in Table - 6.

STRENGTHS	WEAKNESSES
Global Learning Community Open Collaboration Content in 11+ Languages Sustainability User Generated Content Knowledge Networks E-learning medium Simple & Cost free Community of practice	Learning project's Identity? Clarity? User Motivation? Popularity? Boundaries for inclusion of content? User - Lost in the crowd (Too much content) Navigational difficulties Limitations in aesthetics
OPPORTUNITIES	THREATS
Research Projects Collaboration Wiki Learning Projects International R&D groups Global Networking Freedom to develop & to design Tool for project management Tool for content management Alternative for website	Threat of content deletion Editing freedom - Mutation of content Editing functions - user demotivation Challenges in crowd sourcing Other virtual learning environments

Table 6: SWOT of the portal

3.5.3 Key design outcomes

The implementation phase was quite intense with various design activities involving iterative designing, usability testing, launching and evaluating the portal. The key outcomes from this phase are listed as below,

- The completion of the portal and its soft launching to the CAL4INO community
- Interviews and SWOT test to compile the developmental framework for the portal
- Insights from value mapping and user journey mapping to realize both the values and the points for improvement of the portal

3.6 Evaluation on the service concept and strategy for sustainable development

The portal for collaborative learning, developed as the web 2.0 based service for the CAL4INO project can be accessed through the link

http://en.wikiversity.org/wiki/Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship

The design process concluded with the design and implementation of the portal and it was handed over to the CAL4INO project group in the end of April 2011. The author's role as the Project Manager in Laurea UAS for the work package on Web 2.0 tools and social media also came to its end on 31.4.2011. This also marked the official completion of her role as the designer for the portal. A final project report on the development of the portal was prepared and submitted to the CAL4INO project group. An abridged version of the final report is given in Appendix - 10.

The portal in its present condition is only a foundation for the CAL4INO project to make it in to a creative network for educators and trainers from the field of innovation and entrepreneurship. A lot of technical features for collaboration, user interaction and peer reviewing are yet to be incorporated into the portal. The portal is open to sustainable development and positive transformation by interested user around the globe. The interactive participation and content generation by the CAL4INO group will be inevitable in the future to bring it alive and spread its services to a global community. The challenges that CAL4INO will face to mobilize forces of "collaborative creativity" (Miell & Littleton, 2004, 1) can be foreseen when we observe the saying of Mann & Stewart (2000, 29) that "even if technology is available, it is important to remember that many individuals do not share the enthusiasm for the internet and Computer Mediated Communication (CMC)".

Fernando (2010, 509 & 510) shares his experience on formulating a social media initiative, called the BlueBI Campaign for a Fortune 500 organization, which tried to incorporate social media paradigms, for the purposeful building of knowledge communities. A number of similarities can be observed in the designed portal and the BlueBI campaign, in terms of,

- A Portal (both CAL4INO and BlueBI had a multi-faceted portal)
- An open platform for development (BlueBI-Platform and the Wikiversity open platform for the CAL4INO portal)
- Team of subject matter experts (Social media experts for BlueBI and Educators in Creative teaching techniques for CAL4INO)

- Creating and nurturing a community (Knowledge community of, stakeholders, users and business partners for BlueBI and educators in innovation and entrepreneurship for CAL4INO) and
- Improving brand awareness and preference (of New Zealand market space for BlueBI and dissemination and exploitation of research findings for CAL4INO)
- The possibility to interface the content contained in the platforms with new social media tools and existing social media networks (in both the portals)

From the BlueBI experience Fernando presents 8 notions as a preliminary set of best practice steering points for future social media campaigns. CAL4INO needs to consider Fernando's notions in order to transform the current portal in to transform it into an 'Extended Social Network Site' for an exclusive community of educators, innovators and entrepreneurs. The 8 notions adapted from Fernando ((2010, 509 & 510) are given below;

- Notion 1: Understand the end goals -Understanding the type of community to be nurtured and what has to be achieved from the community.
- Notion 2: Formulate a strategy - Developing action objectives plans to meet the goals
- Notion 3: Calibrate appropriate social media tools - To match strategy and achieve different functions
- Notion 4: Build an open extensible platform - To enhance value creation by the users
- Notion 5: Embody strong taxonomy and structure - To enable discussion and the evolution of content
- Notion 6: Assemble staff for involvement and knowledge contribution - To engage with the knowledge community
- Notion 7: Anticipate and embrace varying use cases -To cope with the process of evolution of the knowledge community
- Notion 8: Develop a community maturity model - To understand and reevaluate the process of growth and transition of the knowledge community

In the observations of Kleemann et al (2008, 7) the distinctive features of the 'social software' applications include enabling of user-generated content, creation of elaborate platforms for interaction and networking, and user friendliness. "The central function of these applications is to get end-users involved collaboratively in the construction of an internet site and the generation of its content. In this way, individual knowledge becomes shared information". According to Gunawardena et al (2009, 5) Web 2.0 applications such as wikis provide the technological support for creating 'collective intelligence' in a learning environment. However, special considerations need to be given to attract 'the wisdom of crowds' (Surowiecki, 2005).

Chatfield (2009, 192-198) discusses the 'Search Engine Optimization' (SEO) techniques to use search engines and internet sources to attract and develop user bases for wikis. Link building with websites that have their pages ranked in Google, article publishing in 'free to publish' directories, blog posting, using bookmark listings and list building and recruiting are some of the SEO techniques that Chatfield suggests to develop and promote the wiki based platforms.

In the words of Mollerup (2004, 12), "*the design process is not an end in itself*". The author deems that her role in the service development process is not complete until a feasible solution for the continuous development of the portal is proposed. Based on the feedback generated during the implementation phase and her observations with the portal development after its hand over to CAL4INO, the author proposes a framework based on the concept of "crowdsourcing" (Howe, 2006, 1) towards the sustainable development of the portal. "Crowdsourcing refers to outsourcing the tasks of an enterprise to its customers. The customers are included in the processes, generating added value for the enterprise (and for him or herself)" (Aminoff et al, 2010, 7). "The word Crowdsourcing is a compound contraction of crowd and outsourcing. Thus crowdsourcing means outsourcing to the crowd. Crowdsourcing platforms derive from academic institutions, start-ups or large multinationals" (Schenk & Guittard, 2009, 2). Kleemann et al (2008, 2) interprets Howe's use of the term in the original article as "the new pool of cheap labor: everyday people using their spare [resources] to create content, solve problems, even do corporate R & D". According to Archak & Sundararajan (2009, 2) "crowdsourcing can involve experts, amateurs or any mix of those, the participation incentives can be monetary, intrinsic or mixed and it can be used to produce goods, services, ideas or obtain information". Crowdsourcing as a means of 'knowledge sourcing' can be the most effective solution for CAL4INO to popularize the portal, to attract users and to generate content.

The strategy for further development of the portal is illustrated in Figure - 34.

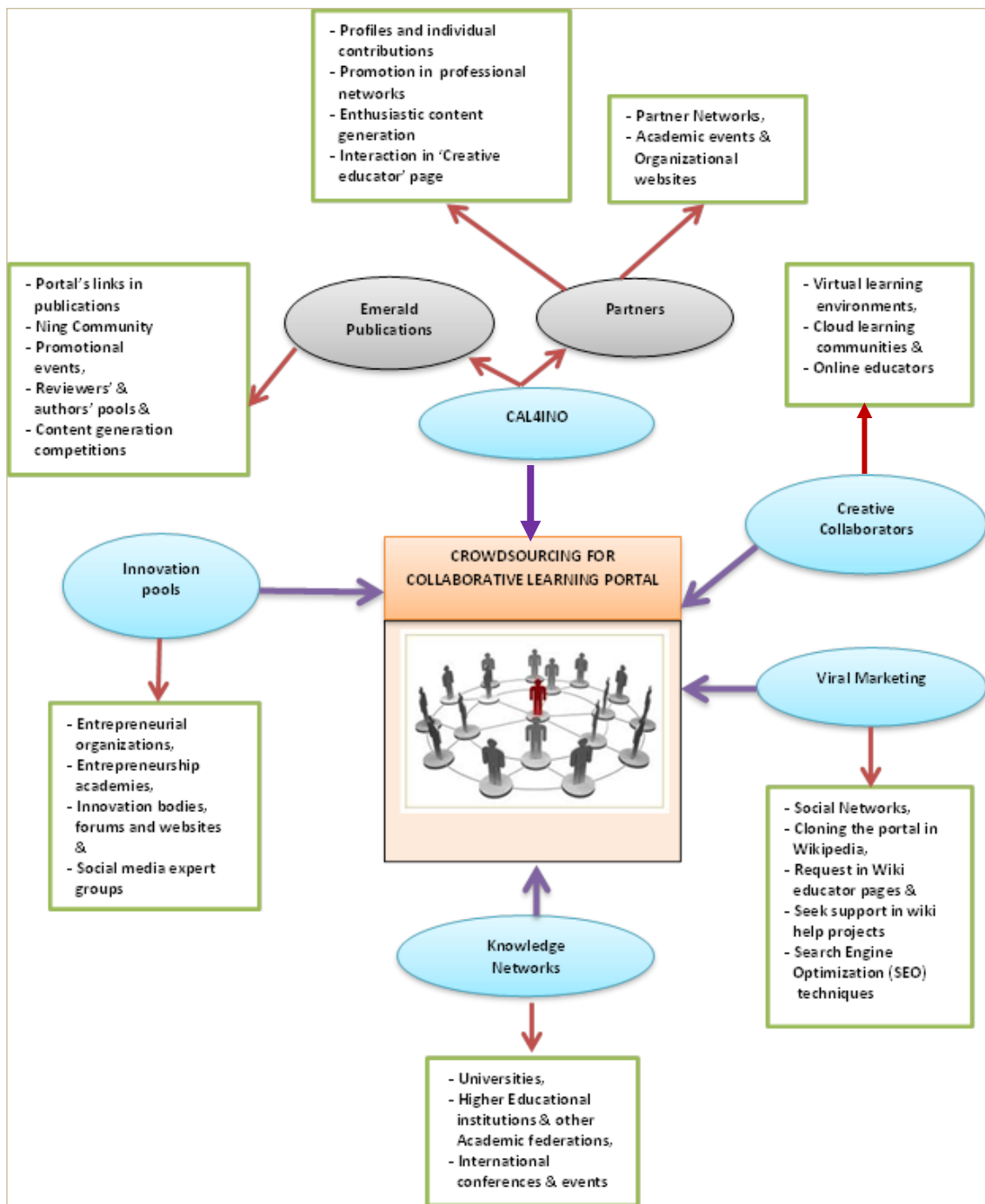


Figure 34: Crowdsourcing strategy for the sustainable development of the portal

4 Reflections and Conclusions

The design of a portal in a wiki based online environment may not hold enough significance for a Master's level thesis, if we consider only the technical dimensions of creating a wiki, which is relatively a simple task for many. However, if we look at the whole process of designing and implementing a portal with a theme and features for open collaborative learning, carried out as a service development task in an international project, its complexities and significance in terms of interdisciplinary service design, action research and project management can be well comprehended. From the beginning of defining a meaning to an abstract "extended social network site" (CAL4INO, 2010, 120), to its conclusion as a functional web portal, the practical challenges that the author (as both the designer and as well the stakeholder) encountered and resolved, using a combination of service design, website design and action research methodologies, can be visualized.

4.1 Action research in the service development process

According to Perry^a & Gummesson (2004, 314), "traditional action research necessarily focuses on a workgroup within an organization or community, all of whom are involved in joint cycles of planning, acting, observing and reflecting". Action research methodology followed in this service development project is an integral component of the service design process. Iterative or cyclic and reflective development aspects (Townsend, 2007, 1), engaging users as co-creators (Cook & McCallum, 2007, 67) and the use of qualitative research methods such as focus groups and interviews are some of the notable similarities between action research and service design methodologies. The major difference, however, is in the author's immersive role throughout the service development process and not as an outside designer practicing co-creation, as in the case of many service development projects. Geoghegan (2010) asserts that the Participatory Action Research (PAR) seeks not only to understand a situation but also to stimulate positive change through the way the research is carried out. He states that the research team acts as facilitators, guiding a process of reflective analysis and action by the people who are affected by the situation - its stakeholders. He also points out that the techniques used in PAR and participatory planning⁷ involve bringing stakeholders together in meetings, workshops and other ways. The entire CAL4INO research group was involved in various co-creation methods, throughout the four phases of service design process, with the author as one of the stakeholders, which proves the prominence of action research in this web service development project. Action research is more prominent in this thesis also in the fact

⁷ The approach that engages stakeholders in a linked process of problem identification, information collection, analysis, negotiation and formulation of plans (Geoghegan, 2010)

that, the author as the lead researcher produced new knowledge among the CAL4INO group in relation to web 2.0 tools and social media tools in teaching.

Motschnig et al (2004, 453-455) introduce an extended action research framework in the context of developing, extending, and customizing a web service based environment. They discuss the use of the action research to guide them in the process of co-developing and improving “open source, web service based modules that directly and intuitively support learning, cooperation and facilitation processes based on users’ experiences”. Perry^a & Gummesson (2004, 312) cite Carr & Kemmis (1986) while describing the three levels of (technical, practical and emancipatory) researcher participation in an action research project. In the first, technical level the action researcher is merely a technical “expert”, a consultant who tells other people what to do. In the second, practical level the researcher encourages participation and reflection and helps the clients understand how he or she fits into a system. In the third, emancipatory level, the researcher becomes a co-researcher with the other people, for responsibility for the project is shared equally among everyone. The action research process applied in the thesis is illustrated in Figure - 35.



Figure 35: Action research methodology in the service development process

Being an action researcher brought in a number of challenges to the author, in terms of acquiring new knowledge and educating the other stakeholders to the same level, convincing and persuading them in accepting changes and motivating them to involve in the whole process. However, the benefits of being an action researcher in terms of innovative thinking, flexibility in researching and refining the design process, and imparting the new knowledge gained into own professional practices, outweighed the challenges.

4.2 Interdisciplinary approach to service design

Service design thinking is an interdisciplinary approach that includes and connects different fields of activity (Anna, 2012). Accounts of service design vary from origins in other disciplines and make references to existing approaches within design, management and the

social sciences (Kimbell, 2011, 41). Rodriguez & Lockley (2011) demonstrate the success of interdisciplinary working in service design using two design case studies. They observe that the interdisciplinary teams involving experts from human-computer interaction, sports and exercise science, product design, interaction and experience design, drew upon different skills from one another providing a dynamic process to service design concepts. Meroni & Sangiorgi (2011, 207&213) also assert the need for interdisciplinary approach in design for services in order to make the service contributions more visible and effective. Their mention of contributions of interdisciplinary design teams can be excerpted as,

- Engaging people to experiment with new service models and more collaborative solutions (developing platforms based on social and mobile technologies to connect and collaborate)
- Applying transformational and experimental approaches to generate the space for changes to happen (using pilot projects and service prototypes to co-create new collaborative solutions)
- Exploring and proposing new behavioral patterns that challenge existing unsustainable lifestyles (observing and interpreting current social trends in order to identify promising examples to be replicated supported by adequate solutions)

The service development process applied in thesis is also a good case example for interdisciplinary service design, as it involved methods and tools from varied fields such as service design, web design, user centric design, qualitative research and action research. The collaborative working process also enhances sharing knowledge and skills from experts from different fields, namely information technology, Web 2.0 and social media, service design, entrepreneurship, creativity and innovation. The network of different disciplines integrated in the portal development is illustrated in Figure - 36.



Figure 36: Network of different disciplines in the portal design

The combination of service design and action methodologies supported the smooth and successful integration of the disciplines to design the portal as a web based service for CAL4INO. This service development project also addresses the following (Table - 7) interdisciplinary research priorities, summarized by the Arizona State University's Centre for Service Leadership, cited in Meroni & Sangiorgi (2011, 213).

Business Areas	Research Priorities	Research Topics	Interventions in the thesis
Strategy priorities	Improving well-being through transformative service	Enhancing access, quality, and productivity in (healthcare and) education	<ul style="list-style-type: none"> - Creation of an open educational resource for educators on social media tools for teaching - Designing the collaborative portal in wiki, which is continuous and sustainable
		Delivering service in a sustainable manner	
Development priorities	Stimulating service innovation	Identifying drivers of sustained new service success	Educating the CAL4INO partners on open collaborative learning environments and involving them in designing one, as the cost free and sustainable solution
	Enhancing service design	Learning about how to best engage customers and employees in collaborative service design	Adaptation of a number of co-creative service design tools in a dispersed intercultural group
		Using service design to influence the behavior of people within service systems	Facilitating and leading the CAL4INO stakeholders through the service design and action research processes
Execution priorities	Effectively branding and selling services	Harnessing social media's impact on service brands	Utilizing and marketing the advantages of social media to education and research
	Enhancing the service experience through co-creation	Driving customer/service collaboration through technology	Using the contemporary tools for communication, such as emails, telephones, web chats, video conferences etc., to collaborate and co-create with the stakeholders
	Measuring and optimizing the value of service	Integrating the role of customers, employees and technology for value optimization	<ul style="list-style-type: none"> - Bringing the stakeholders and the web 2.0 technology together in order to create a sustainable collaborative environment. - Enhancing value optimization by using the stakeholder networks for continuous growth and development. - Using the wiki based portal as the dissemination touch point for CAL4INO project.

Table 7: Interdisciplinary research priorities addressed by the project (Based on Arizona State University's Centre for Service Leadership, cited in Meroni & Sangiorgi, 2011, 213)

4.3 Impact of service design tools

“As in any other aspect of a service design project, there is no absolute right or wrong way to employ service design tools. A successful project involves finding a relevant and workable combination that can conceptualize, develop and prototype ideas through an iterative process of gradual improvement” (Dijk, as quoted in Stickdorn & Schneider, 2010, 215). The following observations are made from the extensive use of the service design tools in the service development process,

- Conventional research methods such as desk research, field notes and project diary were efficient in gathering and analyzing contextual information
- The challenges brought in by the wide spread dispersion of the stake holders were effectively met by the technological tools like emails and Skype conversations in a cost free, economical way
- Questionnaires were effectual in understanding first-hand opinions and views of users on ‘context specific’ issues. Interviews or observations following the questionnaires proves successful in gathering more in depth view on experiential issues
- Tools like ideation, brainstorming, focus groups, interviews and service staging proved excellent in bringing out user interactions, common understandings, collective agreements and productive dialogue
- Idea sketches, paper prototypes, and system maps were used in situations when concrete design decisions were needed to be taken
- The selection of tools can rarely be readily determined for each phase. In most instances, the selection depended on the scenario, need and the kind of insights needed. For example the focus groups were more of a natural choice, whenever there was a possibility of face- to -face meetings with the whole project group as a means to gather collective insights at once and quickly. The short interviews were more prevalent within the internal project team due to convenience and availability of the team members
- The four phases of service design could not be distinguished or defined precisely and were not completely sequential, as many of the design activities (idea sketching, prototyping etc.,) over-lapped and were repeated in more than one phase. In many instances, the author had to move back and forth among the phases to complete a design activity. The design goals for subsequent phases were derived based on the key outcomes from the previous phases.

To sum up, the design process and the tools were effective in providing a framework for engaging the stakeholders in co-creative activities to generate deep insights. However, the impact and the effectiveness of the tools largely depended on the skills and decisions of the author in using them in selected situations. It was also a revelation to observe the extent of use

of large number of tools in a relatively simple, technically basic, portal development. The reason being the demands brought in by the culturally and geographically divided stakeholders and the extent of efforts needed to unite them to produce a collective vision for the portal. The interdisciplinary approach with the action research befitted the outcomes of the phases largely. A summary of the pattern of use of the service design tools is given in Table - 8.

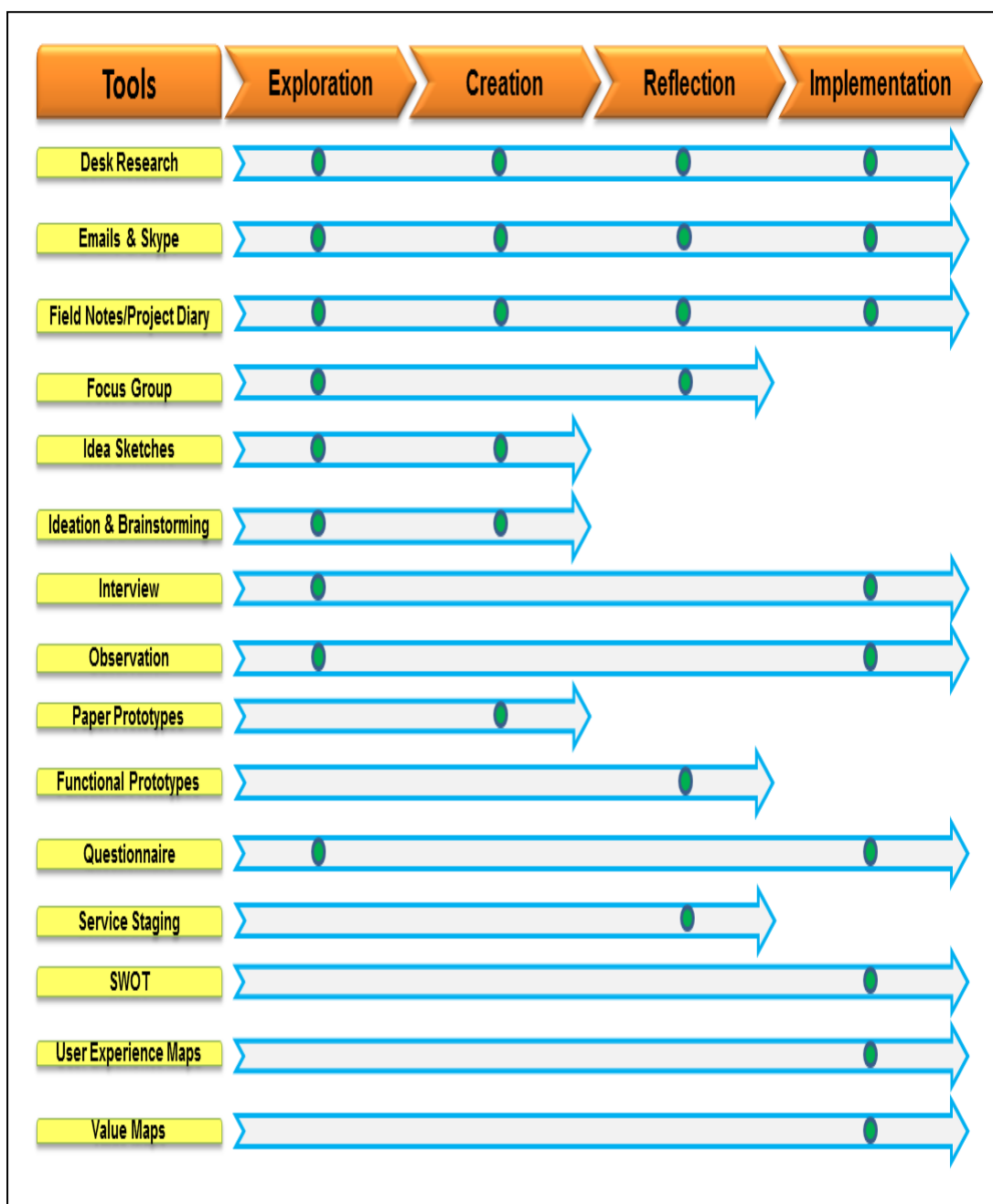


Table 8: The pattern of use of the service design tools

4.4 Personal Learning

It will be honest to admit that, the author had been a novice to the technological tools for learning and collaboration, until she embarked on this professional journey to lead this web based service development project. Using action research and service design methods as her navigating tools, she successfully honed her knowledge and skills on various aspects listed below,

- Developing and utilizing cost free, open collaborative learning resources
- Process of designing a collaborative learning platform involving geographically dispersed stakeholders
- Adaptation of action research approach and participatory service design techniques in a web service development task
- Efficient use of technological tools, such as emails, video conferencing and social networks to collaborate with a wide range of educators
- Exploitation of web 2.0 and social media tools for education and
- Development of practical solutions to the challenges in international project management

To quote the observation of Nel & Wilkinson (2006, 556) on action research, “the action takes the form of change, improvement or implementation in the researcher’s own workplace, while the research consists of learning and understanding, often leading to publication”. As a milestone in her journey of learning in this web service development project, the author gained substantial expertise in the field of social media. As a consequence, this led to the design and implementation of an online course on ‘Social media tool kit for effective communication’ for the Federation of Universities of Applied Sciences (FUAS), Finland and publication of a peer reviewed article in the Sixth International Multi-Conference on Society, Cybernetics and Informatics: IMSCI 2012. The article is attached in Appendix - 11.

4.5 Limitations

The duration of this service development project was seven months, one third of which was spent on clarifying the vision for the service to be developed. Short duration, lack of resources and budget, geographically dispersed and culturally divided partners, end of the author’s working contract and communication lags in the project management limited the project in the following contexts,

- The majority of the time spent in uniting the partners to produce a collective vision restricted the time for carrying out and implementing the technical changes that were required to make the portal more efficient

- The short-term working arrangement did not leave much time for the author to encourage a ‘sense of community’ among CAL4INO members to generate more content for the portal, although she succeeded in bringing them together for the design of the portal
- The dispersion of the CAL4INO partners around 6 European countries limited the frequency of using ‘face to face’ co-creative methods, for example the ‘affinity diagrams’ and ‘co-creation’ workshops and ‘on-site’ iterations.
- The communication gaps experienced among the project partners made it difficult to keep up the schedules and time lines for design activities, in many instances

4.6 Recommendations

According to Meroni & Sangiorgi (2011, 157) “new approaches are needed to reverse top-down design processes and shape horizontal frameworks of collaboration”. The following areas of research could be considered for explorative design studies in the future,

- Adaptation of service design processes in “socio-technological design”⁸ (Shneiderman & Rose 1996, cited in Camara et al, 2009, 136)
- Service design methodology to study and encourage user engagement in open collaborative environments
- Blended service design approaches with a combination of disciplines in developmental projects

4.7 Conclusions

In an ethnographic study on professional service designers Kimbell (2011, 50) observes that, the designers practiced a “constructivist approach to design in which designers and diverse others are involved in an ongoing enquiry”. Kimbell adds that the designers are “in an understanding of service that does not rest on the distinction between goods and services from industrial manufacturing, but rather sees service as the fundamental basis of exchanges of value”.

The unified vision of the work package on web 2.0 and social networks is to create an extended ecosystem dedicated to creativity, innovation and enterprise based web 2.0 enabled social networks capable of ‘organic growth’, ‘viral multiplication’ and ‘sustainability’. The collaborative learning portal designed in this service development project offers the foundation to fulfill the vision. It adds value to the CAL4INO project by developing the portal with the scope

⁸ “To expose and address issues in collaborative ICT design within the social, technical and cultural contexts”.

of creating a 'knowledge network' to promote sharing of teaching resources, creative activities, learning experiences and academic endeavors across a global community. The value creation through the portal largely depends on further developmental efforts by every CAL4INO partner's interest, enthusiasm and commitment. The power tool that CAL4INO needs to make the portal a real 'Extended Social Network Site' is the concept of 'crowd sourcing'. The project can benefit a lot from supplementing the crowdsourcing concept with the user centric concepts such as service design and action research. It will be a matter of time to see the positive transformation the portal will undergo to realize the service that, the author had envisioned and initiated through this service development process.

The author would like to conclude by quoting Walt Disney,

"You can design and create, and build the most wonderful place in the world. But it takes people to make the dream a reality"

...which holds true to the success of every design and to the sustainable development of any open collaborative environment.

References

- Acha, V. (2006). Open by design: The role of design in open innovation
- Adams, S.W. (2006). Action research in education. Retrieved 2012, from <http://www.edu.plymouth.ac.uk/resined/actionresearch/arhome.htm>
- Akama, Y. (2009). Warts-and-all: the real practice of service design. First Nordic Conference on Service Design and Service Innovation, Oslo 24th - 26th November 2009
- Albors, J., Ramos, J.C., & Herva, J.L. (2008). New learning network paradigms: Communities of objectives, crowdsourcing, wikis and open source. *International Journal of Information Management* 28 (2008) 194-202
- Ambrose, G., & Harris, P. (2010). Design Thinking. Switzerland: AVA Publishing
- Aminoff, C., Hänninen, T., Kämäräinen, M., & Loiske, J. (2010). The changed role of design. Retrieved 2011, from http://www.tem.fi/files/26881/The_Changed_Role_of_Design.pdf
- Angrosino, M.V. (2005). Recontextualizing observation. In Denzin, N.K., & Lincoln, Y.S. (Editors). *The SAGE handbook of qualitative research*. Third Edition. USA: Sage
- Anna, Z. (2012). Service design thinking - Design beyond design. Retrieved 2012, from the blog <http://designforchangeblog.com/category/service-design/>
- Antoni, S.D. (2009). Open Educational Resources: reviewing initiatives and issues. *Open Learning*. Vol. 24, No. 1, February 2009, 3-10
- Archak, N., & Sundararajan, A. (2009). Optimal design of crowdsourcing contests. *ICIS 2009 Proceedings*. Thirtieth International Conference on Information Systems, Phoenix
- Arhippainen, L. (2009). Studying user experience: Issues and problems of mobile services. Academic dissertation presented to the Faculty of Science of the University of Oulu.
- Atkins, D.E., Brown, J.S., & Hammond, A.L. (2007). A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities. A report to the William and Flora Hewlett foundation
- Barrett, D.J. (2009). The media wiki. USA: O'Reilly Media Inc.
- Bate P, Robert G. (2007). Bringing user experience to healthcare improvement: The concepts, methods and practices of Experience-Based Design. Oxford: Radcliffe Publishing
- Bedford, C & Lee, C. (2010). Would you like service with that?. In, Lockwood, T (Etd). Design thinking. New York: Allworth press
- Bell, D. (2010). The social media handbook. UK: Lightning source
- Bell, G. (2009). Building social web applications. USA: O'Reilly media Inc
- Bell, J. (2006). Doing your research project - A guide for first-time researchers in health and social science. Fourth Edition. England: Open university press
- Best, P. (2010). Branding and design innovation leadership: What next?. In, Lockwood, T (Etd). Design thinking. New York: Allworth press
- Bingham, T., & Conner, M. (2010). The New Social Learning - A Guide to Transforming Organizations through Social Media. California: Berrett-Koehler

- Bissell, A., & Boyle, J. (2007). Towards a Global Learning Commons: CC Learn. *Educational Technology*. Volume 47 (6). November-December 2007
- Bitard, P & Basset, J. (2008). Pro Inno Europe Inno Grips Global review of innovation intelligence and policy studies: Mini study 05 - Design as a tool for innovation. Retrieved 2012, from http://grips.proinno-europe.eu/knowledge_base.
- Bitner, M.J., Brown, S.W., & Meuter, M.L. (2000). Technology Infusion in Service Encounters. *Journal of the Academy of Marketing Science*. Volume 28, No. 1, pages 138-149. Copyright © 2000 by Academy of Marketing Science
- Boeije, H. (2010). Analysis in qualitative research. USA: Sage
- Bowlby, S.M. (2010). Six Phases of the Web Site Design and Development Process. Retrieved 2010, from <http://www.idesignstudios.com/faq/process/>
- Boyd, D.M., & Ellison, N.B. (2007). Social Network Sites: Definition, History, and Scholarship. *Journal of Computer-Mediated Communication*. Volume 13, Issue 1, pages 210-230, October 2007
- Brewer, J. (2011). Open Collaboration - The Next Economic Paradigm. Retrieved 2012, from <http://www.chaoticripple.com/2011/open-collaboration-paradigm/>
- Brown, T. (2009). Change by design. USA: Harper Collins
- Buxton, B. (2007). Sketching user experiences. Canada: Focal press
- CAL4INO. (2010). 'Creative Activities in Learning for Innovation' - EU-LLP-KA1 project application
- Camara, S.B., Oyugi, C., Nocera, J.A., & Smith, A. (2009). Augmenting Usability: Cultural elicitation in HCI. *Pre Conference Proceedings. IFIP HWID2009 Working Conference on Usability in Social, Cultural and Organizational Contexts*, Oct. 7-8, Pune, India
- Camarinha-Matos, L.M & Afsarmanesh, H. (2004). Collaborative networked organizations. USA: Kluwer Academic Publishers
- Carr, W. and Kemmis, S. (1986), *Becoming Critical: Education, Knowledge and Action Research*, Deakin University Press, Geelong. In, Perry, C., & Gummesson, E. (2004). *Action Research in Marketing*. Perry, Chad (Editor). Bradford, GBR :Emerald Group Publishing Ltd
- Chatfield, B.T. (2009). The complete guide to wikis. USA: Atlantic publishing group Inc
- Cheng, H. (2009). Service Science: Design for Scaling and Transformation. Singapore: World Scientific
- CiRAC. (2005). The ecology of Queensland design - A report in the Mapping Queensland's Creative Industries series. Queensland University of Technology: Creative Industries Research and Applications Centre (CiRAC)
- Clough, P & Nutbrown, C. (2007). A student's guide to methodology. 2nd edition. London: SAGE
- Coghlan, D & Brannick, T. (2001). Doing action research in your own organization. London: SAGE publications
- Collins, H. (2010). Creative research. Switzerland: AVA Publishing
- Conole, G. (2011). Learning design. Retrieved 2012, from <http://e4innovation.com/?cat=4>

Cook, L.S., Bowen, D.E., Chase, R.B., Sriram Dasuc, S., Stewart, D.M., & Tansik, D.A. (2002). Human issues in service design. *Journal of Operations Management* 20 (2002) 159-174

Cook, R., & McCallum, S. (2007). Talking together, reflecting together and working together: Tutor and student reflections on academic discourse, ethical disclosure and management education. In, *Differing Perceptions of the Participative Elements of Action Research. Collaborative Action Research Network (CARN) Bulletin 12*

Costello, P.J.M. (2003). *Action research*. London: Continuum

Cox, G. (2005). Cox Review of Creativity in Business: Building on the UK's strengths. Retrieved 2012, from http://www.hm-treasury.gov.uk/d/Cox_review-foreword-definition-terms-exec-summary.pdf

Davies, J. (2004). Wiki Brainstorming and Problems with Wiki Based Collaboration. Report on a project submitted for the degree of Information Processing in the Department of Computer Science at the University of York

De Laat, M., & Lally, V. (2004). Creativity and the net: How do researchers collaborate creativity using the internet?. In, Miell, D., & Littleton, K (Editors). *Collaborative creativity*. London: Free Association Books

Denscombe^a, M. (1998). *The good research guide for small scale research projects*. Buckingham: Open university press

Denscombe^b, M. (2004). *The good research guide for small-scale social research projects*. Second edition. England: Open university press

Design Council, UK. Customer journey mapping. Retrieved 2012, from <http://www.designcouncil.org.uk/about-design/How-designers-work/Design-methods/Customer-journey-mapping/>

Design Institute of Australia. The voice of a designer. Accessed in April, 2012, at <http://www.dia.org.au/index.cfm?id=186>

Dijk, G.V. In Stickdorn, M., & Schneider, J. (2010). *This is service design thinking*. The Netherlands: BIS Publishers

Eriksson, P., & Kovalainen, A. (2010). *Qualitative methods in business research*. USA: Sage

Fernando, I. (2010). Community creation by means of a social media paradigm. *The Learning Organization*. Vol. 17 No. 6, 2010. pp. 500-514. XIV International conference on Industrial Engineering and Operations Management. October 6-9, Salvador, Brazil

Fischer, G & Konomi, S. (2007). Innovative socio-technical environments in support of distributed intelligence and lifelong learning. *Journal of Computer Assisted Learning* (2007), 23, 338-350

Flick, U. (2005). *An introduction to qualitative research*. London: Sage

Fong, P.K.F., & Aghai, R.P.B. (2010). What did they do? Deriving high-level edit histories in Wikis. WikiSym '10 Proceedings of the 6th International Symposium on Wikis and Open Collaboration. New York: ACM

Fontana, A., & Frey, J.H. (2005). The Interview. In Denzin, N.K., & Lincoln, Y.S. (Editors). *The SAGE handbook of qualitative research*. Third Edition. USA: Sage

Freire, K., & Sangiorgi, D. (2010). Service design & healthcare Innovation: From consumption to coproduction and co-creation. *ServDes. 2010, Second Nordic Conference on Service Design and Service Innovation*

Frye, E. (2010). Take a SWOT at your business. Retrieved 2012, from <http://www.walkupright.com/blog/take-a-swot-at-your-website/>

Gaffney, G. (1999). Usability testing. Retrieved 2011, from <http://www.infodesign.com.au/ftp/UsabilityTesting.pdf>

Garrett, J.J. (2010). Customer loyalty and the elements of user experience. In Lockwood, T (Ed). *Design thinking*. New York: Allworth press

Gauri, P & Gronhaug, K. (2005). *Research methods in business studies - A practical Guide*. 3rd edition. England: Pearson Education Limited

Geoghegan, T. (2010). Building a collaborative platform for climate change: an action research approach. A Case study based on a project initiated by the UK Collaborative on Development Sciences (UKCDS) and implemented by the International Institute for Environment and Development (IIED)

Gloor, P.A. (2006). *Swarm Creativity: Competitive advantage through Collaborative Innovation Networks*. New York: Oxford University Press

Goldstein, S.M., Johnston, R., Duffy, J., & Raod, J. (2002) The service concept: the missing link in service design research?. *Journal of Operations Management* 20 (2002) 121-134

Gorghiu, G., Lindfors, E., Gorghiuc, L.M., & Hämäläinen, T. (2011). Acting as Tutors in the ECSUT On-line Course - How to Promote Interaction in a Computer Supported Collaborative Learning Environment?. *Procedia Computer Science* 3 (2011) 579-583

Gray, D., Brown, S. & Macanufo, J. (2010). *Game storming*. USA: O'Reilly media Inc

Green, E.N. (2010). *Anywhere - How the global connectivity is revolutionizing the way we do business*. New York: Mc Graw Hill

Guilland, A. (2010). Multifform thesis report

Gummesson, E. (2000). *Qualitative methods in management research*. 2nd edition. California: SAGE

Gunawardena, C, N., Hermans, M.B., Sanchez, D., Richmond, C., Bohley, M., & Tuttle, R. (2009). A theoretical framework for building online communities of practice with social networking tools. *Educational Media International*. Vol. 46, No. 1, March 2009, 3-16

Hair Jr, J.F., Celsi, M.F., Money, A.H., Samouel, P., & Page, M.J. (2011). *Essentials of business research methods*. 2nd edition. USA: M.E.Sharpe

Harwood, T., & Garry, T. (2010). It's Mine!' - Participation and ownership within virtual co-creation environments. *Journal of Marketing Management*, Volume 26, Issue 3-4

Hollins, B. (2006). Service Design. Retrieved 2012, from <http://www.designingbusinessexcellence.org.uk/About-Design/Design-Disciplines/Service-design-by-Bill-Hollins/>

Holmid, S. (2007). Interaction design and Service design: Expanding a Comparison of design Disciplines. Retrieved 2012, from <http://www.ida.liu.se/divisions/hcs/ixs/publications/fulltext/2007/HolmlidNordes.pdf>

Houghton, G., Singh, S., & Fraser, J. (2003). Using email as a research tool in general practice: Starting to implement the National Service Framework for Mental Health. *Informatics in Primary Care* (2003) 11: 27-31. PHCSG, British Computer Society

Howard, T.W. (2010). *Design to Thrive Creating Social Networks and Online Communities that Last*. Amsterdam: Morgan Kaufmann

Howe, J. (2006). The Rise of Crowdsourcing. *Wired*. Retrieved 2012, from [http://www.wired.com/wired/archive/14.06/crowds.html?pg=4&topic=crowds&topic_set=Hypermedia & Telecommunications](http://www.wired.com/wired/archive/14.06/crowds.html?pg=4&topic=crowds&topic_set=Hypermedia%20&Telecommunications), Lugano, Switzerland, 21-26 June. Norfolk VA: Association for the Advancement of Computers in Education

IDEO. (2003). *IDEO method cards - 51 ways to inspire design*. USA: William Stout Books
Innovateuk.org. Design methods for developing services. Retrieved 2012, from http://www.innovateuk.org/_assets/pdf/Design_Methods_Services.pdf

Innovateuk.org. Design methods for developing services. Retrieved 2012, from http://www.innovateuk.org/_assets/pdf/Design_Methods_Services.pdf

ITIL. (2008). *Key element guide service design*. UK:TSO

Jones, M & Samalionis, F. (2010). From small ideas to radical service innovation. In, Lockwood, T (Etd). *Design thinking*. New York: Allworth press

Jovanović, J., Gasšević, D., Torniaić, C., Bateman, S., & Hatala, M. (2009). The Social Semantic Web in Intelligent Learning Environments: state of the art and future challenges. *Interactive Learning Environments*; Dec2009, Vol. 17 Issue 4, p273-309, 37p

Kane, G.C., & Fichman, R.G. (2009). *The shoemaker's children: using wikis for Information* 2009

Kanev, K., Kimura, S., & Orr, T. (2009). A Framework for Collaborative Learning in Dynamic Group Environments. *International Journal of Distance Education Technologies*. 7. 1 (Jan-Mar 2009): 58-77

Kaplan, A.M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*. Volume 53, Issue 1, January-February 2010, Pages 59-68

Kimbell, L. (2011). Designing for service as one way of designing services. *International Journal of Design*, 5(2), 41-52

Kleemann, F., Voß., G., & Rieder, K. (2008). Un(der)paid Innovators: The Commercial Utilization of Consumer Work through Crowdsourcing. *Science, Technology & Innovation Studies* Vol. 4, No. 1, July 2008

Konstantinidis, A., Tsiatsos, T., & Pomportsis, A. (2009). Collaborative virtual learning environments: design and evaluation. *Multimedia Tools Appl.* (2009) 44.279-304

Kuniavsky, M. (2003). *Observing the user experience- A practitioner's guide to user research*. USA: Morgan Kaufmann

Kwan, K. (2009). *The Web 2.0 revolution on online design education*. A MFA thesis report. Faculty of fine arts. York University. Retrieved 2012, from <http://www.drs2010.umontreal.ca/data/PDF/069.pdf>

Lawson, B. (2005). *How Designers Think - The Design Process Demystified*. Fourth edition. Amsterdam: Architectural Press

- Lee, W.I., & Lin, C.H. (2011). Consumer hierarchical value map modeling in the healthcare service industry. *African Journal of Business Management* Vol. 5(3), pp. 722-736, 4 February, 2011
- Leikas, J. (2009). Life-Based Design A holistic approach to designing human technology interaction. Finland: VTT Technical Research Centre
- Leuf, B., & Cunningham, W. (2001). The Wiki way - Quick collaboration on the web. Boston: Addison-Wesley
- Liamputtong, P. (2011). Focus group methodology - Principles and practice. USA: Sage
- Liedtka, J.M., & Ogilvie, T. (2010). Ten tools for design thinking. Charlottesville, USA: University of Virginia Darden School Foundation. Retrieved 2012, from http://www.darden.virginia.edu/web/uploadedFiles/Darden/Batten_Institute/BP-0550.pdf
- Lightner, S., Bober, M., & Willi, C. (2007). Team-based activities to promote engaged learning. *College Teaching*, 55 (1), 5 - 18. In West, J.A., & West, M.L. (2009). Using Wikis for Online Collaboration. USA: John Wiley & Sons
- Lih, A. (2009). The Wikipedia Revolution. Hyperion-E-books
- Lincoln, S.R. (2009). Mastering Web 2.0. USA: Kogan Page Limited
- Lockwood, T (Etd). (2010). Design thinking. New York: Allworth press
- Lopes, A. (2009). Design as a multi model conversation. Pre Conference Proceedings. IFIP HWID2009 Working Conference on Usability in Social, Cultural and Organizational Contexts, Oct. 7-8, Pune, India
- Lusch, R.F., & Vargo, R.F. (Editors). (2006). The service-dominant logic of marketing - Dialog, debate and directions. USA: M.E.Sharpe Inc
- Madrigal, D. (2010). Contextual Interviews and Ethnography: Two Different Types of Home Visits. Retrieved 2010, from <http://www.usabilitypost.com/2009/09/09/contextual-interviews-and-ethnography/>
- Mager^a, B. (2004). Service design, a review. Köln: Prima print GmbH
- Mager^b, B. (2006). Service design basic cards. Germany: Printland
- Mäkitalo, K. (2006). Interaction in online learning environments. Jyväskylä: Jyväskylä University Press
- Mann, C & Stewart, F. (2000). Internet communication and qualitative research - A handbook for researching online. London: SAGE
- Markham, A.N. (2005). Online ethnography. In Denzin, N.K., & Lincoln, Y.S. (Editors). The SAGE handbook of qualitative research. Third Edition. USA: Sage
- Marshall, C & Rossman, G.B. (2006). Designing qualitative research. 4TH edition. USA: SAGE
- Martinez, M. (2010). How a New Generation of Teachers Will Change Schools, Kappan, V91 N7. Retrieved 2012, from www.pdkintl.org
- McIntosh, P. (2010). Action research and reflective practice. Oxon, UK: Routledge

McNaught, C., Lam, P., & Hodson, P. (2006). A SWOT analysis of a complex project for the development and evaluation of educational websites. In L. Cantoni & C. McLoughlin (Eds). *ED-MEDIA 2006, Proceedings of the 16 th annual World Conference on Educational Multimedia*

Meroni, A & Sangiorgi, D. (2011). *Design for services*. UK: MPG books group

Miell, D., & Littleton, K (Editors). (2004). *Collaborative creativity*. London: Free Association Books

Mollerup, P. (2004). *Design for Latvia - The final report*. Retrieved 2012, from <http://www.designlatvia.lv>

Moran, S., & John-Steiner, V. (2004). How collaboration in creative work impacts identity and motivation. In, Miell, D., & Littleton, K (Editors). *Collaborative creativity*. London: Free Association Books

Moritz, S. (2005). *Service Design - Practical access to an evolving field*. Köln International School of Design

Morrison, J.H. (2004). How to create an effective taxonomy?. Retrieved 2011, from <http://www.zdnetasia.com/how-to-create-effective-taxonomy-39190441.htm>

Motschnig, P, R., Derntl, M., & Mangler, J. (2004). Developing Coperative Environment Web Services based on Action Research. *Proceedings of 5th International Conference on Practical Aspects of Knowledge Management (PAKM 2004,Vienna, Austria, LNCS 3336)*. 453-462

Näkki, P., & Virtanen, T. (2008). Online Tools for Co-design: User Involvement through the Innovation Process. The NordiCHI'08 Workshops on New Approaches to Requirements Elicitation & How Can HCI Improve Social Media Development?. SINTEF report A8210. Oslo, 2008. Retrieved 2012, from http://sintef.academia.edu/PetterBaeBrandtz%C3%A6g/Papers/814043/Capturing_User_Requirements_and_Feedback_for_Web_2.0_Applications_by_a_Norm-Based_Questionnaire_Toolset

Nel, L., & Wilkinson, A. (2006). Enhancing Collaborative Learning in a Blended Learning Environment: Applying a Process Planning Model. *Syst Pract Act Res* (2006) 19:553-576

Nguyen, H.C. (2007). Email Surveys in Educational Research: Ethical Surveys in Educational Research. *Essays in Education*. Volume 21, Summer 2007. Retrieved 2012, from <http://www.usca.edu/essays/vol212007/chinguyen.pdf>

Norman, D. (2010). *Web 2.0: Its inception, its impact, and its future - An EPIC white paper*. UK: Epic Performance Improvement Ltd

O'Brien, R. (1998). An Overview of the Methodological Approach of action Research. Retrieved 2012, from <http://www.web.ca/robrien/papers/arfinal.html>

O'Reilly, T. (2007). What Is Web 2.0: Design Patterns and Business Models for the Next Generation of Software. *Communications & strategies*, no. 65, 1st quarter 2007, p. 17

Owen, C. (2006). Design thinking - Notes on its nature and use. *Design research quarterly* 1:2, 16-27. Retrieved 2012, from www.designresearchsociety.org

Perry, C., & Gummesson, E. (2004). *Action Research in Marketing*. Perry, Chad (Editor). Bradford, GBR: Emerald Group Publishing Ltd

Perry, Chad (Editor). (2004). *Action Research in Marketing*. Bradford, GBR: Emerald Group Publishing Ltd

- Poggenpohl, S., & Sato, K. (Editors). (2009). *Design Integrations : Research and Collaboration*. Bristol, GBR: Intellect Ltd., 2009.
- Poole, E.S., & Grudin, J. (2010). A taxonomy of Wiki genres in enterprise settings. *WikiSym '10 Proceedings of the 6th International Symposium on Wikis and Open Collaboration*. New York: ACM
- Porto, S., & Kipta, A. (2011). *Harnessing the Web: Social and personal learning*. In Liebowitz, J., & Frank, M.S. (Editors). *Knowledge management and E-learning*. USA: CRC Press
- Rae, D. & Stringer, E.T (Etd). (2007). *Action research: Transitions - The experiences of older women from hospital to home*. 3rd edition. USA: SAGE publications
- Randall, W.S., Gravier, M.J., & Prybutok, R.V. (2011). Connection, trust, and commitment: dimensions of co-creation?. *Journal of Strategic Marketing*, 19:01, 3-24
- Reiken, B. (2010). *Sketch books of a web developer*. Retrieved 2011, from <http://www.looksgd.com/design/sketchbooks-of-a-web-developer>
- Richardson, W. (2009). *Blogs, wikis, podcasts, and other powerful Web tools for classrooms*. Second Edition. USA. Corwin Press
- Riley, J.A. (2011). *2011 Social Media Directory*. USA: Pearson Education, Inc.
- Rockwell, C. (2010). The mathematics of brand satisfaction. In, Lockwood, T (Etd). *Design thinking*. New York: Allworth press
- Rodriguez, L., & Lockley, E. (2011). *Interdisciplinary Working in Service Design: Case Studies for Designing Touch Points*. Retrieved 2012, from <http://www.servdes.org/wp/wp-content/uploads/2012/02/Interdisciplinary-Working-in-Service-Design-Case-Studies-for-Designing-Touch-Points1.pdf>
- Saco, R.M & Gonclaves, A.P. (2010). *Service design: An appraisal*. In, Lockwood, T (Etd). *Design thinking*. New York: Allworth press
- Sanders^b, E.B.N. (2006). Design research in 2006. *Design Research Quarterly* 1:1 Sept. 2006
- Sanders^a, E.B.N., & Stappers, P.J. (2008). Co-creation and the new landscapes of design, *CoDesign: International Journal of CoCreation in Design and the Arts*, 4:1,5-18
- Santos, D., Maruyama, U., Santos, C., & Flexa, R. (2009). A competence-based approach to service design: using the SERVQUAL model to identify service requirements focused on clients. Article presented in the XV International conference on industrial engineering and operations management, 6-9 October, Salvador, Brazil
- Saphire, I. (2008). *Course design in an OER environment*. A Creative Commons licensed article
- Schenk, E., & Guittard, C. (2009). *Crowdsourcing: What can be Outsourced to the Crowd, and Why ?* Retrieved 2012, from <http://cournot.u-strasbg.fr/users/osi/program/Guittard%20schenk.pdf>
- Schuer, R., & Mulder, F. (2009). OpenER, a Dutch initiative in Open Educational Resources. *Open Learning: The Journal of Open and Distance Learning*. Volume 24, Issue 1, 2009, 67-76
- Selwyn, N., & Robson, K. (1998). Using e-mail as a research tool. *Social research update*. Issue 21, Summer 1998. Retrieved 2012, from <http://sru.soc.surrey.ac.uk/SRU21.html>
- Serrat, O. (2010). *Design thinking*. Retrieved 2012, from www.adb.org
- Shneiderman, B. and Rose, A. (1996). *Social impact statements: engaging public participation in information technology design* Proceedings of the symposium on Comput-

ers and the quality of life, ACM Press 0-89791-827-4/96/02, Philadelphia, Pennsylvania, United States, 1996

Silverman, D. (2005). *Doing qualitative research*. Second Edition. London: Sage

Smith, S. E. (2011). What is a soft launch?. Retrieved 2012, from <http://www.wisegeek.com/what-is-a-soft-launch.htm>

Somekh, B. (2006). *Action research - A methodology for change and development*. Maidenhead: Open University press

Spillers, F. (2007). *User Centered Design 101*. Presentation for a web seminar. Copyrighted by Experience Dynamics, USA

Stamm, B.V. (2008). *Managing innovation, creativity and design*. 2ND edition. UK: John Wiley & Sons Ltd

Steen, M. (2008). *The fragility of human-centred design*. Netherlands: IOS Press

Stevens, M.M., Abowd, G.D., Truong, K.N., & Vollmer, F. (2003). Getting into the Living Memory Box: Family archives & holistic design. *Personal and Ubiquitous Computing*. Volume 7, Numbers 3-4 (2003), 210-216

Stickdorn, M., & Schneider, J. (2010). *This is service design thinking*. The Netherlands: BIS Publishers

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research*. USA: Sage

Strijbos, J.W., Kirschner, P.A., & Martens, R.L. (Editors). (2004). What we know about CSCL: And implementing it in higher education. Cited In, Mäkitalo, K. (2006). *Interaction in online learning environments*. Jyväskylä: Jyväskylä University Press

Stringer, E.T. (2007). *Action research*. 3rd edition. USA: SAGE publications

Surowiecki, J. (2005). *The wisdom of crowds*. USA: Anchor books

Sutcliff, A & Carroll, J.M (Etd). (2010). *Designing for user engagement: Perspectives and Conclusions*. USA: Morgan & Claypool

Svensson, L & Nielsen, K.A. (2006). *Action and Interactive research: A Framework for the book*. The Netherlands: Shaker Publishing BV

Tapscott^b, D. (2009). *Grown up digital*. USA: Mc Graw Hill

Tapscott^a, D., & Williams, A.D. (2006). *Wikinomics - How mass collaboration changes everything*. USA: Penguin

Thenint, H. (2008). Pro Inno Europe Inno Grips Global review of innovation intelligence and policy studies: Report on Innovation Policy workshop 2; Design as a tool for innovation. Retrieved 2012, from http://grips.proinno-europe.eu/knowledge_base

Townsend, A. (2007). Introduction: Participation and Change, the Common Concerns of Action Research. In, *Differing Perceptions of the Participative Elements of Action Research*. *Collaborative Action Research Network (CARN) Bulletin 12*

Tuomi, I. (2006). *Open Educational Resources: What they are and why do they matter*. Retrieved 2011, from http://www.meaningprocessing.com/personalPages/tuomi/articles/OpenEducationalResources_OECDreport.pdf

U.S. Department of Health and Human Services. Usability testing. Retrieved 2012, from http://www.usability.gov/methods/test_refine/learnusa/index.html

West, J.A. , & West, M.L. (2009). Using Wikis for Online Collaboration. USA: John Wiley & Sons

Westlander, G. (2006). Action and Interactive research: Researcher roles in action research. The Netherlands: Shaker Publishing BV

Wikipedia^a. Help - Wiki mark up. Retrieved 2012, from http://en.wikipedia.org/wiki/Help:Wiki_markup

Wikipedia^b. Soft launch. Retrieved 2012, from http://en.wikipedia.org/wiki/Soft_launch

Wikiversity. (2010). An introduction to Wikiversity. Retrieved 2010, from http://en.wikiversity.org/wiki/Wikiversity:Main_Page

Wild, P.J. (2007). Review of service design approaches. IPAS Deliverable I15.6 report. University of Cambridge, Cambridge

Zeithaml, V., Bitner, M.J., & Gremler, D.D. (2009). Services Marketing. Fifth Edition. Singapore: McGraw Hill

Figures

Figure 1: Framework of the thesis (Srinivasan, 2012)	10
Figure 2: Approaches to service design (Kimbell, 2011)	18
Figure 3: Human centered approach to service design (Steen, 2008)	19
Figure 4: Design Process (Mollerup, 2004)	20
Figure 5: Three views on design process (Lawson, 2005)	21
Figure 6: An overview of five service design methods (Srinivasan, 2012)	22
Figure 7: Five point views on OER (Tuomi, 2006)	26
Figure 8: Cyclical process in action research (Denscombe ^a , 1998, cited in Costello, 2003)	33
Figure 9: Blended service design process (Srinivasan, 2012)	43
Figure 10: Project organization	46
Figure 11: Iterative service design model (adapted from Stickdorn & Schneider, 2010) ...	47
Figure 12: Notes from the project diary	49
Figure 13: Idea sketch - 1	50
Figure 14: Idea sketch - 2	51
Figure 15: Photos taken during focus group discussion	52
Figure 16: Idea Sketch - 3	56
Figure 17: Idea sketch - 4	57
Figure 18: Paper prototypes for the portal layout	59
Figure 19: Final system map	60
Figure 20: Two preliminary versions of the portal	62
Figure 21: First functional prototype of the portal	64
Figure 22: Photos from service staging	66
Figure 23: Portal layout with the introduction of the themes in colored boxes	67
Figure 24: Portal with change in the taxonomy layout	68
Figure 25: Inclusion of colored themes to the changed portal layout	69
Figure 26: CAL4INO subpage in the portal	70
Figure 27: Subpage for creative educators	71
Figure 28: Pictures from usability testing	74
Figure 29: Portal with partial hyperlinks to the themes	75
Figure 30: Portal with insertion of direct hyperlinks to all the sub topics	76
Figure 31: Final version of the portal during soft launch	77
Figure 32: Value maps from feedback	79
Figure 33: User experience map generated during evaluation	80
Figure 34: Crowdsourcing strategy for the sustainable development of the portal	85
Figure 35: Action research methodology in the service development process	88
Figure 36: Network of different disciplines in the portal design	90

Tables

Table 1: Partners & Work Packages of CAL4INO (CAL4INO, 2010)	11
Table 2: Structure of the thesis	14
Table 3: List of useful OER resources	27
Table 4: Summary of the blended service design process	45
Table 5: Design framework for the wiki portal	54
Table 6: SWOT of the portal	81
Table 7: Interdisciplinary research priorities addressed by the project	91
Table 8: The pattern of use of the service design tools	93

Appendices

Attachment 1: Email questionnaire for ideation	109
Attachment 2: Draft action plan	110
Attachment 3: Questionnaire used to evolve the portal framework	112
Attachment 4: Ideation presentation for first focus group	113
Attachment 5: Communication materials from Project Day Event.....	114
Attachment 6: Presentation slides from service staging	117
Attachment 7: CAL4INO approval for portal development	120
Attachment 8: Questionnaire for usability testing	122
Attachment 9: Communication materials from Learning by Development Day Event	125
Attachment 10: Abridged version of Final Project Report submitted to CAL4INO	129
Attachment 11: Article for publication in IMSCI 2012 International Conference	144

Attachment 1 -Email questionnaire for ideation used in Exploration phase

Dear Madam/Sir,

Warm greetings to you from Laurea UAS!. As you are aware that Laurea is responsible for the WP on Web2.0 and Social Networks, we would like to know from you or from the persons that you would recommend, the following

1. Vision/requirement of your organization in relevance to the Social Networks Site being developed for the CAL4INO activities
2. Your personal vision, expectations & ideas for the website to be developed
3. Use of web2.0 enabled tools in your organization - the context of use, favorites/free tools, success rates, costs, recommendations etc.,
4. Research/research findings/publications related to Social media tools - done at your organization (if any)

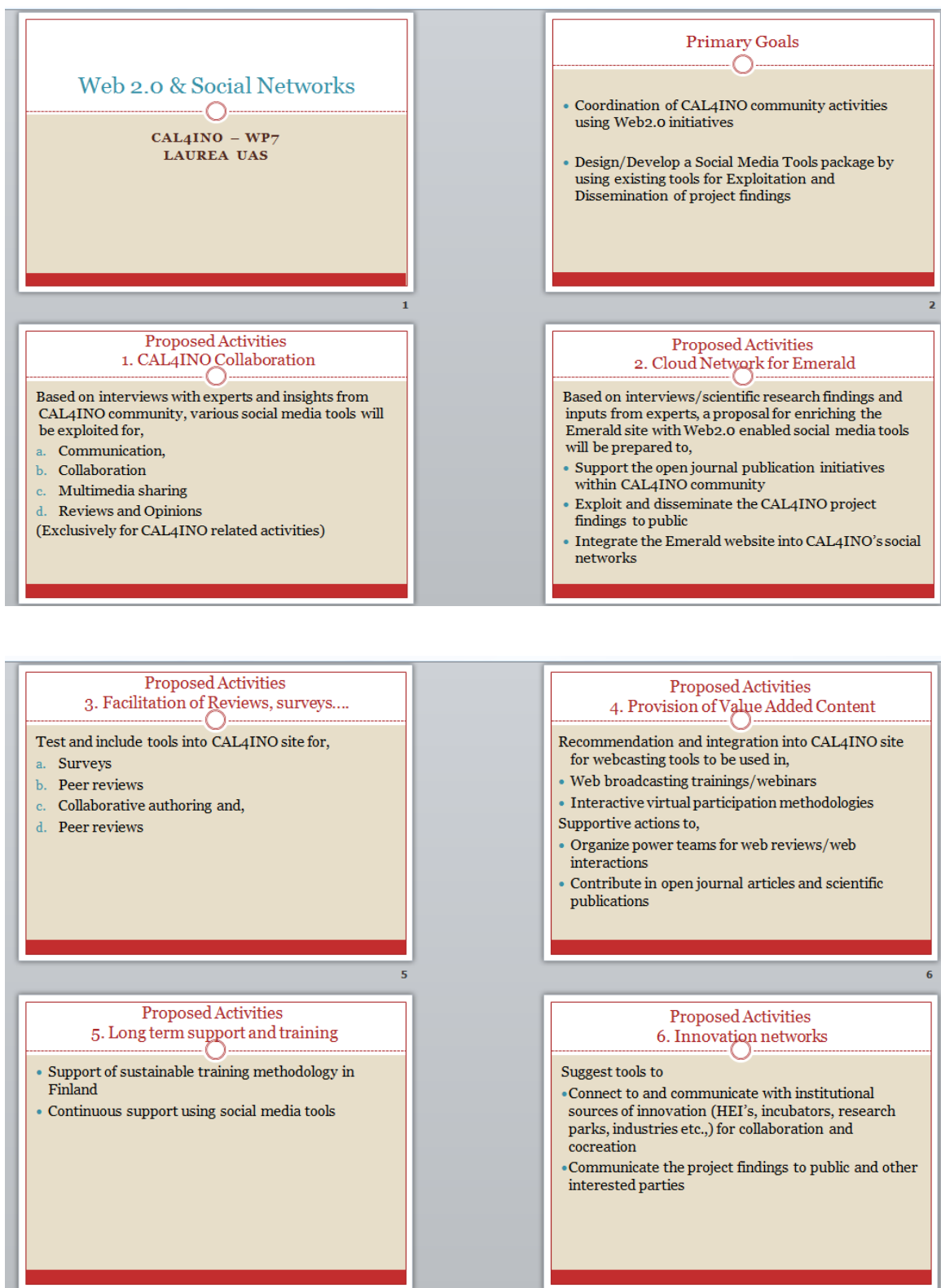
Laurea UAS would be collaborating closely with your activities in bringing out this Web2.0 supported website. It would be good to have the contacts of a few members in your organization with whom we could discuss about the vision/background for bringing out this website. This would help us plan the supportive tools more efficiently. As we understand that you could be very busy to get these details, could we request you to put us through someone who could provide this information. I would be glad to call/Skype to discuss/meet and gather this information - as it would be effective to get the insights qualitatively.

Thank you in advance for your support in this matter,

Best Regards,

Kiruthika Srinivasan

Attachment 2 - Draft action plan



<p style="text-align: center;">Proposed Activities</p> <p style="text-align: center;">7. Identify/Replicate Successful social networks</p> <ul style="list-style-type: none">• Observe/learn from HMEA/Aalto Entrepreneur Society/Other similar innovation societies for entrepreneurship and to formulate best practices for CAL4INO operations and disseminations• Utilize/test Laurea's existing open innovation web2.o initiatives (heimo, massidea.org, renderfarm etc..) for CAL4INO activities	<p style="text-align: center;">EXPERT CONTRIBUTION</p> <ul style="list-style-type: none">• Social media tools enabled curriculum change• E-learning methodologies/E-skills• Web2.o and Social media in pedagogical development/LbD• Creation of learning/entrepreneurial virtual communities• Innovation workshops
<p style="text-align: center;">Immediate Actions</p> <p>Preparation of CAL4INO communication materials for</p> <ul style="list-style-type: none">• Gathering of interest groups for cooperation and collaboration• Set-up project teams, theme teams and functional teams to achieve the goals <p>(After the project goals are clarified with all the partners)</p>	<p style="text-align: center;">Open Questions</p> <ul style="list-style-type: none">• Development and maintenance of web 2.0 by RISEBA?• Research findings from UC on the role of social and social capital networks• MySIE – active social networks by SIE• Laurea's Social Network Site?

9

10

Attachment 3 - Questionnaire used to evolve the portal framework

Dear CAL4INO community,

Many thanks for your initial ideas and suggestions towards the website development. In order to come to a unified decision on the vision and purpose for the website, we need your thoughts on the following questions. Please discuss the questions with your internal project team members. We could further discuss the questions during our group discussion in Cambridge.

1. Purpose of the website - who we are, our purpose, do everyone involved share a common vision for creation?
2. Why and for whom?
3. What is our content/who will take care?
4. What is our user's content? or what do expect users to do with/in our website?
5. Who are our target group/for whom we are creating value?
6. Value to our site?/Why would users visit or revisit us?
7. 24/7 support?
8. Resources for everything?
9. How to make it sustainable after CAL4INO?

See you in a few days !

Thank you!

Attachment 4 - Ideation presentation for first focus group

CREATIVE LEARNING PLATFORM/WEBSITE

- CREATE
- SHARE
- EVALUATE
- SOCIALIZE
- EXPERIENCE

- ✓ JOURNALS
- ✓ CASE PACKAGES
- ✓ INTERACTIVE WORKSHOPS
- ✓ CONNECT TO EXPERTS
- ✓ WEBINARS
- ✓ WEBCASTS

KEY ACTIVITIES BEFORE FEBRUARY 2011

- RESEARCH ON WEB 2.0 ENABLED TOOLS
- SURVEY, SELECTION AND TEST RUNS ON TOOLS FOR WEBCASTS/ WEBINARS
- DRAFT PLAN FOR CREATIVE LEARNING WEBSITE

Web 2.0 & Social Networks
WP7 – LAUREA UAS
20.10.2010

WP-7 GOALS

- Preparing a Social Media Tools package for Exploitation and Dissemination of project findings
- Introducing Web 2.0 tools for CAL4INO community activities

TASKS FOR CAL4INO GROUP

- SUGGESTIONS FOR WEBSITE FEATURES & TOOLS
- PARTICIPATION IN SURVEY ON WEB 2.0 TOOLS
- THEMES FOR WEBINARS/WEBCASTS (?)
- PARTICIPATION IN TEST RUNS OF WEBINARS
- DISTRIBUTION OF CLEAR TASK LISTS FROM EACH WP (?)

Attachment 5 - Communication materials from Project Day Event

Poster from Project Day Event



CAL4INO – Creative Activities In Learning For Innovation



CAL4INO investigates the role of creative activities in learning to enhance innovation. This EU project under the Life Long Learning (LLP) programme brings together an international group of innovators spreading the entrepreneurial spirits to produce EU policy level recommendations on the best practices for creativity and innovation.



Laurea and Social Media in CAL4INO

- Study on the adaptation of social media and other web 2.0 tools in enhancing creativity in educational, entrepreneurial and organizational processes
- Knowledge sharing with entrepreneurial networks using web 2.0 tools and social networks
- Creation of Wikiversity web page on Creative Entrepreneurship

Project Partners

- Laurea UAS (Finland)
- RISEBA (Latvia)
- University of Piraeus (Greece)
- University of Wuppertal (Germany)
- University of Cambridge (UK)
- Queens university (Belfast)
- COTEC (Portugal)
- Emerald publications (UK)
- Scottish Institute for Enterprise (Glasgow)

Project Outcomes

- Research methodology on the creative competencies in individuals
- Training modules for creativity and innovation
- Peer-reviewed open journal on social media
- Handbooks and manuals on best practices in fostering creativity and innovation




**For Internships/Project works,
Please Contact**

Vesa Taatila
+358400853464
vesa.taatila@laurea.fi

Kiruthika Srinivasan
+358401343719
kiruthika2.srinivasan@laurea.fi

Brochure from Project Day Event



CAL4INO- CREATIVE ACTIVITIES IN LEARNING FOR INNOVATION

Blending Creativity & Innovation
CAL4INO will use an interdisciplinary systems approach to identify specific conditions and factors that enable or inhibit creative innovation in educational, organizational & entrepreneurial processes.

Creating knowledge societies
The main research focus of CAL4INO is the creation of 'knowledge societies' with universities as clusters and ecosystems for fostering creativity and innovation.

Viral networking and social media perspectives
The overall objective is to create an extended ecosystem dedicated to creativity, innovation and enterprise based on Web 2.0 enabled social networks capable of organic growth, viral multiplication and sustainability.

Opportunities for students
Internships/Credits/Mini projects/Thesis/User insight research on

- Creative factors behind Entrepreneurship
- Needs and impact of creativity competencies on innovation - Surveys & Trainings
- Open, peer reviewed journal on social media
- Creative use of Web 2.0 tools & Social networks
- E-Learning tools/E learning environment
- Wikiversity page on 'Creative Entrepreneurship'
- Webinars, webcasting and live casting methodologies

And many more to develop with your creativity!

"Creativity is thinking up new things. Innovation is doing new things" - Theo-

Project Partners

- Laurea UAS (Finland)
- RISEBA (Latvia)
- University of Piraeus (Greece)
- University of Wuppertal (Germany)
- University of Cambridge (UK)
- Queens university (Belfast)
- COTEC (Portugal)
- Emerald publications (UK)
- Scottish Institute for Enterprise (Glasgow)

Please Contact
vesa.taatila@laurea.fi
kiruthika2.srinivasan@laurea.fi

WELCOME TO JOIN CAL4INO!

Photos from Project Day Event



Attachment 6 - Presentation slides from service staging

Web 2.0 & Social Networks
WP7 - LAUREA JAS
09.02.2011

1

WP-7 – GENERAL OBJECTIVES

- COLLABORATION AMONG CAL4INO COMMUNITY
- FACILITATE COLLABORATIVE AUTHORING/DISSEMINATION
- WEB BROADCASTING – VIRTUAL PARTICIPATION
- CONNECT HE’S, INNOVATION SOURCES, ORGANIZATIONS
- EMERALD – CREATE ‘CLOUD NETWORK’/OPEN JOURNAL SUPPORT
- INITIATE ‘OPEN INNOVATION’ – REPLICATE SOCIAL NETWORKS
- PROVIDE LONG TERM SUPPORT FOR TRAINING

2

CREATIVE LEARNING PLATFORM/WEBSITE

- CREATE
- SHARE
- EVALUATE
- SOCIALIZE
- EXPERIENCE

- ✓JOURNALS
- ✓CASE STUDIES
- ✓INTERACTIVE WORKSHOPS
- ✓CONNECT TO EXPERTS
- ✓WEBINARS
- ✓WEBCASTS

DELIVERABLES

EXTENDED SOCIAL NETWORK SITE

- Link Emerald+WP9+CAL4INO WEBSITE
- Allow easy linking with SNS’s
- Webinars – stream and store

REPORTS

- Interim
- Final
- Pilot demonstrations – Peter Kelly

KEY ACTIVITIES BEFORE FEBRUARY 2011

- RESEARCH ON WEB 2.0 ENABLED TOOLS
- SURVEY, SELECTION AND TEST RUNS ON TOOLS FOR WEBCASTS/WEBINARS
- DRAFT PLAN FOR CREATIVE LEARNING WEBSITE

5

EXTENDED SOCIAL NETWORK SITE

Wikiversity Learning Portal on ‘Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship’

6

“Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge. That’s what we are doing” – Jimmy Wales, Founder of Wikipedia

WIKIVERSITY

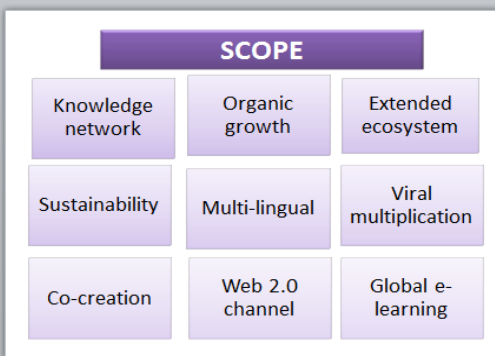
- English: Open Learning Community
- Français: Communauté pédagogique libre
- Česky: Česká Wikiverzita
- Italiano: L’università libera
- Rусский: Обучение
- Suomi: Vapaa oppimisen verkkoyhteisö
- Ελληνικά: Ελεύθερη Παιδαγωγική Κοινότητα
- Português: A universidade livre
- Other languages: Multilingual hub
- Deutsch: Lernen und Lehren
- Español: Comunidad de Aprendizaje Libre



9



10



- ADVANTAGES**
- A treasury of free and open resources
 - A handy and quick reference tool for learning contemporary topics
 - An interactive medium for sharing materials, resources and teaching experiences
 - A simple and easy tool for collaborative authoring, peer review, integration and global networking
 - A directory of social media tools and their applications in teaching, case studies and use case examples
 - An economical but effective medium for hosting and participating in e-courses, research projects, study groups etc.,
 - A sustainable channel for exploiting and disseminating the findings and results of CAL4INO during and beyond the project duration

"Significant emphasis is placed on the impact of EU co-financed projects and on the concrete plans for ensuring that what they produce will be widely known about and widely used.

The results generated, the lessons learned and the experience gained by each project team should be made available to the widest possible audience.

Their key objective is to maximize the impact of project results by optimizing their value, strengthening their impact, transferring them to different contexts, integrating them in a sustainable way and using them actively in systems and practices at local, regional, national and European levels.

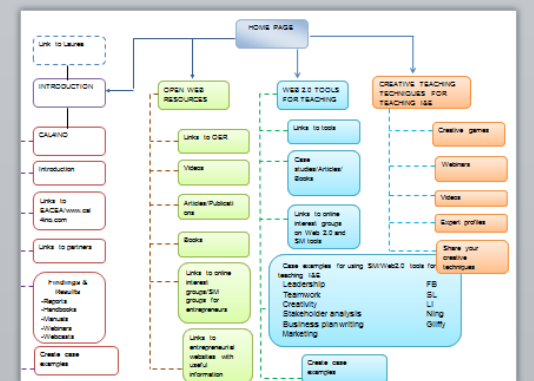
Well-planned and well-executed dissemination and exploitation ensure that project results have a reach beyond those directly involved in the consortium and an impact that is sustained beyond the project's lifetime"

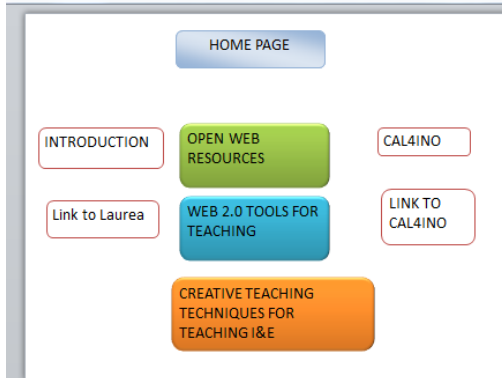
13

RELEVANCE TO EACEA DISSEMINATION POLICY

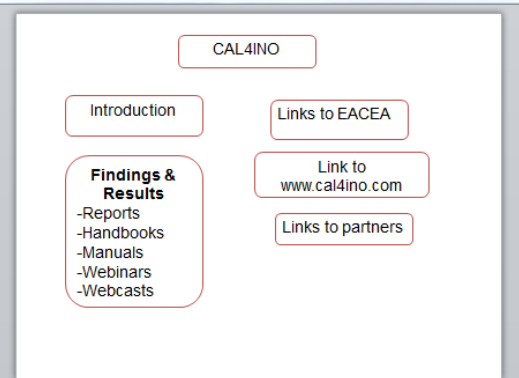
Results Category	Examples	Scope of Wikiversity Learning Portal
Products	<ul style="list-style-type: none"> • Guidance material for new approaches and methodologies; • Online education and training material (e-learning) 	✓
Methods	<ul style="list-style-type: none"> • Exchange of ideas and good practice. 	✓
Experiences	<ul style="list-style-type: none"> • Exchange of experience and best practice through the establishment of networks. • Transnational sharing of experience and best practice 	✓
European Cooperation	<ul style="list-style-type: none"> • Cross-cultural dialogue and co-operation; • New dialogue and partnerships between EU and non-EU countries. 	✓

14

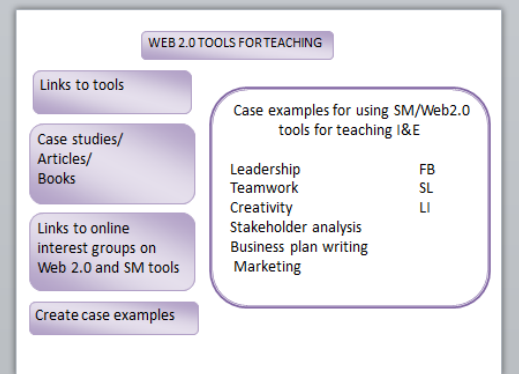




17



18



21

WP1. RISEBA – Project Management	Collaborative communication
WP2. UPRC, Greece – Quality Assurance	Interlinking diverse set of partners and targeted beneficiaries
WP3. BUW, Germany – Desk research & needs survey	Dissemination of survey results Links to depositories of useful scientific literature
WP4. UC, UK – Research methodology	Methodologies for research on creative activities through collaborative platform
WP6. RISEBA – Pilot demonstrations	Valorization of the findings/handbook on best practices
WP8. COTEC – Synthesis and Validation	Global platform for the dissemination
WP9. Emerald, UK - Dissemination	Popularizing the OPEN JOURNAL initiative
WP10. UPRC – Exploitation of results	Wikiversity portal as the web 2.0 platform linking the targeted beneficiaries and communities of practices for valorization.

22

S.No	Tasks	Status
1. Initiation and Concept Design (Inception)	1.1. Initial concept design	Completed
	1.2. Review	
	1.3. Final Concept design	
2. Webpage Planning & Design (Elaboration)	2.1.1. First draft	Completed
	2.1.2. Review	
	2.1.3. Final draft	
	2.2.1. First draft	
	2.2.2. Review	
	2.2.3. Final draft	
3. Execution & Development (Construction)	3.1.1. First draft	Ongoing
	3.1.2. Review	
	3.1.3. Final draft	
	3.2.1. First draft	
	3.2.2. Review	
	3.2.3. Final draft	
4. Implementation (Launch)	4.1. Test Launch	Ongoing (Completed by April 2011)
	4.2. Review	
	4.3. Final launch	



Attachment 7 - CAL4INO approval for portal development
Approval - Page-1

Proposal for Creating a Wikiversity Learning Portal on 'Web resources and Social Media Tools for Teaching Innovation and Entrepreneurship'



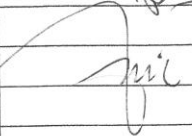
MINUTES OF THE PROPOSAL PRESENTATION – 09.02.11, Riga, Latvia

The proposal to create a collaborative learning portal in Wikiversity (www.wikiversity.org) under the title 'Web Resources and Social Media tools For Teaching Innovation And Entrepreneurship' was presented for review and discussions, by Kiruthika Srinivasan from Laurea University of Applied Sciences, Finland, the lead partner for WP-7. The aim of creating the portal was to make use of the web 2.0 enabled social networks as one of the more exciting and cost effective mechanisms for dissemination, valorization and sustainability. The collaborative portal would operate without boundaries and act as the foundation for the Extended Social Network Site (SNS) among educators and enthusiasts serving in the field of innovation and entrepreneurship. The objectives were,

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship.
2. To provide learning resources on various social media tools that can be used for teaching creatively.
3. To facilitate collaboration among the CAL4INO community by encouraging shared contribution, and collaborative authoring towards the development of the portal.
4. To provide links to proprietary educational resources

The proposal was reviewed in terms of the scope, the objectives and the portal design. Concerns were raised on the issues of the source of the content, the IP rights of the resources, the control of the content in the wiki, the administration of the portal and contribution from the CAL4INO partners. Practical solutions and modifications in the portal features were suggested. It was agreed that a group for European Innovators will be created in the portal as an additional feature. The proposal was accepted as the main deliverable from WP-7 unanimously.

Members Present

NAME & ORGANIZATION	SIGNATURE
Arthur Lindemanis, RISEBA, Riga	
Peter Kelly, Aalto University, Finland	
Alistair Fee, Queen's University, Belfast	
Clair Leitch, Queen's University, Belfast	
Joseph Hassid, UPRC, Greece	
Pedro Vilarinho, COTEC, Portugal	
Kiruthika Srinivasan, Laurea, Finland	

Approval - Page - 2

AJKee Says: 'without boundaries' ? explain

1) A. basic collecting of free + open source resources? (à la STVP as an example)

2 - ✓. Yes - who will provide this? Kit - I think in a generic way

3 - CAI + MO - shared content for CAI + MO only, or open to the world? T.B.C

4. Yes ✓ agreed

The proposal was agreed - (in principle) - However, the concerns ^{must} be satisfactorily ironed-out first.

European Innovators Group - what will it do? ~~But~~ With this in mind I will sign as a conditional draft

1) What is meant by exclusive & inclusive?

2) Who will do this?

3) Yes

4) Yes

Clare Lewis

1) I would use creative licensing tools / techniques

2) I would be restricted to social media

3) O2

4) O2

→ O2 ()

Attachment 8 - Questionnaire for usability testing

Executive summary

Laurea UAS is the leader for Work Package-7, with the theme 'Web 2.0 and Social Networks' for the EU -LLP project CAL4INO (Creative Activities in Learning for Innovation). WP- attempts to make use of the web 2.0 enabled social networks as one of the more exciting and cost effective mechanisms for dissemination, valorization and sustainability for CAL4INO.

Wikiversity (www.wikiversity.org) is a Wikimedia Foundation project devoted to learning resources, learning projects, and research for use in all levels of education. Teachers, students, and researchers join in Wikiversity to create open educational resources and collaborative learning communities.

A collaborative learning portal in Wikiversity under the title 'Web Resources and Social Media tools For Teaching Innovation and Entrepreneurship' is created for CAL4INO. The collaborative portal attempts to operate without boundaries and act as the foundation for the Extended Social Network Site (SNS) among educators and enthusiasts serving in the field of innovation and entrepreneurship. The portal also aims to facilitate collaboration among the CAL4INO community by encouraging shared contribution, and collaborative authoring towards the development of the portal. The objectives of the portal are,

- 1.To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship
- 2.To provide learning resources on various social media tools that can be used for creative teaching
- 3.To provide resources on creative teaching techniques with the CAL4INO members as major contributors
4. To create an exclusive webpage for disseminating the findings of CAL4INO

The unified vision of the Work Package on Web 2.0 and Social Networks is to create an extended ecosystem dedicated to creativity, innovation and enterprise based web 2.0 enabled social networks capable of 'organic growth', 'viral multiplication' and 'sustainability'. The collaborative learning portal blends with this vision with the scope of creating a 'knowledge network' which will promote sharing of teaching resources, creative activities, learning experiences and academic endeavors across a global community. The scope can be well extended to connect the global community to the 'open journal' deliverable planned as a measure of project dissemination, by Emerald publications.

You can locate the portal by,

1. Going to www.wikiversity.org and
2. Giving the title 'Web resources....' in the search window or

3. Copying and pasting the following link in your web browser -
http://en.wikiversity.org/wiki/Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship

Kindly help us to improve this collaborative learning portal by providing your valuable feedback. Please consider the following questions. Kindly send us your responses and suggestions for next steps.

1. Does this wiki page have a simple and clear layout?
2. Are the objectives of this portal understandable to the visitors?
3. Is the navigation easy to do?
4. Are the titles and sub titles well organized?
5. Are the links easy to follow?
6. Do you think the content of the page is relevant to the title?
7. Do you find the links useful?
8. As an educator yourself, do you think that this page will be useful to other teachers?
9. Could you suggest a few ways to market/popularize this page and attract more users and contributors?
10. As a user, what do you think will motivate other users towards the sustainable development of this page?

SWOT

From your point of view, could you please list the Strengths, Weaknesses, Opportunities and the Threats (SWOT) for this collaborative learning portal?

- Strengths
- Weaknesses
- Opportunities
- Threats

VALUE MAPPING

Value mapping means building a visual matrix that quickly and clearly defines the value/ features /functions of interest of a service, a product, a plan or a website.

Kindly spare us a few minutes of your valuable time to browse the Wiki portal on 'Web Resources and Social Media tools For Teaching Innovation and Entrepreneurship' and list the points/features in the portal that is of interest/value to you. You could use the stick notes to post your value points.

Attachment 9 - Communication materials from Learning by Development Day Event


Presentation Slides

Wikiversity – A Global Learning Environment

Kiruthika Srinivasan
13.04.2011

“Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge. That’s what we are doing” – Jimmy Wales, Founder of Wikipedia

GLOBAL, MULTI LINGUAL E-LEARNING ENVIRONMENT



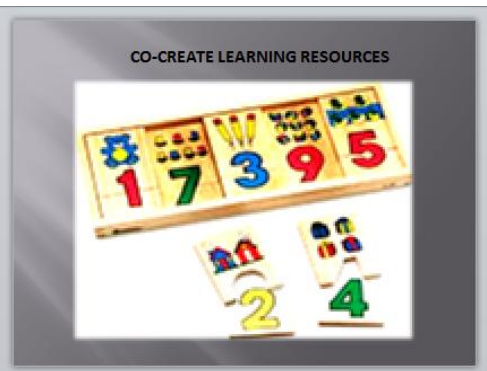
WIKIVERSITY

English <i>Open Learning Community</i>	Français <i>Communauté pédagogique libre</i>
Deutsch <i>Lernen und Lehren</i>	Česky <i>Česká Wikiverzita</i>
Español <i>Comunidad de Aprendizaje Libre</i>	Italiano <i>L'università libera</i>
Português <i>A universidade livre</i>	Русский <i>Обучение</i>
Ελληνικά <i>Ελεύθερη Παιδαγωγική Κοινότητα</i>	Suomi <i>Vapaa oppimisen verkkoyhteisö</i>

Other languages
Multilingual hub



3



4



Today's Featured Project

Introduction to Computers



Introduction to Computers is a very gentle introduction to computers for complete beginners. The course was originally taught to a real-world class and largely consists of the reworked contributions of individual students. The 12 lessons are each framed around concepts and terms used in a particular area of computing. The terms are explained simply and clearly, with the use of plenty of images. The students have also linked the course into many of their podcasts where they explain things in their own words. The value of this course lies particularly in its orientation towards complete beginners and its comprehensiveness.

[Visit this resource](#) [See more featured content](#)

Individual's learning

Building new competence

OPEN COLLABORATIVE ENVIRONMENT



3

CO-CREATE LEARNING RESOURCES



4



Today's Featured Project
Introduction to Computers

Introduction to Computers is a very gentle introduction to computers for complete beginners. The course was originally taught to a real-world class and largely consists of the reworked contributions of individual students. The 12 lessons are each framed around concepts and terms used in a particular area of computing. The terms are explained simply and clearly, with the use of plenty of images. The students have also linked the course into many of their podcasts where they explain things in their own words. The value of this course lies particularly in its orientation towards complete beginners and its comprehensiveness.

Visit this resource - see more featured content



LessonPage:Storyboarding Artwork

This is the first lesson of the Storyboard Artwork Project

What is storyboarding artwork?

Tux Paint is a fun program that kids can use to create beautiful completed pieces of artwork which can be added to a scene.

Tux Paint can be a useful tool for creating storyboards by how can draw human figures in a variety of poses and from a variety of angles.

Examples of Artwork for Storyboarding

The "About Me" Page for Robert Elliott

7

Human Genetic Uniqueness Project

"We cannot fully understand human genome function until we have identified genetic features that underlie uniquely human anatomical, physiological, behavioral, and cognitive characteristics."¹

The **Human Genetic Uniqueness Project** allows Wikiversity students to join in the search for genes that account for the genetic differences between humans and our closest relatives. This project serves as a portal for learning about human biology. Student activities center on accessing genome databases and analysis of differences between human genes and the genes of other species. Background learning topics include learning about genes, and genome sequencing projects.

Comments (1)

- 1 Project participants
- 2 Required reading
- 3 A starting point
- 4 Learning objectives
- 5 See also
- 6 External links
- 8 Bibliography

8

Collaborative Learning Resource Portal

- A treasury of free and open resources
- A handy and quick reference tool for learning contemporary topics
- An interactive medium for sharing materials, resources and teaching experiences
- A simple and easy tool for collaborative authoring, peer review, integration and global networking
- A directory of social media tools and their applications in teaching, case studies and use case examples
- An economical but effective medium for hosting and participating in e-courses, research projects, study groups etc.,
- A sustainable channel for exploiting and disseminating the findings and results of CAL4INO during and beyond the project duration.

9

INDIVIDUAL LEARNING | COMMUNITY'S LEARNING | CREATIVITY

Web Resources and Social Media Tools for Teaching Innovation and Entrepreneurship

Introduction

Welcome to the collaborative learning portal on **Web Resources and Social Media Tools For Teaching Innovation and Entrepreneurship**. The structure of this portal is:

1. To create an inclusive and extensive collection of free and open online resources for education in the field of innovation and entrepreneurship.
2. To provide learning objectives or course social media tools that can be used for teaching purposes.
3. To serve as a platform for sharing creative activities and teaching techniques practiced by educators.
4. To disseminate the findings and outcomes from the CAL4INO (Creative Activities on Learning For Innovation) project for the benefit of everyone.

Web 2.0 Tools for Teaching

This page contains information on selected social media tools and recommendations on how to use them efficiently in teaching. It will also contain case studies and teaching resources collected in social media that can be shared and used by any teacher at any given time. Practical teaching cases and case examples on the application of different web 2.0 tools for teaching for essential topics under entrepreneurship will be included. Information and links to groups of educators, entrepreneurs and target markets which work in the community's social networks are also included.

- Links to tools
- Case studies/articles/books
- Online interest groups on Web 2.0 and Social Media tools
- Case examples for using Social Media/Web 2.0 tools for teaching Innovation & Entrepreneurship
- Create case examples

Open Web Sources

This page provides links to a treasury of teaching resources that are available on the internet that could be used by teachers of innovation and entrepreneurship. This also

PARTNERSHIP | AUTHENTICITY | EXPERIENTIAL NATURE

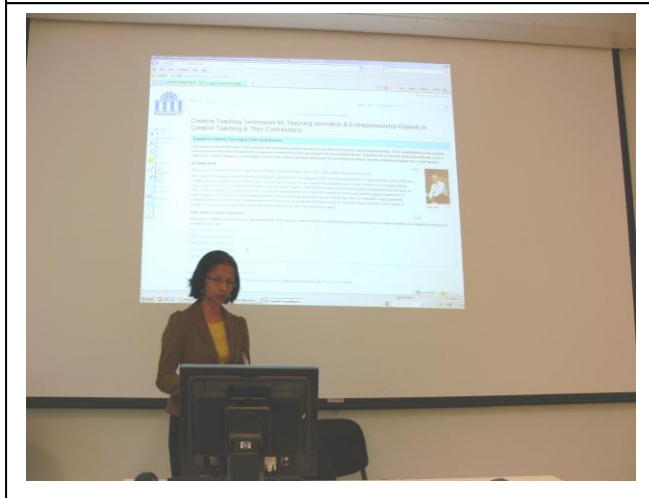
10

<p>STRENGTHS</p> <ul style="list-style-type: none"> Global Learning Community Open Collaboration Content in 11+ Languages Sustainability User Generated Content Knowledge Network E-learning medium Simple & Cost free 	<p>WEAKNESS</p> <ul style="list-style-type: none"> Learning Project Identity? Clarity? User Motivation? Popularity? Boundaries for inclusion? User - Lost in the crowd?
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> Research Projects Collaboration Wiki Learning Projects International R&D groups Global Networking Freedom to develop & to design 	<p>THREAT</p> <ul style="list-style-type: none"> Threat of content deletion Editing freedom - Mutation of content

11

12

Photos from Learning by Development day



Attachment 10 - Final report on the portal submitted to CAL4INO (Abridged Version)

FINAL REPORT FOR THE DELIVERABLE 'EXTENDED SOCIAL NETWORK SITE (ESNS)'
[Plan for Creating a Collaborative Learning Portal on 'Web resources and Social Media Tools for Teaching Innovation and Entrepreneurship' in the Web 2.0 platform www.wikiversity.org]

Web 2.0 and Social Networks

WP-7 - Laurea UAS, Finland

Kiruthika Srinivasan - 04/2011

TABLE OF CONTENTS

S.no	Title
1	Executive summary
2	Background
3	Aims & objectives
4	Issues and potential solutions
5	success criteria
6	Stakeholders, beneficiaries, needs & expectations
7	Mechanisms to engage target groups
8	Inventory of available services and content
9	Relevant project content
10	Tasks, schedules and required resources
11	Partner web 2.0 and social network plans
13	Quality assurance plan for the planning & implementation of the collaborative learning portal

EXECUTIVE SUMMARY

The WP-7 under the theme 'Web 2.0 and Social Networks' attempts to make use of the **web 2.0 enabled social networks as one of the more exciting and cost effective mechanisms for dissemination, valorization and sustainability** for CAL4INO.

Wikiversity (www.wikiversity.org) is a [Wikimedia Foundation](#) project devoted to [learning resources](#), [learning projects](#), and [research](#) for use in all [levels](#) of education [Teachers](#), [students](#), and [researchers](#) join in Wikiversity to create [open educational resources](#) and collaborative [learning communities](#).

This report provides an elaborate account of the background and the scope of creating a collaborative learning portal in Wikiversity for CAL4INO. The collaborative portal attempts to operate without boundaries and act as the foundation for the **Extended Social Network Site (SNS)** among educators and enthusiasts serving in the field of innovation and entrepreneurship.

Aim

The aim is to create a collaborative learning portal in Wikiversity (www.wikiversity.org) under the title 'Web Resources and Social Media tools For Teaching Innovation And Entrepreneurship'.

Objectives

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship
2. To provide learning resources on various social media tools that can be used for teaching creatively.
3. **To facilitate collaboration among the CAL4INO community** by encouraging shared contribution, and collaborative authoring towards the development of the portal.

The unified vision of the Work Package on Web 2.0 and Social Networks is **to create an extended ecosystem dedicated to creativity, innovation and enterprise based web 2.0 enabled social networks capable of 'organic growth', 'viral multiplication' and 'sustainability'**. The collaborative learning portal blends with this vision with the scope of creating a 'knowledge network' which will promote sharing of teaching resources, creative activities, learning experiences and academic endeavors across a global community. The scope also includes creating an exclusive webpage for disseminating the findings of CAL4INO providing links to the participating organizations as and when they contribute their research finding free for general public. The scope can be well extended to connect the global community to the **'open journal'** deliverable planned as a measure of project dissemination, by Emerald publications.

The background, the scope, the vision, the stake holders, the design and the issues and solutions are elaborated in the main document. The **text in red** reiterates the text from the CAL4INO project summary for WP-7, as a means to show the compatibility of the portal creation with the expected deliverable of WP-7, that is the Extended Social Network Site (ESNS).

Web 2.0 and Social Networks
WP-7 - Laurea UAS, Finland

Proposal for Creating a Wikiversity Learning Portal on 'Web resources and Social Media
Tools for Teaching Innovation and Entrepreneurship'

"Imagine a world in which every single person on the planet is given free access to the sum of all human knowledge. That's what we are doing" - Jimmy Wales, Founder of Wikipedia

BACKGROUND

Activities that promote interaction and collaboration with their peers are becoming an integral part of how students learn. As a result, many educators are moving away from instructor - centered methods of teaching to more contextual learning and real - world problem - solving techniques. The new Web provides the tools and technologies that can support educators in creating a rich, collaborative learning atmosphere in their online classrooms (Lightner, Bober, & Willi,2007)⁹.

Web 2.0 tools represent opportunities for people to collaborate and share knowledge in important new ways and this new generation of Internet-based collaborative tools, has increased in popularity (Gerald C. Kane and Robert G. Fichman, 2009)¹⁰. Web 2.0 tools foster interaction, collaboration, and contribution. An essential feature is user generated content enabling sharing, co-creating, co-editing, and co-construction of knowledge reflecting the collective intelligence of the users.

Wikipedia defines social media as 'all online tools and platforms that people use to share opinions, insights, experiences and perspectives with each other'. The social web is a place where people with common interests gather to share thoughts and comments. Importantly, social media holds increasing sway over public opinion. Social media is categorized by their tools such as blogging, Twitter, social networking, wikis, RSS, photo sharing, video sharing, podcasting, widgets, chat rooms, message boards etc., But social media is more a behavior than a set of tools. In other words, social media is more about the ideas that you share, collaborate on, create and participate in rather than observe (Susan Rice Linclon, 2009)¹¹. Social networking tools mediate between the knowledge of the individual and their contribution to knowledge building within the community. In the Web 2.0 environment, social networking is linked to technological services and software that make it possible for people to communicate with others from anywhere, at any time. Social networking sites are online spaces that can be customized to a large extent by their users, providing space for personal profiles, which users complete in order to make connections with others (Charlotte N. Gunawardena*, Mary Beth

⁹ Cited in Using Wikis for online collaboration, James A.West, Margaret L.West, 2009, p.2

¹⁰ The shoemaker's children: using wikis for information systems teaching, research and publication, *MIS Quarterly Vol. 33 No. 1, pp. 1-17/March 2009*

¹¹ Mastering Web 2.0, P.9,10, Kogan Page publications

Hermans, Damien Sanchez, Carol Richmond, Maribeth Bohley and Rebekah Tuttle, 2009)¹² . It is an immense challenge to the educators around the world to select a specific set of tools among the array of social networks and web 2.0 tools, that facilitate collective cooperation and learning interactions. Wikis, often referred to as the tool for collective intelligence is of great interest to online educators and trainers that enables collaborative editing of documents on the web.

Daniel J. Barrett A¹³ defines wiki as a website that lets people freely create, edit, and link a collection of articles. Wikis allow the content and the structure to be changed by a community. Wikis are a great way for a group of people to coordinate and create content, even if that group is made up of thousands of people in different places.

Wikiversity (www.wikiversity.org) is a contemporary development of Wikipedia, the popular wiki encyclopedia used by millions of people around the globe. [Wikiversity](#) is a [Wikimedia Foundation](#) project devoted to [learning resources](#), [learning projects](#), and [research](#) for use in all [levels](#), types, and styles of education from pre-school to university, including professional training and informal learning. [Teachers](#), [students](#), and [researchers](#) are invited to join in creating [open educational resources](#) and collaborative [learning communities](#). Wikiversity is a learning community. The Wikiversity community aims to further the discovery and distribution of knowledge in a very natural way, by helping people to learn and to share learning resources. (Source/More Info: <http://en.wikiversity.org/wiki/Wikiversity:FAQ>). Wikiversity is designed to collect a range of learning materials for various uses: to create learning groups, to conduct courses, to host and facilitate research communities, to share ideas and learning or teaching materials. Wikiversity is a place to share community. It is hoped that Wikiversity will not only provide spaces for persons to form various communities of learning and discovery, but also provide a place where service, learning, and research can be integrated in meaningful ways that benefit individuals, larger communities and our global society (Wikiversity, http://en.wikiversity.org/wiki/Wikiversity:What_is_Wikiversity%3F)

1.1 AIM, OBJECTIVES AND SCOPE

1.1.1 AIM

To create a collaborative learning portal in Wikiversity (www.wikiversity.org) under the title 'Web Resources and Social Media tools For Teaching Innovation And Entrepreneurship'. The aim well relates to the theme of the WP-7, which attempts to make use of the **web 2.0 enabled social networks as one of the more exciting and cost effective mechanisms for dissemination, valorization and sustainability**. The collaborative portal will operate without bounda-

¹² A theoretical framework for building online communities of practice with social networking tools *Educational Media International* Vol. 46, No. 1, March 2009, 3-16

¹³ MediaWiki, O'Reilly publications, 2008, P.1

ries and will act as the foundation for the **Extended Social Network Site (SNS)** among educators and enthusiasts serving in the field of innovation and entrepreneurship.

1.1.2 OBJECTIVES

1. To create an exclusive and extensive collection of free and open online resources for educators in the field of innovation and entrepreneurship. The portal will be **will act as a ‘Social Network Site’ linking creative professionals promoting entrepreneurship among students. It will also serve as a platform for sharing creative ways/activities practiced by educators for teaching innovation and entrepreneurship. . It will also serve as a platform for sharing creative ways/activities practiced by educators for teaching innovation and entrepreneurship.**
2. To provide learning resources on various social media tools that can be used for teaching creatively. The website will contain a set of social media tools and recommendations on how to use them efficiently. It will also contain case-studies and teaching resources published in social media that can be taken into use by any teacher at any given time. Practical teaching cases and case examples on the application of different web 2.0 tools for teaching the essential topics under entrepreneurship will be included.
3. **To facilitate collaboration among the CAL4INO community** by encouraging shared contribution, and collaborative authoring towards the development of the portal. The development will also lead to the creation of ‘knowledge societies’ among other **communities of practice** in innovation and entrepreneurship.

1.1.3 SCOPE

The unified vision of the Work Package on Web 2.0 and Social Networks is **to create an extended ecosystem dedicated to creativity, innovation and enterprise based web 2.0 enabled social networks capable of ‘organic growth’, ‘viral multiplication’ and ‘sustainability’**. The collaborative learning portal blends with this vision with the scope of creating a ‘knowledge network’ which will promote sharing of teaching resources, creative activities, learning experiences and academic endeavors across a global community.

The scope also includes creating an exclusive webpage for disseminating the findings of CAL4INO providing links to the participating organizations as and when they contribute their research findings free for general public. The scope can be well extended to connect the global community to the **‘open journal’** deliverable planned as a measure of project dissemination, by Emerald publications.

Life Long Learning Programme gives great importance to the project results and their dissemination methods. To quote from the EACEA guidelines¹⁴ on the project dissemination and exploitation of Results;

“Significant emphasis is placed on the impact of EU co-financed projects and on the concrete plans for ensuring that what they produce will be widely known about and widely used. The results generated, the lessons learned and the experience gained by each project team

¹⁴ LLP Project Handbook, P.21-23

should be made available to the widest possible audience. The primary means of making this happen are the twin activities of dissemination and exploitation, also known together as valorization. Their key objective is to maximize the impact of project results by optimizing their value, strengthening their impact, transferring them to different contexts, integrating them in a sustainable way and using them actively in systems and practices at local, regional, national and European levels. Well-planned and well-executed dissemination and exploitation ensure that project results have a reach beyond those directly involved in the consortium and an impact that is sustained beyond the project's lifetime”

Results Category	Examples	Scope of Wikiversity learning Portal
<i>Products</i>	<ul style="list-style-type: none"> • <i>Guidance material for new approaches and methodologies;</i> • <i>Online education and training material (e-learning)</i> 	✓ ✓
<i>Methods</i>	<ul style="list-style-type: none"> • <i>Exchange of ideas and good practice.</i> 	✓
<i>Experiences</i>	<ul style="list-style-type: none"> • <i>Exchange of experience and best practice through the establishment of networks.</i> 	✓
<i>European Cooperation</i>	<ul style="list-style-type: none"> • <i>Transnational sharing of experience and best practice;</i> • <i>Cross-cultural dialogue and co-operation;</i> • <i>New dialogue and partnerships between EU and non-EU countries.</i> 	✓ ✓ ✓

(EACEA Project Handbook, P.22-23)

The scope of the proposed learning portal in Wikiversity effectively matches the expectations (mentioned above) of the funding agency. The scope is strengthened by the following advantages of utilizing the Wikiversity open collaboration platform;

- ✓ A source of open and global learning movement
- ✓ Possibility to produce content in many languages - Czech, German, Greek, English, Spanish, Finnish, French, Italian, Japanese, Portuguese, Russian and also , ‘Beta Wikiversity’ for incubating new language projects
- ✓ Collaboration by educators around the world and the possibilities of new professional networks and research projects
- ✓ Co-creation by users and continuous content generation even after CAL4INO - a useful, meaningful and perpetual deliverable for CAL4INO that will grow continuously after the project’s duration
- ✓ An efficient web 2.0 channel for hosting and developing e-learning projects through a simple, effective, easy to use and cost free website

On a broader scale, the scope of this proposal includes the following;

- Integrating the vast resources for teaching innovation and entrepreneurship omnipresent in the world of web 2.0 under a universal umbrella for united learning.
- Exploiting and as well interlinking the various **social networks (Facebook, YouTube, Second Life etc.)** to attract and connect individual users, communities of practice and organizations.
- Generating value propositions through continuous user generated content **enabling virtual participation** and co-creation.
- **Connecting formal institutional sources of innovation, knowledge and assistance such as the HEI's, associations, incubators, research parks and other actors at local, national, EU and global level.**
- **Creating a kind of 'cloud network' by enabling seamless linkages with other portals and content.**
- Contributing towards a multi-linguistic, open and global learning platform.

The scope represents the development of Wikiversity portal during and beyond the duration of CAL4INO, starting from February 2011. By utilizing the free, simple and powerful platform that is already existing, the proposal on Wikiversity learning portal economically leverages the creative contributions of academic community towards a unified mission of creating learning resources that are beneficial to millions of scholars and educators alike.

1.2. ISSUES AND POTENTIAL SOLUTIONS

In practical terms, unforeseen and minor issues may arise during the construction and development of the learning portal in Wikiversity, in the following contexts;

- Web page navigation and taxonomy
- Quality of page content
- User motivation and sustainable development of learning resources
- Awareness about this portal among the academic community

The solutions for the issues mentioned above are thought of in terms of,

- Well planned, simple and effective page design and clarity in taxonomy design
- Inclusion of resources of quality and diversity
- Active interactions in the page and efficient administration to attract and motivate users towards the continuous generation of content
- Intensive communication measures to create awareness among international academic communities

1.3. SUCCESS CRITERIA

The following factors could outline the success criteria for this proposal either qualitatively or quantitatively;

- Growth in the number and versatility of learning resources

- Diversity of collaborators and their interactions
- Creation of new networks/research groups/learning projects etc.,

1.4. STAKEHOLDERS, BENEFICIARIES, NEEDS & EXPECTATIONS

Internal stakeholders

- CAL4INO project partners
- Academicians from CAL4INO project partners' networks
- CAL4INO subcontractors/experts

External stakeholders

- Educators and academicians around the globe, in the field of innovation and entrepreneurship
- Social media experts
- Experts in on-line and virtual education with web 2.0 tools
- Enthusiasts and activists in open collaborations
- Entrepreneurship promoting organizations and entrepreneurial groups
- Organizations/websites offering free and open resources

The beneficiaries

- Educators and academicians around the world
- Faculty, trainers, scholars and education specialists
- Entrepreneurs and Innovators

Needs

The target academic community is presumed to have a plethora of needs when it comes to the utilization of web 2.0 tools and social media for teaching purposes. The basis of their needs could arise from their quest to learn and share their knowledge and experience in the application of technology in teaching, new and creative ways of teaching innovation and challenges in teaching entrepreneurship. The time that requires to be spent for searching and finding valuable resources that are spread around the web also creates a dire need for creating a sort of an information point that shows the short cuts to reach the resources quickly. Overall, the justification for the creation of this portal is built on the following identified needs that exist in the academic community,

- A treasury of free and open resources that could be used by teachers of innovation and entrepreneurship
- A handy and quick reference tool for learning contemporary topics under the field of entrepreneurship
- An interactive medium for sharing materials, resources and teaching experiences among educators around the world
- A simple and easy tool for collaborative authoring, peer review, integration and global networking
- A directory of social media tools and their applications in teaching, case studies and use case examples

- An economical but effective medium for hosting and participating in e-courses, research projects, study groups etc.,
- A sustainable channel for exploiting and disseminating the findings and results of CAL4INO during and beyond the project duration

Expectations

The creation of this learning portal can be assumed to raise a number of expectations from the target groups, the CAL4INO project team and also the funding organization. It is assured that the proposal will be implemented efficiently and reviewed continuously to meet the following expectations of significance;

- Active participation by the CAL4INO partners and other wiki activists in the development of the learning portal
- Growth of the learning portal into an unique and exclusive learning resources for teaching innovation and entrepreneurship
- Development of the portal into an extended social network site for educators and experts in the field of innovation, entrepreneurship and social media tools
- Organic growth and sustainability of the portal beyond the duration of CAL4INO

1.5. MECHANISMS TO ENGAGE TARGET GROUPS

It is implicit and foreseen that the successful development of the learning portal largely depends on the active participation by the target groups and their continuous contribution in terms of content and contexts. As a portal of open collaboration that grows solely by the user generated content, it becomes inevitable to plan ahead, the channels and mechanisms for communicating about the portal and its purpose to the target groups and gather their commitment from the very early stages of development.

The primary target group of educators and academicians will be approached through various channels with information about the learning portal. They will be encouraged to visit the website and as well edit and generate appropriate content. The user group will be motivated to share their resources, creative activities and experiences for the benefit of thousands of others. To engage the target groups, the portal will be promoted through,

- E-invitations to educators/experts /organizations inviting contributions (Global-ly)
- Embedding the link in CAL4INO website CAL4INO partners' organizational websites
- Publishing the link in CAL4INO experts' social media profiles and groups
- Embedding links/invitation for participation in design forums/online journals

- Promoting the learning portal in universities/institutions/organizations (offering study programmes /courses in innovation studies/entrepreneurship education) inviting experts' participation
- Distribution of information on the portal in CAL4INO seminars, conferences, workshops etc.,

1.6. INVENTORY OF AVAILABLE SERVICES AND CONTENT

The development of the collaborative learning portal utilized the following services for the design, creation and implementation.

- i. IT infrastructure and equipment (computers, internet etc.,) available for use in Laurea UAS
- ii. IT experts and web 2.0 expert panel in Laurea for guidance and quality assurance
- iii. Wikiversity's (www.wikiversity.org) free and open web 2.0 platform for the portal development

The content for the portal was gathered from a number of web resources, academic articles, CAL4INO experts and open educational resources. The layout for distribution of the content (portal layout) is given in **Appendix - 1**. The link for accessing the portal is http://en.wikiversity.org/wiki/Web_Resources_and_Social_Media_Tools_for_Teaching_Innovation_and_Entrepreneurship

1.7. RELEVANT PROJECT CONTENT

Since the portal was planned to serve as an important medium of dissemination for the CAL4INO project, an exclusive page was created with content from the CAL4INO project management documents. The background information for CAL4INO, the partners and the activities intended are given in the project's wiki page. The page can be accessed at <http://en.wikiversity.org/wiki/CAL4INO>

1.8. TASKS, SCHEDULES AND REQUIRED RESOURCES

S.No	Tasks	Task Lead	Other Resources	Start	End	Status
1. Initiation and Concept Design (Inception)	1.1. Initial concept design 1.2. Review 1.3. Final Concept design	Kiruthika Kiruthika, Vesa Kiruthika	VesaTaaitila, Ville Saarikoski, Irma Mänty - Vesa Taaitila	11/2010	12/2010	Completed
2. Webpage Planning & Design (Elaboration) 2.1. Home page layout 2.2. Sub page layout	2.1.1. First draft 2.1.2 Review 2.1.3 Final draft 2.2.1. First draft 2.2.2 Review 2.2.3 Final draft	Kiruthika & Vesa Kiruthika & Vesa	Ali Uzun, Paresh Rathod Ali Uzun, Paresh Rathod	01/2011	01/2011	Completed
3. Execution & Development (Construction)	3.1.1. First layout 3.1.2 Review 3.1.3 Final layout	Kiruthika, Ali Uzun & Vesa	Robert Guinness & Paresh Rathod	02/2011	03/2011	Completed
4. Implementation (Launch)	Communication to CAL4INO members and disseminating the link	Kiruthika	Vesa	03/2011	04/2011	Completed
5. Assessment/ Feedback	Framing methodology, disseminating and gathering feedback	Kiruthika	Vesa	04/2011	04/2011	Completed
6. Maintenance/ Updating	Design change, Content addition & Editing	CAL4INO	CAL4INO	04/2011	Continuous process	Ongoing

1.9. PARTNER WEB 2.0 AND SOCIAL NETWORK PLANS

Each of the CAL4INO partners has their individual share of participating, supporting and contributing in the portfolio of activities around the 'Web 2.0 and Social networks'. The learning portal will function as an important point to interconnect and accumulate their individual contributions. The portal will act as a significant medium for the valorization of CAL4INO project activities. The possible ways in which the Laurea will support the partners' project activities through the learning portal and other web 2.0 methodologies is presented below.

Name of partner/WP	Mode of support by WP-7
WP1. RISEBA - Project Management	Providing collaborative communication through Wikiversity portal. Shared learning methodologies through webinars and virtual interactions through Laurea's Adobe Connect Pro video conferencing service
WP2. UPRC, Greece - Quality Assurance	Interlinking diverse set of partners and targeted beneficiaries by encouraging profile sharing and interactions through Wikiversity portal. Adding value through transnational activities such as international surveys and interactive webinars
WP3. BUW, Germany - Desk research & needs survey	Supporting and distributing needs survey to Laurea's partner networks through e-survey tools. Aiding the dissemination of survey results through Wikiversity portal for the benefit of general public. Providing links to depositories of useful scientific literature and bibliographies. Enabling reviewing and comments on papers and documents for the desk analysis through Wikiversity portal.
WP4. UC, UK - Research methodology, tools and comparative analysis	Providing an open collaborative platform through Wikiversity for developing, designing and validating methodologies for research on creative activities. Suggesting knowledge management tools for use in entrepreneurial learning.
WP5. QUB, UK - Training module development for benchmarking best practices	Disseminating bench mark training modules for creativity and innovation training through webinars and Wikiversity portal. Suggesting webcasting/livcasting tools for reaching wider audience.
WP6. RISEBA - Pilot demonstrations & impact survey	Popularizing and communicating the pilot demonstrations through virtual communication tools. Valorization of the findings/handbook on best practices for creative learning for innovation through Wikiversity.
WP8. COTEC, Portugal - Synthesis and Validation	Providing a global platform for the dissemination of findings. Expert contribution on the best practices of using web 2.0 tools in the learning process.
WP9. Emerald, UK - Dissemination	Providing an efficient platform through Wikiversity for the open journal initiative. Popularizing the initiative by providing links to Emerald website. Acting as an effective communication channel for the dissemination activities and conference publications.
WP10. UPRC, Greece - Exploitation of results	Suggesting tools for webcasting for the closing conference 3. Providing the Wikiversity portal as the web 2.0 platform linking the targeted beneficiaries and communities of practices for valorization.

QUALITY ASSURANCE PLAN FOR THE PLANNING & IMPLEMENTATION OF THE COLLABORATIVE LEARNING PORTAL

The collaborative learning portal is an important deliverable from the WP-7. Very clear and through QA methodology was set up and followed in every stage of the creation and implementation of the wiki portal. The QA groups for WP-7 consisted of the following members;

1. Internal and Operational QA group:

Kiruthika Srinivasan - Project Manager for WP-7

Vesa Taatila - Senior Lecturer/Regional Development Director, Researcher and Trainer for WP-7

Ville Saarikoski - Senior Lecturer, Laurea UAS

2. External and Supervisory QA group

Arturs Lindemanis - Project Manager, CAL4INO

All CAL4INO members

Peter Kelly - Professor, Aalto University

3. Expert Panel - Web 2.0 and Technical issues

Paresh Rathod - Senior lecturer, Laurea UAS

Robert Guinness - Project Worker, Simfo Founder, Laurea UAS

Simos Retalis - Assistant Professor, University of Piraeus

Irma Mänty - Development Manager for E-Learning, Laurea UAS

The QA process followed is tabulated below, adapting the QA plan suggested by Prof Joseph Hassid, responsible for the QA for CAL4INO.

QA PLAN FOR THE COLLABORATIVE PORTAL DEVELOPMENT

Quality Issue	Focus group involved	Met-hods/Tools	Timing of QA tests	Deficien-cies/Risks identified	Quality Indica-tors	Comments
1. Web 2.0 platform selection	Internal QA group, External Web 2.0 panel	Meetings, discussion, desk research and brain storming	During decision making (for the Extended Social Network Site - ESNS) (11/2010)	A commercial website as ESNS will have issues of funds for development, resources for maintenance and updating and access rights	i. Cost free ii. Open collaboration features iii. Multilingual iv. Sustainable v. Communication and dissemination features	Different web 2.0 platform were considered to function as the ESNS for CAL4INO. After QA discussions the wikiversity was selected to be the most suitable
2. Webpage Planning & Design	Internal QA group,	Meetings, discussion, desk research and brain storming, blue printing	After selection and before arriving at the final concept and layout (01/2011)	Certain design features were not possible and there was the need to adapt to a wiki's restricted functions	i. Number of created pages ii. Additional page for CAL4INO dissemination and exploitation iii. Well defined taxonomy	The content, the navigation features and the page taxonomy was after the QA process
3. Execution & Development	Internal QA group, External Web 2.0 panel and External and Supervisory QA group	Meetings and discussions. Presentation of the portal design and layout to the CAL4INO members in the Internal meeting in Riga in February 2010 (Appendix-3)	During the construction of the home page (02/2011 -03/2011)	Content deletion, user motivation issues, issues of continuous user motivation	i. Number of informative links added ii. Number of visitors and content producers	The content generation needs to be initiated by the CAL4INO members and gradually new users have to be invited
4. Implementation	Internal QA group	Discussions and group meetings for content generation. Meetings for layout revisions. Presentation of the portal in the Learning by Developing day in Laurea UAS in April 2011	After the completion of the portal construction and initial content addition (04/2011)	Issues in attracting users, content generation and design restrictions in wikis	i. Positive user experience ii. Simple and clear layout for editing iii. Useful and informative content	Certain navigation features were changed after the QA in the implementation period. Sub pages were created for easy navigation and more content addition
5. Assessment/ Feedback	Internal QA group, External Web 2.0 panel and External and Supervisory QA group	User experience mapping, value mapping, feedback questionnaire, open feedback, and observa-	A few weeks after the implementation (04/2011)	Issues in link descriptions, context of certain resources, choice of targeted users and challenges in popularizing the portal	i. Short and simple description of resources ii. Further page links to other wikis, websites and wiki activist groups for	A navigation bar in all the subpages that help in navigating back to the home page needs to be implemented. Ac-

		tion technique. Elaborate feedback process carried out in April 2011 (Appendix-4)			popularization iii. More contributions from CAL4INO members	tive participation from the CAL4INO community is perceived essential at this stage.
6. Maintenance/ Updating	All the QA groups and all the external users	Editing, reviewing and developing content	Continuous starting from 05/2011	Issues in content generation and user motivation	Active users, new user groups and growth in the size and quality of content.	The portal development is hoped to be continuous and sustainable.

Attachment - 11 - Article Accepted for presentation and publication at the 6th. International Multi-Conference On Society, Cybernetics And Informatics (IMSCI 2012), to be held in Orlando, USA, on July 17th - 20th, 2012. (www.iiis2012.org/imsci)

Developing Social Media Communication Skills of Students in Higher Educational Institutions -
Reflections from conducting an Online Course

Irma MÄNTY

Department of E-Learning, Laurea University of Applied Sciences,
Vantaa, 01300, Finland

and

Kiruthika SRINIVASAN

Laurea Business Ventures, Laurea University of Applied Sciences,
Espoo, 02630, Finland

ABSTRACT

An online course namely 'Social Media Tool Kit for Effective Communications' was carried out in the summer of 2011 for the students (N = 50) of three different Applied Sciences Universities in Finland. The objective of the course was to guide the students to understand the importance of social media communication tools and to learn to how to use them in their personal and professional communications. The course was conducted entirely online, using virtual conferencing, social networks and an e-learning platform. The implementation consisted of seven online meetings with the teacher and seven mandatory learning tasks. The-learning tasks focused on creating personal profiles, online interactions, using bookmarking & mind mapping tools, visiting virtual worlds, making photo stories, publishing in blogs and wikis and using e-portfolio tools. A survey was conducted on the e-learning skills and social media skills of the students before and after the implementation of the course. In this paper we discuss the impact of the course on the students' e-learning skills & knowledge on social media tools. The challenges in learning virtually and points for improvements for conducting online courses are also discussed. The shared outcomes and the research findings from this article are useful to people who intend to use or already using social media techniques and tools for teaching.

Keywords: e-learning, social media tools, communication tool kit, interaction in virtual learning, teaching online

1. INTRODUCTION

The transition from personal communications to professional communication is an important stage in students' professional growth. In a rapidly growing social world, communication in social networks and skills to use a wide variety of web 2.0 based tools have become inevitable. Though guidance and support in terms of tools and learning materials are available in

plenty for the use by the students it was observed that, their awareness on these tools remain inadequate. After a number of discussions with the teachers and interactions with students, the need to bring out a course on social media tools was realized in order to improve their knowledge on conduct and behavior in social networks, information security rights and utilization of an array of freely available tools for communication. This article is based on the challenges, outcomes and reflections on designing and conducting an online course namely ‘Social media tool kit for effective communication’ for the students of three different Applied Sciences Universities in Finland. The observations by the authors are from the first part of an action based iterative studies on developing the social media communication skills of students in higher education.

2. DESIGN OF THE STUDY

The developmental study design is discussed in three parts which are presented below;

2.1. The content of the course

The course was designed in December of 2010 and was implemented in the summer of 2011 as an online course. The course carried 5 ECTS and it was open to students of all the disciplines and did not include any specific skill set as eligibility criteria. The course had the general objectives of, i. learning about and becoming familiar with selected social media tools for different types of communication and ii. understanding the features of tools and applying them for personal and professional communication. The specific objectives included, i. knowing about various social media tools that exist for communication, ii. personal and professional use of selected tools for communication and collaboration, iii. awareness on information security and copyright issues in content creation in social media and iv. evaluation of the new methods of social communication and collaboration.

The course had seven mandatory learning tasks with specific learning objectives.

Learning Objectives	Learning task
1. Efficient personal communication	Creating personal profile using an online tool & sharing
2. Making use of publishing platforms	Wiki/Blog entries on social media for professional communication
3. Efficient use of Video/Photo sharing tools	Interviewing friends on their social media usage & presenting in the form of videos or photo stories
4. Interaction using video conferencing tools	Evaluating the social media strategy of an organization & presentation through video conferencing
5. Learning about bookmark sharing tools	Bookmarking with tagging using a shared bookmarking tool
6. Understanding of virtual worlds	Essay after visiting the virtual worlds & sharing using document sharing tools
7. Evaluation of communication tools & presentation	Learning diary entries with personal communication tool kit

Table 1: Learning Tasks

2.2 Tools for course implementation

Conole (2010), expressed concern that the uptake and use of Web 2.0 sites such as blogs, social networking and wikis by teachers for sharing and discussing practice has being marginal so far. With specific consideration to harness the interesting features of a variety of tools, the course was implemented using a combination of tools, which are listed below.

2.2.1 E-learning environment

An advanced Moodle like e-learning Management System (LMS) called Optima was used as the main platform for the implementation of the course. Optima provided features like shared writing, audio & video recording, multimedia file uploading, electronic dairy, chat, discussion list, survey, personal folders etc., The-learning materials, learning tasks, instructions and feedback discussions were communicated using Optima. Students were given their personal folders and e-diaries. Group discussions were initiated in the discussion lists on their learning tasks and return folders for uploading assignments were provided in Optima.

2.2.2. Web conferencing

Seven online interactive sessions were conducted using Adobe Connect web conferencing technology. Chatting to the teachers and among groups was encouraged with the intention of sharing comments and questions during online lectures. Individual and group presentations in Adobe Connect were made part of the e-learning activities.

2.2.3 Social Network

A closed group was created in the social network Facebook to initiate informal discussions among the students and the teachers. Facebook was also used to post quick updates and announcements. The students were encouraged to add useful links and to interact with one another.

2.3. Survey

Two surveys were conducted among the students using e questionnaires. The international ICT literacy panel (2007) pointed out the need for ICT literacy surveys to understand the digital divide in terms of literacy and effective performance, that is, the extent to which the students and adults are able to use and successfully integrate technology into their lives and work. The first survey focused on the self- evaluation of the e-learning skills of the students. The questions were on the access, use, application and skills in training of various ICT tools. Information on their experience in participating in online courses and use of e-learning environments were also gathered. 30 out of the 50 students who enrolled for the online course responded to the survey.

The second survey focused on the following attributes;

- Awareness/knowledge on important concepts in social media communication
- Skills in using 18 different tools for communication suggested for use during the course
- Evaluation of the tools used in the implementation of the course
- Best & worst practices observed in the course implementation
- Self- evaluation & evaluation of the teacher

25 out of the 50 students enrolled for the course responded to the survey and assessed their skills & knowledge before & after participation in the course. The assessment followed a 5 points scale given below:

- (1) I do not know how to use it
- (2) I know the basic principles and I can use some of the basic features
- (3) I can use most of the features properties to my benefit
- (4) I can use the advanced features very well and I will be able to offer advice to others
- (5) I can use it professionally and creatively. I am able to train others also.

3. RESULTS & DISCUSSIONS

The findings from the surveys and the observations by the authors are discussed below.

3.1. E-learning skills

The survey on the e-learning skills showed that one third of the respondents did not have any experience in participating in any online courses before this course, while one third of them had participated in 1-5 online courses. Almost all (97%) of them had access to computer and internet either at home or work or study place. More than 50% had access to broadband. More than 90% of the students had laptops & had used an USB flash drive to store the data. Gadgets like mobile phone with internet & music player were also seen in use by more than 30% of the respondents. However, the use of DVD/CD writer and e book readers were found to be very less (less than 20%). Two of the respondents had not previously used the audio and video conferencing systems and one respondent have not had used any mobile devices.

Use of tools	Number of students
Mobile devices	7(24%)
Web conferencing tools	9(30%)
Instant messengers	15(50%)
E-learning environments	26(87%)
Social networks	21(70%)
E-book reading tools	6(20)

Table 2: E-learning skills of participants

The assessment of experience and skills in knowing & using various tools showed that the respondents were a mixed group with different levels of skills. The number of students without

experience in working in online teams, multimedia sharing, using e-library services, online peer reviewing and getting online tutoring equaled the number of students having good skills enough to train others in the same attributes.

Category	Students without experience /Skills	Students with skills to train others
Privacy & ethics in social media	3(12%)	12 (40%)
Information security	5(17%)	8(27%)
Copyright	6(20%)	8(27%)
Educational projects online	8(27%)	8(27%)
Online team working	9 (30%)	9(30%)
Online discussions	9 (30%)	9(30%)
Audio, video, picture sharing	13(43%)	13(43%)
E-library services	13(43%)	13(43%)
Peer review online	9(30%)	9(30%)
E-diary/ E-portfolio	13(43%)	9(30%)
Getting online guidance/tutoring	11(37%)	11(37%)

Table3:Previous experience/ skills in using online tools

3.2 Awareness & knowledge

Before their participation in the online course, Facebook and Skype were the main tools mentioned by the students as the most used social media based tools for their social communication. Close to 50% of the students rated their awareness in the scale of 2 when it came to their knowledge on social media, wikis & blogs. One third of the students also rated their knowledge fairly well on social networks, LinkedIn, E-portfolio & virtual worlds. Only one third of the students felt that they possessed good knowledge on information security issues and maintaining identity in social networks enough to apply for their personal benefit. Very few students rated their knowledge to the highest scale of 5 on social media and social media tools.

Measurable improvement in the awareness and knowledge of students on social media, social media tools, content generation and Creative Commons licensing was observed after their

participation in the course. The increased rating on the awareness and knowledge of students on various aspects social media is illustrated below.

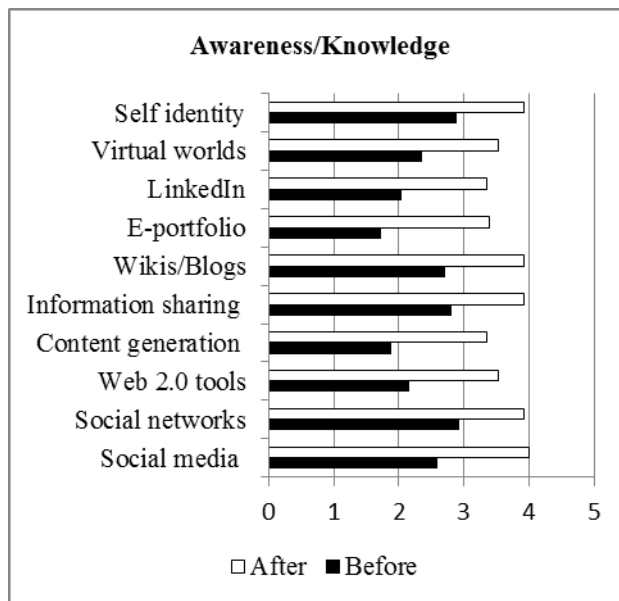


Figure 1: Awareness on social media & social media tools

More than 50% of the students increased their knowledge to the scale of 4 which meant that they felt confident to use the advanced features in social media communication technologies very well and would be able to advise others on the same issues as well. Progress to the professional and creative knowledge level of 5 points was seen in 20% of the students in aspects of social media, information security, content generation and Creative Commons, LinkedIn and wikis and blogs. Insignificant number of students rated their knowledge in the basic level of 2 points, on web 2.0 tools (4), content generation (4), virtual worlds (3), e-portfolio (2) and wikis & blogs (1). Significant percentage of students (30%-48%) showed an improvement of their level of knowledge to level 3 in most of the aspects of the course content after the course completion.

3.3 Skills in using the tools

Significant increase in the level of skill was seen among students in using all the social media tools recommended for the-learning tasks. The difference in the level of skills in both using the tools and creating different presentations are illustrated below.

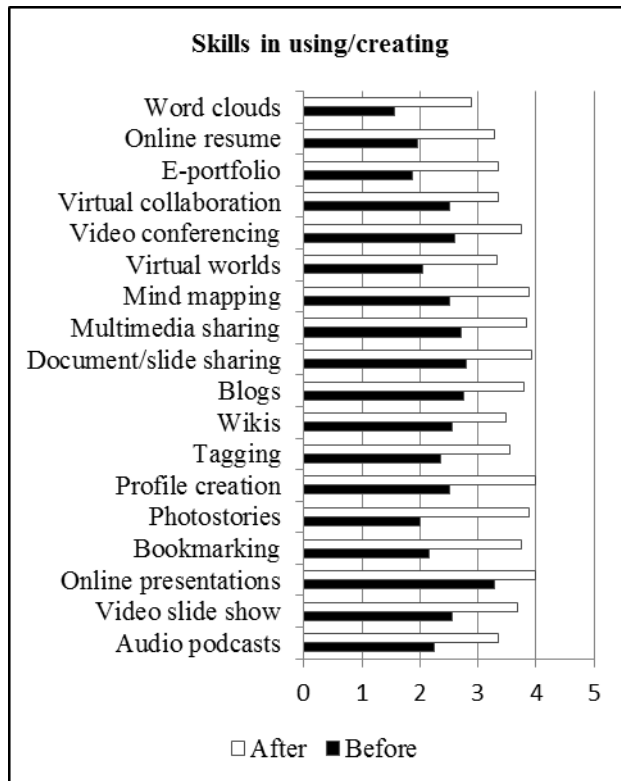


Figure 2: Skills in using the social media tools

The most significant improvement in the skills from the level of knowing the basic features of tools to the level of using the advanced features and as well offering advice to others was observed in using the tools for creating word clouds, online resumes, e-portfolios, photo stories & bookmarking and also in understanding the virtual worlds, particularly ‘Second Life’.

Skills in using the tools for video conferencing, mind mapping, multi-media sharing, document and slide sharing, blogging, profile creating, photo stories, book marking and virtual presentations improved to the scale of 4 in more than one third of the students. Progress to the professional level of using and training was observed in one fifth of the students in the same set of tools.

3.4 Tools used for implementation

The three tools used for the course implementation namely the Optima (Learning Management System), Adobe Connect (Web conferencing tool) and Facebook (social network) had mixed impact on the e-learning. The students expressed both positive and negative responses to the effectiveness of these three tools for collaborative, virtual learning. The points of significance noted are,

3.4.1 Optima

The positive features for collaborative-learning observed were sharing, peer reviewing, peer discussions, accessing learning materials, audio recording and uploading multi-media files and links. However, the students found that the lack of personalized settings in folders, lack of search functions to find information and difficult shared writing functions as the demotivating factors to use Optima. They did not find using e-diaries interesting as they were open to all the students and had a plain, non-personal interface.

3.4.2 Adobe Connect

Adobe Connect was perceived as a new and interesting tool for the online lectures. Most of the respondents, except one student, felt that Adobe Connect provided the true ambience of a virtual class, with its desktop sharing, voting and chatting functions. This tool was highly appreciated, particularly by the students who attended the online sessions from different parts of the world (Europe, Russia and Africa) during their summer travels. The meeting recording features also benefitted the students for follow ups, when they missed the sessions. Students felt that the intermittent audio problems and confusing screen sharing features made the interactions impractical, when they tried to host their own presentations. Familiarizing the students with the hosting functions was time consuming and made it impossible to hold long interactive sessions.

3.4.3 Facebook

Facebook was best used for rapid spread of information and quick updates by the teacher. It also proved to be a good tool for getting immediate responses for decision making and short surveys. The students felt it was easy to keep in touch with the teacher and with the others participating in the same course. The students used Facebook mostly for asking the teacher questions and getting answers. This tool made it easier for the teacher to develop a personal trust and connection with the students as they felt it was easy to share their qualitative feedback with her through the Facebook messages and chats. Facebook's negative characteristics were considered to be the spamming games and commercials. Students gave feedback that the Facebook group creation by itself did not generate in-depth interactions among the students. Security issues and uncertainty of the messages reaching the teacher on time were also considered as the problems of communicating in Facebook.

3.5 Best practices in the course

The best practices in this course, as pointed out by the students were,

- Variety of new tools presented along with well-planned learning tasks
- Adobe Connect online sessions & availability of recorded sessions after lectures
- Facebook communication with the teacher
- Optima's sharing features
- Useful & interesting course content
- Flexibility, convenience & open grading system
- Knowledge on mind mapping, bookmarking, video making, online resumes & virtual worlds was highly beneficial

3.6 Worst practices in the course

Some of the worst practices listed down by the students were,

- To many tools & time consuming learning tasks
- Registration for tools & too many passwords to remember
- Lack of mandatory group assignments
- Lack of social interaction among students
- Lack of a motivating grading system
- Absence of compulsory online participation

4. CONCLUSIONS & RECOMMENDATIONS

The feedback from the students and the findings from the survey on awareness and skills lead the authors to conclude that the online course positively and significantly improved the social media communication skills of the students. Overall, the implementation of the course was a success. Other points of interest observed by the authors are,

- the level of social media communication skills of students of higher education vary with individuals
- more and more curriculum based developments on the communication skills need to be implemented in higher educational institutions
- the knowledge of the students on conduct and behavior in social networks, information security and licensing on content generation and sharing lacks in-depth understanding, despite the fact that they are active users of social networks
- though the students are very active in their personal communication in Facebook, they are unsure and hesitant to interact with new members when it comes to communication and networking for education. This observation correlates with Murray (2008), as he indicated that the Digital Natives use OSN (Online Social Networks, Hamid, 2009) mostly outside of classroom context and for non-educational purposes. A study on school children by Kirschner & Karpinski (2010), showed Facebook users reported having lower GPA's and spend fewer hours per week studying than nonusers. However, they reported more extracurricular involvement, which could have been aided by their friends in their social networks. It would be interesting to explore the academic and extracurricular performance of students using social media further
- more guidance and instructions are needed to be offered to the students in order to initiate social interactions among new groups through social media

Based on their learning points from conducting the online course, the authors would like to make the following recommendations for others attempting to implement similar online courses with the objective of developing the social media communication skills of students in higher educational institutions.

- pre assessment of the e-learning skills and basic IT skills of students would help plan the type of tools and learning tasks to be included in the curriculum
- design of learning tasks need to include compulsory, collaborative group work online using social networks
- Project-based assignments that will allow students to discuss, share, explore social media strategies of organizations will be a plus point in virtual courses
- lot more peer support and guidance for students is necessary for successful implementation
- challenging grading system, strict deadlines and mandatory online presentations serve as motivating factors for quality learning

- design and implementation of virtual courses with social media content suitable for professional and business development of students and student entrepreneurs are desperately required
- e-portfolio development, participation in social networks for professionals, use of blogs as personal e-portfolios, Twitter for education, the use of Creative Commons licensing and the use of privacy features in social networks could be emphasized in the content of any course on social media in higher educational institutions

To quote Bonzo & Parzoma (2010), 'social media are more than the technology behind the social applications and programs. Their use includes a set of ideas about transformation and social gathering, mass participation, user-generated content, openness, flexibility, collaboration, community, and they are user-centered. If higher educational institutions can understand and adapt some of their practices to these principles, perhaps there is a chance for significant change in how tutors teach and how students learn'. The authors hope that they have succeeded to a considerable extent in creating awareness on social media among students by applying some of the core concepts of social media in their teaching to the personal and professional benefits of students. Furthermore the authors would like to recommend that all the higher education institutions must have social media guidelines of their own and they should take care that every student is aware of these guidelines in order to maintain a good professional identity in their social media communication.

REFERENCES

- [1] A report of the International ICT panel, **Digital transformation - A framework for ICT literacy**, ETS pub., 2007, p6.
- [2] C. Murray, **Schools and Social Networking: Fear or Education?** Synergy Perspectives: Local, 2008, 6(1), 8-12, as cited in S. Hamid et al, 2009.
- [3] G. Conole, "Facilitating new forms of discourse for learning and teaching: harnessing the power of Web 2.0 practices", **Open Learning**, Jun 2010, Vol. 25 Issue 2, p141-151.
- [4] J. Bonzo & G. Parzoma, **The Paradox of Social Media and Higher Education Institutions**, Proceedings of the 7th International Conference on Networked Learning, 2010, p917.
- [5] P.A.Kirschner & A.C.Karpinski, **Facebook and Academic Performance**, Computers in Human Behaviour, 26 (2010), p1237-1245.
- [5] S.Hamid et al., **Identifying the use of online social networking in higher education**, Proceedings ASCILITE Auckland, 2009, p 417