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UNIVERSITY FOR BUSINESS AND TECHNOLOGY KNOWLEDGE CENTER: MAKING LOCAL KNOWLEDGE VISIBLE

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ABSTRACT

A vision to further national development through higher education now informs planning for the University for Business and Technology (UBT) Knowledge Center. At its essence, the Center aims to make local knowledge visible through furthering discovery of and access to research content produced by academic students and university professors on institutional, local, and international levels. This paper reports on conceptual exploration of this institutional idea during spring semester 2017 in a graduate course on systems sciences. Using active learning pedagogy to improve local situations, an international teaching team facilitated student and stakeholder engagement in participatory design activities using systems thinking expressed through soft systems methodology tools and techniques. Course evaluation outcomes revealed students' improved levels of knowledge and development of insights. In addition, their course work demonstrated their advanced understanding of systems thinking and its application. Furthermore, students expressed high motivation to learn more about other human-centered theories and participatory design tools. In considering the value of the University's knowledge vision, they were especially enthusiastic about its implications for furthering national democratic development in Kosovo and regional economic growth in south-eastern Europe.

Keywords: design thinking; higher education; Kosovo; local knowledge; soft systems

INTRODUCTION

In setting the aspirational vision for University for Business and Technology (UBT), founder Dr. Edmond Hajrizi sought to educate Kosovo students to become active contributors to the society and at the workplace, within the country, the Baltic region, and beyond. For historical reasons, success initially depended on inviting lecturers and scholars from abroad, as reflected in the university's brand statement, 'American European Education'. Now, after more than a decade of successfully educating Kosovo graduates and developing Kosovo instructors, the University plans to further awareness and promote usage of university produced knowledge, within the institution and throughout the country, in a Knowledge Center.

The University for Business and Technology (UBT) Knowledge Center initiative extends the founding vision of national development through higher education. Reflective of its institutional maturity, the University now produces considerable local knowledge, including but not limited to faculty publications and presentations, student paper and

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reports, and commissioned studies and reports. In the first stage of this initiative to enhance visibility and accessibility of local knowledge, computer science students developed the architecture and the software for a repository of UBT faculty publication and presentation references, which now serves as the platform for the Kosovo national faculty bibliography.

In this second phase of making local knowledge visible, the University will create a repository system and associated workflows for acquisition, organization, and dissemination of student research projects, faculty research papers, and community research reports. This initiative thereby acknowledges the responsibility of a university in a transition country to foster democratic civil society and regional economic growth, as well as further smart business practices and higher education efficiencies. In addition, the pedagogical process – which constitutes the emphasis of this paper – illustrates the efficacy of engaging stakeholders in participatory designing of educational systems. Finally, since local knowledge, identity, and learning are necessarily situated, Kosovo students, faculty, staff, and administrators serve as domain experts and international educators from Sweden and the United States serve as system design facilitators. This paper will describe systems thinking education animated by collaborative design thinking to create robust educational systems.

DESIGN THINKING

“Design thinking is essentially a human-centered innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping, and concurrent business analysis.... to involve consumers, designers, and businesspeople in an integrative process ... for innovation and enablement” (Lockwood, 2010, p. xi). Implementation within the University for Business and Technology context recognizes that “The most significant innovation enables the realization of far greater human potential. The catalyst of such creativity in higher education is the acquisition of new knowledge and the living of new experiences. Then, within innovation and incubation environments, new thinking enriches knowledge handed down from previous generations, enlivens contemporary lives and informs future growth” (Hajrizi et al, 2017).

In response, as stated in the defining vision document, “the University for Business and Technology intends to build collaboration environments to enable discovery and access, interpretation and analysis, creation and sharing of knowledge” (Hajrizi et al, 2017). These aspirations recognize the synergies possible when individual discovery is reinforced by collective inquiry. With a shared purpose of using information to learn, people can design ways to create knowledge together. Stated differently, educational systems can be designed to encourage and enable participants to learn from each other and co-create relevant and useful knowledge. Further, the UBT “initiative acknowledges that societal progress, whether local or global, ultimately depends on catalyzing, fortifying, and affirming human inquiry ... working in a global marketplace and living in a global society” (Hajrizi et al, 2017).

In the belief that enabling educational environments foster ‘learning to learn together’, course pedagogy and learning outcomes necessarily supported participants’ learning “to share what they have learned, learn what others want to share, and imagine how they might

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combine their talents to discover and do even more meaningful work ... for the greater good of humanity” (Hajrizi et al, 2017, p.). Teaching strategies also intentionally catalyzed the synergistic potential of international higher education collaborators (Somerville, 2015d) ‘working together’ (Somerville, 2009) to design curriculum activities for envisioning virtual spaces and physical places *for and with* Kosovo students, professors, and staff.

This intentional process, of engaging system users early on, aligns well with the advice of Thomas Lockwood, former president of the Design Management Institute. Based on his experience leading this highly regarded association of design practitioners working in business, he has described design thinking as follows:

“There are several key tenets of design thinking.... The first is to develop a deep understanding of the consumer.... The best way to do so is by getting out in the real world with consumers, with open-minded collaboration, even with codesign concepts ... by watching, listening, discussing, and seeking to understand. The key is to start from a seeking understanding point of view.... Having the users involved early on makes it possible to get user evaluations of a concept. Therefore, a second important aspect of design thinking is collaboration, both with the users and through forming multidisciplinary teams. ... The third part is to accelerate learning through visualization, ... which are made as simple as possible in order to get usable feedback.” (Lockwood, 2010, p. xi).

Lockwood continues,

“Visualization of concepts ... is the fourth criterion. The objective is to make the intangible become tangible, and visualization is the best way to do that. The power of visual communications is undeniable.... Using visual explanation also provides context, which is greatly helpful when the consumer is a partner in your concept development.... The fifth and last aspect ... is concurrent business analysis integrated during the process ... anticipating what new business activities may be required by a conceptual new product, service, or experience offering, as well as the resources it may require and the ... landscape in which it will appear” (Lockwood, 2010, p. xii).

Design thinking, then, aims to activate innovation to reveal opportunities and inspire possibilities. At later stages, realization is grounded in environmental scan, workflow analysis, and resource allocation.

In this spirit, visioning activities for the University for Business and Technology Knowledge Center incorporated higher education learning principles, since learning has long been highlighted as central to the purpose of design activities (Senge, 1990; Beckman and Berry, 2007). Furthermore, co-design activities recognized the efficacy of ‘using information to learn’ (Bruce, 2008), employing human-centered and user-driven antecedent thought and practice for systems design and information experience (Somerville, 2015b, 2015c). Moreover, the course activities highlighted the synergistic potential of integrating systems thinking and co-design activities to activate entrepreneurial processes for creativity and innovation within an educational institution and beyond.

RELATED WORK

Applied research over more than a decade has demonstrated that complementary learning- and information-intensive theories and methods catalyze collaborative design of workplace systems, relationships, and practices to accelerate synergies between people and ideas (Somerville, 2014, 2015b). It thereby follows that everyone designs who devises courses of action aimed at changing existing situations into preferred ones (Simon, 1969). Within systems sciences, this notion can be expressed thusly: “A systems approach begins when first you see the world through the eyes of another” (Churchman, 1968, p. 231). In order to inclusively explore complex sets of relevant interactions among people, purposes, processes, practices, technology, and professions to thereby systemically improve local situations, the visioning activities for the University for Business and Technology Knowledge Center employed participatory systems design processes. Enabled by technology, using information, and focused on learning, course design activities fostered ideation and invention outcomes using sense-making processes and data visualization tools.

The UBT Knowledge Center design initiative has its roots in Peter Checkland’s Soft Systems Methodology processes (Checkland, 1981; Checkland & Holwell, 1998; Checkland & Poulter, 2006) and Christine Bruce’s informed learning theories (Bruce, 2008; Bruce et al, 2014). In combination, this antecedent scholarship from England and Australia, amplified in Sweden and the United States, now furthers systems design and knowledge management in the UBT Knowledge Center in Kosovo, through furthering information exchange, reflective dialogue, knowledge creation, and conceptual change.

Although building upon longitudinal North American studies which demonstrated the efficacy of information-centered (Bruce et al, 2017) and systems-focused (Checkland, 2011) design activities in the workplace (e.g., Somerville & Mirijamdotter, 2014; Somerville, 2009, 2015c), this UBT initiative commenced in a graduate level systems science course that aimed to ultimately redesign university educational experience. Graduate students served as co-design practitioners, researchers, and consultants. This shift in traditional power relationships in academia reflects an original contribution within the published literature.

COURSE PEDAGOGY

Following a four-month planning process, initiation of human-centered design for the UBT Knowledge Center commenced in late March 2017 in a 6 credit graduate level Information Systems Analysis, Design, and Modelling course at the Pristina, Kosovo campus. A ‘flipped classroom’ (e.g., Bergman & Sams, 2012) pedagogy guided the course design. Therefore, course participants were given an assignment three weeks before the start of classes. The resource list included seminal texts on Systems Thinking and Soft Systems Methodology (Checkland, 2011; Checkland & Poulter, 2010; Reynolds & Holwell, 2010), Informed Systems and Learning Theory (Somerville, 2015a; 2015b), and Participatory Action Research (Somerville, 2014). In addition, students were provided questions to which they were required to respond in advance of the class. This ‘flipped’ approach, which required significant work before class sessions ensured that the four days of in person class time could be productively spent on active learning. Then, within this shared context, SSM

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techniques were employed to address the case assignment on the Knowledge Center concept, from multiple perspectives and worldviews. Finally, each course participant was asked to write a reflection paper about their learning processes, in relation to the course learning outcomes. Highlights of the course activities, learning outcomes, and reflection insights are presented in this paper.

Throughout, Soft Systems Methodology tools and techniques guided course participants' exploration of essential questions related to the why, what, and how of realizing the institution's aspiration to make university knowledge visible. Through a co-design process facilitated by guest professors from Sweden and the United States, students explored aspects of 'the problematical situation'. Inspired and informed through course presentations and conversations with University for Business and Technology academic and technology leaders, students collaboratively applied tools and created reports on various dimensions of the Knowledge Center case. Reflective of the design thinking process, grounded in soft systems design practices and informed learning principles, they pursued these learning outcomes related to the UBT Knowledge Center case study:

- Explain information system aims and objectives in the context of human activity related to the UBT Knowledge Center, including concepts, models and methods,

and

- Design applicable processes for inclusive information systems development, including models, for purposeful information systems for the UBT Knowledge Center.

The pedagogical approach for the course initiated student learning about systems thinking ideas, such as the Soft Systems Methodology (SSM), and tools, e.g., Rich Picture and PQR technique. SSM was selected for this purpose because it acknowledges the social context of learning – that knowledge is acquired and understood through action, interaction, and sharing with others. As the students' projects illustrate, soft systems models and processes therefore explore the social relationships necessary for informed learning, which acknowledges the larger landscape of information exchange and knowledge creation, oftentimes enabled by technology.

PROJECT HIGHLIGHTS

To frame the context for human-centered UBT Knowledge Center design, Rektor Hajrizi delivered the opening course lecture. He expressed the aim of the Knowledge Center aspiration as capturing data to produce information and create knowledge. Also, senior university administrators and staff from the IT and library departments were present to contribute to collection creation of the knowledge center vision. Although the Center will ultimately collect, organize, and preserve all UBT-generated knowledge – and make it discoverable, visible, and accessible, the Rektor suggested that the students focus on faculty, staff, and student produced research results in this course. He framed the problematical situation as 'lost opportunities' for building on earlier knowledge, whether in the classroom, in the laboratory, or in the literature. In keeping with the university's brand as a top university for top students, Rektor Hajrizi spoke eloquently about the potential of university generated scholarship to catalyze and sustain teaching and learning.

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In recalling the university's mission to advance Kosovo, a transition nation, he spoke passionately about the importance of having 'knowledge of knowledge' with an underpinning 'system of systems'. On the last night of class, the Rektor returned to critique (and complement) student reports.

Student projects illustrate application of SSM techniques, using information to advance local knowledge visibility within prototype UBT Knowledge Center environments.

Project #1 choose to focus on the technological part of the problematical situation. Group members identified six perspectives – from students' experiences – to further explore using SSM models. One viewpoint related to students' wishes for access to free and credible data and, relatedly, a second perspective acknowledged students' desire to collaborate in research projects and therefore contribute to production of freely available credible content. From the position of librarians, another perspective prioritized the organization of content. Two other perspectives, reflective of UBT information technology staff members' worldview, emphasized data center infrastructure establishment, including information security for protecting intellectual property. The sixth perspective, presented by the Rektor, envisioned making local knowledge visible through furthering discovery of and access to research content produced by academic students and university professors on institutional, local, and international levels. He acknowledged that this necessarily required policies and procedures to collect relevant information as well as provision of a digital platform for data exchange.

Project #2 expanded on the institutional role for campus libraries across the world. Team members also considered the global impact of a mature UBT Knowledge Center. Mindful of the need for phased projects, students recommended revisiting current library facility design decisions, to create more attractive and inclusive spaces for both physical and virtual technologies and services that enable information flow and knowledge exchange. This included ensuring easy access for people with disabilities.

Project #3 imagined the UBT Knowledge Center as consisting of four pillars comprised of physical library, electronic archive (e-archive), globalization platform, and online communication. From both systems/technology and social/political perspectives, the group found the e-archive to be of greatest interest. In their drawings, the e-archive anticipate the full expression of the Rektor's vision, which enable curating, storing, and sharing local knowledge through a global platform accessible by other universities within the region and around the world.

RICH PICTURE

Movement toward a coherent, integrated design concept required synthesizing student teams' visions for a UBT Knowledge Center. In that spirit, the international teaching team collaborated with university leadership to create a comprehensive conceptualization figure, depicted in the Rich Picture style, Figure 1.

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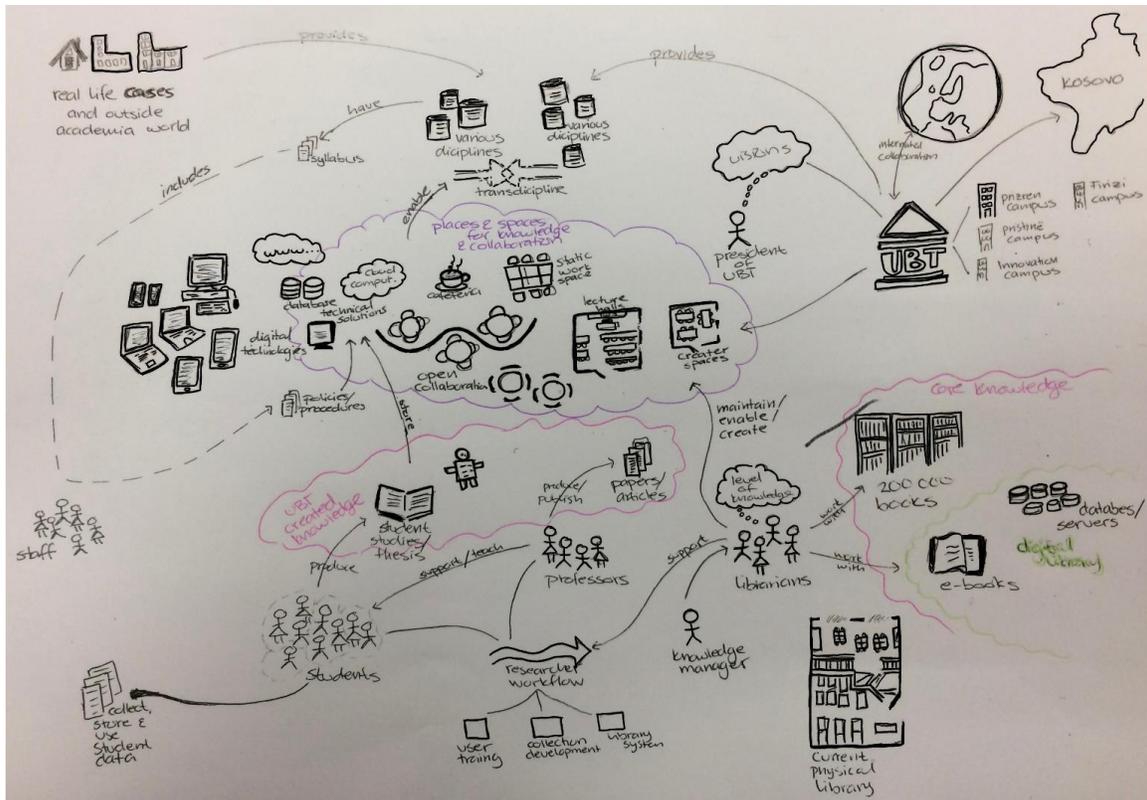


Figure 1. Conceptualization of the UBT Knowledge Center.

Figure 1 depicts an early rendering reflecting institutional vision, potential design, and value added. Starting at the top right corner of the figure, UBT - with its four campuses - is illustrated. UBT is located in Kosovo but has international collaboration as symbolized with a globe. An arrow to the left illustrates the various disciplines and educational programs offered by UBT.

In the bottom right corner, the current physical library is drawn with its stacks of 200,000 print books, as well as its e-books and publisher databases. The librarians work with physical books and digital material, including cataloguing and circulation, are illustrated at the left of the sphere named 'core knowledge'.

To the left of the UBT symbol, the Rektor and his visions are illustrated. His future Knowledge Center vision includes physical 'places and spaces' for collaboration (depicted in the center of the figure) and repositories for students' and professors' academic work. The students' ideas about collaborative digital solutions supporting their studies and enhancing their knowledge development are also represented.

To realize these initial design ideas, Figure 1 further acknowledges that the interior design of the library facility needs to be re-thought in terms of opening up the places and spaces as well as enabling mobility and flexibility to refurbish easily, as needs change. The drawing for a repository for UBT created knowledge recognizes a need for developing sustainable architecture and software. In addition, there is need for policies and guidelines

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(illustrated below the ‘digital technological solutions’ at the middle left) on how these technologies should be used to support integrity, accessibility and storage. Further, Figure 1 recognizes that the library can act as a node, but its function needs to be expanded in terms of identifying the knowledge needs as well as working with, and supporting professors and students with their research workflow (illustrated as a wavy arrow at the center bottom). This is likely to require development of staff members’ level of knowledge and competence as well as establishment of a new professional position of knowledge manager.

In its fullest expression, the UBT Knowledge Center adds considerable value to the academic library, which is complemented by open spaces and collaboration places, and amplified by a UBT created knowledge repository. This enriched research and educational environment for student and staff builds upon local knowledge, even as it encourages transdisciplinary work, to contribute to societal development.

COURSE REFLECTIONS

In their reflection papers for the course, its pedagogy, and their learning, students presented positive impressions and offered encouraging comments. In particular, they appreciated the active learning pedagogy applied to a local case statement. They also expressed appreciation of systems thinking ideas and methodologies, as indicated below.

About the course design and its action pedagogy:

- “It was an honor to be part of your class.”
- “It made me be more active, focused, and open minded.”
- “I’m certain the whole group felt joy.”
- [The course design experience made us] “be proud of our achievements.”
- “Together we have completed the project ... [as well as] helping [each other] and sharing ideas from the lessons that we covered from SSM.”
- “The whole experience was unforgettable, especially presenting in front of nonnative professors. It was our pleasure.”

About Soft Systems Methodology as pedagogy:

- “As my background comes from exact sciences (BSc in Chemistry), I always based my decisions/solutions/problems on exact information and function. If we take as an example painting the fence then the reasoning would be because fence is getting rusted and to protect the fence – I need to paint. But then I was introduced to Soft System Methodology. In this course, I learned that it is not so simple to paint the fence only for functionality but we need to consider many other factors and variables so that we do not repeat the same mistakes but rather think in long run and with social, environment, etc. wide approach.”

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- “What I can say as general feedback [is that] it was a real pleasure of mine being part of this course and I have gained more knowledge on how to see [that] the most unreasonable problems can [be] solved by having different world-views.”
- “And finally, after analyzing ... different worldviews, we could easily define the situation based on different worldviews by drawing the rich picture of the situation or a problem.”
- “With this rich picture, we tried to represent structure, processes and issues of the organization, which could be relevant to the problem UBT knowledge center.”

About the case:

- “Professor Edmond opened a broader point of interest for us in regard of advancing a knowledge center.”
- The “director of UBT participated in the lecture with a vision [for] UBT to have a Knowledge Center, [including] how we can categorize, store and share information. It was a step for our group work aiming UBT to have a unified platform that students, other universities, communities, governments ... [will] have free access to [in our] knowledge center.”
- “To understand how ... [the] library at UBT [works], Professors ... invited UBT staff members.”

A final remark about the whole approach, course design, systems thinking, and relevant real world case declared:

- “And I can say that my life will have two eras, before SSM and after SSM”.

The latter testimonial suggests the transformative impact of university course design for educational system design. In this instance, students’ motivation to learn new theories and apply new models was heightened by the practical value of advancing the University founder’s vision for developing both the University for Business and Technology and the Kosovo society. The active learning processes used in the course enabled students to experience new approaches for exploring complex, ill-defined situations. The evaluation of the students’ submitted assignments, both individual and team based, revealed high level of knowledge acquisition and advanced understanding. Also, there were no dropouts for the course; all students who started also finished the course, suggestive of their high level of engagement.

CONCLUDING REFLECTIONS

“There has been no greater time of need for social, economic, and environmental improvement than today, and no better people to make a difference than ‘design thinkers’: those who venture outside the box, who are open-minded, who enjoy collaborative ideation, who have an eye on design and an eye on the future, who have a passion for change, who tell visual stories, and who do all of these things with a spirit of goodness. We

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can make the world a much better place, by design, in every moment” (Lockwood, 2010, p. iii).

In this spirit, the UBT Knowledge Center initiative illustrates some rich opportunities for advancing design of educational systems through systems co-design, purposefully using information to learn. First, the course employed a ‘real world’ case study approach in which students served as co-design practitioners, researchers, and consultants. The remarkable collaboration between UBT students and UBT leaders during the early design processes anticipates sustained engagement during later design phases.

Secondly, through exploration of complex sets of interactions between and among people, purposes, processes, practices, technology, and professions, the students offered valuable advice for a phased approach to enacting a bold University knowledge vision to enhance institutional ways for working with people, information, and technology. As students’ SSM data visualization drawings illustrate, the boundaries of the Knowledge Center ecosystem extend well beyond interrelationships within the university to encompass the society of which the university is a part. Finally, as students’ reflection assignments illustrate, success requires active curation, interpretation, and usage of information and knowledge to create more knowledge, which builds upon and preserves intellectual, cultural, national, and regional resources for future generations, through iterative design thinking processes.

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