Author

Sandra Romenska

Beyond Distance Research Alliance, University of Leicester, UK

sr224@le.ac.uk

Abstract

Higher Education Institutions (HEIs) operate in a borderless and complex environment, abundant in potentially useful information. The Creating Academic Learning Futures (CALF) research project, carried out in partnership by the University of Leicester and University College Falmouth in the UK, involves the development of approaches and tools for structuring and filtering information, in order to facilitate institutional decision-making in participative and creative ways.

One of the aims of the CALF project is to involve students in creating and exploring a variety of plausible 'alternative futures' for learning and teaching technologies in higher education. This paper discusses some of the issues that are emerging in the course of the research process and presents ideas for the future, grounded in and emergent from 'student voices' from the CALF research project. Students expected the technologies of the near future to enable them to become co-creators in their own education processes. The future scenarios imagined the rise of learning technologies which instead of becoming outdated with use, become more valuable as more user-generated content is invested, technologies which are truly learning in that they learn about their users and constantly morph/adapt to their users' needs. Finally, increasing virtualisation was a recurrent theme across most student-generated scenarios.

The paper concludes with a discussion of some of the strengths and limitations of using technologies for involving students in creative activities for generating future scenarios for higher education. The technologies used by the project enabled collaborative creative thinking across a broader spectrum of possibilities about the relationship between the present and the future of higher education.

0164 The learning technologies of the future: technologies that learn?

Introduction

The first universities were institutional innovations which emerged in 12th to 14th century Europe as a result of the need to consolidate and expand intellectual resources in response to increasing demands for knowledge and skills in the economy and society (David, 2006). Despite debates as to whether universities have remained these "medieval organisations," unchanged over the 700–800 years of their existence (Clarke, 2003; Kerr, p.152, 1982) or have been transformed by major changes (Clarke, 1996; Kyvik, 2004), consensus seems to prevail about intensifying pressures for reform in HEIs today (EC, 2003; Aghion, 2007; LERU, 2006). Technological, financial, political, regulatory, demographic, cultural and psychological factors bring major challenges to twenty-first century higher education and its governance systems, curriculum, mission focus, external relations, research and financing. While these challenges can be viewed as both threats and opportunities, it is important that planning and management are not dominated by short-term thinking about immediate problems and maintaining established practices. Neglect of the long term is increasingly problematic in meeting the challenges of complexity and change in higher education. In order to be able to look beyond the constraints of the present, especially when the investment of significant resources is concerned, HEIs need to sharpen their capacity to systematically explore and connect together various driving forces, trends, and conditioning factors so as to envisage alternative futures (Lancrin, 2004, OECD, Notten, 2006). Involving today's learners in a dialogue about the future of learning is essential for ensuring that strategies for the future of HEIs take into account changes in learners' expectations and cultures. Engaging the learners of today in imagining the future can provide platforms for strategic conversation even between those who may sometimes be considered to be worlds apart (Goudet et al. 1996). This dialogue may enable the future to be created collaboratively rather than predicted (Lancrin, 2004, OECD, Notten, 2006) — evidence from cognitive psychology suggests that mentally simulating alternative future visions can influence future behaviours (Parks et al., 2003; Sanna et al. 2003; Roese et al. 1995).

This paper is structured in two parts. The first discusses the conceptual and methodological challenges of researching student perceptions of the future of learning. The second presents some initial ideas about the future of learning, grounded and emergent from a research project which aims to uncover, model and represent student ideas about the future. The CALF project is led by University College Falmouth, and the research is supported by the University of Leicester. CALF involves staff and students from the two institutions, creative partnerships with other HEIs, international organisations, corporate, research and technology partners.

Conceptual framework

CALF provides learners with opportunities to surface and articulate views about the future of learning in HEIs. It uses creative events in real and virtual environments, social networking and web tools to encourage learner engagement in creating alternative futures through the acts of authoring content, collaboration and participation. CALF uses the paradigm of future studies to explore questions about student ideas for the future of

learning—about who is going to learn what, how and where in the future 30 years from now.

Futures studies as a strategic management framework have developed over many years, originating from the writings on alternative futures of Herman Khan for the RAND organization in the 60s (Burt, 2007). Futures studies work seeks systematically to explore and connect together various driving forces, trends, and conditioning factors so as to envisage alternative futures (rather than predict the future). As a result, long and short-term policies and strategies can be produced, which then can in turn enable people to create a desired future (Edwards, 2007).

Methods

There are multiple approaches to futures studies, and one of the most widely employed, although contested, is scenario development. Defined as "plausible, challenging and relevant stories about how the future might unfold," scenarios incorporate quantitative models with qualitative assessments of social and political trends (Raskin, 2005). On the continuum of analytical tools, they come between deterministic quantitative models of the future and purely narrative descriptions (Nakicenovic et al. 2000).They can refer to both descriptions of possible future states and descriptions of developments.

From a cognitive perspective, creating futures is not only a problem of a discrepancy between a present state and an imagined state. Choosing how to describe the discrepancy at a particular time will determine what future will be created, therefore to understand young people's visions of the future requires uncovering the underlying logic and assumptions of present realities and policies and presenting them in a format open for questioning and challenging (Edwards, 2007). It is necessary to provide learners with opportunities to develop a "foresight language" for what is in essence critical discourse analysis for exploration of future states. In selecting the future envisioning methods some key requirements need to be met to ensure that a range of perspectives is captured so that there is potential for different discourses to emerge. In this way, truly divergent alternative scenarios can be developed, in line with the definition of the scenario method:

"Scenarios are consistent and coherent descriptions of alternative hypothetical futures that reflect different perspectives on past, present, and future developments, which can serve as a basis for action." (OECD, Notten, 2006)

The CALF project partners believe that there are better ways of engaging with students than by seeing them as customers or consumers, and that creation of future scenarios in collaborative activities is one of the richer, more accessible and useful approaches to futures studies compared to conventional questionnaires or interviews (Wildman, lnayatullah, 1996; Salmon, 2008). The emphasis on group work and collaboration in the choice of futures workshops as one of the research instruments in CALF is based on a number of assumptions. It is hoped that group work will help establish a shared sense of ownership of the created scenarios for the future of learning, as to what is feasible and desirable (Cunha et al., 2007). Also, collaborative creation of scenarios involves the establishment of networks among the participating students, allowing them to share awareness of each other's knowledge resources, ideas, and visions of the future.

The present paper reports on data collected during three creative events, held between November 2008 and April 2009, involving 29 students. Every event is structured in a way aimed at introducing students to a variety of ways of thinking about the future of learning and helping students build a vocabulary which would support discussions about the future. The first two events, involving 26 students, used a specially developed wiki, integrated into the event. The third event, involving 3 students, was set up in the virtual world Second Life.

2

The wiki event format

The objective of the CALF project wiki was the production of series of generic scenarios, created by inviting students to form a narrative from a series of statements about how they saw the future of learning in higher education. Wikis "enable rapid and easy authoring direct to the Web. Wiki pages can be used by all to publish new content direct to the Web, including text, images and hyperlinks; and to edit existing content (Wheeler et al., 2008). Students can develop their own knowledge content with alacrity using a wiki and seldom need to study alone because of participation in a technologically mediated social space conducive to the formation of communities of practice" (Wheeler et al. 2008). Every page on a wiki is created and editable through the web using a web browser and therefore wikis express a high point in the attention to the connection between community and content, thus offering a way to implement in research practice the core principle of the CALF project that learners are not mere "receptacles" of ideas but participants in the dynamic creation and discovery of what is to be learned. This lead to the choice of wikis as an approach to developing future scenarios, in the process making learning outcomes contextualized and relevant.

The format of the events involved a discussion of digital and Web technologies existing at present and ways in which they could change the future of learning. The participating students were encouraged to think about the likelihood of future scenarios and searched the web for images, videos or applications that they associated with a particular scenario. As a result of the activities the students learnt how to use wikis and created wiki scenarios for future learning in higher education which have since been made available on the CALF project wiki: calf.wetpaint.com.

The use of the wiki enabled collaborative creative thinking across a broader spectrum of possibilities about the relationship between the present and the future of higher education. New ideas emerged in a way that would not have been possible if conventional scenario planning methods were used.

The use of the wiki allowed the replacement of the traditional snapshot and chain portrayals of scenarios by a network, which allowed the seamless integration of multiple views of the present and the past, occurring in multiple systems (e.g. global and local). A fractal "leaf of goals" metaphor best represents the functioning of the wiki as a scenario tool, where a fractal is the whole which when split into parts, each part is (at least approximately) a reduced-size copy of the whole. This property of the CALF future scenario wiki illustrates the continuum where activities, events and objectives lie and incorporates the assumption that any one event is itself a composite of an indefinite number of component events that would have been very difficult to capture without the use of the wiki. The collaborative scenarios created through the wiki emphasized technological change without overlooking social change, thus escaping a common criticism of conventional ways of scenario development.

The collaborative creative character of the wiki tool addressed another shortcoming of traditional scenarios—the time they usually take to develop. The combination of web-based and face-to-face activities allowed students to collaboratively generate, mix, edit and synthesise scenarios within a shared and openly accessible digital space.

An important advantage of the use of a wiki for developing future scenarios was that it allowed storing of the narratives, comparing them and deriving generic scenarios by combining common elements for possible, probable and desirable futures. It allowed interventions in fluid and informal creative ways.

Data about the ideas of the participating students of the future of learning were collected through observation and note-taking during the student

Section 2: Other Papers   0164 The learning technologies of the future: technologies that learn?

99

discussions at the wiki events and analysis of the text of the scenarios created on the CALF project wiki by the students at the two events.

Second Life event

The third CALF event took place in Second Life, the 3D virtual world where users can socialise, connect and create using voice and text chat. The choice of setting the event in Second Life was determined by one particular challenge of future studies—"the cost of thinking".

This challenge is one which those working in the area of consumer research call "the finite or quantal choice problem." It refers to the difficulty people have in comparing diverse alternatives. According to theories about the cost of thinking in choice problems, when having to make choice between alternatives people form perceptions by acquiring information about each alternative and then processing this information to arrive at an expected utility (Shugan, 1980). The comparison between the characteristics of the alternatives will be associated with a cognitive effort—the characteristics are evaluated and their differences assessed. Therefore, the more comparisons are required to make a choice, the more difficult the choice—the cost of thinking. Determination has costs — ubiquitous information, numerous alternatives, time pressure, limited information processing capabilities, and the general effort exerted to solve the problem. Choice theorists say that generally, the net utility of finding the best product from one set of products may be different from the net utility of finding it as best from another set of products. That is, there may be a cost associated with the act of making a decision—the "cost of thinking" (Murrey et al. 2007)

In the case of the CALF project, the cost of thinking that participants have to pay is significant—they have to imagine possible futures of learning, to compare them and to make a choice of their preferred future. The comparison is between entities or concepts—futures—which do not yet exist—either complete new systems or new states of existing systems. This represents a relevance gap.

A number of properties of Second Life offer a way of addressing this challenge. Second Life provides a "sandbox" (Salmon, 2009) where participating students can compare alternatives and characteristic which are not that distant and abstract any more. By providing interactivity within the environment and a 'feeling' of presence and immersion, dialogue and encounter, Second Life allowed the participants in the CALF project to visit and immerse themselves in learning locations and cultures in a way that is not possible in real life. It was hoped that in this way it could give a very real sense of a possible future for learning technologies. The experiences in Second Life can provide a platform for the creativity, imagination and viable innovation in engaging with the technologies and pedagogies of the future that can reduce "the thinking cost" of having to compare alternative futures.

During the Second Life CALF event, the three students entered Second Life for the first time and explored different sites—the Beyond Distance Research Alliance Media Zoo, the replica of the Sistine Chapel recreated by Vassar College and NASA's moon probe launch site. After the event the students were interviewed individually about their experiences in Second Life and their ideas about the future of learning.

The next section of this paper presents a summary of the visions of the future of learning of the students who participated in the CALF project events.

Visions of the future of the students

The issues which emerged from the interviews were quite varied, and ranged from the particular to the general. The initial analysis of issues did not

2

contain strong evidence of a consensus or of common themes. The issues raised in the interviews, however, could be grouped into several areas, each of which included a number of perceived trends.

The initial scenarios proposed by the students were centred on ideas about increased flexibility in the provision of education, increased accessibility and participation in higher education in the future which would lead to an increase in the diversity of the available educational content and the student demographic profile.

"80% of the population today is enrolled in a programme of study and since all learning content became free, producers receive their income from advertising and donations."

"80% of the population today is enrolled in a programme of study, this means our society is more educated. I am studying full-time at the University of Leicester and today the vice-chancellor announced that the university would invest 3 million pounds in renovation of the student accommodation blocks which means I can study in a safe and comfortable environment with my friends."

Quotes from the student scenarios

The students envisaged that the stake of non-traditional providers in higher education would grow and that the competition between HEIs would increase, leading to a fall in the cost of education:

"Prof. Lindsey returned our assignments today — I have done well. I think this is because I used external resources in addition to my traditional degree structure which has enabled me to learn when it's convenient for me."

Quotes from the student scenarios

At the same time, a recurrent theme across the student scenarios was the expectation that education will be a continuous process, with the concept of "completing education" disappearing. Interestingly, the driver for the disappearance of "an end to education" was not conceived to be the pressure of ever-increasing amounts of information that will come in the future. The desire "to always learn new things" was also identified as a driving force, coupled with the expected low-cost of learning and the enabling power of technology to deliver learning conveniently to the individual needs of the students:

"I found my grandmother's graduation photographs today. I keep thinking what a funny thing this "graduation" must have been. How could they have assumed they could "graduate" and finish "education"? If I want to be employable, I need to spend at least ¼ of my week in learning new things, otherwise I will fall behind."

"It is fun, learning new things. People like learning something new, always, so if you can learn anything, I mean with technology, why stop learning? People will learn more in the future."

"All learning content became free. Producers receive their income from advertising and donations."

Quotes from the student scenarios

The participants in the event expected that the use and importance of technologies for education would increase and that the role of user-generated content, social-networking, peer assessment and referencing, and the use of interactive and participative approaches to teaching would also grow. As part of this process students expected that the rise of learning technologies, which instead of becoming outdated with use, become more valuable as more user-generated content is invested into them, and that the technologies will become "truly learning" in that they learn about their users and constantly morph / adapt to their users' needs — the way that Amazon, iTunes or Youtube recommendations work today. One student gave as an

example of "a technology that learns" his iPod because he had invested time, effort and resources to personalise it and now it "knows" about his preferences and style, thus becoming more valuable with use.

"One of my Facenote contacts also has an interest in Shakespeare; we got in touch after we discovered we had tagged the same course components on Youtube."

"Anybody can add to and change educational resources. You can check their quality by the number of times they have been favourite, tagged and recommended."

"I worked with Abel from Argentina and a Katya from Russia on a task that Glaxo Welcome had posted on the examination discussion board on Facenote. We used translation software for the online discussions so all three of us could speak our native languages and still understand each other."

<div align="right">Quotes from the student scenarios</div>

An interesting projection was that HEIs of the future would need to be more involved in socially responsible projects and activities as part of their strategies for competition for students. Environmental and social considerations were the few areas of the students' future narratives where the envisaged futures were not entirely optimistic. Expectations of HEIs addressing issues of environmental and social responsibility were present across all of the student-generated narratives about the future:

"All learning is now done [partly] on campus since computers were banned after the UN Commission on Climate Change discovered that computers contribute greatly to global warming. "

"I transferred my studies from Kyoto University to the Sorbonne after Kyoto failed their recycling targets for 3 consecutive years."

"I decided I will study Automated Chemical Synthesis with the University of Bath because they are supporting so many of the social causes I support—they are donating funds for HIV treatment in Lesotho, rural community development in France and literacy projects in Bulgaria."

<div align="right">Quotes from the student scenarios</div>

Discussion

In this paper some of the methodological, practical and conceptual issues of developing future scenarios for learning with students were discussed. A few clarifications are in order to point out the limitations of this paper. As it is aimed at a futures scenarios study, it does not propose an exhaustive academic analysis of the current situation of HEIs. Rather, it offers a description of trends and ideas of possible futures for learning from the perspective of the students who took part in the CALF project. A challenge that the chosen approach presented was one common for scenarios—that generic scenarios are of little interest and of limited use to organisations precisely because they are too general. Also, a relatively small number of the students made a large number of contributions, while the majority of the students made only few. Despite these issues, the student experience revealed that future thinking events can be seen as vehicles for the empowerment of students, opening up new possibilities for thinking about the future. Some of the futures envisaged by the students focussed on technology, others on society, the economy and the environment. A common thread across all of them is the emphasis on the enabling role of democratic and participatory debate about the future of learning and the importance of the ability to think creatively and imaginatively in the construction of scenarios.

Section 2: Other Papers   0164 The learning technologies of the future: technologies that learn?

102

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Section 2: Other Papers   0164 The learning technologies of the future: technologies that learn?

103