Virtual Universities and Virtual Campuses

Working Group 3.6

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Abstract This report considers several issues that relate to virtual universities. Firstly a typology is considered to cover the main types of virtual university and their distinguishing features. One can distinguish several types of institutions: pure virtual universities, extension of current universities, outgrowth of current distance learning institutions, integrating the internet and purely commercial ventures. Following on from the typology, we consider how such universities are funded and how this might influence the curriculum. The curriculum is considered in a section on educational effectiveness, followed by issues related to accreditation and competitiveness. Finally, we comment on research in a virtual environment.

1. TYPOLOGY

We distinguish five dimensions for classifying virtual learning initiatives in higher education. The dimensions may have four discrete values or vary along a continuum. In all cases we use a scale of 1 to 4 along the dimension.

1. Method of funding:

Public:	government subsidy	1
	institutional budget	2
Private:	industrial financial support	3

corporate budget 4

They may combine in public-private partnerships.

2. Degree of collaboration, which may vary along a continuous scale from 1 to 4, meaning no collaboration at all (single organisation) through weak collaboration (e.g. project wise) to strong strategic alliances
3. Degree of virtuality in interaction, which may vary along a continuous scale from 1 to 4, meaning conventional face-to-face teaching to a wholly internet supported course, i.e. 100% virtual interaction
4. Degree of virtuality in delivery, which varies along a continuous scale from 1 to 4, meaning conventional classroom delivery with supporting printed materials, to fully internet delivered materials with no direct teaching or supporting paper.
5. The variety of target populations:
 - 18-21 school leavers 1
 - life long learning
 - a second chance university 2
 - leisure learning 3
 - professional development 4

1.1 **Examples**

The typology above is applied to several institutions around the world.

UK Open University and Dutch Open Universiteit

Funding	1, 2
Collaboration	2
Interaction	3
Delivery	3
Target	2, 3, 4

Dutch Digital Universiteit (consortium)

Funding	1, 2, 3
Collaboration	4
Interaction	4
Delivery	4
Target	1, 2, 3, 4

Swiss Virtual Campus

Funding	1, 2
Collaboration	2
Interaction	3
Delivery	4

Target 1

Phoenix University

Funding 4

Collaboration 1

Interaction 4

Delivery 4

Target 4

Curtin University Learning Technology Program

Funding 1, 2

Collaboration 2

Interaction 4

Delivery 4

Target 4

Monash University

Funding 1, 2

Collaboration 1

Interaction 1 - 4

Delivery 1 - 4

Target 1, 2, 4

It can be seen that there is a wide variation in the implementation of what is meant by a virtual university.

2. FUNDING

The various institutions and companies that offer on-line learning operate under very different financial regimes, according to whether they are privately or publicly funded (see typology).

Open universities are often national institutions and so are financed by the Government, thus covering most development costs and part of the tuition fees. The fees are set relatively high so that these institutions are able to cover their operating costs. In financial terms open universities have much in common with private companies and private universities except that the former don't have to concentrate (restrict themselves) to highly demanded courses and topics, such as those in the business and IT areas. The income of commercial, for profit, universities has to cover all costs, including both the development costs and the administration and running costs for web-based learning in the virtual classroom. The proportion of web-based courses and

elements in ordinary courses is increasing and therefore it is expected that the need for funding for development costs will increase.

A true virtual 'higher education' institution will operate with net-based teaching and learning only. A virtual university has no need for lecture rooms and other infrastructure, thus reducing overheads. However, virtual universities have other high costs, namely those associated with the development of net-based modules from scratch. The traditional higher educational institutions offer face-to-face campus-based teaching and learning with add-on virtual support. There are lower costs for this wrap-around development.

In addition to the cost of developing coursework there is the cost of running and maintaining web-based modules sustained through ongoing changes in the curriculum, increases in the number of students and accordingly the tutoring costs. These factors render it necessary to plan the budget carefully, allowing for ongoing costs in addition to the initial production costs.

3. VIRTUALITY

3.1 Educational effectiveness

One of the key objectives of virtual universities is to improve educational effectiveness, where educational effectiveness in this context is taken to mean achieving the aims and objectives of educational programs.

It is considered that a key factor in achieving effectiveness in virtual universities is the strong support for the virtual operation by the institutional leadership. Without explicit strategic and financial support and institution is unlikely to be able switch substantially from a conventional mode institution to a virtual one.

In order to achieve educational improvements in virtual learning a certain amount of adaptation is required of all participants, both staff and students. New roles may have to be found for:

- Educational designers
- University lecturers
- University tutors
- Students
- Computers.

These new, emerging roles can be supported and enhanced by

- Preparation and maintenance of high quality learning materials, e.g. at minimum at least at the level of a standard textbook

- Improved delivery mechanisms
- Appropriate administrative structures, e.g. online enrolment
- Support structures, e.g. online library access
- Electronic collaboration mechanisms for student-student and student-university staff interaction
- Sustained training and professional development.

As a necessary prerequisite for the development of effective virtual learning is the need for student preparation for life long learning in virtual environments throughout their educational careers. One aspect of this is the development of independent learning skills, which need to be emphasised in virtual education, alongside social skills, e.g. the skills of virtual collaboration, to prepare self-motivated and independent students.

The scheduling and structuring of work task requirements in a virtual environment may need to be fitted to the independent learning capabilities of the students, e.g. students with minimal independent learning capacities may initially need a more comprehensive support structure which reduces with the student's maturity and development.

Students learn in a variety of ways so there should be a wide range of educational media and methods available in the virtual world, rather than assuming all virtual university activities must be solely conducted online.

To achieve these changes there needs to be more research on teaching and learning in virtual environments within the context of virtual universities.

4. COMPETITION

Educational institutions are now working in a competitive environment, which has changed over the recent years. They have become much more student centred; the student is the focus as a customer and this is expected to increase. Evolution will be demand-driven. The commercial influence will be strong as companies invest more in development work.

The traditional academic exam is still a yardstick for assessment, and will still be a necessity for first-degree students. For others, an exam becomes less important. Higher education, defined and created by faculties and institutions will be of less interest for the mature student. Adult students who constitute a major growth area will compose and define their own 'portfolios' of knowledge and training.

It is important that the meaning of 'quality' in higher education is clearly defined and described. Academic standards as regards subject knowledge must be maintained. New academic standards as regards form and delivery must be recognised and approved. Universities tend to offer education across

a wide variety of subject areas; 'company education' and the commercial ed-market are often very specialised in a few subjects. Universities must keep up their academic standards and broad research-based education. But they must also realise that this is not enough in a competitive world. Didactic skills, based on research as well, must be developed and these include skills in ICT-based teaching and learning.

Currently, there are three different teaching scenarios, each with different aims and objectives: traditional classroom education, learning that is aided by a computer system and web-based education. Their existence and the movement between them must be recognised and adjusted to. In spite of the progress that has been made, there is a need for more effective learning systems. In ICT-based teaching/learning (t/l), a development in parallel streams can be observed. There is a pedagogic/didactic shift from computer-aided t/l to computer based t/l. A reverse shift can also be observed, when 100% net-based t/l reverses the trend and includes to an amount of classroom teaching. Also, there is the traditional, campus-based t/l. We believe that all these styles, or educational modes, must co-exist since they meet different student needs.

4.1 ACCREDITATION

Accreditation and credit transfer calls for international collaboration and national Cupertino. In order to meet the students' growing demands for international education, academic institutions must accept some adjustment for international standards and quality criteria, with respect to educational/didactic mode and delivery of each course on the market. Consumer information is important to the individual student as well as to institutions and employers. This can be developed and hopefully approved internationally. Quality criteria with respect to the content must still be an issue and responsibility for the institution and national boards.

Virtual universities, in the real sense, are universities operating together and pooling their limited resources, universities open to credit transfer among the member institutions above all, but also negotiating with institutions outside the consortium, the exchange of knowledge and experiences taking place within co-operating institutionally. Such virtual universities have no border limits and even fewer brick-and-mortar limits. Within the virtual universities, accreditation should be one of the most important assets in the competitive market.

5. EXCHANGE OF FREE COURSE MATERIALS

The workgroup on virtual universities and virtual campuses find that exchange of free course materials is an activity that deserves the full support of IFIP and that it should be actively encouraged and supported by IFIP and its local partners as well as by institutions of higher education world-wide.

The workgroup recommends the sharing of free course materials, meaning digital content presented in an educational context, and software licensed to be used free of charge for educational purposes.

Arguments for sharing are plenty: recycling materials reduces cost and time spent on developing courseware to the benefit of institutions and their lecturers, mutual inspiration, and supporting the development of content for the emerging virtual universities and virtual campuses world-wide.

The workgroup on virtual universities and virtual campuses recommend that an educational file- and courseware sharing (Napster-style) service and clearing house be initiated within the framework of IFIP, much along the guidelines employed by the open source community (<http://www.opensource.org/>). It is intended to use specifications on meta-data, content and structure representation as is currently worked out by organisations like: IMS (Instructional Management Systems), CEN-ISSS WS- LT (Council for European Norms / Information Society Standardisation System, Workshop on Learning Technologies) and the IEEE-LTSC.

In order for such a sharing scheme to be successful, the following recommendations and conditions are suggested:

1. Consideration of international and national copyright legislation
2. Easy-to-read student and peer rating of material/courses for quality control and for faster retrieval and overview
3. Material presented explaining its original educational context and with teacher guidelines
4. Acknowledgement of developer of course/courseware and copyright owner
5. Common guidelines for submitting materials (using meta-data etc.).

Other relevant factors include topics such as language and other cultural differences between learner communities, discount prices on commercial software packages for educational use, updating and maintaining shared courseware, and the work on international copyright issues carried out by WIPO.

6. RESEARCH IN VIRTUAL UNIVERSITIES

The issue of undertaking research in the Virtual University context is problematic. Most of the discussion so far has focused on teaching and learning. However, universities undertake research and the question arises whether it is possible to undertake research in such a virtual environment. It would seem important that research into virtual aspects of disciplines should be a characteristic activity of virtual universities, especially in virtual PhD programs. However, doubts exist about the desirability of implementing all of research training programs in virtual environments. The relationship between PhD supervisor and PhD student requires face-to-face contact.

It is considered that research programs in virtual universities should research how the various disciplines could be taught better in the virtual environments.