

# Criteria of Virtual University Operation

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## Abstract

Administration, awareness, and assessment are the three criteria of virtual university operation. This position paper points out the basic requirements of the 3 A's and proposes questions to the operation of virtual university.

**Key words:** Distance Learning, Virtual University, Distance Education,

## 1 The 3 A's

How should a virtual university operate? According to a traditional university, instruction delivery is the most important activity. In order to realize the main activity smoothly, administration is required. A traditional university usually has some student activities and organizations, which need to be properly supported by the university's infrastructure. These are some of the important operation factors of a traditional university. A virtual university also focuses on instruction delivery. But, due to the geographical difference, communication tools should be efficient enough to realize instruction. Communication efficiency points out an important factor: the *awareness impact*. Awareness indicates how strong an individual feels the existence of another person in the communication. For instance, when two persons have an eye contact, the awareness is high. When people are located in different cities and are talking on the phone, the awareness is lower. Sending postal mail has the lowest awareness among these three communication channels. Since a virtual university is distributed geographically, how to use computer networks to guarantee a reasonable awareness is one of the considerations. Awareness certainly affects instruction quality. On the other hand, a virtual university needs administration, which includes activities such as registration, course selection, accounting, and so on. Furthermore, a university needs to ensure that students are learning in order to meet some evaluation standard. This step is to guarantee the quality of education. A virtual university is different to a traditional university in that assessment is difficult. Conclusively, We believe that, a well-considered virtual university supporting system needs to meet the following three criteria:

- **The Administration Criterion:** A virtual university environment needs to have administration facilities to keep admission

records, transcripts, accounting records, and so on. These administration tools should be available to administrators, instructors, and students (e.g., checking transcript information).

- **The Awareness Criterion:** Distance learning is different from traditional education. Since instructors and students are separated spatially, they are sometimes hard to "feel" the existence of each other. A virtual university supporting environment needs to provide reasonable communication tools such that awareness is satisfied.
- **The Assessment Criterion:** Assessment is the most important and difficult part of distance education. Tools to support the evaluation of student learning should be sophisticated enough to avoid unbiased assessment.

## 2 Specification of Software Tools

The virtual university infrastructure is a logical layout of network connections, which tight together workstations and servers of various purposes. Among these computers, software tools to support the operation of daily virtual university activities run either at a particular location, or run as a mobile agent program. This section discusses the specification of the software tools, from the three perspectives: administration, awareness, and assessment.

### 2.1 The Administration Tools

The administration tools are used by the administrators, the instructors, and students. Some of these tools can be accessed via various privileges. The tools for virtual university administrators are:

- **Student record maintenance tool**
- **Accounting tool**
- **Course catalog maintenance tool**
- **Curriculum schedule maintenance tool**
- **Virtual library maintenance tool**
- **Public Announcement Tool**

Instructors in a virtual university need tools to develop their courses. Virtual courses can be Web-based multimedia documents, video records, or the combination of both. Instructor tools that should be developed include:

- **Course development tool**
- **Course annotation tool**
- **Lecture-on-demand tool**
- **FAQ auto reply agent**

Students in a virtual university also need some tools:

- **Course selection and on-line registration tool**
- **Transcript/diploma inquiry tool**

## 2.2 The Awareness Tools

As discussed in the previous section, awareness impact plays an important role in the success of a virtual university environment. According to the characteristics of communication, awareness tools can be divided into two categories: asynchronous tools and synchronous tools. The former tools are used in instruction activities which is not on-line and does not need an immediate response. The later tools, on the other hand, require real-time communication. Asynchronous communication tools include:

- **Course annotation playback tool**
- **Lecture-on-demand playback tool**
- **Student notebook tool**
- **Office hour scheduling agent**

Among the tools in a virtual university system, real-time communication tools are the most difficult parts to build due to the difficulty of maintaining continuous media transmission over a bandwidth limited network infrastructure, such as Internet. Synchronous communication tools not only need to ensure real-time interactions, but the Quality of Services is important. The communication tools to be used in a virtual university environment include:

- **Floor control tool**
- **Audio communication tool**
- **Video communication tool**
- **Chat room tool**
- **White board tool**

## 2.3 The Assessment Tools

Assessment is one of the most difficult and interesting research topic in distance learning. Since the instructor and students are separated from each other, it is hard for an instructor to know the in-class behavior of the students. Similarly, when a quiz or test is given, it is necessary to assure an unbiased evaluation. Assessment tools of a virtual university system can be divided into two categories: on-line tools and off-line tools. On-line assessment tools include:

- **In class student participation guard**
- **Web navigation patrol**

On the other hand, off-line assessment tools may include:

- **Class record bookkeeping and grading tool**
- **Learning curve analysis agent**

## 2.4 Other Tools

There are other tools useful and should be

developed for the virtual university environment. These tools are used in research activities or designed to assist students:

- **References Collection/Processing Agent**
- **Glossary and Citation Management Agent**
- **Adaptive Document Agent**
- **Intelligent Tutoring Agent**
- **Preference Agent**

## 2.5 Usability of Tools

The use of the above tools can be divided into two categories, which are administration and instruction. This session discusses some examples of using the above tools in an integrated manner. In virtual university administration, the system is used in many ways:

- **Student registration**
- **Library service**
- **Student service**
- **Tuition service**

One of the most important purposes of any university is on instruction delivery. Even virtual university has a different style of communication between students and the instructor, it is possible for a virtual university to operate the same way, or to operate very closely to a traditional university. This goal can be achieved by using the above tools:

- **Web-based instruction for open education**
- **Lecture-on-demand instruction for off-line learning**
- **Synchronous virtual university instruction for on-line students**
- **Office hour instruction for students.**

## 3 The Questions

There exist some questions that we have to consider in virtual university operation:

- Does a virtual university need to operate the same as a traditional university?
- Is there a difference between virtual university and traditional university in terms of student evaluation? And, does students need grades in a virtual university?
- Is there a difference between virtual university and traditional university in terms of instructor load? And, what kind of system we need to reduce the load of instructors?
- How does virtual learning affect the social behavior of students? And, can a virtual university system consider student activities (or social activities) as part of the requirement?
- Should we call it virtual university or else?

Some questions may have partial answers while others do not. The panelist hopes that, in the panel on Virtual University of COMPSAC 2000, some of these questions will be addressed, with possible directions toward the solution.