TECFA's virtual campus : integrated tools to support pedagogical paradigms

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TECFA's Virtual Campus: Integrated Tools to Support Pedagogical Paradigms / Virtuelles Campus TECFA: Integrierte Werkzeuge für die Unterstützung pädagogischer Paradigmen / Campus virtuel TECFA: outils intégrés pour soutenir les paradigmes pédagogiques

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ABSTRACT. TECFA’s Virtual Campus is supported and based on an integrated teaching and learning environment. By embedding course modules, resources, information, and activities as objects within a complex database, a dynamic Web-based environment is generated. The framework of the Virtual Campus is defined as a hierarchical series of zones, buildings, and rooms, thereby creating elements of space, structure and navigation. Unlike a simple instrument to diffuse knowledge, the Virtual Campus can also be described as a series of pedagogical tools. Combined, these tools contribute in the creation and delivery of teaching and learning scenarios, and in turn, serve as concrete models of organized, structured, and accessible activities. This article proposes a taxonomy, composed of five different categories, of which account for the diversity of the tools in TECFA’s Virtual Campus.


RÉSUMÉ. Le campus virtuel du TECFA constitue un environnement d’apprentissage intégré. Il inclut des activités d’apprentissage, des modules de cours, des ressources, etc. qui, parce qu’ils sont considérés comme des objets dans une base de données, permettent de créer un environnement web dynamique. Le cadre du campus virtuel est organisé sur une structure hiérarchique de zones, bâtiments et salles, créant de ce fait une structure topologique - spatiale - et fonctionnelle. Le campus virtuel peut également être décrit comme une plateforme unique intégrant divers outils pédagogiques. Pour les enseignants, le campus contribue à la création de scénarios et d’activités pédagogiques tandis que pour les apprenants, il constitue un espace de médiation et de médiation qui leur permet d’avoir accès aux activités et de les réaliser à distance. Nous proposons dans l’article une taxonomie à cinq classes qui rend compte de la diversité des outils proposés.

KEYWORDS. TECFA, virtual campus, Web-based environment, pedagogical tools, teaching, learning.

SCHLÜSSELWÖRTER. TECFA, virtueller Campus, webbasierte Lernumgebung, pädagogische Werkzeuge, Lehren, Lernen.

MOTS-CLÉS. TECFA, campus virtuel, environnement d’apprentissage intégré web, outils pédagogiques, enseignement et formation.

1. TECFA’s Academic Setting

TECFA (Technologie Formation et d’Apprentissage) is a research and teaching unit within the Faculty of Educational Sciences, at the University of Geneva. Now in its tenth year, TECFA’s teaching discipline focuses on the field of educational technology, encompassing cognitive issues in learning technology, cognitive effects of educational software, computer mediated communication and information systems in education, multimedia coursework, and distance education.

All of these teaching and learning activities are concentrated in a post-graduate Masters degree program, STAF (“Sciences et Technologies de l’Apprentissage et de la Formation”). STAF is organized as a b-modal academic plan, offering part-time course work on the campus, alternating with periods of distance education off-campus. Therefore, TECFA has created a Virtual Campus to help facilitate the teaching and learning needs for STAF’s dual demand of distance and presence.

2. What is a virtual campus?

It is not uncommon for academic institutions to refer to themselves as being a “virtual campus.” But what does the term “virtual” mean in a campus setting? Just simply depositing single, static course content on the network and making it available through the WWW is not enough to define a virtual campus. Likewise, there are many existing Web sites that propose these types of courses on-line without ever asserting a true model of a virtual campus. For example, often times remote or present learning scenarios employ Internet tools, such as electronic mail and forums, and never bother to question their pedagogical contexts in a virtual campus setting. Therefore, it is necessary to formally define what constitutes a virtual campus.

First of all, a virtual campus can be explained as an integrated environment based on technologies of the WWW. Additionally, it exists as a virtual environment, subjected to both perception and comprehension, in terms of space and structure. Considering that there is an already existing concept of space and structure in a university campus setting, an analogous metaphor can be derived and applied to a “virtual” campus setting as well. This metaphor of a virtual campus is furthermore expressed through semantic fields and lexical structures. From here, a two-dimensional or three-dimensional element can be added to enhance the virtual campus’ representation.

Additionally in a virtual campus, information, resources, and activities are implied in a global pedagogical scenario. Here, the technologies inside the Virtual Campus unite the learner and the instructor, carry course content and information and provide the opportunity for two-way interaction between them. Furthermore, these technologies can serve individuals and groups, by facilitating synchronous (same time) and asynchronous (different time) learning, which provide educational services that can be accessed from presence or distance locations.
3. Integrated Tools in a Virtual Campus

Going into further detail, integrated learning environments combine two or more of the single-function Internet-based tools and create a multifunctional tool that can be used for several purposes. Integrated learning environments provide a common interface that can be simpler to use than that provided by using a set of independent tools. They may require that only a single, monolithic server software application be set up by technical support staff, instead of many independent tools. Furthermore, the consistent integrated interface design is less likely to intimidate instructors and students who are in the process of learning to use a new software application each time a new tool is incorporated into the course. In addition, integrated learning environments are typically developed specifically for education or training, and may include features such as support for online examinations and monitoring, where each student has the freedom to access the information.

Moreover, integrated learning environments have the capability of using dynamic Web pages, incorporating Web page forms as the interface to a dynamic database. For instance, a dynamic Web page may display real-time data from a dynamically developing system, such as user log-in time and location in the system. Such systems may generate all their Web pages dynamically, based upon information in the underlying database, rather than merely serving a set of static texts that were prepared earlier. Dynamic Web pages can provide an interface for modifying both the integrated learning system itself and other dynamic databases that may be accessed through the integrated system.

4. The Creation and Role of TECFA’s Virtual Campus

Initially, the opening of the STAF diploma prompted TECFA’s first version of a Web-based model. At the time, TECFA’s goal was to create a Web site that would cultivate distance educational needs. Therefore, course resources, materials, and some activities were placed at the students’ disposal on the Web. This early Web-based version offered various types of general information about courses, especially relating to the organization of the current year. But aside from the Web-based site, the STAF diploma was based on other technologies on the network, including electronic mail, forums, and FTP.

Soon, a different need for a Web-based teaching and learning environment began to emerge at TECFA. A more integrated model was sought after that would be able to combine and provide a technological niche for the various pedagogical scenarios at TECFA. Therefore, the concept of TECFA’s Virtual Campus was understood and hence developed as a non-commercial platform. The result was that, unlike the previous method to diffuse knowledge via the Web, the new Virtual Campus model was capable of delivering tools via the Web to expand environments of work, acquisition of theoretical concepts, and engagement of activities, all under a common interface. In addition, TECFA’s Virtual Campus encompasses a series of embedded pedagogical tools, specific to teaching and learning paradigm of asynchronous and synchronous communicational designs.

TECFA’s Virtual Campus represents a learning environment that has all the essential qualities of a "real" distance educational campus plus the component of face to face personal contact in traditional educational settings. The concept of the Virtual Campus is understood and supported by a pedagogical approach to learning, informational retrieval, user roles and responsibilities in a learning and teaching community, focusing on the importance of a partial educational delivery at a distance.

TECFA’s Virtual Campus is a lexical representation of a hierarchical spatial metaphor. Here, the framework of the Virtual Campus is supported by a hierarchical menu, composed of a series of zones, buildings, and rooms, thereby creating metaphorical elements of space, structure and navigation. More specifically, zones represent courses within TECFA. Inside each zone, different and separate buildings are located that define pedagogical scenarios that support the courses. Interior to the pedagogical scenarios lie rooms containing course activities.

Continuing, within TECFA’s integrated Web-based environment, a series of pedagogical tools can be described. Combined, these tools contribute in the creation and delivery of teaching and learning scenarios, as well as the provide the concrete techniques in order to organize, structure and access the various activities within. Further, these tools are detailed in the following taxonomy:

- **Navigational Tools**: These tools are utilized to enhance the metaphor of space and structure concerning theoretical concepts inside the Virtual Campus, especially in terms of navigation and information retrieval.
- **Awareness/Informational Tools**: These tools strengthen the perceptions of user presence for campus members. Additionally, these tools provide quick access to campus member information and location. Most importantly, these tools evoke communication, collaboration, and information sharing within the campus community.
- **Tools for Managing Learning Activities**: In course scenarios devoted to group projects, project management tools have been developed to increase the quality of exchanges between students and teaching staff.
- **Communication Tools**: A) Asynchronous tools that support communication - These tools provide the exchange of data, files, and communication where the correspondents are not online at the same time. B) Synchronous tools that support communication - These tools provide a real-time exchange of communication where the correspondents are online at the same time.
- **Tools Supporting Learning Content and Activities**: These tools aid in the understanding of the theoretical concepts applied in the course. Students gain this understanding by engaging in an activity involving the theory and afterwards, analyzing the dynamically generated results from the activity. Additionally, these tools are also used for research purposes for the instructor.

These tools stimulate the importance of learning and teaching in the Virtual Campus. Combined, the Virtual Campus tools are designed to enhance the structure of TECFA’s expansive curriculum, both at the pedagogical level and at the management level.

5. Considerations and Conclusions

Considering the endeavor to develop and construct TECFA’s Virtual Campus, several remarks can be made. First of all, the implementation of effective distance learning requires extensive preparation, as well as adapting traditional teaching strategies to a new learning environment. This process demands a comprehensive understanding of the theoretical and practical aspects of distance education, enabling educators to create a virtual learning environment that is both engaging and effective. Furthermore, the success of such initiatives hinges on collaboration with various stakeholders, including students, faculty, and technical support staff. By fostering a culture of continuous improvement and innovation, educators can continually refine their approaches to meet the evolving needs of learners in a rapidly changing educational landscape.
Formation à distance sur un campus virtuel : un exemple / Fernlernen auf einem virtuellen Campus: ein Beispiel / Distance Education on a virtual campus: an example

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RÉSUMÉ. Le campus virtuel décrit dans cet article est à même d’accueillir des formations dont le style peut varier de la transmission des connaissances jusqu’à leur construction par les apprenants. L'exemple d'une formation à distance est décrit ici en rapport avec les outils de collaboration mis à disposition par la communauté éducative. Les stratégies pédagogiques sont basées sur la construction des savoirs par les apprenants eux-mêmes, la collaboration entre pairs, l'organisation d'ateliers et de séminaires par les enseignants et dans certains cas par les étudiants, ainsi que la poursuite, l'encadrement et l'animation de projets personnels des étudiants. Les expériences acquises avec un public très hétérogène et une pédagogie innovante nous ont permis d'adopter les pratiques, d'ambilorer le dispositif, et d’envisager des développements du campus virtuel de l’université Louis Pasteur (ULP) pour les formations à venir.

ABSTRACT. The virtual campus described in this article is able to host formations whose style may vary from transmission of knowledge, all knowledge construction by students. The example of a distance formation is described here in connection with the tools for collaboration placed at the disposal of the educational community. The teaching strategies are based on knowledge construction by students themselves, collaboration between peers, organization of workshops and seminars held by teachers and in certain cases by students, as well as the continuation, the framing and the animation of student's personal projects. The experiences build up with a very heterogenous public and a innovating pedagogy enabled us to adapt the practices, improve the device, and consider developments of ULP's virtual campus for further formations.


MOTS-CLÉS. Formation à distance, campus virtuel, apprentissage, groupe, collectif, Internet.

KEYWORDS. Distance Education, virtual campus, learning, group, groupware, Internet.

SCHLÜSSELWÖRTER. Fernuniversität, virtueller Campus, Gruppe, kollaborative Softwarewerkzeuge, Internet.