Academic Education Chain Operation Model

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Abstract: This paper presents an approach for modelling the educational processes as a value added chain. It is an attempt to use a business approach to interpret and compile existing business and educational processes towards reference models and suggest an Academic Education Chain Operation Model. The model can be used to develop an Academic Chain Operation Reference Model.

Keywords: Academic Processes Modelling, Value Added Chain.

1   Introduction

When we take into consideration both the student's level of competence and the business's desire to satisfy customer demands, we realise the need to develop adaptive learning approach. It is essential to have efficient and effective university education that is synchronized with the changing environment – inputs, output results and competences.

On the other hand, the development and the implementation of new technologies have expanded the possible forms and ways of the educational process e.g. face-to-face, blended and online learning (Garrison and Kanuka 2004). Information and communication technologies introduce us to new pathways for lifelong learning at universities, schools and workplaces. Nowadays e-learning is not only enhancing people's proficiency, but also is giving them the freedom to decide what, where, when and how to learn and to develop competence. Applying e-learning at the universities is going to give many competitive advantages for all involved parties.

The problem is the existence of various practices and incompatibilities between academic processes and procedures in different universities and countries. Before implementing e-learning standards and delivering convertible systems, it has been recommended that one model the academic processes and simulate different scenarios (Havey 2005, Mayes de Freitas 2004).

This paper presents one approach to modelling educational processes as a value added chain. We attempt to interpret and compile existing business, governance and education processes reference models and suggest an example, Academic Chain Operation Model (ACOM). The latter can be used to develop an Academic Chain Operation Reference Model (ACORM) in the same way it is with already established business models.

2 Business process management Systems and academic processes management

Business process management (BPM) includes the cycles of analysis, design, deployment, monitoring and maintenance of activities and allows continuous evaluation and improvement in terms of cost, time and quality. People, process and technology collectively form the core of any successful BPM. Business processes management systems (BPMS) help managers to adopt the latest business innovations and to be competitive worldwide (BPTrends 2006). They, furthermore, represent the logic of all running activities in business organisations and lead the managers towards their desired business goals.

Just like business processes the academic ones comprise mainly sequences of decisions. Academic processes are different from business activities and have their own peculiarities based on the education as a system. The following is an incomplete list of major peculiarities of the academic processes:

- Education is an active and mutual process;

- Knowledge transmitting methods, forms and techniques between teachers and students are constantly evolving;

- Because of the huge variety of interests the stakeholders negotiate in a difficult and complex way;

- Technological developments and innovations are a key factor for skills and knowledge formation.

In today's e-learning literature too much emphasis is placed on technology, and too little on the good practices in the fields of BPM and, IT Applications in the educational field.

3 Methodology and previous works

We follow the BPM methodology (Scheer, Abolhassan, and. Kirchmer 2003). Our approach uses BPM tools to describe, model, animate and simulate the chosen processes.

Our starting point is the collection of both the artefacts and the best practices related to education processes and models. Nichols, Terry Mayes and Sara de Freitas have published reviews concerning the theory and practice of e-learning and how they could be mapped together (Mayes de Freitas 2004, Nichols 2003). The reviews not only explain the pedagogical and pragmatic approaches to e-learning, classifying it into three broad areas, but also suggest a principle of constructive alignment to ensure that practice models are based on relevant theoretical frameworks. There are many running EC, international and local projects about educational innovations (COVARM 2006, TENCompetence 2006, PRIME 2006, JISC, 2006b). Also important is the useful guide for managers and practitioners in further and higher education on emerging practices with mobile and wireless learning (JISC, 2006a). It presents innovative practice with e-Learning from several points of view: of the learners, of practitioners and of industry. The Sharable Content Object Reference Model (SCORM) provides cost effective solution for institutions for reuse and interchange of standard content across the different platforms for education and training (Watson J., Hardaker G., 2005). In addition, there are also many models related to education and teaching (Wilson, Blinco, Rehak 2004, Knight, Beetham 2006).

The analysis is done with the professor-student partnerships on the basis of the functions required. It is important that the analysis follows the value-added chain logic. According to

this methodology, when processes are correctly described and modelled, it is possible to perform simulations on them (Havey 2005).

Organisations work hard to obtain the best possible practice. A range of best practices have been established as reference models. Many models exist for the business processes, such as: the Supply-Chain Operations Reference-model (SCOR), the Design-Chain Operations Reference-model (DCOR) and the Customer-Chain Operations Reference-model (CCOR). The ITIL (IT Infrastructure Library) is the best practice framework for IT Services Management and eTOM framework and describes the business processes in the telecommunications industry (Casewise 2006). FEAF defines the US government processes architecture (FEA 2006).

4   An Academic Chain Operations model

We are attempting to find the right level of adoption and to make use of good cases and practices related to academic processes. The processes within educational and competence development activities should include all the main educational process: planning, designing, managing and support. There are two major directions for academic processes classification: 1) the main education activities and 2) all the other activities. The activities that are not related directly to the educational process and that do not add value for the students, can be classified as additional. For the normal execution of the educational process it is necessary to plan and perform all supporting activities very well. For example academic processes can begin with student enrolment. Encouraging Applications should be organized in a proper way. Subsequent processes that have to be developed are applications processing and examination.

Following the APQC research on process (APQC 2006) we can decompose the educational processes into following groups:

- Category
- Process Group
- Process
- Activity

The top level, **category,** of the Academic Chain Operations Model (ACOM) is illustrated in *Figure 1.* It describes the key issues and the gearing of main processes within the individual units of chains and between them (as networks).

- Planning
- Designing
- Managing
- Supporting

It is a process model that can be used as a tool for academic process governance. ACOM will enable the users to address, improve, and communicate academic management practices within and between all interested stakeholders.
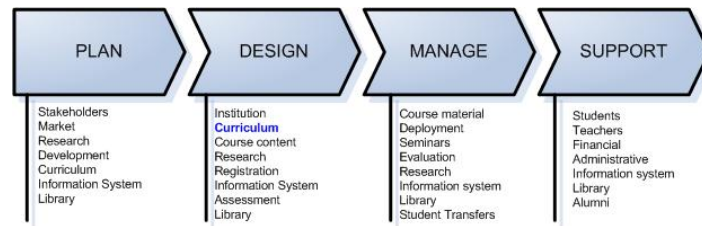
Figure 1. Academic Chain Operations Model (ACOM)

The next level, **process group,** describes the sub-processes of the categories. We have chosen "Curriculum Design" process group for our example. It is an important value creating educational process – *Figure 2*. It is quite similar to "Product development" in the commercial sector, as the process of Curriculum Design involves market research, modelling, designing, development and launch of a new educational product.
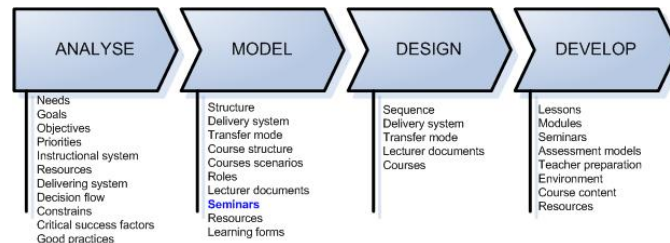

Figure 2. Curriculum process group chain model

The next level, **process,** describes the activities within the process. We have modelled the Ph.D. seminar process (*see Figure 3*). Figure 3 shows the process workflow together with all the activities, roles, document and time. It is also possible to model and simulate different costing scenarios.

Managers suffer boardroom pressure for complete process accountability together with horizontal integration of all the processes thus providing the best possible value to the customer. The ACOM model enables academic organisations to effectively get knowledge about the processes in their academic value chains. From comprehensive process architecture all participants in the educational process can understand the role of technology for supporting the processes.

For each of the processes in the model above we have to describe:

- Mission

- Goals

- Scope

    a.1 Includes

    a.2 Excludes

- Key Performance Indicators

- Workflow

- Roles

By simulating different situations and scenarios in the educational system, its features and behaviour can be improved before potential threats become reality.
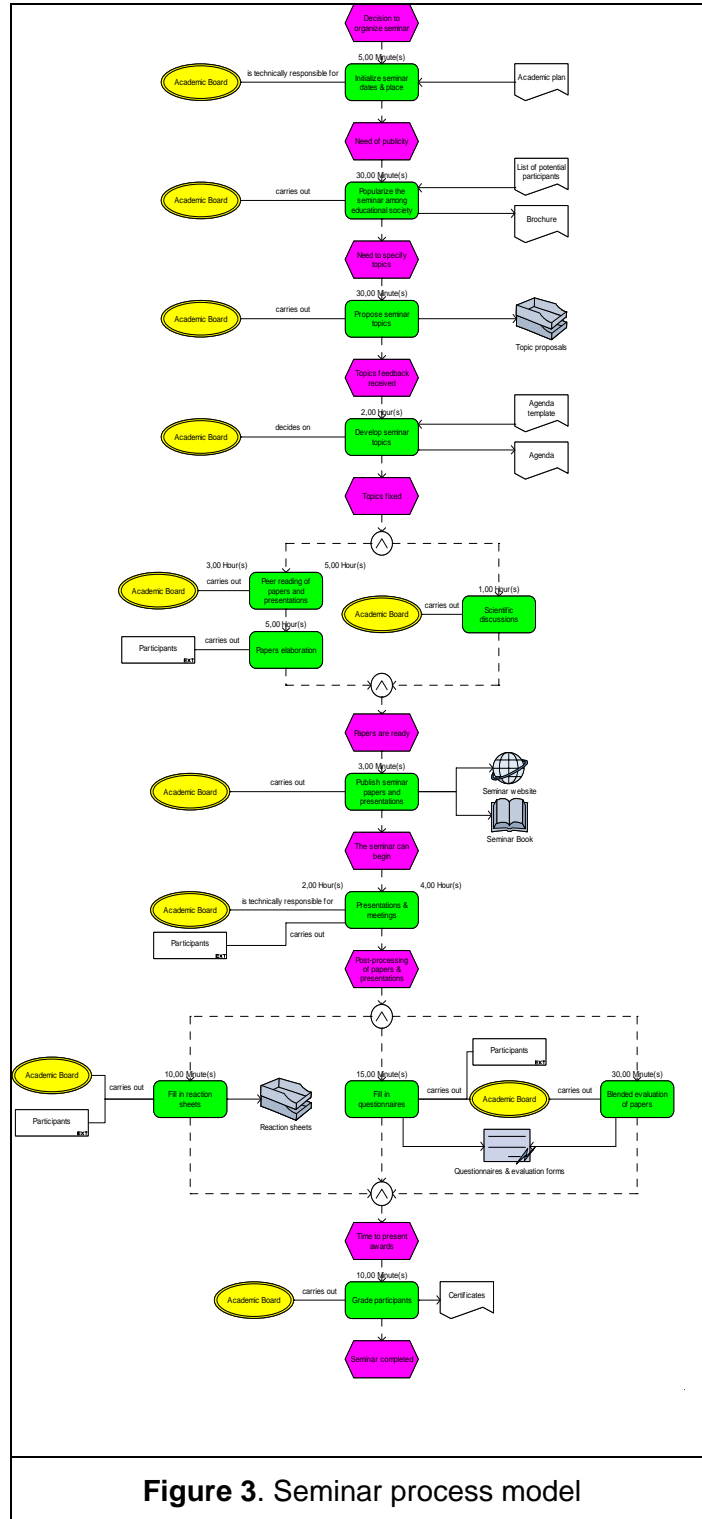
Figure 3. Seminar process model

Conclusion

Our dynamic life requires us to implement new educational methods and forms, according to various existing needs. The elements of ACOM have been developed to model the

academic activities associated with selected phases of the educational process. It shows the approach to modelling and simulate educational activities and in this way to satisfy the learner's demand and to synchronise activities between educational institutions.

By modelling the academic chains using process building blocks, the model can be used to explain simple and complex educational and competence development activities using a common set of definitions. The model is able to successfully describe the academic process and provide a base for continuous improvement. It can be used to provide a roadmap for developing Academic Chain Operation Reference Model and academic processes warehouse of references models.

Acknowledgement

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