Chapter 10

IT Methods and Techniques Applied to Educational Quality Enhancement

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ABSTRACT

European Union countries aspire to create, through the implementation of the Bologna Process, an open European Higher Education Area, which increases the attractiveness of European higher education and the competitiveness of Europeans in the international labour market. This paper examines the importance of the Bologna Process in countries outside Europe and how effective implementation of a Quality Assurance action plan can enhance education quality. The authors apply Information Technology (IT) methods and techniques, such as Total Quality Management (TQM), Goal Question Metric (GQM) and Balanced ScoreCard (BSC), to Educational Management. The derivation of Key Performance Indicators (KPIs) is discussed, as well as their application to a case study at the Cybernetics Faculty of the State Engineering University of Armenia (SEUA), regarding the implementation of an education quality enhancement strategy. As a result of the effort to align to European Higher Education Standards and the Bologna Process, a degree of Business Process Re-engineering (PBR) was necessary. The results show that the main reason for university strategy development is better relocation of resources and determination of which programmes and services are efficient and consistent with the university’s mission.

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INTRODUCTION

The Bologna Declaration is the foundation for establishing a coherent and cohesive European Higher Education Area (EHEA) and for promoting the European system of higher education worldwide (Kettunen, 2002a; Reichert, 2005). The aims of EHEA are meant to ensure more comparable, compatible and coherent systems of higher education in Europe. It was agreed that by May 2005, national quality assurance systems should include:

- A definition of the responsibilities of the bodies and institutions involved;
- Evaluation of programmes and institutions, including internal assessment, external review, participation of students and the publication of results;
- A system of accreditation, certification of comparable procedures, international participation, co-operation and networking.

In order to meet the challenges regarding the EHEA educational institutions have been trying to adapt their strategies to the educational policy. The national policy can be interpreted and analysed by using terms of strategic planning at institutional level (Kettunen, 2002b; Reichert, 2005). Educational institutions need to have a clear mission, comprehensive vision and graspable objectives. They also need to be flexible and adaptable to the new environment (Heje, 2009). In order to understand what the objectives are and how well they are achieved they are linked to a specific strategy. The performance of the strategy is measured through understandable Key Performance Indicators (KPIs), which are communicated to internal stakeholders (academic, technical and administrative staff, as well as students), and to external stakeholders (authorities, parents and the society as a whole). Targets clearly quantifying desired success levels of performance need to be developed for current and future stakeholder satisfaction. The question is not whether students are ready for the educational institutions and processes but whether the institutions and the processes are ready for the students (Deming, 1986). A holistic consideration of learner, learning and learning context together with a broad societal viewpoint that forms the backgrounds and perspectives of each learner are necessary. In addition, build-in quality assurance criteria and procedures embracing the whole process are required.

The educational assessment is established around four questions (Siakas, 2007), namely: What are the objectives of the educational institution? How does it try to achieve them? How does it know that it has succeeded in the achievement of the objectives? What are the required changes for success? In order to answer these questions the educational assessment needs to comprise a systematic process of collecting, processing, analysing and interpreting data regarding certain entities, often called metrics, aiming to provide useful information of weakness and for future improvements and enhancements of education quality (Calder, 1995; Lakasa, 2005, Georgiadou & Siakas, 2008).

MEETING THE CHALLENGES OF THE BOLOGNA PROCESS

The main aims and objectives of a quality assurance system in Higher Education (HE) is to create a ground for visibility into the processes that support the study programme and into measurements of learning outcome, capabilities and competences i.e. what the graduate is able to do (Siakas & Georgiadou, 2009). The quality assurance system needs to support a system of continuous improvement and as Matsuo and Fujimoto (2010) emphasize, a challenging issue in learning systems is how the system supports learners.

The main challenges faced by Higher Educational (HE) institutions pursuing a reform agenda relate to quality enhancement and the scope of
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