Introduction

The statement 'the degree of validity is the single most important aspect of a test' is probably one of the most widespread accepted requirements for assessment instruments (Mehrens & Lehmann, 1984; Ebel & Frisbie, 1991). The situation where the test is intended to measure higher-order thinking skills but where most items require only recall of facts, terms and principles, illustrates a well-known validity concern. The validity question also is relevant on a higher level of aggregation. Together with Gronlund (1971), Van der Vleuten & Wijnen (1990) state that "the key problem in designing any assessment system is to make the assessment procedures congruent with the educational and instructional principles".

The basis for the educational program of the Maastricht School of Economics and Business Administration is problem-based learning. Problem-based learning (PBL) is an instructional method which can be described by a set of characteristics: student-centred, self-directed learning, the acquisition of interdisciplinary and permanent knowledge, the application of knowledge to solve economic problems and small tutorial groups. These instructional key features are translated into a number of specific requirements for the assessment system: assessment based on problems, the assessment of the acquisition and the application of knowledge and an interdisciplinary character. This article presents the results of empirical research which intends to evaluate the assessment system and its underlying principles. It starts with a brief description of three main characteristics of the Maastricht problem-based assessment system. In the second paragraph, the structure of the assessment system and its main instruments are presented. I will especially elaborate on the Overall-Test which aims to assess the core goal of the Maastricht curriculum: the application of knowledge in real life problem situations. Third, the results of the evaluation of the OAT are presented.

A Problem-Based Assessment System: Some Characteristics

It is often stressed that evaluation and assessment shape students' learning (Ebel & Frisbie, 1991; Hounsell, 1990; Balla & Boyle, 1994). This implies that if the faculty wants students to become competent problem-solvers, the assessment of students' level of competence

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1 For an elaboration upon the core characteristics of a PBL-curriculum, I refer to the chapter of Gijselaers.
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problem-solving is a determining stimulus for the focusing of students' learning activities on problem-solving. "If an assessment programme is not congruent with educational goals, the assessment can drive student learning in antithetical directions." (Swanson et al., 1991)

A number of articles are published on the issue of assessment in PBL (Hand, 1993; Marchais et al, 1993; Hassan et al., 1993; van Berkel et al., 1993). They all refer to curricula of medicine or health sciences. This paper focuses on the assessment system of a problem-based economic curriculum as implemented in the School of Economics and Business Administration in Maastricht.

Three characteristics of the assessment system indicate its congruency with the principles of PBL.

1. An assessment system based on problems

In PBL it is essential that students learn by the analysis and solving of problems which are representative of the problems they will face in their future careers. Consequently, a valid assessment system should evaluate students' competencies with an instrument based on real life problems.

2. The assessment of the acquisition and application of knowledge

The acquisition and application of knowledge are complementary elements in a PBL-curriculum. A vast amount of research indicates that, in order to solve problems in a productive way, the retrieval of well-organised knowledge is prerequisite (e.g. Voss et al., 1983). In many educational systems, there is an exclusive reliance on instruments measuring knowledge. Because of the educational rationale, the assessment of problem-solving skills seems to be a logical choice. Test items should require examinees to apply their knowledge to commonly occurring and important problem-solving situations (Swanson et al., 1991). Both levels of competency should be equally assessed; the assessment of the application of knowledge follows the assessment of the acquisition of knowledge.

Since a sufficient level of domain-specific knowledge is a prerequisite for productive problem-solving (Voss et al., 1983; Bransford et al., 1986; Glaser, 1984), the assessment instruments focusing on the acquisition of knowledge should not only serve a certification function but also a feedback function. This implies that the instrument(s) assessing knowledge has to indicate the weak spots in students' knowledge base. This information enhances future learning of students in the direction of the knowledge base necessary to tackle problems.

3. The assessment of integrated knowledge

Since real life problems are mostly multidimensional, they integrate different disciplines within one field of study. The assessment system should therefore be based on integrated problems.

The principles described are the rationale for the problem-based assessment system of the Maastricht School of Economics and Business Administration. I will elaborate on the assessment system in the next paragraph.

The Maastricht Economics Curriculum And Assessment System

The economics curriculum