Perspectives On Problem-based Learning

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Problem-based learning constitutes a radical reform in university education. Over the past ten years, problem-based learning has been put in practice especially in disciplines having a traditional orientation towards professions, such as medicine and law. During this period, problem-based learning has gained the reputation of a far-reaching innovative approach to higher education (Schmidt & De Volder, 1984; Boud & Feletti, 1991; Bouhuis, Schmidt & Van Berkel, 1993). More recently, problem-based learning is also seen as an attractive alternative for programs having a more academic oriented nature (e.g. economics). An obvious question is why problem-based learning became so popular in higher education. What are the acclaimed benefits?

This article describes the rationale underlying problem-based learning, by discussing four major perspectives on problem-based learning. These perspectives reflect approaches to problem-based curriculum design, sets of instructional practices and teaching tools used in problem-based courses, and ways to organise the management of problem-based educational programmes. Four issues are addressed:

1. What are the goals of problem-based learning (why was PBL developed)?
2. What are the basic features of problem-based curricula?
3. What sets of instructional tools are commonly used in problem-based programmes?
4. How are problem-based schools organised?

Goals Of Problem-Based Learning

Although many programmes or courses claim that they apply problem-based learning as leading educational strategy, it seems evident that different sets of educational practices are found in different programme settings. For example, at its most fundamental level problem-based learning is regarded as an instructional tool that uses problems as a context for students to acquire knowledge about science. Contrarily, problem-based learning may also be viewed as a way to conceive or design curricula. Problem-based learning is then not solely regarded as an instructional technique, but as an educational philosophy or approach for designing curricula. Typically, in this case the emphasis is on a multidisciplinary organisation of the curriculum, confronting students with problems as they would find them in 'real-life'. According to this view, curricula should be strongly multi-disciplinary oriented, because 'real-life' problems are often not bounded or solvable within mono-disciplinary constraints. Clearly, many versions
and definitions exist of what constitutes problem-based learning, resulting in many perspectives on problem-based learning.

Problem-based learning as it is generally known today, had its origins in the health sciences (Boud & Feletti, 1991). Initially, problem-based learning was developed as a way to address some persistent problems in medical education. Health sciences education suffered from an excessive emphasis on memorisation and lack of integration between disciplines. In addition, the importance of the need for continuing education was ignored.

Especially the organisation of curricula received increasing criticism. The basic issue was whether the knowledge that students have to acquire during their training, is relevant for their future career as professionals (Glad, 1984). This also includes the aspect of lack of integration between those disciplines constituting the curriculum as a whole. It was argued that in professional practice, graduate students are often confronted with problems having complex multidisciplinary characteristics. Dealing with problem situations requires identification, analysis and management of the problem. Therefore, students should be better trained in problem solving skills, being taught in a multi-disciplinary perspective on problems.

It was this particular issue that led medical educators to seek new approaches in curriculum design. Medical schools at Case Western Reserve University (USA) and McMaster University (Canada) developed in the 1950s and 1960s problem-based courses that focused upon integration between disciplines. Subjects were approached from a multidisciplinary perspective, engaging students actively in problem-formulation and problem-solving. Howard Barrows, a neurologist who may be regarded as one of the major proponents of the problem-based learning approach, attempted to develop a rational foundation for problem-based learning. The following citation from his book on problem-based learning (Barrows & Tamblyn, 1980) provides illustrative material to understand why medical educators were looking for new ways in medical education in the 1960s:

"In 1965, I had been responsible for several years for a neurological clinical clerkship through which six or more third year medical students percolated every four weeks. I became concerned that the usual faculty evaluations were not providing data that were truly helpful to the student. As a result, the simulated patient was developed and used as a standardised patient problem; this provided more data concerning student competence. It revealed that, although students had, for the most part, good techniques in performing a neurological history and physical examination, they seemed to have a paucity of basic knowledge that they could apply to the patient problem. This seemed paradoxical to me, as I had been closely associated with and contributed to, the students' prior courses in neuroanatomy, neurophysiology, and clinical neurology. I knew that these students had been exposed to, and had passed, excellent, detailed courses. This observation about students was shared by many on the faculty, leading to the recurrent, half-serious suggestion that the school ought to have an 'inverted curriculum' where the students would have two years of patient exposure and then two years of basic science. Students thus could then enhance their learning and application of information, since the importance and relevance of basic science information could be perceived more readily."

The citation above contains two important observations concerning the medical program described. First, it seems that a lack of knowledge exists, and that students are not able to use knowledge. Barrows felt that innovation in medical education should at least address these issues. In addition, he came to the conclusion that no medical school can teach all the knowledge that graduates in medical education may need in their future career. Consequently,
students should be trained in self-directed learning skills. After graduation students should be aware that knowledge is not static but is dynamic. Therefore, students should be explicitly trained on how to use new information technologies, to keep track with new developments in professional practice. In the end Barrows (1984) formulated three educational objectives that may be regarded as key features, or major goals, of problem-based learning:

1. students must acquire an essential body of retrievable and usable knowledge;
2. students must acquire to extend or to improve that knowledge to keep contemporary (develop self-directed learning skills);
3. students must be able to use their knowledge effectively in the analysis of problems.

It is interesting that the major goals of problem-based learning gain increasing merit within the context of economics and business education. Teachers in economics and business administration express growing concerns about what to teach and how to teach. Or stated differently, what kind of knowledge is useful for graduates in economics or business (e.g. Bressler, 1977; Courvisanos, 1985; Hansen, 1986, 1993; Klamer, 1993; Milner & Stinson, 1993)? For example, in his essay about economics education, Hansen (1986) poses the question, what kind of knowledge is most worth knowing for economics majors? The main focus of his essay deals with the issue of whether graduates are skilled enough to deal with problems in the practice of economics. Courvisanos (1985) analyses the problematic nature of economics education from a philosophy of science perspective. He claims that within the discipline of economics abstract theories have been developed which have acquired a great level of sophistication. In a parallel development, or maybe as a result, the teaching of economics has evolved into the teaching of abstract theories without making links to history or to the initial problems from which they emerged. He argues that economics is not presented as a dynamic development of ideas to solve central economic problems. Besides from these, he feels that uncertainty exists in the discipline of economics about what to teach due to competing schools of thought and paradigms. Presenting theory-as-fact leads to students' failure to see the relationship between various theories and the practical relevance of these theories. Consequently, problem-based learning may be regarded as a valuable attempt to present various theories as an instrument to understand and explain economics problems.

Concerning education in business administration similar arguments are raised. For example, Milner and Stinson (1993) argue that traditional business education is normally oriented toward strong monodisciplinary teaching and not on teaching business—which is by definition regarded as multi-disciplinary. They stress the importance of problem-based learning as an approach through which students learn knowledge and the application of knowledge simultaneously. These authors contend that traditional business education is in need of radical curriculum and instructional changes. Implementing problem-based learning is seen as a way to address major problems in business education.

In summary, it may be concluded that problem-based learning was developed as an educational approach to renew monodisciplinary oriented curricula for the professions. A multidisciplinary orientation of curricula is regarded as a valuable attempt to gain a closer relationship between the needs of professional practice and training of professionals.

Next to the issue on what to teach, or how to conceive curricula, another important issue in problem-based learning is the focus on self-directed learning skills. The need for continuing education in society in general and in the professions in particular, implies that students should

1 See for example, the chapter of W. L. Hansen (this volume).
learn how to keep track with new developments in their field of knowledge (Schmidt, 1983). If one assumes that professional education contributes significantly to students' attitudes and willingness to adapt to changes in the profession, then this has implications for the form and content of initial studies. According to Barrows (1984), professional practice needs professionals which are able to improve their knowledge, to keep current in their field and to attend to new or unique problems they may face in their work. Problem-based learning is viewed as a way to provide students enough opportunities to acquire these self-directed learning skills.

Finally, the third major goal of problem-learning is to teach students effectively. Problem-based learning may be regarded as an attempt to develop new instructional tools to assure high quality --effective-- teaching. Problem-based learning was also developed as a response to the dominant lecture based approach in traditional higher education. Traditional higher education was heavily criticised for its excessive emphasis on memorisation, or information overload (Goodlad, 1984; Engel, 1991). The basic issue was that students seemed not to be able to use acquired scientific knowledge in solving problems. As such, the effectiveness of traditional higher education was questioned and problem-based learning was regarded as an answer to increase the effectiveness of higher education.

In the 1980s, many years after the introduction of problem-based learning, studies on science education indeed found empirical evidence for the notion that traditional higher education is not as effective as presumed. For example, studies on science and physics education showed that students were not able to transfer their acquired knowledge to performance on simple Newtonian mechanics problems (e.g. Camarazza, McCloskey & Green, 1981; Clement, 1983; Champagne, Gunstone & Kloper, 1983). These studies demonstrated that traditional education does not facilitate an enhanced understanding of physics problems from the perspective of formally taught physics theories. Similar results were found in economics education (Voss, Blais, Means, Greene & Ahwesh, 1986, 1989). Students tended to fall back on naive knowledge, as opposed to scientific knowledge, in the analysis of problems.\footnote{See for example, the chapters of H. P. A. Boshuizen, R. Vaartstra and F. Vernooij (this volume).}

In summary, problem-based learning is seen as a way to address many problems in traditional higher education for the professions. Although originally developed in medical education, today problem-based learning is also used in more academically oriented programs, or disciplines not substantially related to health education. Over the past few years several attempts have been made to introduce problem-based learning in economics or business education. Given the widespread application of problem-based learning in many domains, it is not surprising to see that problem-based learning may have different features in different settings. The next section describes problem-based learning as a way to conceive curricula.

What Are The Basic Features Of Problem-Based Curricula?

The four-year programme of the Faculty of Economics and Business Administration consists of 4 eight-week course periods for each curriculum year. Each course period in year 2, 3 and 4 contains two parallel courses (total time allocation for a course equals 20 hours a week) in economics or business. In the first year, courses in economics and business are scheduled for 28 hours a week. Course contents are organised around central themes in economics or
business administration. These courses are complemented by parallel courses (12 hours a week) in mathematics, statistics and book-keeping. Courses in economics and business use problem-based learning as major instructional method. Students work four hours a week in small-groups. Next to small-group work, lectures are organised and skill training. An obvious question is to what degree is this programme problem-based, or what features make it problem-based?

Many institutes in higher education claim that their curricula are problem-based. Some use problem-based learning exclusively at its most fundamental level (an instructional method in which small groups analyse problems as a starting-point for learning), other institutes conceive problem-based learning as a way to organise curricula in a multi-disciplinar, thematic way. In the literature on problem-based learning opinions diverge about the "pure form" of problem-based curricula.

Bouhuijs and Gijselaers (1993) distinguish two basic views concerning the format and use of problems:

- problems have to reflect directly the problems of professional practice;
- problems must be carefully designed problems that can refer to professional practice.

The first view results in problem formats that look like complex case studies, such as the typical Harvard case. Problems include every detail that professionals normally also meet in daily practice. Writers of cases or problems try to simulate practice as far as possible in the description of cases. It is students' task to disentangle this complex reality in a way a professional would do (Barrows, 1984). Consequently, problem-based curricula focus on problem descriptions with a high degree of real life value. Contrarily to this view is that problems form the starting point for problems (Schmidt, 1983). Problems are to be considered as an instrument to analyse subject-matter, or as initiator for certain learning activities.

Problem-based learning is also considered as a way of organising curricula. In this view curricula are not oriented in a disciplinar fashion. In this view, courses typically cross traditional disciplinary boundaries to realise a high degree of "real-life" value (Boud & Feletti, 1991). Students work in this kind of curricula is focused on studying themes located in different disciplines. Disciplinary knowledge is acquired in the context of problem analysis.

Whether a curriculum may be classified as problem-based has led to great dispute in the literature (e.g. Engel, 1991; Ross, 1991). For example, Ross (1991) distinguishes between:

- problem-oriented curricula (problems are used as selection criteria for content and method);
- problem-based curricula (students work on problems as part of the course);
- problem-solving curricula (students are given specific for solving problems).

Engel (1991) tries to approach this issue by focusing on the coherence of a curriculum concerning choice of contents and methods. According to him four major aspects may be considered as essential components of a problem-based curriculum:

- **Cumulative learning**
  No subject or topic should be studied in finite depth at any one time, rather it should be reintroduced repeatedly.

- **Integrated learning**
  Subjects should not be presented separately, but rather be available for study as they relate to a problem.
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- **Progression in learning**
  As the students mature so the various aspects of the curriculum must change (e.g. working in groups, relationship between theory and practice).

- **Consistency in learning**
  The aims of PBL must be operationalised in every facet of the curriculum (e.g. relationship between teaching and testing).

Integration between disciplines is regarded as an essential feature for choice of course contents in problem-based programmes (Engel, 1991). Especially this feature led to persistent difficulties in the Faculty of Economics and Business Administration of the University of Limburg. According to Gijseelaers, Kunst and Van Veen (1989), this problem derives partly from uncertainty whether professional practice is best served by students trained in the disciplines of economics and business administration using a multi- or interdisciplinary approach, or trained in a monodisciplinary fashion. Above all, a more prominent question is whether these disciplines, from a scientific point of view, have enough in common as to preclude thorough integration.

**Problem-Based Learning As Instruction Tool**

**Process of problem-based learning**

Figure 1 contains a model of problem-based learning identifying the essential elements of problem-based learning (Gijseelaers & Schmidt, 1990). According to this model three kinds of input variables may be identified: student characteristics (students' prior knowledge about the subject-matter of a course), features of the problems used in a course, and tutor's teaching skills. This model will be used as illustrative background for describing problem-based learning as instructional tool. The present paragraph focuses especially on the nature of problems and the tutor role.

The instructional method used in the programme of the Faculty of Economics and Business Administration is based upon the principles of problem-based learning. Students meet twice a week in a tutorial group (consisting of 10 - 14 students) to discuss and analyse problems. Students are randomly assigned to their tutorial group. In each block new groups are formed. The task set before such a group is to analyse the set of problems, detect deficiencies in their knowledge, and consequently formulate learning goals and intended study activities. The tutorial group is guided by a staff member, a tutor, whose task it is to facilitate the learning process and stimulate optimal functioning of the group. Problems are collected in a course book, the so-called block-book. This book is a guide to the students' learning activities. It contains problems, lists of learning resources, and information about scheduled activities. A block is a course period of 7 weeks devoted to and organised around specific themes from economics or business such as consumer behaviour, financial management, or advertising management.

The process of problem-based learning usually starts with presenting a problem to small groups of students. These problems typically consist of a description of a set of phenomena or events which are in need of some kind of explanation (Schmidt, 1993). In economics and business, often an organisation, firm or government agency is used as a context to present
problems. Essential to the method is that students’ prior knowledge of the problem is, in itself, insufficient to understand and analyse it in depth. During the initial analysis questions will be raised that are not “solvable” for students due to their lack of knowledge. The gap between what kind of knowledge should be available to handle the presented problem and what students actually know about the subject-matter discussed in the problem, leads to the formulation of so-called learning goals (student generated learning issues).

![Diagram](image)

**Figure 1:** A model of problem-based learning (Gijseelaers & Schmidt, 1990)

Students discuss and analyse problems in small group tutorials to find explanations and ways to manage the problems. By discussing the problem and asking questions of each other, it is expected that students identify the kinds of knowledge and information required for its solution. The format of problems can range from simple, few sentences only, problem descriptions, through comprehensive case write-ups including, if relevant, data, figures, diagrams, etc.

**Problems as instructional tool**

Table 1 contains two examples of problems used in the first year and post-graduate year. The first year problem is about merging processes in organisations. The post-graduate problem is about auditing processes in non-profit organisations. Both problems share in common their focus upon invoking discussion in small groups about the issues raised. These problems are used as an instructional tool to identify required knowledge before problem-solving actually takes place. This is in sharp contrast with traditional university education in which problems are used to apply knowledge after subject-matter has been studied. The problems in table 1 differ concerning required outcomes. The first-year problem requires students to compare advantages and disadvantages about merging processes, whereas the post-graduate problem asks students
to develop a plan for action. The former focuses upon reading activities of students, studying relevant literature, the latter problem asks students not only to read but also to design a plan.

Table 1: Examples of problems.

Example of first year problem:

- Denwood is an old-established Dutch chain of retail stores in clothing. Denwood sells family-wear. It also has some specialised stores. These stores sell to somewhat older women. Although Denwood has a market share of 55%, it accounts only for 15% of the total result in this market. To change this situation cooperation with another chain (Burns) is considered. Burns is specialised in selling more exclusive clothing.

Example of a post graduate problem (an auditing case):

- An organisation for social-cultural work has a small amount of capital. The income depends on contributions of participants in courses and the profits made by selling beverages, alcoholic drinks, and snacks in the bar of their building. The bar is managed by the house-keeper. Refreshments are served by unpaid free-lance workers. The city subsidises, till a maximum part of each cost component, costs made for housing, personnel, and organisation.
- Develop a plan to check the financial accounting.

The Faculty of Economics and Business Administration teaches students from the beginning how small groups may systematically explore and analyse problems. A problem-solving framework (the so-called Seven-Jump) is used that consists of seven phases. This framework reflects the way scientists normally approach scientific problems through the “empirical cycle” of observation, formulating of hypotheses, deduction and evaluation. It was developed by Schmidt (1983) to provide students with a tool they could use in group work. Table 2 contains the outline of this problem-solving framework.

Table 2: Problem-solving framework, the "Seven-Jump".

- Step 1: Clarify terms and concepts not readily comprehensible
- Step 2: Define the problem
- Step 3: Analyse the problem
- Step 4: Draw up an inventory of the explanations discussed in step 3
- Step 5: Formulate learning objectives
- Step 6: Collect additional information outside the group
- Step 7: Synthesise and test the newly acquired information

During small-group work, students follow these steps sequentially. An initial analysis of a problem typically requires students to go through step 1 - 5. The initial analysis ends with formulating learning objectives. During the interval between two group meetings students try to collect information about the issues discussed during problem analysis. A few days later, group
work will continue with step 6 and 7. An evaluation takes places whether the acquired knowledge about the contents of the problems is sufficient to understand and explain the problem in depth.

The first step students take is to make sure everybody understands all the concepts and terms used in the problem. For instance, students can raise questions about the concept of market share. Depending on the prior knowledge of students there may be agreement on the definition of the concept market share. Otherwise, students can decide to do further study on this concept. Another possibility lies in asking their tutor for more information. During the next steps students define and analyse the problem. For example, in discussing the first-year problem, shown in table 1, advantages and disadvantages may be considered about merging. Usually the outcome of the discussion is that students use this problem to study different kinds of cooperation. Another frequent outcome is that students choose to study merger patterns in this or other industries. Finally, some groups may decide to discuss marketing opportunity analysis as in portfolio matrices. Apparently, a considerable variation may occur between discussion groups about the learning goals defined. Ultimately, this has consequences for the sequence and scope of learning and for the testing procedures applied (Gijseelaers, Kunst & Van Veen, 1989).

Table 3: Matching student generated learning issues with faculty objectives.

<table>
<thead>
<tr>
<th>Students</th>
<th></th>
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<tbody>
<tr>
<td>• Follow rules learned from the principal handbook in a rigid way</td>
<td></td>
</tr>
<tr>
<td>• Bring prejudices and prior experiences forward during the discussion “Probably, this organisation fails to have a proper management accounting system given the softies who run this place”</td>
<td></td>
</tr>
<tr>
<td>• The expenses made for checking the financial accounting are larger than the expected revenues</td>
<td></td>
</tr>
<tr>
<td>• They forget the “shop-within- a -shop-effect”</td>
<td></td>
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<tr>
<td>Instructors</td>
<td></td>
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<tr>
<td>• Students should detect the “shop-within- a -shop-effect”</td>
<td></td>
</tr>
<tr>
<td>• Students should identify the way this organisation will probably try to maximise money grants</td>
<td></td>
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</table>

Table 3 contains an example about the group work done on the auditing case, shown in table 1. This table contains some observations about how students worked on the auditing case, and what objectives faculty had in mind when constructing this case. A case in point is that students don’t identify an important element of the auditing case: the “shop-within- a -shop-effect”. It also makes clear that students have difficulties in applying theoretical knowledge to the present case.

An obvious question is whether students’ not identifying an important element in the present auditing case, must be regarded as a "failure" inherent to problem-based learning. Critics of problem-based learning have put forward that students, "if left to themselves” would drop their standards, or would work at a "lower level”, or "would not be able to identify the relevant issues” in a problem (Albanese & Mitchell, 1993). The basic issue is whether the emphasis on self-directed learning skills leads to a situation in which students are not able to identify the required knowledge. This would in the end result in students lacking sufficient knowledge...
about certain subject-matter domains. A number of studies conducted by Dolmans (1994), have shown that this criticism is only valid for a very small part. Dolmans (1994) showed that students correctly identify about 70% of the faculty objectives during problem-analysis. About 15% was not explicitly recognised by students. The remaining number of learning issues was considered by faculty as “unexpected, but relevant”.

In summary, the quality of problems determines to a large extent the process of problem-based learning. Gijselaers and Schmidt (1990) found that problem features have a great overall influence on process (e.g. group work, time spent on self-study) and outcome variables (achievement and motivation) in problem-based learning. Problems may fulfill several roles in the problem-based learning approach:

- Problems are used to create a gap between existing prior knowledge, and knowledge required to manage the problem adequately.
- Problems are used to increase student’s motivation in the subject-matter of the domain.
- Problems are used to enhance group work.
- Problems should cover theoretical and practical issues reflecting the core of education for the profession.

Tutor role

The tutor plays a crucial role in the process of discussing problems. He or she coordinates, facilitates and guides it. The tutor’s task is to encourage and stimulate students in their learning process. For this purpose he/she must be skilled in managing small-group interaction. Another important aspect of the tutor role is the ability to guide the discussion by asking questions in the process of discussing problems. He should confront students with the consequences of their reasoning by using analogous examples, or elaborating the problem according to the ideas of the tutorial group. It is not the task of a tutor to dispense extended information, or to give lectures about the problems discussed (Barrows, 1984).

It may be apparent that the tutor-role takes a different view on teaching than is traditional. Considerable debates exist in the literature on problem-based learning on the required characteristics of an effective tutor. Empirical studies about effective tutor behaviour in problem-based tutorials, may in general be divided into two categories. The first category contains empirical studies that are concerned with the question what kind of tutor skills is needed in the tutorial process to fulfill the tutor’s tasks efficiently. These studies aim to identify skills that are important in guiding the work of discussion groups. For example, Moust (1993) found that in problem-based law education an essential tutor skill is the tutor’s ability to use terminology and vocational language that is nearly equivalent with students’ level of competence. He defined this ability as cognitive congruence.

The second category consists of studies that examine whether tutors must be experts to realise a certain degree of directiveness which, in turn, is assumed to influence student learning. The debate about the degree of content expertise required for effective tutoring in discussion groups finds its origins in the works of Barrows and Tamblyn (1980). He claimed that staff members who are good tutors can successfully tutor in any course or area. Consequently, according to Barrows and Tamblyn (1980), content expertise is not a necessary prerequisite for tutors and therefore skills for small group work are far more important. However, this

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3 See for a discussion of these studies Albanese & Mitchell (1993), Gijselaers (1994) or Schmidt (1994).
assumption is increasingly questioned because of recent conflicting research findings. For example, Schmidt et al. (1993a, 1993b) found that students who were guided by content experts realised a slightly higher achievement level and spent more time on self-directed learning. Studies from Eagle, Harasym and Mandin (1992) and Davis, Nairn, Paine, Anderson and Oh (1992) show that if discussion groups are guided by content-expert tutors, increased student achievement is found; more student-generated learning issues are produced, and more time is spent on self-study. However, Swanson, Stalnhoef-Halling, and van der Vleuten (1990) found in their large scale study in medical education (including 230 tutors and 600 students) that there was nearly no relationship between professional background of tutors and test performance of students. More recently, Schmidt (1994) pointed out that inconsistencies in tutor expertise research may be explained by course specific characteristics, especially degree of course structure. He suggests that students will always try to find a minimum level of instructional structure in problem-based courses. Structure may be provided by the quality of problems and the internal relationships between problems. However, if this instructional structure is missing - for example by lack of adequate prior knowledge, or provision of ill-structured problems - students will attempt to ask for a higher degree of directiveness of the tutor. Schmidt (1994) argues that in such a situation a tutor may only respond effectively if a tutor has a sufficient degree of context-expertise. Only content-experts will be able to provide students with information that may help them to get a better understanding of the subject area of an ill-structured course.

Over the past ten years the Faculty of Economics and Business Administration has followed an approach in which tutors are appointed for courses that fit their professional background and interests. It is felt that teachers can fulfil the tutor role more effective if they work in courses that stimulate tutor's motivation. Evaluation data showed indeed that after changing the tutor allocation procedures in the direction of choosing content-experts, ratings of teachers improved. Research of Hommes (this Volume) shows that teachers seem to be more motivated for tutoring in courses of the later part of the programme. In these courses, tutor's professional interests are more narrowly connected with course's subject-matter.

**Organising Problem-based Schools**

Although problem-based learning has gained the reputation of a far-reaching innovation, and despite its wide-spread use, the very idea of implementing problem-based learning often evokes passionate resistance or scepticism. In general, two factors seem to play an important role for successfully introducing problem-based learning:

- Is there a professional need to make a shift from a disciplinar oriented curriculum towards a multi-disciplinary organised curriculum?
- Is there an instructional need to abandon lectures as dominant teaching approach?

The first factor serves as a restraining force to cross disciplinar boundaries. Faculty members often operate in a highly specialised environment with a strong disciplinar orientation. If society, or professional bodies don't play the role of catalyst, the challenge of changing a curriculum may become a burden. For example, in the field of medical education the publication in 1984 of the so-called GEP-R report (published by the Association of American Medical Colleges) may be considered as a change agent by itself. This report strongly emphasised...
curriculum changes in directions that were familiar to the principles of problem-based learning. Professional bodies in medical education stimulated change of traditional curricula in a problem-based fashion. An obvious question is what kind of professional needs exist in the fields of economics and business education to make curriculum change a valid action. Clearly, several contributions in this book underscore the need to change curricula. However, the question is whether the existing change forces are strong enough to support introduction of problem-based learning in economics or business education.

The second factor also serves as an inhibitor to make changes. Why should faculty change their teaching, if they applied traditional methods in the past? What was wrong anyway with traditional teaching? Traditional teaching methods seem to have earned their legitimization based on historicism. This always puts any innovation in a backward position. The innovators have to show what they are doing is valuable, not the traditional oriented teachers. The restraining influence of both factors is enforced by faculty reward systems. It takes time to change, time that normally could have been spent on research (a universal academic reward factor).

It is generally recognised that both factors have to be dealt with when implementing problem-based learning. Several solutions have been developed to cope with resistance to change in university organisations. These solutions vary from focusing on changing organisational structures, by changing reward systems or reorganising decision structures, through putting emphasis on different organisational cultures. Strong central project management is viewed as a way to balance the decentralised university organisation and the need to develop coherent programmes (e.g. Moore, 1991; Engel, 1991). Despite these difficulties it seems worthwhile to undertake the enterprise of educational change in the spirit of problem-based learning, given the great number of universities that showed its significance for professional education.

References


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4 See for example the contributions on management of change, this volume.


