

## **Implementing a new approach in teaching and learning (problem-based learning) in a higher education learning organization**

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**Abstract:** The aim of the study presented in this paper is to investigate the development of the learning organization while implementing change, i.e. a new approach to teaching and learning – problem-based learning – into a higher education institution as well as defining the new knowledge and skills for teachers, teacher education and training, and appropriate leadership styles needed in this situation. Among the five disciplines or components of the learning organization, defined by Peter M. Senge, we focused on team learning. Problem-based learning, which is also based on team learning, is the most important innovation in education for the professions. It encourages learning for capability rather than learning for the sake of acquiring knowledge. Students learn in teams solving a professional problem and develop many new skills. They are assisted by a teacher or a tutor. The benefits of this change – problem-based learning - for student learning were observed as well. The research was carried out as a case study, supported by questionnaires and interviews. A typical example of a higher education institution in Slovenia which has been implementing problem-based learning in teaching foreign languages for specific purposes across the curriculum was presented. The implementation of the change was initiated by a group of foreign language and subject teachers after it was approved by the institution's management. It was initially encouraged by an international project (Teaching and Learning English for Technical Purposes) and supported by the British Council in Ljubljana. Both, students and teachers (foreign language and subject teachers) participated in this case study. The research proved that while implementing problem-based learning, the higher education institution was developing in the direction of a learning organization. Secondly, it was established that new knowledge and skills have to be acquired by the teachers implementing this new approach and that the new skills and knowledge should be identified for each individual teacher. Consequently, teacher education and training should be planned, according to the principles of a learning organization. Finally it was found that while implementing and practicing problem-based learning in the higher education institution, both the constructivist leadership style and leadership for learning in teams are suitable. It was also established that with the problem-based approach to learning, there is a greater possibility for students to use the deep approach to learning, which enhances the quality of their learning in comparison with the surface approach. It was concluded that having a clear idea about mutual expectations between teachers and students, teachers and the management, and between subject teachers and language teachers (as this was their mutual project) is a significant factor affecting the success of the problem-based learning process. These expectations refer to enhancing cooperation and opportunities for team learning, which is essential for the institution to develop in the direction towards a learning organization. Therefore, good communication as well as the organizational culture that values cooperation and team learning are extremely important. The research findings can be applied as guidelines for those higher education institutions which implement changes in approaches to teaching and learning, especially problem-based learning.

**Key words:** cooperation, higher education institution, implementing change, leading teachers, learning organization, problem-based learning, teacher education, teacher training, team learning.

### **1 Introduction**

Nowadays, in higher education institutions as in other organizations employees are faced with rapidly changing circumstances and the pressure to quickly move from problems to solutions. Therefore, innovation and implementing change is welcome, also in the area of teaching and learning, which should provide ample opportunities to generate new knowledge. Consequently, higher education institutions keep adjusting, changing and learning. New findings in the area of human learning processes – individual learning, team learning and

organizational learning – can definitely enhance the organization and effectiveness of a teacher's or institution's learning and education. Moreover, in higher education institutions, implementing change is based on learning, teacher education and training. The acquired knowledge enables teachers to develop new study programmes or change the existing ones and introduce new teaching methods. Higher education institutions are aware of the need for efficient and active learning as well as the need for implementing ICT in teaching and learning. Therefore, it is of vital importance to implement changes in teaching methods (and in turn student learning), teacher training for implementing new methods and also changes in leading students as well as leading teachers in their learning and professional development.

In this paper we present the theoretical grounds for introducing a new teaching and learning method – problem-based learning (PBL) in teaching a foreign language and professional subjects across the curriculum as well as the established types of teacher education and training for this new method. Moreover, the theoretical grounds for leading students and leading teachers in a PBL project in a learning higher education institution are established. Furthermore, a case study on this topic in one of Slovenian higher education institutions is presented.

## **2 Background and purpose**

For their quality teaching, teachers of languages for specific purposes (LSP teachers) at Slovenian higher education institutions need an incessant contact with various academic subject contents and subject specialists teaching these subjects. Dissatisfied with the current position of LSP teaching and learning at tertiary level, a group of LSP teachers, members of the Slovenian Association of LSP Teachers, decided to get involved in a PBL project. By implementing this project they expect to solve some of their problems: firstly, LSP teachers sometimes find it rather difficult to motivate their technically or otherwise professionally oriented students for language learning; secondly, and closely connected with the question of motivation, languages for specific purposes, especially at tertiary level, are often treated as second-rate subjects, despite declarative support to language learning which is provided by all important bodies (Gvardjančič in Gvardjančič, Boothe and Vukadinovič 2001, viii, ix).

The group was given an initial professional support provided by the University of Aston, GB, and a financial support provided by the British Council, Slovenia. The LSP teachers in this group are practicing PBL in 11 higher education institutions and one study centre. The group also organized an international workshop for LSP teachers who planned to introduce PBL at their higher education institutions – so the group also disseminated the generated knowledge, which was their further aim. PBL workshops in Slovenia are also given by the Slovene Association for Teaching in Higher Education and the Centre for Teacher Education, the Faculty of Arts, Ljubljana.

Our study focuses on one among 11 higher education (HE) institutions which are practicing PBL in teaching LSP across the curriculum. An LSP teacher and 5 subject specialists have been practicing this approach to teaching and learning for four years. There was no teacher training organized by the institution for this new approach. However, the LSP teacher was provided with training assistance by his own interest group inside the Association of LSP Teachers. The management of the institution agreed with implementing this new approach to teaching and learning which was introduced only in teaching LSP (only one teacher, 3 years later another teacher joined) in cooperation with some subject teachers.

The purpose of this study is to set the guidelines for teacher education and training in a learning HE institution implementing PBL as well as for leadership in the presented situation. Although the research is focused only on one higher education institution, some of the findings can be applied also in other higher education institutions or they can serve as a starting point for further research on a wider sample.

## 2.1 Methodology

In our study the quality research paradigm prevails, considering views, interpretations, experiences, understanding and practical knowledge of the participants in this research (cf. Easterby-Smith, Thorpe and Lowe 2005) within a concrete teaching situation.

The case study encompasses only one typical example of implementing and practicing PBL in teaching LSP across the curriculum at a chosen higher education institution. The sample includes all the students (21), 5 subject specialists (subject teachers) and 1 LSP teacher, all participating in the same project (teaching LSP across the curriculum by means of PBL), which was coordinated by the LSP teacher who implemented this approach in the institution. The duration of the project was 2 and a half months.

The study was conducted by means of questionnaires and interviews, which were designed separately for the students, the LSP teacher and the subject teachers.

In this paper we will thus focus on the following research questions:

- 1 What kind of teacher education and training is needed when implementing PBL (with the vision of a learning higher education institution as an ideal environment)?
- 2 What are the appropriate leadership styles for implementing PBL and for teacher education and training?

## 3 Theoretical background

### 3.1 Learning organization

An ideal higher education institution should develop towards a learning organization. This ideal organization includes notions of organizational adaptability, flexibility, avoidance of stability traps, propensity to experiment, readiness to rethink means and ends, inquiry orientation, realization of human potential for learning in the service of organizational purposes, and creation of organizational settings as context for human development (Argyris 2001, 1).

Senge (1994a, 6), who is often referred to as the father of the learning organization<sup>1</sup>, claims that there are five disciplines needed for a learning organization: systems thinking, personal mastery, mental models, shared vision and team learning. Senge (1994a, 4) believes that the organizations that will truly excel in the future will be the organizations that discover how to tap people's commitment and capacity to learn at all levels in an organization.

A learning organization is thus an organization which learns incessantly. Learning brings changes, therefore, such an organization keeps changing continuously. A learning organization provides an environment in which implementing changes or innovations is most efficient.

### 3.2 Implementing changes (PBL) and teacher training

Garrat (in Stoll and Fink 1997, 150) states that for an organization to survive and develop, the rate of learning within the organization must be equal to, or greater than, the rate of change in the external environment. In times of rapid change, it is difficult to foresee the course of events, therefore, the systematic approaches to change cannot be appropriate any more.<sup>2</sup> Watson and Groh (2001, 14) claim that changes in higher education<sup>3</sup> can be introduced

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<sup>1</sup> Harvard Business School's Chris Argyris is the father of the learning organization though MIT's Peter Senge tends to receive most of the plaudits (The Thinkers 50 2005 at [www.thinkers50.com](http://www.thinkers50.com)).

<sup>2</sup> Fullan (in Garrett 1997, 102–106) supports the evolutionary perspective (the environment both inside and outside organizations is often chaotic, no specific plan can last for very long) and proposes a new order of events in preparing for educational change: Ready (direction, shaping culture)! Fire (enquiry and action)! Aim

through faculty development and course design. Moreover, a systematic care to strengthen the teacher's professionalism is of utmost importance and should be based on the most recent findings about learning, teaching and teachers' learning, including both methodology and contents (Marentič Požarnik 2004, 48).

Problem-based learning (PBL), which (in our case) is an example of a change being implemented into a higher education institution, is based on the contemporary views on learning. Moreover, PBL is the most significant innovation in education for the professions (Boud and Feletti 2001, 1). PBL is learner-centred and enables students both to learn their subject and to gain the high-level competences, transferable skills and complexity skills, that are being demanded increasingly by the today's society (Murray and Savin-Baden 2000, 107). PBL is characterized by interdisciplinarity, cooperative learning and teamwork. This educational strategy helps students build the reasoning and communication skills necessary for success today (Duch et al. 2001, 3).

For this new approach to teaching and learning, teachers need education and training as well as they need to study individually and in teams (learning communities), exchanging their experiences, incorporating new ideas from outside including formal knowledge (cf. Hoban 2002, 167). Therefore, facilitators who are experts in this new approach to studying are appreciated.

Marentič Požarnik (in Mihevc, Marentič Požarnik et al. 1998, 35–36) lists some of the most frequent didactic models for teacher education and training in PBL: beginners' courses, pedagogical workshops, action research and development projects, expert networks, collegial training and mentorship.

### **3.3 Leading students and leading teachers in a learning higher education institution while implementing PBL**

Changed circumstances and increased expectations mean that teachers now need not only to be knowledge brokers but »learning counsellors« in settings in which the distinction between student and teacher will become blurred (Day 1999, 201). Students will therefore engage in teacher roles and teachers also will be students, engaged in lifelong education and training.

Argyris and Schön (Caine and Caine in Day 1999, 201) distinguished between two models of teacher behaviour: the one in which teachers unilaterally design the teaching environment and control it, and the one in which they design situations or environments where participants can be originators and can experience high personal causation, where tasks are controlled jointly (Caine and Caine in Day 1999, 201). The latter model features the kind of leadership which could fit the leadership in a learning organization, where the leaders are responsible for creating a motivating environment.

A similar approach to leadership (as mentioned above) is presented by constructivist leadership, e.g. a less hierarchical and more cooperative approach to managing affairs. Such leadership blurs the line between leading and following. Northfield presents it as leadership that promotes quality in learning. He presents a view of learning which can be described as a constructivist or generative model. »Teachers and leaders are, therefore, considered as »constructivists« continually reconciling new ideas to gain more satisfactory explanations of classroom and school change efforts (Northfield in Duignan and Macpherson 1992, 85)«.

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(vision, mission and strategic planning)! – which is a direct challenge to the systematic approaches to change which first encourage us to shape the vision, mission and strategic plan.

<sup>3</sup> All in all, it is important to be acquainted with the every-day practice of the final change implementors (Koren 2000, 77) – teachers (in our case). Stoll and Fink (in Roncelli Vaupot 1999, 25) maintain that the majority of major school reforms failed as teachers were not actively involved in those changes.

The teacher or leader is thus responsible for learning, creating a motivating atmosphere, promoting cooperative learning and for providing such working conditions that lead to meeting the set objectives.

However, a leader should be capable of using different management styles, he has to react according to a situation as well as in accordance with the beliefs and values of his »subordinates or followers«. Such leadership promotes common learning of all employees (Goddard 2003, 14–19).

As teachers in PBL are responsible for creating an encouraging environment for student learning so are the leaders in higher education institutions responsible for creating or developing such a culture which is encouraging for teachers when implementing innovative approaches to learning and teaching and which is based on cooperative learning and teamwork as well as on a common design of leadership practices in a higher education institution.

Sawatzki (1997, 146–149) defines a leader as a facilitator<sup>4</sup> of team performance. He believes that leadership is about the creation and maintenance of a climate and conditions for the achievement of goals and the attainment of high performance<sup>5</sup> - a situation in which leadership involves working with and through others. Manz and Sims (in Sawatzki 1997, 147) state that the leadership that is required today is best described as »leading others to lead themselves«<sup>6</sup>. The new leadership in schools will be thus leadership practiced by committed leaders who delegate their authority to a high degree.

#### **4 Results**

In this part of the paper we will present only the most essential results and findings concerning our research questions.

##### **4.1 Teamwork and teacher education and training for PBL with the vision of a learning higher education institution as an ideal environment**

When analysing the advantages of PBL, the teachers and the students also assessed the development of the learning organization (as an ideal environment for implementing change, with a special attention to teamwork) in the period of implementing PBL. According to the questionnaires and interviews, the group involved in the research formed a learning group inside their institution. However, more changes have to be introduced to come closer to the ideal of the learning organization. Nevertheless, it was established that PBL with all its features encourages the development of the learning organization.

The students believed they had worked autonomously in their teams. However, they also identified some disadvantages (not sharing the same goals, unresponsiveness of some team members, loss of autonomy).

The subject teachers believed that teamwork was beneficial for the students as it provided opportunities to solve real-life problems in teams. The LSP teacher realised that PBL was the first opportunity for the students to practice teamwork and that it was quite difficult for many of them to cope with problems they faced in teamwork.

The subject teachers established that there were many benefits of teacher cooperation or teamwork. Likewise, the LSP teacher saw many advantages of teacher cooperation or teamwork. However, the most difficult and not successfully completed task was to define the common goals for teachers designing study programmes from different disciplines.

As students and teachers in PBL work in teams and their relationships are changed as well, further training and learning is needed for teachers.

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<sup>4</sup> Such a role is performed also by a tutor in PBL.

<sup>5</sup> This was expected also by the teachers in the research.

<sup>6</sup> This is also the role of a tutor in PBL.

We carried out a needs analysis which showed that in PBL the students needed more support by the teacher in terms of guidance, encouragement, motivation and information search (they needed good tutoring<sup>7</sup>). Moreover, some teams missed closer relationship with their teachers and vice versa. They should know about each other's expectations and they also needed more knowledge and experience in teamwork.

The teachers identified the areas where they need further education (teamwork, tutoring, psychology of learning). The subject teachers expressed the need for further education and training in the area of teamwork and tutoring. The LSP teacher needs the training in the area of teamwork, encouraging students' new role and the appropriate assessment methods.

The majority of subject teachers believe that the assistance of an outside expert practitioner is needed in PBL. They suggest education and training at conferences, workshops and faculty working sessions in the area of teamwork, teaching methodology and psychology of learning<sup>8</sup>. The LSP teacher expressed the need for occasional counselling by the experts who are acquainted with the goals of his subject and PBL in his particular situation. He would appreciate education and training for PBL inside and outside his institution in workshops for tutors, working sessions and discussions.

According to their responses in questionnaires and interviews, all the respondents need further training in teamwork. The teachers need further training for their new role of a tutor to be able to provide assistance by directing and motivating students as well as to provide assistance in the search for study materials<sup>9</sup>. It is of vital importance for teachers to be aware of and consider the new role of the teacher and the student as well as their relationship as partners in the learning process, whereby they learn from each other.

#### **4.2 Leading a group or team of teachers and the function of the management in teacher education and training**

The majority of the teachers in our research believed that the constructivist leadership was an appropriate leadership style in PBL. The same leadership style should be applied with the students as well. They believed that the teachers in their group cooperated as partners, however, the LSP teacher was the initiator of the project, who also organized their activities and introduced the new teaching method (PBL) to them. Two of the respondents believed that the constructivist leadership is not always the most appropriate leadership style and should be thus combined with other leadership styles.

The LSP teacher believed that PBL was his project and that the subject teachers were invited to cooperate. This was a voluntary cooperation, therefore the LSP teacher expected a limited cooperation. He believed in 'collective' leadership in the group of teachers as well as in the teams of students.

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<sup>7</sup> In our paper, we refer to PBL tutors as to teachers because they do not perform all the tutoring tasks. Most of these tasks are performed by the LSP teacher, who cooperate with all the teams of students. These tutorial skills are indispensably needed by teachers or tutors, respectively. »The tutor stimulates the learning process and helps ensure good group dynamics. A tutor is not a teacher and will not present direct information about the subject matter. In contrast, the tutor stimulates and activates individual thinking by asking questions, giving suggestions and clarifying matters where necessary. The tutor should have knowledge on the essentials and background of the problems, but is not necessarily an expert in all subject matter of a particular module. A good understanding of the objectives of the block, however, is a prerequisite (de Goeij 1997, 188).

<sup>8</sup> In their training and development as professionals, they also stressed the importance of mutual cooperation and trust as well as looking for common goals.

<sup>9</sup> The teachers should interfere with their students' learning in PBL when this is indispensable and they should do it in an appropriate way - acting as partners in the learning process. Moreover, they should introduce a new assessment method which includes the assessment of the output as well as the process of PBL.

All in all, the LSP teacher acted as an informal leader who was also a facilitator of team performance. However, ideally in this situation a constructivist leadership style should be applied.

In the PBL project the subject teachers expected the management to inform all the employees about the new method of teaching and learning (PBL) the PBL group was implementing, and to organize training or give the teachers opportunities to receive education and training in PBL outside their organization as well as to encourage research in this field. They expected at least indirect involvement of the management in their PBL project: involvement in the project assessment, time management and formal introduction of PBL in the institution. All the teachers believed that it should be the management's role to promote a quality and innovative study process, to coordinate the study content in different subjects while implementing PBL, to provide material and organizational conditions for PBL and to motivate teachers to practice PBL in their classes. They believed such a teaching method and the way of cooperation (teamwork) among teachers and students should be seen as a value in their institution.

To sum up, we would like to emphasize the importance of the management's attitude towards the teachers' innovative teaching practice, which encourages multidisciplinary and cooperation. The management should promote PBL, cooperation and team learning by presenting these methods or qualities as one of the institution's most important competitive advantages and values.

## **5 Discussion**

Nowadays, HE institutions should be flexible, innovative and student-centered, focusing on their students' and employees' needs.

- In our research an innovative teaching method - PBL proved as a teaching method which brings many benefits.
- It was proved that PBL promoted the development of a learning group of teachers and a learning team of students.
- The research suggested there should be better conditions for cooperative learning, teamwork, sharing experiences. The institution should be also open to external influences, namely to cooperation with PBL experts and practitioners.
- It was proved that a higher degree of cooperation among the students, teachers and the management should be developed.
- The teacher training and education should be based on the needs analysis for each individual teacher. However, during the project the teachers could learn from each other and share experiences through cooperation and teamwork.
- In the situation presented it was also proved that learning and cooperation should be seen as values by the management.
- Despite of the fact that it was the teachers' initiative to implement PBL, the management should be more deeply involved in its implementation.
- Leading the students in PBL was the kind of leading that encourages the student's active role, the deep approach to learning and enables them to become autonomous learners. The constructivist leadership style would be appropriate for leading a team of teachers in PBL.

Some of our findings can be also applied to other HE institutions implementing the same or similar change. However, teacher education and training should be planned for each teacher separately according to the needs analysis. Opportunities for cooperative or team learning should be provided inside and outside the HE institution. The appropriate choice of leadership styles in a learning HE institution (when implementing change) depends on various factors (like the degree of development of a HE institution towards the learning organization,

the change being implemented, etc.). It is also important who initiates the change. In our research it was the teachers' initiative, however, this should not exclude the involvement of the management in implementing the presented change.

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