

## **Learning by Teaching at University Politehnica of Timișoara – A Case Study**

Liliana-Luminița TODORESCU<sup>1</sup>, Gabriel-Mugurel DRAGOMIR<sup>2</sup>, Anca GRECULESCU<sup>3</sup>

**Abstract:** The current study tackles teaching as a leading source of learning as part of the educational process. The research was conducted at University Politehnica of Timișoara (UPT), and it is based on an exploratory case study that consisted of an in-depth analysis of the institutional documents, archives, periodical reports and statistics available on the university web site. The study highlights the way teaching is perceived and addressed by teachers, as a means to both educate the educable and ensure the quality of the educational process.

**Key words:** teaching, learning by teaching, quality assurance of didactic process, teacher, educable

### **1. Rationale**

Traditionally perceived as a process through which ready-made knowledge was transmitted by educators, based on rote learning and memorization, *teaching* has been re-defined and it is nowadays considered a transformation process likely to stimulate and train educable thoughts and feelings. The new definition of teaching (apud Cerghit, I., 2002, p. 228) bridges the gap between teaching as transmission and teaching as action and reconstruction, and makes the shift from teaching as *training* (instruction, to teach) to *learning* (learning process). Thus, the focus is no longer on the educable who is taught, rather on the educable who learns.

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<sup>1</sup> Assistant Professor, PhD, Departament of Teaching Training, Politehnica University Timișoara, Romania, E-mail: mugur.dragomir@upt.ro

<sup>2</sup> Associate Professor, PhD, Departament of Teaching Training, Politehnica University Timișoara, Romania, E-mail: lilitodorescu@yahoo.com

<sup>3</sup> Assistant Professor, PhD, Department of Communication and Modern Languages, University Politehnica of Bucharest, Romania

Moreover, learning is no longer a mere acquisition of knowledge, rather it creates a psychological and behavioral change in the educable through action, interaction, communication, information etc.

In modern pedagogy, both teaching and learning interact and interfere. The efficiency of the former conditions the efficiency of the latter. (Albulescu & Albulescu, 2000).

Unfortunately, learning is often ignored by teachers during classes. Most of them are in favour of learning at home. Although learning at home is important, the basics of learning are acquired at school, under teachers' guidance, since teachers are the only ones who master the mechanisms of learning and thus, they can assist the educable in learning efficiently (Jinga, I.; Istrate, E., 1998).

In line with modern pedagogy, teaching must be considered a source of learning. Hence, teaching can be interpreted differently, it is no longer an information provider and a learning guide, rather it is a learning facilitator, it interacts with evaluation and combines education and training in order to achieve the educational goals.

Learning by teaching represents a network of interactions, a process based on the relationship between the educator and the educable. As a consequence, the teacher is no longer the sole provider of teaching for whom the educable is just an inanimate passive audience. The teacher must make a call for action and engage the educable, must arouse their interest in learning and create a positive attitude towards learning. Furthermore, it is the teacher who must arouse their curiosity, make them actively participate in the teaching-learning process as well as help them benefit from their own creative performance. Hence, the teacher must trust his/her educable's ability to participate in their own educational and development process and encourage them to interact and speak their mind. In addition, the teacher must offer them support and guidance, respect their personality and, in turn, the educable must participate autonomously and deliberately in their own education. (Albulescu & Albulescu, 2000; Bontaş, 2001; Joiţa, 2003).

It is worth mentioning that learning by teaching becomes a prerequisite for the quality assurance of the didactic process in all educational institutions, irrespective of levels and specializations.

## **2. Research Methodology**

The present research analyzes the hypothesis of teaching as a leading source of learning by the educable at University Politehnica Timișoara (UPT), one of the largest and most well-known technical institutions in Central and East Europe.

As a result, an exploratory case study was conducted in order to outline the way teaching is perceived and literally approached by teachers, as a learning source for the educable and as a means of ensuring the quality of the didactic process. The case study is based on the analysis of the institutional documents, archives, periodical reports and

statistics also available on the university web site ([https://www.upt.ro/Informatii\\_asigurarea-calitatii-in-upt\\_12\\_ro.html](https://www.upt.ro/Informatii_asigurarea-calitatii-in-upt_12_ro.html)).

### **3. Results**

Teaching as a source of learning consists of all educational activities carried out by the teacher: planning, content design, development of teaching materials, use of educational means likely to ensure efficient learning, selection of the best methods to transmit content, organization of educational environment, creation of a congenial learning atmosphere, guidance of the learning activity, coordination of the resources available, evaluation and recording of learning outcomes.

All these activities are supported by appropriate psychological and pedagogical training. In line with all the aforementioned aspects, UPT has always proved keen on the psychological and pedagogical training of the teaching staff. Hence, the Department for Teacher Training was founded in 2001 and ever since it has been a provider of psychological and pedagogical training services for all teachers and students studying for their Bachelor's or Master's Degrees. Aiming for the quality assurance of the teaching-learning and evaluation activities, in 2009, all the teaching staff within the university, who were at the beginning of their teaching career (mostly teaching assistants and lecturers) were required to take classes taught by DPPD – the Psychological and Pedagogical Training Program – Levels I and II. In the aftermath of this, UPT enforced the obligation of such a training program for candidates to all didactic positions. These courses have endowed teachers with psychological and pedagogical knowledge and competences necessary for didactic planning and efficient educational process (through the best didactic strategies and learning situations adapted to each discipline and to the students' profile) as well as for the objective assessment of the learning outcomes. Furthermore, in order to ensure the quality of the teaching-learning process within the university, the teaching staff benefit from the services offered by DPPD: specialized counselling on didactic strategies for teaching-learning-evaluation.

The didactic planning activity, an integral part of teaching, is developed by teachers at UPT at the beginning of each academic year. They must hand in the syllabus of all subjects taught during courses/seminars (if applicable) throughout the respective academic year or the entire academic year. Moreover, they must provide the faculty/department with the course or seminar syllabi, laboratory guidebooks and assignments and design methodologies. According to the guidelines set in the syllabus, knowledge taught through the disciplines established by the Bachelor's, Master's and Doctoral programs meets the requirements of the domain and specialization and aims at achieving the educational goals, it is updated (based on the recent breakthroughs in that particular field of activity), accurate and compatible with the content taught in other European universities.

Likewise, the syllabus proves that the teaching methods are diverse, based on interaction, research, exploration, cognitive techniques, creativity and modern means of

learning (computer, overhead projector, flip-chart etc.), and it meets the educational goals, subject content and didactic principles respectively.

The university teaching staff is familiar with the new information and communication technologies (ICT) (Internet, multimedia packages, TV, e-mail, WEB pages etc.). Hence, the teaching staff at the university proves capable of using the modern information and communication technologies (Internet, multimedia packages, TV, e-mail, WEB pages etc.) and, constantly makes good use of these technologies in order to transmit bibliography, subject content, resources and to create rapport with the students. For each study program, the university provides educational e-resources (courses, seminar activity books, laboratory guidebooks, bibliography) in the form of – CD, DVD – uploaded on the faculty site. Most classrooms in UPT are well equipped to facilitate the use of modern information and communication technologies (overhead projector), and the teaching staff offer Power Point (PPT)-based courses.

The use of a wide range of teaching methods is considered an efficient marketing tool likely to promote the university and improve the quality of the educational system. As a result, for the past two years, the teaching staff at UPT have benefited from training programs on innovation, development and the use of teaching methods (eg. collaborative teaching, team-teaching, e-learning – Internet-based teaching, web based learning, blended learning – teaching by e-learning as well as face-to-face courses) provided by the Center for Continuing Education and E-learning within the university, through specific projects (<https://elearning.upt.ro/index.php/>).

In addition, the teaching staff at UPT uses student-centered didactic methods, they tailor instruction to meet students' special needs. They frequently address differentiated strategies for their students' education and personal development. Differentiated teaching also implies instruction delivered to students with special needs. ([https://www.upt.ro/Informatii\\_asigurarea-calitatii-in-upt\\_12\\_ro.html](https://www.upt.ro/Informatii_asigurarea-calitatii-in-upt_12_ro.html))

The student-teacher relationship is construed as partnership, teachers constantly make students engage in the teaching activity. According to the syllabi, the content is practical and it ensures the acquisition and development of certain skills and competences as required by a particular specialization. The hands-on value of the subject content knowledge is supported by seminars, laboratories and project assignments.

The teaching staff meets the requirements of systemic and continuous education in order to improve students' educational performance and develop sustainable professional competences. Systemic and continuous learning at university is provided by the logical sequence and content of the disciplines. The subject content knowledge is delivered logically and gradually, and thus progressive development is achieved. Furthermore, the content proves diachronic and synchronic coherence, ideas are intertwined and contradictions and desynchronizations between chapters, disciplines and even academic cycles are evaded.

In their constant pursuit of effective teaching, the teaching staff at UPT periodically revise the syllabi and the respective teaching content, improving it with the latest findings or information in the field and, thus, obsolete knowledge is disused.

There are management bodies (commissions, boards) responsible for the elaboration of competence grids relevant to different domains of study and curricula guidelines, so as to meet the demands of the labour market.

There is a special mechanism at the level of each department in charge of periodical revision of the syllabi (specialization board). The curricula are elaborated and supervised through dialogue and partnerships between teachers, students and the working force. The specialization boards in UPT consist of representatives of all social and educational agents (students, teachers, representatives of employers). The executive board of the university periodically address agents, companies, business partners in order to continuously create and recreate the profile of the graduates from technical higher education so as to meet the requirements of the employers. Feedback regarding the study programs run by the university is obtained through forms and questionnaires that employers, social partners and students (including students with special needs) must fill in. As far as teaching is concerned, feedback is obtained both from students, by means of questionnaires that assess the disciplines taught, and peer evaluation. The findings show that teaching and didactic methodology is broadly approached. Between 2006-2007, DPPD carried out an ample research on teaching at UPT and the results reveal the students' positive perception and appreciation of the teaching process delivered by teachers at UPT, no significant differences between faculties were recorded.

#### 4. Conclusions and recommendations

It deems fit to underline the UPT teachers' great concern for the quality assurance of the didactic process and hence, they focus on teaching and consider it a leading source of learning by the educable.

As shown by the research findings of the case study above mentioned and based on the respective psychological and pedagogical requirements and specifications, in order to ensure an efficient teaching-learning process and turn teaching into a real tool for learning, the current paper makes a list of recommendations and **general guidelines for the teaching-learning activity in education** (Todorescu, 2007: 22-23):

- Thorough planning and preparation of each lesson, course, seminar, laboratory and project;
- Elaboration of a general framework for each lesson, course, laboratory;
- Going through all the lesson/course/seminar steps: engaging the students (grabbing attention), presenting the educational goals and objectives, updating important knowledge previously taught and learnt, guidance of the learning process, feedback, evaluation of students' performance, support for content knowledge retention (especially during lessons, seminars and laboratories), knowledge transfer;

- Elaboration of tangible instructional goals;
- Educational content adjusted to the curriculum and syllabi;
- Meeting didactic principles (regarding students' special needs, different personalities and age, systematic and continuous learning, the principle of unity between perception and cognition and between concrete and abstract, the principle of conscious participation by all students in the learning process, putting theory into practice, solid acquisition of knowledge and development of competences and abilities, feedback) in order to achieve instructional efficiency. Hence, teachers should:
  - teach according to students' personal data, not exceed their understanding and development capacity (intellectual and physical), according to individual characteristics and age, use differentiated instruction;
  - become aware of the educable level and amount of previous knowledge;
  - build upon students' previous knowledge;
  - create a logical sequence between past and present knowledge in order to encourage learning and intellectual development as well as to develop students' progressive professional achievement;
  - make cross-disciplinary associations of content and knowledge;
  - give a logical structure to the teaching material, teach step by step, elicit the main and supporting ideas so as to facilitate retention;
  - facilitate perceptual learning likely to trigger cognitive learning. Observation is the basis of correct and solid comprehension of phenomena, processes, teaching content and it generates thinking and thus it evades rote learning;
  - use as many explanations and additional examples of possible for a better understanding of the teaching content;
  - make a call for action to students by means of interactive methods and techniques;
  - think critically and use argumentation to encourage students' critical thinking;
  - make students solve problems and find solutions to problems through problem-solving, documentation and scientific research;
  - put theory into practice and avoid excessive theory so as to develop students' competences and skills required by the domain of the humanities;
  - tackle learning by discovery and heuristic conversation in order to make students capable of eliciting scientific truths by themselves;
  - constantly check students' knowledge acquisition and revise and plan further teaching content;

- pursue feedback at the end of each teaching stage about the teaching content and the methods used so as to identify possible misunderstandings and teaching mistakes that may prevent a better acquisition and development of the information transmitted.
- Updated knowledge and scientific thoroughness of teaching materials;
- In-depth knowledge of the subject he/she teaches;
- Teaching content meets the educational goals;
- Conceptualization of essential terms and illustration of information sources;
- Concern for the appropriate amount of knowledge so as to avoid information overload;
- Concern for the time allocated for instruction;
- Rhythm of teaching moderately paced (neither too slow nor too fast) so as to prevent boredom, monotony or misunderstanding due to an overload of information;
- Motivate students to learn at their own pace;
- Clear structure and delivery of the subject content likely to facilitate note-taking;
- Show enthusiasm, interest in the subject content and the quality of teaching; passion and seriousness for the job;
- Identify learning styles and use a variety of didactic strategies accordingly;
- Use efficient learning strategies and techniques, address the principles of efficient learning during classes;
- Knowledge of a series of mnemotechniques (memorisation techniques) to be passed on to the students in order to facilitate their retention of information;
- Use interesting ways to deliver the subject content, to grab students' attention and arouse their curiosity as well as their desire to look into the matter;
- Favour intellectual thoroughness, support and encourage students to undertake further steps into self-learning, self-teaching and lifelong learning (Văideanu, 1988; Delors, 2000);
- Use teaching methods based on interaction, research, exploration and cognition;
- Facilitate learning by cooperation and collaboration to develop teamwork and team spirit;
- Alternate teamwork with plenary or individual activities;
- Use visual aids to support better understanding and learning;
- Adjust the didactic methods to the educational goals, subject content and didactic principles;
- Facilitate access to information – courses, books, teaching materials etc.;
- Provide students with a wide range of references and additional bibliography to fathom the subject content knowledge;
- Eliminate barriers that may deter students from learning and create a motivating congenial learning atmosphere likely to foster free swapping of opinions and participation in the study process;

- Use varied teaching methods, approaches and didactic materials. Nevertheless, make sure they are appealing (Wlodkowsky,1993);
- Concern for empathy and sensitivity while teaching so as to build a positive social and emotional relationship between the educated and the educable (Todorescu, 2007):

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