

SELECTION OF TEACHING STRATEGIES AND METHODS FOR E-LEARNING: A CASE STUDY

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Abstract: A single learning objective, particularly demanding for students, was selected for the "Safety Management" course taught within the professional study program at the University College of Applied Sciences in Safety. Three teaching strategies were proposed, which may in different way result in achievement of this objective, and appropriate online teaching methods were selected and described for each of them. In addition to the explanation, the conclusion determines a strategy for cooperative learning as the most effective teaching strategy to help students achieve their learning objectives.

Key words: e-learning, teaching method, teaching strategy

1. INTRODUCTION¹

Rapid changes in social, economic and technical/technological processes in a society where the human relations system has been increasingly based on virtual and global communication, have resulted in transformation of the learning and education system: on the one hand, the focus of learning and education is transferred from the teacher to the student and, on the other hand, a transnational learning system process arises. This system enables communication between different cultural and educational/teaching contents and trains users to take maximum advantage of all knowledge available [7].

Information & Communication Technologies (ICT) introduce innovations and bring changes to jobs and production and business processes. This results in new job and qualification profile descriptions that must be ensured and adapted using a professional and specialized education. At the same time e-learning, perceived as online learning of web-based learning, demonstrates how sophisticated multimedia technologies may contribute to satisfying different educational needs, but also to improving user participation in the formal education system.

In this context, the selection of teaching strategies and methods and elaboration of appropriate didactic-methodical model is very significant in this area, including in a way lecturer's (teacher, course trainer, moderator, etc.) pedagogical/andragogical preparedness and qualification. E-learning shifts the learning process from the traditional classroom into the student's world by enabling the learning process to take place anywhere and

anytime, with non geographic or time barriers, while the internet provides access to teaching materials and interaction with experts and peers. E-learning is a useful tool that helps develop learning processes, but the didactic/methodical conceptualization of the whole learning process will also largely determine students' (educational service recipients') success.

E-learning is often compared to the traditional learning and education system. Such comparisons are not justified if we ignore the didactic specificities of learning situations and the fact that we should actually start from the specificities of teaching contents and activities when selecting learning strategies and methods. Traditional learning methods are faced with problems when any of the following is involved:

- Distance: live interaction is a positive feature of classroom teaching, but gathering students requires more time and money to be spent; in a growing market competition, such costs are often unacceptable.
- Number of attendants and time of response: traditional classroom teaching requires teacher's presence and an appropriate infrastructure both for large and small student groups (not efficient for small groups).
- Absence from work: many students are employed, which additionally impedes attending classes and other traditional forms of teaching/education work [10].

Combined teaching offers a combination of traditional teaching (teaching methods) and technically supported teaching. Combined teaching integrates e-learning tools and standard classroom teaching to ensure maximum efficiency. Students can prepare by integrating and renewing classes already taught in a standard or virtual classroom, conveying their experiences online [8].

E-learning is therefore not the only solution. Standard classroom teaching also has social significance. All the more so considering that e-learning education is often boring and requires more student discipline.

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Combined teaching offers:

- socialization through classroom training, focused on learning achieved exclusively through student-teacher interaction;
- individual satisfaction through self-directed learning, online learning of contents requiring minimal interaction;
- cost cutting by minimizing the time spent away from work and travel/classroom/teacher costs;
- improved absorption of knowledge by using supporting web mechanisms;
- higher likelihood of encountering different learning styles and a greater number of listeners,
- developing teamwork and team learning, etc. [10].

2. METHODOLOGY

The research used a descriptive analysis and content method and the case-study method detailing specific e-learning segments on a practical example of one higher education institution and one course.

The sample higher education institution used in the case study was the University College of Applied Sciences in Safety, Zagreb, Croatia. The selected course was "Safety Management".

3. RESULTS

Course Context

The "Safety Management" course is taught in the third year of the special professional safety study program at the University College of Applied Sciences in Safety. It is attended by 140 adult students, most of whom are employed. The purpose of teaching safety management is to provide safety students with elementary theoretical management knowledge, theoretically improve their present technical knowledge, and acquaint them with modern management techniques and skills and the possibilities of their practical use in safety areas.

Eight learning objectives were defined on the basis of the established purpose. The objective including training students for teamwork on preparing a safety concept to solve an actual practical problem is a particularly demanding learning objective for students. The attainment of this objective starts in the middle of the learning period and continues until the end of the semester, thus ensuring students' two-month commitment during the fifth semester within the third year of the professional safety study program.

During the first part of the course, students acquire theoretical knowledge of safety management and project management and then, after they start preparing the safety project concept, acquire knowledge of project management techniques, teamwork skills and using IT in project management.

Students may use recommended and other literature available at the library of the University College of Applied Sciences in Safety and public libraries, online materials available on websites (manuals, statistical data,

etc.), online materials available to them in the internet mailbox of the University College of Applied Sciences in Safety (scripts, presentations, applications), and documents and materials available with their employers. Students receive some technical support at their enterprises and some by using online services and the internet portal of the University College of Applied Sciences in Safety [11].

Selecting Teaching Strategies

Different teaching strategies use different types of student-content, student-student, student-teacher and student-context interactions, which drive different learning levels and approaches (surface and in-depth approaches) [1].

The basic teaching strategies, also used in an online environment, are: teaching strategy (direct instruction), indirect instruction, cooperative learning (interactive learning), experiential and situated learning, and self-directed learning [9].

The strategies include a number of methods, and the methods include a number of procedures. According to Vizek-Vidović et al [6], learning strategies and methods differ according to two criteria: 1) the degree of student/teacher activation during learning and instruction (the degree of student's control vs. the degree of teacher's control), and 2) the number of students being instructed. Accordingly, when the teacher wishes or deems it necessary to have total control during instruction, he/she will select the lecturing strategy, and when the teacher wants his/her students to have control of learning, he/she will select the self-directed learning strategy and its associated methods.

Depending on the defined learning objective, three teaching strategies may be selected, which may result in attainment of the objective:

- 1) cooperative learning,
- 2) situated learning, and
- 3) self-directed learning.

These three teaching strategies were selected because the objective requires that students have control of their learning to be able to participate in it actively and adapt their learning order and pace to their needs, while the teacher will have a role of an organizer, cooperator and advisor.

In addition, these teaching strategies are the most appropriate ones to a learning style where students will learn by discovering, researching and acting, achieving the selected learning objective that will enable them to prepare and present a safety project conceptual plan based on a practical problem, in cooperation with the team.

The selected teaching strategies will be able to and will have to contemplate student's perception of the topic (rather than teacher's perception of what students should know), developing knowledge presentation skills (rather than just memory skills) on a specific example of presenting a safety project conceptual plan, and epistemological development (rather than just recall development).

These teaching strategies implement the importance of developing student activities that will train them to: build their own understanding or transform their understanding of a safety project management concept, associate things to be able to use abstract understanding in a practical manner, and to boost their knowledge with real-life problems (business practice) and open paths to communities of practice through teamwork within the safety project team.

This also results in a “learning community” [3] with its three interacting presence elements: social presence, cognitive presence and teaching presence. In addition, activities are created and introduced that encourage interaction between two or more students, teachers and students, and between a student and a student group and content source, as an important role in developing teaching presence.

Selecting Online Teaching Methods

The selected teaching strategies and learning objectives result in selection of teaching methods based on the principles of the strategy and the possibilities of its online application for the purpose of contributing to the attainment of the learning objective.

All cooperative learning methods have two basic characteristics:

- 1) a cooperative task structure (the tasks used enable students to work together and may only be performed in pairs or groups),
- 2) a cooperative stimulating structure (grades and rewards are provided not only for the result, but also for the cooperation of a pair or group) [5].

The situated learning teaching strategy uses both cooperative and participating teaching methods where students associate in communities of practice to solve specific cases or problems.

The teaching methods in self-directed learning enables a student to learn according to his/her own interest, but the teacher guides, encourages and supports him/her in expanding his/her knowledge beyond the curriculum in his/her capacity of a cooperator and organizer.

To achieve a selected objective, the “projects” learning method is crucial because its integral use will enable/train students to prepare and present a safety project conceptual plan based on a practical problem, in cooperation with their teams. The method enables students to deepen their acquired knowledge and confirm their knowledge on a practical example of a safety project – this is a key factor in promoting safety and students’ work in future business practices. The students in the project team (5-7 students) prepare a safety project conceptual plan for two months within the curriculum. By using available tools (noncommercial free or commercial ones, e.g. MS Project), the students learn and conduct group work and all project management elements. This method derives from the cooperative and situated learning teaching methods.

In addition to the basic project method, students may combine certain other learning methods. The brainstorming method, arising from the cooperative

learning strategy, is appropriate to identify the problem and the solution idea at the beginning of the safety project, for which approximately one week is provided.

The most appropriate method to exchange ideas and experiences when preparing the conceptual design for the safety project is online discussion, arising from the cooperative, situated and also self-directed learning strategies. Students may conduct online discussions the entire time on an internet forum in special forum groups dedicated to the course.

Students will use the conference method, arising from the cooperative learning strategy, to ultimately publicly present the safety project conceptual plan (using a computer presentation with a digital projector) at a single-day internal conference at the end of the Safety Management course. By placing it in the internet mailbox, the presentation become permanently available online for viewing and learning from it for other project teams and new generations of students.

Regarding the organization of tasks and grading, the group research method will be used, the most complex form of cooperative learning [6]. This is a result of complex tasks derived from the learning objective i.e. safety project conceptual plan and the availability of information sources is enhanced by internet options.

Other appropriate methods arising from the self-directed learning strategy include computer teaching where students are able to learn the entire time by viewing project management computer presentations, locally or online. Students are also required to complete a practical work task in a business organization during the third year of the safety study program, which is the best way for them to familiarize themselves with and learn from actual safety and safety project management problems in practice.

4. CONCLUSION

An analysis of the selected case shows the possibilities of combined teaching in formal education (standard teaching and e-learning).

The following key pedagogical principles derive from the research results:

- e-learning should be integrated with the present teaching practice and teachers’ and students’ needs,
- combined teaching enables students to expand their normal learning methods by participating in projects, research, experiments and other forms of practical teaching.

To achieve the selected learning objective for the Safety Management course, including training students to prepare and present a conceptual plan for a safety project on a practical example through teamwork, three teaching strategies were selected: cooperative learning, situated learning and self-directed learning. They can result in achievement of the objective in different ways, but what they have in common is that students have control of their learning, while the teacher has a role of an organizer and advisor.

Based on an analysis of the possibilities and contributions of each strategy and the teaching methods deriving from them, especially with respect to the possibility and benefits of using online teaching methods, the cooperative (team) learning strategy was found to be the most efficient teaching strategy.

The advantage of cooperative learning in achieving the learning objective is in the numerous teaching methods – their combining and using online methods encourage and enable teamwork among students [4], which is crucial for the preparation and presentation of a safety project conceptual plan.

Teamwork is also firmly linked to the tension and power of learning. Learning tension is a new mental image, a hunger for information. If the team members assume their appropriate roles and have personal ambition and capability for realizing them, both the team members and the team will have a high learning tension. To achieve this, the teacher must create an adequate environment on the classroom, assign appropriate roles, make relevant information available and select appropriate materials (available online).

Of course, team learning is a team skill to be learned. Routine is acquired through dialog sessions, learning laboratories and micro-worlds. Team learning is a process of coordinating and developing team's ability to function as a whole, to think and act in a new synergic manner and create results that the members truly want. It is focused on group learning ability.

Adults learn best from each other by contemplating, reexamining assumptions, receiving feedback from the team, and from their results.

Team learning makes group's learning ability greater than the ability of any individual within the group. It is provided through dialog and productive discussion and results in a changed way of thinking. According to Agriris [2], it enables a double learning circle. In addition, the cooperative strategy is closely related to the constructivist learning theory, which prevails in the conveyance of teaching contents for the analyzed course.

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