Promoting E-Learning for Adults to Improve Quality and Availability of Life-Long Education

METHODOLOGY OF TEACHING IN E-ENVIRONMENT

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Contents

Introduction

This material is developed within the framework of the Promoting E-Learning for Adults to Improve Quality and Availability of Life-Long Education.

Project goal is to improve adult education quality and availability, by contributing to the development of free-access IT-based educational products that will enhance financial literacy.

The following actions are required to achieve project aim:

1. To establish a collaborative network between the partner entities of this project.

2. To prepare content of IT-based educational products for adults, teaching instructions and recommendations for creating of related webinars.

3. To develop pilot webinars and related materials for adults.

4. To prepare a content and technical programming for self-evaluation e-tool.

5. To raise the awareness about adult learning opportunities in partner countries.

Project coordinator: Danish Agency for Science and higher Education, DENMARK (DK). Project partners: Draudimo ir rizikos valdymo institutas (Insurance and Risk Management Institute), LITHUANIA (LT), 'Københavns Handelshøjskole', 'Institut for International Økonomi og Virksomhedsledelse' (Copenhagen Business School, Department of International Economics & Management (INT), DENMARK (DK) and Ekonomikas un kultūras augstskola (The University College of Economics and Culture), LATVIA (LV). The Methodology comprises 6 sections.

1. Digitalization of Education

This chapter introduces the common phenomenon of digitized educational offerings as platforms for teaching in an increasingly competitive global market for professional learning.

Digitized learning approaches comprise both blended learning and pure e-learning. Blended learning is an educational approach that combines traditional classroom methods with different online digital media applications. It provides physical presence and face-to-face interaction between teachers and students where class practices combine with various computer-mediated activities accessible online to offer flexibility in terms of time, place, and pace of learning. E-learning replaces many of the common classroom approaches with electronically intermediated activities to complete the learning experience.

The concepts of e-learning (EL) and blended learning (BL) entered the vocabulary of institutions of higher education more than a decade ago and are often touted as the means to achieve global scale economies and representing the obvious responses to increasingly competitive international educational markets. Yet, the verdict is still out with respect to the relative efficacy and effective use of these technology-driven learning approaches. The EL and BL methodologies are more than simple offers of electronically intermediated training modes. They constitute complete educational approaches that offer different online digital media applications that can enhance, or even replace, the full learning experience to improve the acquisition of professional skills and development of deeper insights. These approaches can be combined with traditional face-to-face classroom activities, or similar e-based discussion fora. Together these approaches represent the means to provide presence among students and personal interaction with the instructors. The students can conduct class practices while engaging in computer-mediated activities that are accessible at their leisure thus providing extended learning space and convenience in terms of student control over timing, location and pace of learning and course completion.

While the potential advantages of EL and BL often are taken for granted, there is still limited research-based evidence on the optimal application and eventual effects of these relatively new learning methods, where more emphasis typically has been devoted to the

technical features of the approaches than to the underlying pedagogical dynamics and learning outcomes to be derived from them. In search of a better understanding of the potential effects, challenges and possibilities of the EL and BL approaches, this manual provides a review of prior research related to the topic and outlines a proposed framework for e-teaching and e-learning.

The following chapter presents a broad selection of topical contributions published over the past decade with critical reviews of positive experiences as well as cautionary insights with suggestions on how to extend the application of EL and BL in professional and higher education. Finally, the implications for future IT-enhanced educational offerings are discussed concluding with suggestions for further consideration.

2. The E-teaching concept: Empirical Evidence on Applications and Effects

This chapter provides a theoretical basis for new online learning offerings based on a review of recent literatures devoted to online teaching and learning.

In the following, we present the contents of a broad selection of topical contributions published over the past decade with critical reviews relaying positive experiences as well as cautionary notes with suggestions on how to extend the application of EL (e-learning) and BL (blended learning) in professional and higher education. Finally, the implications for future IT-enhanced educational offerings are discussed with conclusions and suggestions for further consideration.

The empirical literature typically considers aspects that can influence the successful application of EL methodologies. To this effect, Sun, Tsai, Finger, Chen and Yeh (2008) conducted an empirical investigation of critical factors that led to satisfactory learning outcomes realizing that we still know too little about the key characteristics of effective online solutions and the learning outcomes realized from their use in education. The adoption of IT supported online technologies has been growing rapidly and continues to advance at double digit growth rates, but their applications still do not always lead to

successful outcomes. A variety of factors may influence the eventual user satisfaction when telecommunication facilities deliver both the underlying educational information and facilitate the training activities. The relative importance of these factors were examined on the basis of 645 survey responses from on-the-job MBA students attending 16 e-learning courses with a response rate around 45%.

Computer anxiety among the students was found to be one of the significant factors affecting student satisfaction (Sun *et al.*, 2008). Hence, the ability to familiarize students with the general IT infrastructure and offer supervisory support for its ongoing use is associated with perceived success among the student population. The instructor attitude to use of e-learning tools also affects student perceptions, where a positive instructor attitude has positive spill-over effects and creates more favorable student perceptions. With respect to learning outcomes, the study finds that built-in course flexibility providing students' with freedom of access and ease of applying course material has a positive effect as does the timeliness of online instruction with easy access to instructional support (Sun *et al.*, 2008). The students' perceived ease of use of the learning technology and interactive facilities connecting to co-students working on exercises and group assignments had similar positive effects on learning outcomes.

Whereas real and perceived ease of technology usage is important BL is more than supportive technology, it provides extended opportunities to revamp entire course management systems and offer adjacent online activities as complementary pedagogical features in the learning process. Chou and Chou (2001) analyzed these effects based on a dynamic decision model of innovative learning derived from an ongoing process of knowledge acquisition, persuasive use, application decision, implementation and eventual confirmation of content (e.g., Rogers, 2003). Innovative learning as a dynamic process is affected both by changes in the underlying learning model and changes in the supportive technology infrastructure. Increasing both dimensions will drive the innovative learning development and move it from conventional face-to-face learning towards advanced inclusion of complementary online learning activities. This emphasizes the importance of a balanced approach where both dimensions are considered as essential aspects of an

effective course management system using communication and information technology (CIT) to facilitate.

The most frequently used online feature is the ability to access content and read lecture notes at the leisure of the students. It also offers a great diversity of distributed computer usage that correlate positively to the final course grades (Chou & Chou, 2001). So, BL is seen to offer important advancements to the learning practices helping instructors improve efficiency, e.g., by engaging with more students at the time and an ability to offer more flexibility providing instructional assistance. In short, there is evidence that BL can enable innovative changes in the learning process but we need to know more about the effects on learning outcomes and not least the ability to enhance deeper learning in higher education.

In an attempt to uncover this transformative potential of BL in higher education, Garrison and Kanuka (2004) studied how BL may support meaningful learning experiences by rethinking and restructuring the educational process. The application of BL is consistent with the values of traditional classroom learning but offers a potential to enhance the effectiveness and efficiency of the learning activities combining deep thinking with on-line exercises in ways that extend and challenge the content. This calls for a purposeful integration of the face-to-face classroom and/or interactive e-learning activities and the interim online learning exercises in a comprehensive educational experience comprised by directive teaching (lecturing), social interaction (discussing) and individual cognition (reflecting). Meaningful learning from EL/BL does not imply that more of the same is produced cheaper at higher volumes by applying new information technology, but rather refers to the transformational potential of the full learning experience providing a balanced approach between the student's teaching, social and cognitive presence. It is also important to establish administrative functions, technology and instructional support capacities to realize the potential academic benefits and create better learning experiences.

The ability to form an effective BL instructional model using web-based e-learning tools requires more emphasis on the psycho-pedagogical aspects of the proposed solutions as opposed to primary consideration for technological features of new learning tools (Alonso,

López, Manrique, & Viñes, 2005). Higher education and most professional studies do not just deliver routinized skills and practice of specific capabilities, but extends the professional topics to higher order epistemologies that require creative combinatory learning in collective interactions. Such efforts must consider how to structure the course content, the psychology of individual information processing in knowledge-creating learning and skills acquisition as a social constructivist process. So, the underlying instructional model will continue to be supported by learning objectives derived from conventional object-oriented paradigms transmitting foundational knowledge through teaching as well as enhancing understanding and generating problem solving skills through hands-on exercises and collaborative group work (Alonso *et al*., 2005). Learning depicts acquisition of new mental schemata that order the storage of knowledge in the brain that can be facilitated by CIT (computer and information technology) by applying different online presentations and various exercises to acquire the needed schemas.

The advancement of EL should provide an extended approach to learning, which often is defeated by profusion of detailed technological features. Instead, the underlying teaching principles should be the essence for developing impactful solutions drawing on sound pedagogical principles and techniques (Alonso *et al*., 2005). EL and BL can provide personalized teaching facilities including behavioral responses to repetitive stimulus, imitation of prior problem solving, engaging in concrete exercises, and supporting individual topical cognition. This must enable an ability to reorganize cognitive structures in order to deal with more complex research issues where multiple perspectives, diverse interpretations, and constructivist reality formation come to the fore. Hence, EL and BL in higher education should be able to accommodate an eclectic approach with deep understanding of content, social cognitive processes, and collaborative learning (Alonso *et al*., 2005). This requires a balance between assisted personalized teaching where learning is enhanced through practice, thinking and interpretation of outcomes.

The use of CIT can enable self-paced EL features that also incorporate real-time collective activities. Organizing these offerings needs thoughtful direction with administrative assistance, and technical and pedagogical support functions (Alonso *et al*., 2005). It offers a

shift from centralized classroom teaching to include distributed EL activities that can enhance the complete learning experience. Such a BL approach has the potential to be more efficient by combining or replacing conventional face-to-face classroom teaching with self-paced CIT supported EL activities and collaborative social interactions among students for complementary instruction and completion of individual as well as collective learning exercises.

By incorporating CIT enhanced online discussion facilities as complements to face-to-face interactive teaching activities, Chen and Looi (2007) found that this blended approach can bring a wider spectrum of perspectives into the learning experience. They find that the combination of class discussions and online exercises can enhance student participation and promote their cognitive thinking thus allowing more in-depth information processing around course topics (Chen & Looi, 2007). The biggest challenges to the efficacy of these processes is a shortage of needed face-to-face interaction between instructors and students, as well as the time required by instructors to post online activities represent substantive resource limitations.

Looking at the EL/BL methodological choices around online studios in higher education, Bliuc, Goodyear and Ellis (2007) identified a need to focus more on the integration between direct instructor-based learning modes, online interactive exercises, and group work. They do not discern a strong general agreement about the definition of BL from a review of the literature, which to a large extent is focused on experiences from specific case studies of face-to-face courses converted into blended offerings and a focus on the technological-supported part of the learning experience (Bliuc *et al*., 2007). Instead, there is a shortage of more holistic perspectives that looks into the potential synergy to be gained from the complete learning experience. Hence, there is a need to better understand the structure and purpose of EL and BL in higher education with stronger assessment of student experiences and outcomes.

Accordingly, Watson (2008) observed too many approaches to online learning with a need to combine the best elements from prior experiences with different online and direct

instruction-based education approaches. He argues that this requires a larger shift in thinking than just adding a few computers to support the traditional learning process in conventional course offerings as face-to-face education converges to integrate online interfaces (Watson, 2008).

Exploring an EL/BL approach in second year accounting teaching at a South African University, Prinsloo and van Rooyen (2007) found this phenomenon of higher education as an outcome of more open international learning opportunities where distance learning is a solution. The idea is to consider and use of a variety of technologies, pedagogies, and delivery modes adapted to the specific context that will create a proper strategic mix to enhance success in student learning. The ability to construe the proper online learning environment is crucial to a successful outcome, which implies that good access to computers and tutorial support is essential. They conclude that EL/BL has potential to increase the effectiveness of teaching and improve student success in a second year university accounting class (Prinsloo & van Rooyen, 2007).

In a study of perceived effectiveness of an EL/BL approach for technology training in Greece, Mouzakis (2008) found general satisfaction with student participation and knowledge acquisition based on date from questionnaires and semi-structured interviews among 51 primary and secondary teachers. The blended course in the study offers more flexibility to students where online contact with teachers and real time interaction with other students and team members are important concerns, and he reports requests for more support from facilitators and face-to-face seminars (Mouzakis, 2008). Similarly, Ayala (2009) found a good potential for EL/BL approaches in social work education that deserve to be further explored.

Kenney and Newcombe (2011) report on their experiences from adopting an on-line approach to pilot test the blended instructional methods in the context of large university classes. These settings are particularly challenging due to the pressures for increased teaching efficiencies and the demand for individualized treatments in large class fora. Increases in class size and concurrent requirements for more lecturing can have the adverse

effects of reducing student engagement and lowering class activities that should enhance the learning. Hence, an EL/BL approach that combines direct teaching and online learning activities provides an opportunity to circumvent these negative developments. The fundamental challenge is to find the right blend of methods with a good integration between the two learning modes.

In their action research study Kenney and Newcombe (2011) identify the barriers they encountered in BL and generate ideas for enhanced student motivation and support to improve learning. They note that time requirements are substantial for instructional personnel in setting up the proper facilities as well as the technical and administrative support structures must be in place for effective implementation (Kenney & Newcombe, 2011). The pilot project indicates that student involvement increases and leads to somewhat better preparation with some increase in class participation. While the openness of the blended approach seems to enhance student interest and satisfaction, it is also noted that it can be difficult to learn effectively using remote online access without an ability to gain immediate instructional feedback.

Poon (2013) explores EL/BL as an institutional approach to enhance student learning experiences and analyze information obtained from interviews with academics and student questionnaires in a university setting. He finds that the students' perception of the learning environment influences their experiences, the learning outcomes and achievements from course completion. E-learning has distinct benefits, such as, an enhanced learning platform, more flexibility across activities, more student autonomy and possibilities for reflection. However, a positive perception of the learning environment is associated with reduced student withdrawals, a professionalized learning environment, and educational cost savings. Conversely, the challenges are to face the often unrealistic expectations about BL, potential isolation of students on remote EL platforms, problems with failing or insufficient technology, lack of technical and instructional support, more invasive learning practices, and higher time commitments to instructors and students (Poon, 2013). It requires that students, instructors, administration, and technology support acquire new relevant skills, make necessary resources available, and provide flexibility in the course structure

considering a diversity of delivery methods. In general, it is appreciated that e-learning allows students to study at their own pace. There is little perceived difference to conventional classroom teaching and student sentiments are overwhelmingly positive.

Along the same vein, Kiviniemi (2014) finds a significant increase in student performance and positive evaluations from implementation of an EL/BL approach in a graduate-level public health course and consider blended offerings as effective means to optimize student learning and performance in the health sciences. Similarly, Yigit, Koyun, Yuksel and Cankaya (2014) find that the use of e-learning in computer engineering education can optimize the seat time and improve the learning experience of students. They observe that algorithmic thinking abilities provide to students in traditional and e-learning programs are quite close in computer engineering education while EL/BL can make the education more effective (Yigit *et al*., 2014).

The conclusion is, that the adoption of blended and e-learning approaches has increased dramatically in recent years as a viable response to global competition in professional education. The e-learning offerings hold the promise of enhancing student flexibility in the learning process and improving success in the teaching of professional course topics. While much emphasis initially has been devoted to the details of the features of the information technology supported offerings, it is more important to see e-learning as a full pedagogical offering focusing on simple skills enhancement as well as critical thinking and innovative developmental reasoning. While conclusive evidence remains wanting, the extant research efforts suggest that a positive attitude to technology, easy access to relevant teaching materials, and ease in ongoing interactions to instructors and between students are essential aspects of the successful e-learning initiatives.

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3. E-Teaching Organizational Aspects

Training process organization in e-environment differs from a face-to-face training process because of a higher demand for information accuracy and more extensive informative

support. The reason is communication between students, academic staff and institution's administrative and technical staff via digital communication tools. Consequently, each participant of the training process shall be able to formulate the respective task accurately, as well as the training process itself shall be organized accurately and simply, i.e. without any unnecessary and incomprehensible information.

Regardless of the type of educational institution and applied training mode, the participants of an e-teaching process are:

- ➢ students;

- ➢ academic staff;

- ➢ administrative staff, incl. people responsible for the training process;

- ➢ technical staff.

Each participant of the e-teaching process has his/ her role and responsibility in the training process (see Table 1). If one of its participants fails to fulfil his/her obligations, it affects the work of other participants, as well as the learning outcomes to be achieved during this training process.

Table 1. Main responsibilities of e-teaching process participants

	Preparation	Training process	Control
Students		To meet the study course acquisition requirements To pass tests on time	Participation in survey
Academic staff	Participation in training To prepare e-course	To conduct classes and provide tutorials To communicate with students To check students' knowledge	Participation in survey E-course updating Upgrading of applied teaching/ learning methods

Administrative staff	To prepare training schedule: lectures, tutorials, tests, etc. To organise training; To control e-course preparation To control the readiness of the e-environment Coordination of the acquisition requirements of study courses	Meetings with students Information support for students and academic staff Administrative support Methodical support for academic staff	Compliance of the e-course curriculum with the study programme To check the existence and quality of the e-course To organize student and staff surveys To analyze survey results To develop and implement upgrading measures within the process
Technical staff	To prepare the e-environment To conduct staff training Informing about the e-platform and its requirements	E-platform maintenance Advisory support to academic staff and students	To check the existence and quality of the e-course To develop and implement upgrading measures within the process (in ICT)

Before classes start, instructions for working in the e-platform and technical requirements for using the educational institution's e-platform (PC and operating system requirements) shall be sent to students email addresses given in the educational institution's data base, as well as an introductory meeting on organizational aspects of training shall be held.

When starting a course, academic staff shall inform students about the requirements for course acquisition, tutoring support, scope of independent work and final examinations, as well as submission deadlines for independent work assignments and their evaluation procedure.

It is recommended to establish a single procedure how academic staff assess student knowledge. The basic principles of this procedure are the following:

> ➢ Student's work shall be evaluated not only by grading, but also by giving comments on identified drawbacks and mistakes;

- Grades for independent work assignments and other formative tests shall be entered into e-platform;

- The measures taken by academic staff should be provided in cases when students submit an independent work or perform an assigned task after the set deadline.

Taking into account the specifics of the e-teaching process, an important role is played not only by classes and e-course materials, but also by tutoring support to students. The educational institution may organise tutorials based on common principles, planning a set number of tutorials depending on the scope of the course and provide additional tutoring opportunities if requested by students. The basic principles for organizing tutorials are the following:

- Students should be encouraged to discuss all unclear issues in e-course forums (the aim is to promote the efficiency of academic staff: answers to the most frequently asked questions are provided in the forum (i.e. only once and simultaneously to all students);

- Via email (it is preferable to determine in how many days from the date of e-mail receipt);

- Onsite in the premises of the educational institution;

- Before final examinations tutorials are provided online with the help of videoconference system at a time and place agreed with the educational institution.

Tests

Final examination in the course may be organized in a written or oral form. Organizing final examination of courses in the e-environment the identification of a student shall be provided. For example, if a test is organised in the videoconference system, then the student may show his/ her ID. Academic staff assesses student knowledge and skills following the predefined course requirements, as well as student's results in the final examination. The results of the final examination shall be reflected in a document following the procedure set by the educational institution.

The person responsible for the training process and academic staff jointly analyse students' results in the course. Upon necessity, meetings are organized for upgrading the training process, incl. teaching methodology and course curriculum.

Methodological, administrative and technical support shall be provided to academic staff and students throughout the whole training process.

Beside the organisational work also control of the training process shall be performed throughout the whole training process: compliance of e-courses with the requirements of the educational institution, quality of the provided classes, completion of students and academic staff's duties, etc.

Control is also required once the training process has been completed to find out students and academic staff's opinions about the training process in order to timely identify drawbacks and develop improvement measures.

Self-assessment

Self-assessment questionnaires should include questions about both the training process itself and the availability and quality of methodological, administrative and technical support. Student questionnaires should include questions about the course curriculum, availability and quality of the required learning materials, quality of classes, availability of tutorials and evaluation procedure. Academic staff questionnaire should include questions on teaching and learning methods, use of the e-platform and student involvement in the training process. It is advisable to carry out such survey at the end of the course.

Self-assessment data analysis

After the survey, the administrative staff of the educational institution performs data analysis and identifies drawbacks in the training process organisation indicated by students and academic staff.

The person responsible for the organization of the training process holds discussions with staff to find out the reasons of the identified drawbacks and opportunities to eliminate them.

Development

After the self-assessment data analysis, the education institution's administration develops a plan for improvement measures, including all the necessary activities, specifying the deadline, required resources and persons responsible for their implementation.

In order to expand the range of applied teaching and learning methods, as well as to promote the use of innovative teaching and learning methods, the educational institution may provide professional development activities for its academic staff, as well as experience exchange tours or visits to other educational institution which also provide their training process in e-environment.

4. Moodle platform options

Nowadays variety of the virtual learning platforms exists such as Blackboard, ATutor, eFront, Myicorce, Bigmarker and the others. Moodle is one of the best options from free or open source learning management systems (LMS) for online learning. It is the most used e-learning solution in HEI (more than 70% of the Latvi HEI are using Moodle) . While being open source platform, it is not limited from viewpoint of courses, participants and accessible features and gives institution possibility to upgrade, enhance, and customize it in accordance with educational needs. It incorporates most universal tools for e-teaching, e-learning and e-course management online, which give opportunity to post and study variety of learning resources, to develop and submit individual and group tasks online and offline, to grade students' contribution and to generate different mode feedback.

Moodle course may content many different **resources**, such as files, folders, books, web pages links etc. External tools allow students to interact with certain learning resources and activities on other web sites, for example, linking to opened learning materials from publisher. To set this option up, a tool provider which supports learning tools interoperability is required. Resources are highly changeable and open to enriching Moodle option. Still they considered most static and one-direction learning instrument. In opposite

to this, Moodle **activities** are interactive tools, which promotes exchange, communication and collaboration and, in some cases, provides interactive delivery of content.

Moodle platform offers several interactive activities:

ASSIGNMENT activity let instructors to track and collect work from students, to communicate tasks, to provide feedback and grades, as well as to set due dates. All the course works from all the groups of students can be collected in organized way in one definite place online and graded in a journal mode if instructor prefer. It gives teacher possibility to include into study course different assignments, such as essay, students' research, different types of presentations. These assignments may get downloaded as one or several digital files in different formats (MS Office, pdf, spreadsheets, audio and video clips et al.), as well as submitted as online written text in special text submission box. Assignments may get done individually or within the group, online or offline, following definite schedule and general study calendar.

Every assignment gets evaluated online, as well may be more or less explicitly commented by teacher. Teacher may exchange comments with students individually or, in a more rare case, through assignment forum publicly, about their submissions, to answer the questions and to leave written feedback. This Moodle activity gives possibility to correct submitted works and attach reviewed file as general feedback file for student to see and, if study course tasks imply this, to consequently improve or develop it through the pass of time during the course. Teachers comments may get written online in special comments section, or given as recorded audio feedback. Any assigned offline work (such as artwork, classroom performances), even partly submitted through Moodle (for instance as recorded video file), can be graded in Moodle using points, a custom scale, through a rubric or grading guide, simple direct grading etc., explaining requirements and evaluation method in the course description. Grades entered on the assignment grading page are added to the Moodle gradebook.

In the Moodle platform teacher can configure how many files student may submit in every assignment. For instance, assignment may include one Power Point presentation file and

one excel file with calculations made, thus, two files. Maximum file size allowed (for instance, 5 MB) can be configured as well.

Assignment activity helps to administrate course and to develop time management skills due to deadlines and cut-off day set. Deadline is the due day for submission, which typically showed in the course calendar for every assignment within the course. Cut-off day may be matching due day, restricting any possibility for student to submit files later, of may activate days of even weeks later, stopping works submission. Teacher may give lower mark for the work not submitted timely.

Typical steps in using this Moodle activity are:

1. Adding an Assignment. In the course editing mode teacher select Assignment in the Activity Chooser. When adding a new assignment page is open, it is possible to configure different assignment options.

2. Configuring general options, such as assignment name (for instance, test in definite subject, corresponding to the course) and description, which is summary and instructions for students, typically displayed underneath the assignment link on the course page. Even in case of offline activity, when students perform their work outside the moodle, teacher still can provide a description, set the due day and thus task will be shown in the course calendar, course activities list and in the gradebook as well. Access to the assignment may be restricted, sorting student by groups and preventing them from accessing restricted content, including descriptions and dates.

3. Configuring availability options, which is submission timeline. Here teacher determines when student can begin to submit their works, when the assignment will be due and when submissions will no longer get accepted.

4. Configuring submission types, such as online text or file submissions, maximum number of uploaded files and maximum submission size. Submission setting may be configured as well, such as maximum number of submission attempts that can be made by student, or requiring all group members to submit in order to acknowledge that they are signing to the joint work of the group. Teacher can set notifications, such as notifying about late submissions made after the due date.

5. Configuring feedback types, which typically include feedback comments from teacher to student, feedback files (document with comments or audio feedback) or comments inline, which copies submission text into the feedback comment filed during grading, letting to edit and comment original text.

6. Configuring grading. Teacher may select standard or customized grading scales, or choose grading by points, entering maximum possible score for the assignment in the maximum point filed. It gives student possibility to collect points through submitting course tasks within assignment activity and to earn final mark, which depends on the scores sum. Teacher may configure advanced grading methods, select a categories in the gradebook, enable blind grading with no seeing student name, rate the grading workflow from not graded and in review to ready for release and grading completed, if works require consequent grading step by step etc. It helps to provide more sophisticated approach to grading process and use different didactical options in the assessment.

Moodle platform gives teacher wide options for revising and improving of the developed course and editing posted assignments. Still instructor should be very cautious and careful when editing the content or setup options for an existing assignment, especially if it has already been released to students. If students started to submit works, it may rise confusion and motivation loss. If correction is needed, it need careful and explicit communication.

Similar steps let customize another moodle activities, such as chat, forum or database.

CHAT activity allows course members to hold real time text-based conversations with other course members. Typically course may have chat sessions in chat rooms when meeting online is scheduled. Several chat rooms can be set up for the course if needed.

From the teachers' perspective, typical steps in using this Moodle activity are:

1. Setting up a chat room, adding Chat from the Activity Chooser in course editing mode and giving it informative name.

2. Entering description in the description box, explaining the purpose of the chat and teachers expectations for students' participation. Typically a list of subjects or questions needs to be set in order to promote structured discussion.

3. Configuring chat options, specifying time and date for chat sessions, which adds the chat to the course calendar block. Repeating sessions may be significant part of the course, developing discussion and communication online on the course subject. Chat activities may be assigned to the some groups of students and restricted to others if needed. Within the chat description it also can be specified if chat logs planned to get archived or be available to all students enrolled.

Chat logs of every particular session can be viewed, downloaded as an HTML page and deleted by course instructor. Student contribution made through chatting sessions may be part of the overall course grade. In this case it needs to be explained in course description and requirements.

FORUM or discussion activity may be used by instructors and students for communication and collaboration within the course in Moodle. Instructors can create topics following the course structure (for example, it main themes and assignments), as well as allow students to originate their own topics.

Steps of using and administrating this activity within Moodle are:

1. Choosing forum type, considering it's function and role in the course. There are multiple forum types, such as Q and A forum, forum for instructors' announcements, journals in blog-like format or standard forum for general use. Forum may imply short-term focused conversations, restricted in allowance and reply numbers, or be freely opened to all students enrolled any time with no limitations for topics and responses number, arranged in a thread.

2. Adding forum to the course from Activity chooser in the course editing mode and configuring forum options. General options include forum name, which displays on the course page as a link, and description, concisely explaining the purpose of the forum and expectations about students' contribution such as posts' content, size and number.

3. Configuring forum specific options such as maximum attachment size, if student can attach files, posts' word count, forced or optional subscription to the forum and tracking read and unread posts. In order to keep students up to date with forum posts, it is possible to enable RSS feeds, setting the number of discussions or posts included in the RSS feed. Forum activity allows multiple restricted access options, allowing only students, who belong to definite group, or requiring to achieve a specified grade in order to get access, or preventing posting until and from a specified date and time.

4. Configuring grading. Student contribution to forum activities can be graded as well as every other task, corresponding to course aims and explained in course description as a requirement. Ratings also can be used in order to grade student's posts.

It is good practice to remind students about netiquette and communication rules, preventing undesirable posts or deviations from forum subject. Actively used and concisely managed course forums may develop into important body of virtual learning community and peer knowledge exchange, more valuable than course static resources.

Glossary and database are Moodle activities, which allow students to collaboratively develop bank of course related information.

GLOSSARY allows users to create list of definitions with browsing and searching options. Entries form a collections of terms related to the course subject.

Glossary settings allow comments on entries, available through a link at the bottom of the definition, as well as approving options from teachers before definition becomes visible to all. It is possible to attach pictures or articles through browsing the file picker and uploading chosen file.

Contributing to the glossary may be part of the course requirements, described in the course description. It stimulates students to search for information, to compare course constructs and to form deeper understanding on the course subject. Entries can be put on categories, edited and modified, and may serve as a valuable source of information through long period

of time. Teacher's requirements and expectations about the students contribution may be articulated as number of entries, number of words etc.

DATABASE activity is meant to build, display, comment and search a bank of records, which may include text, images, URLs, numbers and files of different formats. Database contributors can be teacher and/or students. The course instructor defines database fields and templates and designs the format of the database entries. This tool is highly customizable and has versatile settings options to course instructor. Collecting and sharing information for the database can be important part of the course, explained within course description and requirements. Content may be presented as ready-made for students to comment, or be given as data array to form with in order to develop full database during the course. It may serve as source of information and knowledge exchange among peers.

In database settings teacher can configure such elements as number of entries each student is required to make before database is considered complete, maximum number of entries or the number of entries student must submit before it be possible to see entries made by others. It is possible both to rate and to grade student's entries, setting maximum score for the activity and framing time limits during which items are available for peer rating. Visibility and restricting access are also customizable. Database is more complicate tool than glossary described above. It requires to select the filed type from the menu (URL, Text input, File, Checkbox, Picture, Multimenu etc.) and provide the field name, description and options. The visual display of the database is determined by the chosen layout template.

Workshop and wiki are highly collaborative and flexible Moodle tools. When based on concise and well developed course design, they perfectly able to promote active learning and knowledge construction, creative development of new products and projects.

WORKSHOP mostly is a peer assessment activity which typically flows for days or even weeks. It has many options, but typically students receive two grades – one for their own work, which can be submitted online as text with attachments, and another for their peer assessment of other student's work. Their own work grade may also be based on peer reviews, providing feedback to the authors. It's up to course instructor to configure blind grading (hiding the identities of the students to each other while assessing submissions).

Teacher may guide students by providing submission and evaluation examples and/or templates, and use different grading strategies. Grading may include a set of criteria, having weights and grading scales, or be banded to the number of errors etc.

General options of workshop activity are similar to assignment: access restrictions, timeline for both submission of works and their peer assessment, submission types and modification options and limitations. During the peer assessment phase, after initial works (for example, students research projects, developed individually or in the group) have been submitted, the workshop participants review and assess the submissions allocated to them. This assessment gets graded during "grading evaluation phase", when teacher provides final grades and feedback for authors and reviewer. By this, every student gets grade as an author and as a reviewer. The final grade for every submission is calculated as weighed mean of particular assessment grades given by all reviewers of this submission. Teacher may provide higher weight for instructor's assessment than usual peer reviews have.

WIKI activity allows course participants to create collaboratively produced web pages or online books in Moodle, adding and editing it's content. Course members can create also whole set of web pages, working directly in the browser. Wiki content modification options and time period for editing can be configured in settings. As well as for the other Moodle activities, teacher expectations about students' participation and contribution should be clearly explained in course requirements and matching course aim and objectives. They can be articulated as number of pages created and/or edited, number of words added etc. Wiki settings allow different options for grading, restricting access and other configurations typical for Moodle assignment. Teacher may provide wiki template through index page in order to get more structure to submissions. Annotation system enables teacher to add inline annotations to wiki pages on the Moodle. Students can use this system as well if configured in order to approve their edits.

As every other online learning activity which enables students to collaboratively write and edit content, wiki tool is supporting and promoting group work. Some versions has lack of learners activity traceability, but in most cases edits and amendments of each group member can be monitored. It is also possible to allocate separate wiki for each user.

Quiz, Questionnaire and Choice are Moodle activities teacher can use for student's knowledge assessment.

QUIZ activity lets course instructor to administer a wide range of questions from the courses question bank, within a specific order, providing different types of feedback. The question bank works as an organized repository of all questions on the course subject (excluding those used for Polls and Questionnaires). Moodle allows various quiz question types: multiple choice with single and multiple possible answer, true/false in response to a question, short answer by entering number, a word or a phrase, with different grades for various options, calculated questions requiring a student to calculate numerical answer etc. Due to the fact, that quiz is control and assessment tool helping to evaluate student understanding of course material, it is significant to monitor how students access and perform it. Quiz is a powerful and highly adaptive activity teacher can customize in various ways.

Typical steps in using this Moodle activity are:

1. Creating and organizing questions in the course question bank. The Moodle question bank allows creating, importing, previewing and organizing questions in categories before using them in a quiz activity.

2. Creating and configuring quiz activity in order to appear in the chosen part of the online course. Quiz description provides instructions and clarify details about the activity, such as time limits and number of attempts allowed. In addition to general configurations such as access restrictions, overall feedback and grading and timing, there are some particular settings for quizzes.

3. Configuring layout and appearance. By default, Moodle creates a new page for each question, but it is possible to set number of questions per page. Navigation through quiz can be free, when students can answer the questions in any order, or sequential, requiring to answer questions in sequence without returning to previously viewed pages.

4. Configuring questions behavior and extra restrictions to the attempts. Settings allow shuffling within questions, as the result the correct answer appears in a different

location for each attempt. Students may receive immediate feedback as they submit each answer. It is possible to set options and limitations for changing their response (in an adaptive mode, students can have multiple attempts or adapt itself to the student's answer providing some hints before next try, so teacher may set it taking pedagogical goals into consideration). If multiple attempts are allowed, each next quiz attempt may be based on the previous one. Certainty-based marking requires students to indicate how certain they are about answers. Correct answers or automatically generated summary of the correct responses may be shown to students if configured in questions behavior settings.

QUESTIONNAIRE activity looks similar to quiz and allows teacher to survey students using the wide range of question types, such as yes/no, numeric, rate, textbox for brief one line response, essay box for longer response, dropdown box etc. Still it is less control-oriented. Unlike the quiz activity, the questionnaire is designed primarily to gather information from students, not to test their knowledge. In a questionnaire particular responses cannot be graded, teacher may award a grade for the entire activity. This activity helps collect students feedback on the course or particular topic.

Teacher's steps in using questionnaire in online course are:

1. Creating and describing questionnaire goals and instructions.
2. Configuring timing and response options in the activity settings. If start day is not specified, students may take the questionnaire immediately upon its creation. Teacher may limit how often student may respond (daily, weekly and so on). If respondent type was set as anonymous, teacher still will see, whether a student has submitted a questionnaire or not by checking the reports for the activity. Typically students are allowed to view results even after the end date of questionnaire. Moodle offers various responses viewing options for students, for example, students may view all the responses only after answering the questionnaire, which motivates them to submit their own response, or only after questionnaire is closed.
3. Adjusting content options and configuring access restrictions.
4. Adding and editing questions.

5. Viewing and downloading the responses.

CHOICE activity meant for single question polls. It allows to present a single question to the students with multiple responses as the possible answers. Each student can then pick the given choices. Choice activity is intended to gather information through quick survey and is not gradable. Choice may be used for choosing research projects subject or students group, as a signing up tool, by limiting the number of students who are allowed to select each option.

Enabling this activity includes:

1. Creating a choice question. If allowed, choice can be updated, more than one choice can be selected by student, and number of responses allowed may be limited.
2. Configuring additional options such as restricting answering to definite time period, showing results to students after they answer, keeping responses anonymous (which may be appropriate in case of gathering opinions) or publishing full results, showing students names and their choices (for example, if students choose research topics or group they are ready to join).
3. Viewing and downloading choice responses.

Among interactive delivery of content such Moodle tools can be mentioned as **Lesson** and **SCORM** package.

LESSON module presents a series of HTML pages to the students. Typically they are asked to make kind of choice underneath the lesson content area. The choice made by them will send them to a specific page of a lesson. From the pedagogical viewpoint, level of knowledge and previous achievement determines path for further learning activities. The lesson can be designed by teacher as a simple linear or adaptive sequence, but in all cases it implies kind of hierarchical didactical structure of material and choices determined self-directing learning process. Thus, when fully configured, lesson module customize the presentation of content to each student individually in special way and sequence, based on previous knowledge. There are two basic lesson page types which are shown to students:

content page and question page. There are also several navigational pages, meeting more specialized need from teacher's perspective.

After naming and describing the lesson, teacher can configure versatile advanced settings, such as progress bar, giving and restricting access to the linked media, displaying students' ongoing scores, multiplying navigation options and determining activities after the false and correct answers.

SCORM module enables teacher to upload compliant SCORM (Sharable Content Object Reference Model) package in the course. SCORM specifications enables interoperability, accessibility un reusability of web based learning content. Module offers many types of activities report, such as basic report showing a table of attempts for the SCORM activity, graph report displaying graphs of percentage obtained against number of participants, interactions report, showing student's responses to questions together with the correct answers and objectives report. Along with range of usual setting configurable by course instructor, within the SCORM package accessing from the repository, attempt status appearance, navigational options, course structure displaying on every page, displaying attempt status, forcing new attempts and auto-continuation and many other options and settings can be configured by teacher in accordance to the course goals and preferred didactical approach.

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5. Recommendations on the development of e-courses

The development of an e-course, while in many respects being similar to a traditional course development, has it own unique points that have to be taken into account. Mainly, there are two major factors that have to be considered – the technical aspect and the human resource.

Technical aspects in this regard are referring to the "technology" that is being used, as well as the best-practice that has been built up over the years by those who consistently and continuously use online format for educational purposes.

The human resource refers to the teachers that are actually carrying out the training/education. Not surprisingly, much more attention should be given to this particular aspect, as form many this will be a relatively new (or a completely new) way of educating. Therefore, a very concise overview of these two factors will be provided in this chapter.

How to prepare for webinars.

In order to prepare the webinar cycle, the teacher should adhere to the following sequence of actions:

1.   Drawing up a thematic plan for the webinar cycle on the discipline.

2.   Preparation of materials of the first webinar.

3.   Conduct a training webinar (before the first webinar), obtaining admission to conduct webinars.

4.   Receiving and considering expert recommendations and making appropriate changes in the materials of the webinar.

To prepare for webinars, teachers are given appropriate instructions, which should be followed in order to draw up a thematic plan for a webinar cycle, prepare webinar materials, etc. The webinar's materials include: topic, lesson plan, script, recommendations for students, illustrative material, questionnaires / polls.

The main criteria when choosing a webinar topic are the complexity of self-study, practical significance for the discipline and the direction of training in general, students' interest in its development.

The lesson plan (in the form of a webinar) contains:

1.   Goal, objectives, expected results;

2.   The issues under consideration (for narration, general and individual survey, discussion);

3.   The course of the lesson;

4.   Overview of the lecture (to memorize, highlight the main, conclusions);

5.   Recommendations for additional information.

The presentation of the webinar primarily includes illustrative materials. To its content and design, the instructions also contain requirements that are based on recommendations and principles from various sources.

During the webinar, it is important to receive feedback from the participants, with this purpose, questionnaires and surveys are prepared. Therefore, the tasks of conducting surveys include:

1.   Checking existing knowledge on a topic;

2.   Conducting a test of "attentiveness", understanding during the lecture;

3.   Identification of existing points of view (with a general survey);

4.   Verification of residual knowledge (after class).

The main components of instructions for conducting webinars are: webinar regulations and sequence of actions, substantive and technical recommendations on conducting a lecture, a survey, answering students' questions, summing up results, etc.

There is no particular time limit set on how long a webinar could be and the decision on how much time a particular session should be is left at the discretion of the one carrying out the webinar. However, generally it is advised for one session not to exceed 3 hours in

length, as it has been noted that after this point it becomes very uncomfortable for both the participants and the teacher. Having sessions longer then 3 hours should have very good justification for doing so and should be communicated to the participants. Therefore, time consideration should play a major role for the structure of the whole course.

How to prepare teachers to conduct webinars.

Since conducting training sessions in the form of webinars is a new technology for many teachers, mastering it requires additional training and maintenance. As the most important asset for a successful webinar is the teacher, it is highly advisable to seek out a party that would be able to play the role of a "tutor" for the teachers.

Here we consider the main stages of this process envisaged by the technique of organizing and conducting webinars:

1.   Preliminary training.

2.   Training webinar.

3.   Support of the teacher in preparation for the webinar.

4.   Support of the teacher during the webinar.

Preliminary training. Before it is possible to start preparing training sessions in the form of a webinar, the teacher must master the techniques of its preparation and conduct. For this, training sessions should be organized (individual or group).

The training should strive to answer the following questions: what is a webinar, how to prepare and conduct a training session in the form of a webinar, what illustrative materials need to be prepared for the webinar, and what are the main requirements for them in terms of content and design.

The training must also include an introduction to the virtual room, its features and didactic tools, the basic principles of conducting a fun and effective webinar. Training should also involve the participation of teachers in the webinar in the role of "student". The tutor using illustrative / demonstration materials conducts a webinar on the topic "What is a webinar?", demonstrating the possibilities of a virtual room.

At the end of the training teachers should receive feedback on their performance and possible issue areas. This will allow them to more adequately and independently prepare for the first training webinar on the subject being taught.

Training webinar. For the first webinar, the teacher prepares the presentation in accordance with the instructions and information obtained at the training. Additional materials for the webinar on a given topic can be: illustrations, demonstration of the use of software for performing any tasks, questions for questioning or questioning. All materials of the webinar, the expert reviewed (if necessary, makes recommendations for improvement), the time of the training webinar is appointed.

Its implementation is due to the following goal - the teacher approbation of the methodology for conducting a webinar. This stage in teacher training is necessary because, having tried in practice to hold such a training lesson, the teacher masters the method much faster and easier, increases the motivation and interest of the teacher in new technologies for teaching students, and also revises the prepared materials and introduces corresponding improvements.

Thus, the teacher is psychologically, methodologically, and technically prepared for the webinar. After that, according to the technology of organizing and conducting webinars, the teacher coordinates and approves, together with the tutor and moderator, the schedule for conducting webinars on the discipline being taught.

Support of the teacher in preparation for the webinar. Before each webinar, the teacher should review (or provides for approval) all the prepared materials. As noted earlier, the preparation of the presentation is paramount. During the preparation of the presentation, the teacher may encounter the following main difficulties:

1.   Methodical preparation and preparation of the presentation.

2.   Technical issues on the development of the presentation using special software.

Each teacher (if several) should be individually advises and given the necessary instructions and recommendations. Often, the teacher is faced with the second problem due to the untimely completion of advanced training in the use of information technology and (or) the

infrequent use of appropriate software in their professional activities. It is necessary to teach the teacher to independently develop presentation materials, since this is an integral part of the further work on preparing webinars.

Also important is the first designated question of setting out the content and preparation of the presentation. The teacher often has the following errors:

• the slides are overloaded with text / information;

• there is no visualization in the form of thematic schemes, drawings, tables, etc;

• slides duplicate everything that the teacher voices;

• The design contains many colours, fonts, styles, which distracts from the content of the slides.

Any issues that are found in the presentation and arising from it should further discussed and resolved (preferably with the tutor) and appropriate changes must be made in the author's materials, which are further taken into account when preparing materials for the following webinars.

Thus, continuous support of the teacher during preparation for webinars and material review are an integral part of the process that contributes to the improvement of the quality of educational content development. The teacher receives additional skills both in the work of specialized software, and in the systematization of knowledge, methodological presentation of educational content, in the design of illustrative materials of the webinar.

Support of the teacher during the webinar. When using a virtual room, the teacher is required to possess certain user skills. Familiarity and necessary skills of the virtual room should be obtained by the teacher on the preliminary training and training webinar. However, often times training is not enough to provide the teacher with all the necessary skills and confidence to freely use the virtual room.

Therefore, it has to be noted here that it is unreasonable to expect the teacher to be able to autonomously carry out the first webinar and for him to be able to cope with possible arising technical issues after training. In the event of emergency situations of a technical

nature, additional actions may be required to restart the virtual room, adjust its parameters or the parameters of the computer from which the translation is being performed, of which the teacher may not be aware of or "forget" due to stress.

For the implementation of certain settings and problem solving also requires additional assistance from the tutor and/or moderator of the virtual room. In addition, at the first classes, the tutor should also monitor compliance with the rules of the webinar. This is necessary because the technology of conducting a training webinar is significantly different from conducting classroom training. Practical experience shows that only at the first webinars the teacher needs tutor/moderator.

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6. Practical suggestions

Similar to traditional education, there are numerous things that should be taken into account when hosting webinars. However, there are some unique things to consider and that will be outlined here. These are given in no particular order and are all worth considering and taken into account.

1.   Choose the Right Webinar Platform. There are a lot of platforms that provide webinar hosting services. Make sure that you have spent some time on searching and looking through various platforms, as they often offer various things. Some have a higher

participant count, while other allow you to record much longer video. Prices are also often different.

2.   Set reminder letters to participants. Before a webinar, you need to remind participants of the webinar two or three times and send a link with access to it. You can prepare reminder letters in a special email newsletter service or use the email sending function provided by some webinar platforms

3.   Take care of the appearance. It is better to wear plain clothes. Shirts or sweatshirts with stripes, checkers or other small items create unpleasant ripples on the video. Clothing should not cause a feeling of internal discomfort, and distract attention. Therefore, wear those things that you feel comfortable.

4.   Prep Your Studio Space. If you're hosting your webinar from a home office, ensure that your kids/pets/neighbors won't interfere or make any noise during the webinar. Alternatively, if you're running the webinar from your office, find a quiet room with a door where you won't be disturbed

5.   Prepare the background. Take care of what the audience will see in the background during the webinar. Do not sit against the wall with small details - it will ruffle in the frame. Prefer a monophonic background. Make sure that the background matches the business or corporate style. For example, if you conduct business webinars, it is more appropriate to sit near a shelf with books or a plain wall than near a flowered wallpaper.

6.   Run a Test Webinar. Whatever you do, don't assume that everything will go smoothly during the live webinar without testing your equipment first. Do at least one run-through several days before the live event to make sure that everyone knows what they're doing, and that all your gear is functioning correctly.

7.   Upload presentation. Add a presentation and all necessary materials to the webinar service. As a rule, the conversion of files on the webinar site will take some time, so download materials in advance. After downloading files, be sure to check if they are displayed correctly.

8.   Conduct equipment test. Most of the technical problems at the webinar can be avoided if the equipment test is performed in advance. This function offers the majority of webinar services. If the test reveals any problems, you will have enough time to fix them.

9.   Check the sound and video from the speakers. Teachers who will speak at the webinar with a camera and microphone should remember to pass the test equipment. This will help reduce the number of technical difficulties in the webinar. Few things will ruin a webinar faster than poor-quality audio. Don't rely on built-in mics on your laptop – the resulting audio may be tinny, distorted or faint, even if you have some decent hardware. Instead, use cabled headset microphones to ensure that everything your presenters say is clear

10.   Put a greeting on the webinar. Guests enter the webinar some time before the start. Naturally, they will not be interested in looking at a blank screen. Therefore, while participants are gathering, you can run a selection of musical compositions or a welcome video in the room.

11.   Unload internet feed. Turn off all downloads and applications that may affect your internet speed.

12.   Turn off sources of extraneous noise. Put the phone on silent mode. Turn off notifications on the computer. Ask colleagues or other people who are with you in the room, do not disturb you.

13.   Pour a glass of water. With a long conversation can dry up in the throat. Water or another drink will help keep your voice clear and voiced longer.

14.   Enable webinar recording. When the webinar starts, you can simply forget about recording the event. Therefore, it is better to press the record button one minute before the broadcast.

15.   Keep Backup Batteries / Power Cables Handy. If you can't use power cords for your hardware, ensure that not only are all laptop batteries fully charged before the broadcast, but that you have at least one spare battery on hand for each piece of equipment.

16.   Enlist a Technical Assistant. During the webinar, either you or your presenters need to be focused on delivering a great presentation. The last thing you should be worrying about is technical problems. With this in mind, enlist the assistance of an assistant who can handle technical issues as they arise, moderate comments and other tasks that might derail the presenter. Often times, webinar platforms have technical assistance available. If you let them know in advance that you are hosting a webinar, they may be able to provide you technical assistance during the event.

It's impossible to prepare for every eventuality when producing a webinar, but there are a few things that are recommended doing every single time to ensure things go as smoothly as possible:

•   Always do a dry run no matter what.

•   Use poll questions to engage your audience.

•   Start promoting at least 7 days in advance.

•   Put presenter bios on your registration page. It adds credibility.

•   Test and optimize your registration page and email invites.

Following the steps outlined above and having then in mind should provide a solid basis that will allow to avoid the majority of possible issues.