

Virtual Teachers' Toolbox – An Innovative Tool to Assist the Creation of High Quality Open Distance Learning Courses

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Keywords: Distance Learning, Self-evaluation Mandala, Innovation, MOOCs, OER, Technology, VTT-Box, Open and Distant Learning, Technology Enhanced Learning, Open Educational Resources.

Abstract: Virtual Teachers' Toolbox aims to create a special virtual toolbox for teachers as a sophisticated tool for developing open, online, flexible and technology enhanced education (OOFAT learning). This toolbox assists teachers/trainers in the course creation by offering a pedagogical framework with a special student's view, a quality enhancement framework and a new self-evaluation technic, the so-called mandala evaluation. This project uses a strategic cooperation between formal and non-formal/informal educational providers using ICT based teaching and the enhancement of digital integration in learning. It will be enhancing teachers' professional development and support students' acquisition of values, skills and competences. Additional, pilot courses as samples of proven praxis will be produced and be published as Open Educational Resources (OERs).

1 INTRODUCTION

Traditional teaching methods, with teachers giving long hours of lectures in front of a blackboard, do not “work” with today's student and certainly will not work with students of tomorrow. Success counts, quality matters, and innovation wins. Students want to be more successful in their learning and modern teaching methods, like Distance Learning (DL), help them. Open, online, flexible and technology-enhanced education (OOFAT), as an innovative approach to Distance Learning (DL), needs a modern pedagogical approach, an encompassing quality enhancement framework, and students' motivating self-evaluation methods as well as self-determined learning (called Heutagogy).

The project addresses two main issues which are currently seen as important praxes in modern active teaching in the digital area: Open and innovative practices and the treatment of early school leaving and disadvantage.

1.1 Open and Innovative Practices in a Digital Era

Open and innovative practices are a core objective in the Virtual Teachers' ToolBox (VTT-Box) and focus on Open Online Distance Learning and the intensive use of ICT to strengthen the digital competences of both students and teachers. The ultimate goal is to increase students' learning capacities and, to some extent, combat underachievement and drop out. In the OODL context, the educational material is of major importance, and as such, the learning process broadly implies instructor's absence (Poulakakis, Vassilakis, Kalogiannakis & Panagiotakis, 2017). The intensive use of digital competences in this project combined with the proposed pedagogical approach in combination with Open Educational Resources (OER) provide a modern approach to teaching in the digital area. This is supported by the intensive use of multimedia-based material in teaching. The VTT-Box project will create innovative methods and pedagogical approaches and develop learning materials and tools that make use of Information and Communication Technologies (ICTs) in education.

Through the project OERs are created, which ensure innovative access to education. OER use metadata application profiles based on international standards which result in interoperability (Poulakakis, Vassilakis, Kalogiannakis & Panagiotakis, 2017). The focus OODL, as well as innovative evaluation methods combined with an appropriate quality enhancement framework, provides learning at the highest level. Furthermore, the project is spreading the utilization of open and innovative education and training. That covers work methods in the same way as the project provides resources for educators and learners at various levels.

The complementary project consortium is built from schools, a University, a teacher-training institution, and a national Association for Distance Education (K12-Higher Education). It includes supporting synergies between education, research, and innovation activities, and the digitization of quality learning content. It promotes the use of ICT as a driver for systemic change to increase the quality and relevance of education and training. The project results strengthen the acquisition of digital competences in both target groups (teachers and students).

1.2 Supporting Schools to Tackle Early School Leaving and Disadvantage

The schools follow an innovative concept to keep students motivated to finish school and terminate their basic education. A special focus is put on traditional science subjects (Physics, Biology), but languages and arts education are involved as well. From the experience of the participating schools, difficulties arise in the learning success regarding these subjects. Students often get demotivated by lack of achievement - especially in science (and language) subjects and finally drop school. The use of OODL based on technology-enhanced learning, and multimedia content, can motivate students. The specially developed pedagogical approach which addresses specifically the needs, desires and behavior of students and it consists an innovative approach targeting the decrease of early school leaving rate.

The VTT-Box project offers a diversity of learners new chances, helps the disadvantaged students by enabling an individual learning pace and modern multimedia-based learning. This strategy is a must in the participating schools due to their students' profile (students with migration background or different mother tongue) and are in line with the priorities of the Erasmus+ partnerships. Here the consortium will focus on students from the lowest to

the highest end of the academic spectrum, including children with a migrant background who might face specific (e.g., linguistic) challenges.

1.3 Project Aim

The project aims to innovate OODL and to make students more successful in their learning. This will be achieved by an innovative, motivating self-evaluation method, an innovative and student-centered pedagogical approach with a pedagogical framework built on self-directed learning (heutagogy) and an all-encompassing quality enhancement framework. Teachers are supported in course creation by an innovative web-based toolbox (VTT-Box).

1.4 Project Objectives

The project objectives are:

1. Practical implementation of pilot courses in OODL using an innovative learner-centered pedagogical approach (including a quality enhancement framework) and an innovative, motivating self-evaluation tool for students (Mandala self-evaluation, see next section) to increase students' learning success. Mandala self-evaluation is an innovative element in teaching (as described later)
2. Creation of a ready-to-use In-service and OODL training-course for teachers. This course offers work methods and resources for all kinds of educators and offers a way for digitization of quality learning content and promotes the use of ICT as a driver for systemic change to increase the quality and relevance of education.
3. The project supports teachers with a web-based service, which includes a tool to assist the course creation and the pedagogical framework; both of them are based on an innovative learner-centered approach (Hase & Kenyon, 2000). Moreover, it includes a quality enhancement framework (as described later). Implementation of student-centered, problem-based, active and authentic learning through a multidisciplinary and an interdisciplinary approach are a crucial issue in this development. This is the main intellectual output, and it will be provided as an OER.
4. A transferability and evaluation guide enables the transfer of the developed products to other educational sectors (Early Childhood Education, Primary Education, Adult Education, Higher Education).

1.5 International Project

Pedagogical frameworks, including quality enhancement frameworks, will match international standards. Learning also shifts from locality to internationality and finally to glocalization as students attend schools in foreign countries. Therefore, the development of a well-defined, researched and tested learner-centered distance learning environment can only be done in a transnational consortium regarding the various national outcomes and different knowledge.

The knowledge transfer of experts inside the European countries is as well an impact on the project as the experience of different national access to distance learning.

2 METHODS

The used methods followed a classical way with identifying learners' needs, analyzing and studying of the target groups and the development of innovative methods.

2.1 Addressed Needs

Today students, living and acting in the digital age, want to take ownership and to control their own learning. Ownership and intrinsic motivation is the primary issue for learning success. These students have developed particular learning behaviours and typical youth-related learning patterns (Beetham, 2014). A modern pedagogical approach should take this into account. Therefore, teaching and learning methods such as lecturing, repetition and rote learning should be replaced, and theory should be dropped and replaced by a well-fitting "learning offer" tailored to the typical behaviour and needs of the modern students. This requires an in-depth analysis of current studies and, as a consequence, the creation of the appropriate pedagogical framework.

2.2 Addressed Target Groups

The project's target groups are:

- Teachers (School Education) teaching students in the age of 13 -19 years and
- Students of this age (special focus on the age group of 15 - 19 years old students)

Project results can be used in Early Childhood Education (ECE), Primary Education (PrE), Adult Education (AE) and Higher Education (HE) as well, therefore trainers and educators in

ECE, PrE, AE or HE are a secondary target group also. A transferability guide will provide the project's results for these groups.

2.3 The Innovation Implemented in the Project

The project is based on preparatory work done by Mazohl (2016) and the attendance at several Erasmus+ KA1 trainings about multimedia-based teaching and learning.

2.3.1 Innovative Pedagogical Framework and Quality Enhancement System

The framework uses the currently available research work about the learning behaviour and typical patterns found in the student target group (Bruyckere, Kirschner & Hulshof, 2015; Liang, Wang & Hung, 2008, Gutierrez, 2014), the new publication from Jacobs (2017) and students' questionnaires (Mazohl, 2017). The project group will focus on Technology Enhanced Learning (TEL), students' ownership of learning, use, and handling of multimedia-based content, active and self-determined learning as well as collaborative work. An impact comes from the publication from Bergman (2015) about science teaching.

The project fills the gap of a missing pedagogical framework referring to the students' view (Jacobs, 2017). This framework will use the learner-centered approach and methods that satisfy students expectations in modern learning, like interactive and multimedia-based units (promoted by the EC reference?), eTivities (Salmon, 2007) and methods desired and expected by students (see studies above). This type of pedagogical access means a heutagogical approach to learning (heutagogy puts the learner in the center of all learning activities).

An all-encompassing quality enhancement framework, covering technical, educational, and pedagogical items is embedded in the teaching approach. This shifts the currently used quality assurance (by authorities) (excluding pedagogical issues) to quality enhancement, which is more regarding self-evaluation, and benchmarking (Ossiannilsson, Williams, Camilleri, and Brown, 2015). The framework ensures a basic quality continuously amended by enhancement.

2.3.2 Mandala Self-evaluation

Mandala self-evaluation is a graphical-based method to prove the students increasing competences and

learning progress. This method of self-evaluation was developed by Peter Mazohl in 2016 and will be used and evaluated for the first time in this project.

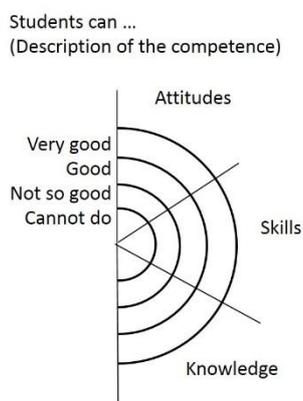


Figure 1: Pattern of a self-evaluation mandala.

The Mandala self-evaluation

- Gives students the possibility to control and measure their learning results easily
- Proves the increase of competences (as foreseen in the European Community)
- Motivates the students
- Enables a simple and visible documentation for the students (and teachers) of the competences increased by their learning.

Strict definition of the competence-based learning (SchoolEducationHighway, 2014) outcomes created by the teachers are transformed in a graphical pattern where the students can indicate graphically their current status of competences. After the learning process, the achievements are marked in the Mandala again. The difference before-after shows the success of the learning process at one glimpse. It also has a motivating impact on the students because it's a success-based evaluation of their learning success.

The method is a complete innovation, and it has not been published yet, but it is mentioned once in one research paper (Rauchlechner, 2016).

2.3.3 Small Knowledge Alliance

The project bundles the experience, competences, and knowledge of five institutions from different educational backgrounds and it consists strategic cooperation between formal and non-formal/informal educational providers.

3 RESULTS

The project has just started (October 2017), so results are not obvious so far, but the first signs already are encouraging, and promising.

In a first pilot environment, the developed Mandala self-evaluation was performed and evaluated (in a small case study). The sample group covered a high school class (24 students) at an age level of 16 years. The evaluation was done by a guided interview and focused on the feedback from the students describing the acceptance and the usability of the Mandala self-evaluation. The feedback was positive, and the students appreciated the quick visibility of learning success by comparing the two mandalas.

This small case study will have an impact at the teaching training event for the VTT-Box Project held in February 2018. Teachers from 3 different European high schools (Italy, Spain, Austria, and Sweden) will get educated to use the method and they will have the possibility to implement several pilot courses.

The development of the pedagogical framework is just finished, the results have an emphasis on active learning methods, the use of interactive multimedia material and engagement of learners in group work. Moodle 3.4 (<https://moodle.org/>) is foreseen as the learning platform for the development of the distance learning course.

The first concepts for the teachers' toolbox include

- Selection of possible interactive eTivities, following the concept of Salmon, (2007) with special focus on collaboration between students, a complete description of each eTivity with instructional design hints and possible assignment methods (if applicable for the eTivity)
- Proposal of the course structure including pedagogical hints
- Proposal for the used quality criteria and valuable quality cycles (selected from the developed quality framework)
- Checklists for teachers covering
 - course preparation
 - course execution and
 - assessments and evaluation of taught competencies
- Material for the course evaluation
- Tool for the definition of competence-based course outcomes

- Tool for using self-evaluation mandalas including the templates to define competence description
- Various checklists like
 - Checklist to evaluate the definition of competence-based course outcomes
 - Checklist for the quality enhancement process in a course definition
 - Checklist for learner-centered activities in courses

4 DISCUSSION

The use of the self-evaluation Mandalas is a promising step to better teaching. It forces the teacher to think very intensively and strictly about the competences and includes fun elements for students in the teaching process. Young students find it “playful” (feedback from the case study). With a well-fitting pattern (some kind of grid) the method is also applicable to Primary Education, Higher Education (Universities) and Adult Education. This must be topic of further studies.

Without a doubt the use of multimedia is a promising way of teaching. Following the ideas of Jon Bergmann (2015) the concept of activating students is integrated into the project. The idea is that students do not only watch a video or perform some interactive tasks, but they also learn something during the interaction.

The open concept in teaching and learning is a promising strategy for the future. Using open educational resources enables students to select from a wide scope of educational offers and to decide on their own what they will use. This self-decision motivates students in self-directed learning.

Most students are motivated by the self-evaluation Mandalas and enjoy seeing that they have increased their competences and in each field (knowledge, understanding, and skills, or in their behaviour). The problem in the project's context is to have motivated students. Nevertheless, students that are not motivated and cannot be motivated by their teachers will pass all the course offers without any advantage.

5 CONCLUSION

Prensky's so-called “Digital Natives” are using rapidly evolving technologies and display decreased tolerance for teacher-centered style (Prensky, 2001).

Students like to use their technical devices in their learning (Mazohl, 2016). Teachers, instructors, and researchers are continually seeking for new methods and strategies to engage and motivate their students (Jacobs, 2017).

The current state of the project brings up the first positive results and offers a promising preview to the final products. The selection of the used elements in the pedagogical framework is currently finished and discussed; it shows up a practicable method for the teaching and the use in ODL courses.

Although the project targets distance learning the project shifts partly into Blended Learning with a specific focus on the distance learning part. Through this overlapping area it offers a high potential of transfer to Blended Learning. Traditional Blended Learning is considered to be learner-centered, offering flexibility, and ownership throughout the learning process. In short, the concept simply means the blend of virtual online digital media, training with traditional classroom methods, and face-to-face, instructor-led sessions (Ossiannilsson, 2017). In School Education (SE) students are taking part in onsite teaching and can receive assignments which can be done in the frame of distance learning. This links partly to the ideas of Bergmann (2017) and carries some characteristics of flipped learning. As all students attend onsite teaching daily (in the classical brick-and-mortar environment), the typical parameters for blended learning are fulfilled. The project results, therefore, are also relevant to all kinds of blended learning. This will be a specific item in the foreseen transferability guide.

ACKNOWLEDGEMENTS

The authors would like to express acknowledgements and thanks to the European Commission, who is funding the VTT-Box project (2017-1-ES01-KA201-038199), under the ERASMUS + KA2-Cooperation for Innovation and the exchange of good practice, and KA201- Strategic Partnership for School Education.

The authors would like to express acknowledgements and thanks to all partners in the project.

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