# TEACHER EDUCATION FROM E-LEARNER TO E-TEACHER: MASTER CURRICULUM

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**ABSTRACT**
E-learning and e-teaching systems are involved in teachers' professional activities and development in several ways: (a) If e-learning/e-teaching is the technology which supports the process of teachers' learning of university courses, the teacher is in the position of e-learner; (b) If e-learning/e-teaching is the content of the teachers' university curricula in order to be applied in the teaching process, the teacher switches from the position of e-learner to the one of e-teacher in blended or total e-learning systems.

Systematic formal teacher education concerning e-learning/e-teaching implementation, and the structure of teachers' ICT competencies and e-competencies, as well as the reasonss for their occurance, are considered in the paper.

The Master curriculum of e-learning and an example of the programme realization are presented. The university curriculum of e-learning at Kragujevac University - Technical Faculty in Čačak (Serbia) was developed as a part of the international project (TEMPUS JEP-41016-2006). The curriculum focuses on the development of different e-roles for teachers and e-teachers: e-creator, e-designer, e-facilitator, e-tutor, e-moderator, etc.

This master programme is a part of teacher in-service formal education for primary and secondary school teachers. In addition, the curriculum is adaptable to teachers' pre-service education. However, it is more effective as a part of in-service education than as a part of pre-service undergraduate education, because the active teachers recognize their professional roles better than prospective teachers.
**Key words:** e-teacher, e-learning, e-teaching, curriculum of e-learning.

## 1. NEW EDUCATIONAL CONTEXT FOR TEACHERS' PROFESSIONAL DEVELOPMENT IN THE KNOWLEDGE SOCIETY

Teaching and learning discourse has been changed. According to Benson and Brack (2009), discourse on teaching and learning scholarship has been focused on passing knowledge derived from teaching practice in the context of other forms of scholarship, as well as in the context of considering of the role of teaching in society. New roles of the teaching process have been derived from the concept of "knowledge society" at all educational levels. On the other side, the strategy of lifelong learning as "a continual process where each human being could expand and adjust their knowledge and skills, capacities of judgement and action" (Knežević-Florić, 2008: 201), should enable people to develop their professional roles. According to Olivera Kneževic-Florić (2008: 202), the first step in mobilizing the lifelong learning strategy is more flexible comprehension, evaluation and development of different forms of education and teaching.

In the context of the information and/or knowledge societies and lifelong learning strategy, a new frame of the pre-service and in-service teacher education has been defined.

The current level of the learning technology development provides opportunities for (Benson and Brack, 2009: 74): collaborative engagement, access to information, interaction with content, and individual empowerment. Nowadays, rapid changes in communication technologies enable teachers to move from traditional face-to-face classroom activities to online classrooms, or online activities in the traditional classrooms.

Educational systems worldwide insist on using information and communication technologies (ICT) to teach students who gain the knowledge and skills needed for the future knowledge society (Jimoyiannis and Komis, 2007: 149-150). Both the students-prospective teachers (pre-service teachers) and in-service teachers develop a positive attitudes toward e-learning and using computers in their (future) classrooms (Akpinar and Bayramoglu, 2008; Gray and Souter, 2002; Gulbahar, 2008; Stevanovic et al. 2009; Tearle and Golder, 2008).

The majority of authors (Benson and Brack, 2009; Schertler, 2006) emphasise that the constructivist and social constructivist concepts are the foundation of e-learning technologies. Current teaching, being social interactive process, is based on the social constructivist and constructivist concepts, too. Constructivist learning theory, especially socio-constructivism in education and higher education (Carnell, 2007), is the formative part of e-teaching and e-learning design. This means that successful learning depends on individual activities and experience in collaborative environment. According to the constructivist principles, e-teaching "means to guide the students to construct their own knowledge and to be aware of the situational context this construction takes places" (Schertler, 2006), thereby using modern ICT. The concept of cooperative teaching is the fundamental construct to develop e-teaching scenarios.

What is relation between e-learning and e-teaching?
Conceptual frameworks for e-learning and e-teaching are different. E-learning focuses on the learner and the learning process. The term "teaching" is used in two ways: teaching as the teacher activities and teaching as the system of instructional activities (teachers activities are incorporated in the teaching activities as the system of instructional activities). Then, there are two meanings of the "e-teaching" concept. According to Nakajima, e-teaching is "the system designed to improve teachers' performance, and their self-regulation and motivation. Its service designs are aimed at supporting teachers to teach effectively in an e-learning environment" (Nakajima, 2006). The architecture of e-learning is centred on learner. The architecture of e-teaching "needs to be centred on teachers" (Nakajima, 2006). E-teaching is not just prerequisite to e-learning, but it can be a great innovation in education.

However, in this paper the term *e-teaching* is used in a broader sense. E-teaching is the instructional system of processes and activities designed according to the ICT development, characteristics, and models of e-learning, principles of formal communication, principles of e-education, principles of competence-based education system etc. (Krneta et al, 2007). Instructional systems, according to Petrina (2007), involve relationships, conditions, processes, causes, effects, and feedback.

Development of e-learning systems and e-teaching modalities makes possibilities to involve them in teachers' professional activities and development in several ways:

- If e-learning/e-teaching is the technology which supports the process of teachers' learning of university courses, the teacher is in the position of e-learner;
- If e-learning/e-teaching is the content of the teachers' university curricula in order to be applied in the teaching process, the teacher switches from the position of e-learner to the one of e-teacher in blended or total e-learning systems.

In this structure of teachers' activities, there are differences between three modalities of e-support of teaching (Krneta et al. 2007):
(1) using attainment of the information-communication technology at the instruction; infotechnological system and computer in that system are the instructional tools;
(2) realization of e-learning as autonomous educational procedure;
(3) realization of e-teaching as a developmental instructional (didactic) system...

Effects of e-learning/e-teaching in the student-teacher and active teacher education have been rarely investigated so far; however, systematic teacher education for complex e-teacher profession has not been investigated.

## 2. TEACHERS' COMPETENCE IN THE KNOWLEDGE SOCIETY
All actors in educational process agree that "high quality teachers are the most important factors in a children and adolescence's education" (Kleiman, 2004).

Teacher's professional competence is the system of knowledge, skills, abilities, and motivational disposition that provides the effective realization of the professional teaching activities. The structure of teachers' professional competence becomes more complex. Teachers' competence includes the three fundamental professional competencies (Bjekić and Zlatić, 2006):

- educational competencies – system of knowledge, skills, abilities and motivation dispositions to realize educational professional roles;
- programme competencies or course content competencies – system of knowledge and skills from the course content and developed abilities to teach the student about the knowledge and skills;
- communication competencies – system of the knowledge, skills, abilities, and motivation dispositions to realize the goals of communication and teaching social interaction.

To gain the expected outcomes of education process, a teacher can realize teaching/instruction by using the elements of information technology, developed models of multimedia teaching, and attainments of e-learning. These elements enable new teaching system design such as e-teaching. Realization of e-teaching requares that the teacher has mastered the wide repertoires of knowledge and skills involved in the fundamental categories of professional competencies (Fig. 1)
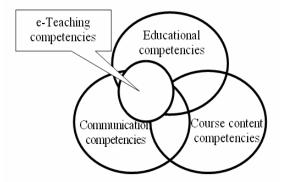


*Fig. 1: Structure of teachers' competence (Bjekić et al. 2008)*

Formative components of teachers' competence in e-teaching include the system of didactical knowledge of the learning, teaching, instruction, educational e-possibilities (possibilities based on the application of information and communication electronic technology). E-teaching competence is the synthesis of the didactical, technological, personal and organizational components that are necessary for effective e-learning and e-teaching modeling and realization.

**2.1. Teachers' ICT competencies**
Pre-requisites of the teacher professional activities are defined by the professional standards. The standards are determined by the description of the competencies. E-education and e-teaching are based on some technological standards of teachers' professional dealing standards. Some standards (Awouters et al; Technology standards for All Illinois Teacher; UNESCO, 2008) are described as the general teachers' competence in the application of ICT (tab. 1), and some standards are described as specific e-competencies for special e-education system modeling (e-learning, e-teaching etc.).

There are three dimensions of the teachers' ICT-competencies (Awouters et al. 2008):

1. the teacher knows what learning activities ICT can be used in teaching (ICT awareness),
2. the teacher has the necessary skills for using hardware and software (ICT readiness), and
3. the teacher knows the pedagogical-didactical elements of ICT (ICT drill and practice).

*Table 1. Teacher general ICT competencies*
*(selected examples from Technology Standards for All Illinois Teachers)*

| Standard | Competent teachers… |
|---|---|
| Standard 1. Basic Computer/Technology Operations and Concepts | use computer systems to run software, to access, generate, and manipulate data: and to publish results<br>evaluate performance of hardware and software components of computer systems and apply basic trouble-shooting strategies as needed. |
| Standard 2. Personal and Professional Use of Technology | apply tools for enhancing personal professional growth and productivity;<br>use technology in communicating, collaborating, conducting research, and solving problems;<br>promote equitable, ethical, and legal use of computer/technology resources… |
| Standard 3. | apply learning technologies that support instruction in his or her grade level and subject |

| Application of Technology in Instruction | areas; must plan and deliver instructional units that integrate a variety of software, applications, and learning tools, lessons developed must reflect effective grouping and assessment strategies for diverse populations. |
|---|---|
| Standard 4. Social, Ethical, and Human Issues | apply concepts and skills in making decisions concerning the social, ethical, and human issues related to computing and technology; understand the changes in information technologies, their effects on workplace and society, their potential to address life-long learning and workplace needs, and the consequences of misuse. |
| Standard 5. Productivity Tool | integrate advanced features of technology-based productivity tools to support instruction; extend communication outside the classroom, enhance classroom management, perform administrative routines more effectively, and become more productive in daily tasks. |
| Standard 6. Tele-communications and Information Access | use telecommunications and information-access resources to support instruction. |
| Standard 7. Research, Problem Solving, and Product Development | use computers and other technologies in research, problem solving, and product development; appropriately use a variety of media, presentation, and authoring packages; plan and participate in team and collaborative projects that require critical analysis and evaluation; present products developed. |
| Standard 8. Information Literacy Skills | develop information literacy skills to be able to access, evaluate, and use information to improve teaching and learning. |

### 2.2. Teachers' e-teaching competencies

The structure of e-learning process brings about a few models of learning scenarios and e-teaching scenarios (Krneta et al. 2007):

- web-based e-learning scenarios;
- classroom-based e-learning scenarios;
- online classroom e-learning scenarios;
- scenarios of net-based course;
- scenarios of e-learning with streaming media technology;
- scenarios of e-learning in the hypermedia classroom;
- scenarious of e-learning based on the combination of the traditional classroom learning and e-learning.

Teachers can be in a position of the creator of e-teaching process (Devedžić, 2006: 77) or the user of the e-teaching/e-learning attainment. Teachers need to re-think their underlying assumptions about teaching, about learning process, and, most fundamentally, about their role as educators (Wiesengerg and Stacey, 2006). Teacher activities in e-teaching scenarios can be broken into two major tasks: providing the content for the students and supporting communication between students and tutors (Schertler and Bodendorf, 2003). Both tasks pose problems to teachers who are used to follow more traditional teaching methods so far. Therefore, modern teachers and e-teachers must be able to organize different types of e-learning and e-teaching scenarios. According to new demands in the teachers' professional activities (new professional roles in current face-to-face instruction, according to Ivić et al, 2001), and e-teaching context, the teachers' e-teaching competencies are the complex system of special roles and competencies (table 2).

*Table 2. Manifestation of teachers' roles in e-teaching context (Bjekić et al. 2008)*

| E-teachers roles | Description of the teachers' competencies in e-teaching process based on the professional roles |
|---|---|
| Model | Teacher creates a model of cognitive functioning in the subjects / course content |
| Diagnostic | Teacher observes and examines the students' reaction, activities in e-learning and e-teaching context, he assesses the student on the basis of these reactions |
| Planner | Teacher creates the plan of e-teaching, integrates tasks and outcomes, creates plan of teaching/learning content, educational means, e-learning strategies |

| Manager | Teacher organizes his own and learners' activities in e-teaching context, communication canals, selects e-teaching content and procedures |
|---|---|
| Initiator | Teacher drives learning process, initiates different e-resources applications |
| Author, creator | Teacher develops e-teaching/e/learning curriculum, creates e-teaching scenarios |
| Motivator | Teacher motivates the students |
| Partner | Teacher cooperates with learners, uses indirect e-teaching communication, creates clearly and individualized feedback |
| Instructor (Educator) | Teacher makes direction to knowledge process by the e/learning programmes, makes directions to use the other links |
| Supervisor | Teacher monitors students' progress and problem solving through the utilization of E-teaching material |
| Administrator | Teacher selects, classifies, reports about learners' achievement, dynamic of progress, difficulties in e-learning materials |
| Evaluator | Teacher creates procedures to monitoring learner achievement, evaluates and assesses learning process, analyzes the norms of e-teaching, evaluates the e/teaching contents and procedures |
| Mediator | Teacher mediates between the content and learners, uses ICT and e-technologies to mediate in process of learner learning, moderates between of the learners in teaching process |
| Adviser | Teacher supports students, supports the process of cognitive difficulties resolving, directs the learners to use specific knowledge and skills without e-teaching |
| Self-assessor | Teacher monitors his or her own progress, estimates his or her own efficiency in conducting e-teaching, makes decisions concerning changes in e-teaching |
| Learner | Explores the possibilities of improving work, learns course content, learns about e-education |
| Self-realisator | Expresses his or her own personality, expresses his or her own ideas about e-learning content and e-learning design |

In this paper, the term e-teachers is used to describe the teachers at the school system who realize teaching process with ICT according to e-learning principles. However, there are many other professions and professional roles in e-learning process. Brigitte Denis et al. (2004) described some central and some peripheral roles of e-tutors in e-learning.

*Table 3. Roles of e-tutors in e-learning (Denis et al. 2004)*

| Central roles | Activities and behaviours of e-tutor (e-teacher): E-tutor… |
|---|---|
| Content facilitator | intervents sometimes as subject expert, sometimes as interpreter and guide through the concepts of study… |
| Metacognition facilitator | supports reflection on learning activities and outcomes, study skills development… |
| Process facilitator | supports learners' learning strategies, time management… |
| Advisor (counselor) | provides pastoral support, doorway to institutional/local support systems… |
| Assessor (formative and summative) | gives feedback on task achievement and performance, assignment development, sometimes he/she is also examiner… |
| Technologist | guide, first-post support with technologies and tools for learning… |
| Resource provider: | identifies and locates, develops and produces resources to provide 'just in case' or 'just in time' learning support… |
| **Peripheral roles** | |
| Manager and administrator | supports the management of the course keeping records and checking the enrollments… |
| Designer | can sometimes intervene to help to design the course or course module, the 'lesson' itself – the pedagogies, the tasks to be done... |
| Co-learner | often, the role of the e-tutor is not 'stage on the stage' or even 'guide on the side', but genuinely 'friend to the end' of the course, walking with the learner-participants and learning alongside them… |
| Researcher | can be a reflective practitioner and action researcher who acts on the basis of his/her e-tutor experience. |

Gilly Salmon (2007) emphasizes the importance of e-moderation in different teaching situations supported by the ICT. Thus, e-moderator is one of the teachers' roles in (e)teaching. Teachers' activities in e-learning process and e-teaching activities in the class instruction organization, include the wide range of e-roles and introject the previous professionals and roles in e-learning and distance learning. Teachers in current (e)teaching context are not only e-tutors, however they integrate e-tutors', e-moderators' roles and activities, as a part of their professional dealings.

## 3. PROFESSIONAL DEVELOPMENT FROM E-LEARNER TO E-TEACHER
New strategies of teachers' education for new professional roles and competencies in the knowledge society have been developed.

According to the continuality of the teachers' professional/vocational development, the teachers' professional improvement regards the development of three fundamental professional competencies: educational (pedagogic), programme or course content competencies as well as communication competencies.

This paper examines the reasons for systematic formal teacher education in e-learning/e-teaching implementation, in professional dealings as an e-teacher in different courses and e-teaching manager as well as in teacher's ICT and e-competencies.

During past decade, "a large number of initiatives, coming from both the research community and educational policy authorities, have been directed towards the preparation of teachers in order to enable them to integrate ICT in their everyday educational practice" (Jimoyiannis and Komis, 2007: 150) and to develop teachers' skills in the pedagogical application of ICT in teaching and learning processes.

The investigations of e-teaching and teacher in e-teaching system represent a new field of research. Then, teachers' competence for e-teaching is a new part of teacher's pre-service and in-service professional education. The investigations of e-education competencies development in the pre-service education (Barton and Haydn, 2006; Beckett et al. 2003; Kadijevich, 2006; Tearless and Golder, 2008) are more frequently conducted than investigations of the in-service development of e-education teaching competencies.

Teachers intentions to use ICT in their instruction are significantly determinated by the teachers' perceptions of ICT usefulness. Investigation of the influence on teachers' perceptions of technology and professional development, which is aimed to integrating ICT in instruction, derives five determinated factors (Jimoyiannis and Komis, 2007: 152):

- continuous ICT support and coordination;
- ICT pedagogical development enabling teachers to use technology in everyday classroom practice;
- Partnership (collaboration with specialist teachers and colleagues in the school);
- Availability of sophisticated educational software in schools;
- ICT infrastructure development in schools.

Mishra and Koehler (according to Jimoyiannis and Komis, 2007: 153) developed the Model of Technological Pedagogical Content Knowledge. ICT integration in everyday teaching and learning system is defined by three key components: knowledge of the pedagogy that is applicable to the specific content; knowledge of how subject matter is transformed by the application of technology; knowledge of how technology can support pedagogical goals.

## 4. MASTER CURRICULUM OF E-TEACHING COMPETENCE DEVELOPMENT
The development of competencies for online teaching should lead to the associated training development for online teachers and (in some cases) to the certification of online or/and e-teachers . Development and application of the e-education (e-teaching and e-learning) involve development and establishment of technological support and intensive training for teachers and students so that they could acquire IT skills needed for implementation and application of IT in e-teaching and e-learning. It is the uses of e-learning as a vehicle for delivering professional development targeted to teacher specific needs, and as a content of professional activities, that is emphasized in the information society context.

E-technology integration in the classroom is becoming the significant priority of national educational systems. Teacher education is becoming an important part of the education system. Context of development of the teacher education includes the global European teacher education policy and national policies (Ash and Burges, 2008č Zgaga, 2006, 2008).

The purpose of this paper part is the presentation and explanation of teacher and e-teacher education about e-education through a case study. The master programme for e-learning at Technical faculty in Čačak is the unique programme in Serbia involving e-learning as a content of the programme, e-learning as the education technology of the programme, and teacher quality assurance procedures.

What is the local context of the master curriculum?
At the beginning of the 21st century, teacher education in Serbia is a part of the Serbian education system, and it is determined by the requirements of the system. It is determined by the process of reconstruction in Serbian society. The current model of teacher education in Serbia, as the teacher education systems in the other contruies, defines the following goals of the teachers' higher education institutions (universities and faculties):

- creating modern and innovative teacher who will be able to self-educate and to integrate his/her own creative work into common curricula of European universities;
- educating high-skilled experts through teaching and researching in the school teaching (teaching all areas of the curriculum), so that they could be productive in their prospective professional activities;
- permanent up-grading of primary school teachers and upper secondary school teachers in order to improve quality and employ critical and creative approach and apply it to the application of their knowledge.

There are more than 86.802 full-time teachers (for 7.411.000 inhabitants in 2007) employed in compulsory (primary and low secondary) education, secondary high education and university education in Serbia (Serbian Institute for Statistics and Demographic Research). Experienced teachers can meet the same standards as new teachers. Then, all experienced teacher must improve their educational technology competencies, and new e-teaching competencies, too.

The following text presents the master curriculum in e-learning (figl. 2). University curriculum in e-learning at Kragujevac University - Technical faculty in Čačak (Serbia) is one of the master programmes for primary and secondary school teachers' education in the field of e-learning. It was developed as a part of the international project (in cooperation with grant holder Maribor University in Slovenia, Brighton University in Great Britain, Gratz Technical University in Austria, and three universities in Serbia – Kragujevac University, Belgrade University and Niš University).
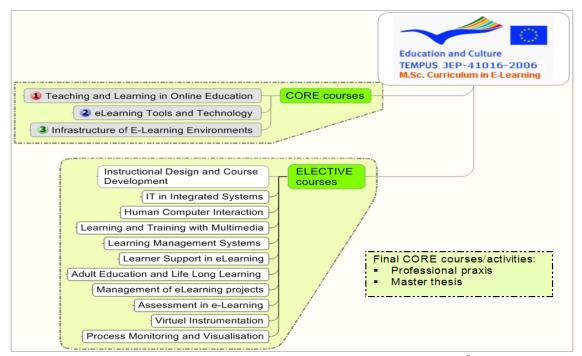


*Fig. 2. Structure of the master curriculum in e-learning at the Technical faculty in Čačak (Serbia)*

The curriculum has been created for professional groups with different prior education. However, all of them are going to use e-learning and e-teaching procedures in some kind of teaching and training in the future. Thus, different professional groups can follow e-learning courses.

In teacher education context, the curriculum is focused on the development of different e-roles for teachers and e-teachers (most of e-learning professionalists): e-creator, e-designer, e-facilitator, e-tutor, e-moderator, etc.

The master curriculum in e-learning paves the way for the second level of teacher' education (defined by the OECD and EC Commission, European teacher education society, TEPE, concepts of the national standards of teachers' professional activities, strategy of teacher professional ). At the end of the master one year programme (60 ECTS), students become teachers of engineering technology and information technology –master in e-learning.

*Table 4. Competencies developed in the master curriculum*

| Description of the competencies developed in the master study for e-learning | |
|---|---|
| General competencies | ▪ System of knowledge, abilities and skills of the vocational and scientific critical approach to investigation and problem resolving; writing skills and skills of the presentation of the vocational and scientific papers; research autonomy and self-reliance; <br> ▪ Team competencies and effective communication skills in the work and research processes; <br> ▪ Qualified persons for continual education and development of interdisciplinary approach; <br> ▪ Professional activities in keeping with professional and scientific ethics. |
| Subject specific competencies | ▪ Complex theoretical knowledge system of the education processes and technological systems, <br> ▪ Qualification for selection, applying, investigation, evaluation, innovation and development of the current methods as well as types of learning and teaching; <br> ▪ The skills of the planning and managing of learning and teaching process, modeling of the learning situation; <br> ▪ Specialized knowledge and skills of the special domains of the e-education, design, creation, implementation, delivering, evaluation and management of the e-courses; <br> ▪ Qualification to use complex theory and interpretation, to demonstrate practical knowledge and apply it in the online, synchronous and asynchronous mod etc. |

**The outcomes of the curriculum master study for e-learning:** at the end of the study, the master of e-learning is able to:

1. functionally explain the processes and dimensions of e-education, e-teaching and e-learning;
2. research the basic principles of the learning base on the multimedia, analyze interaction as well as synchronous and asynchronous e-learning/e-teaching communication;
3. select and apply the adequate technologies and tools in the effective creation of different e-learning solutions;
4. understand the functioning of the hardware, software and communication e-learning infrastructure;
5. create configuration and apply different multimedia devices, software tools, video conferencing solutions in the process of e-learning development and realization;
6. design, develop and realize e-learning procedures based on the specific educational needs of individuals, groups and systems;
7. realize the multimedia project and teaching procedures on his or her own;
8. critically analyze, apply and develop the system for help in learning and for student support; apply adequate technologies, tools and services for user online support;
9. develop assessment plan, e-assessment techniques, collect data of the achievement, interpretation the student improvement in the frame of the formal, informal and social learning;
10. effectively apply LMS in online teaching, coordinate online processes, assess effectiveness of the realized courses in e-environment;
11. assess instructional frame for infrastructure defining and net demands for e-learning;
12. analyze and improve roles of e-educator, e-manager, e-administrator, manage one's own learning and make plans for professional development,
13. resolve e-educational problems and innovate e-learning and e-teaching process,
14. develop and implement research project in the field of e-learning, and develop interdisciplinary approach to e-learning process;

15. manage and transform work or study context that are complex, unpredictable and require strategic approach in e-learning fields;
16. take responsibility for contributing to professional knowledge and practice and/or reviewing the strategic performance of e-learning teams.

There are many **forms of e-learning courses** (Milošević et al. 2009). Most of these forms are used in these master programmes:

- e -learning activities in online professional learning community: graduated students – active teachers participate in a series of learning activities, exchanging ideas with other students and teachers; this form uses web-based technologies, asynchronous discussions, participation in school-based activities (implementation lessons, assessment procedures, class visiting, etc.),
- e-learning programmes use broadcast formats, lectures reviewing, classes demonstration, reviewing other online materials; this form uses multiple sites, interaction via video conferencing, online text messaging; video conference-based teaching approach is important part of the (presented) curriculum;
- individualized self-paced instructional procedures: series of online learning activities which are delivered between e-teacher and teacher-participants who are the e-learners in the curriculum; it includes some forms of the self-study without interaction, some interactions with instructor through online discussion, e-mail, Skype;
- hybrid teaching models: this form uses integrative onsite meetings, classroom visits, face-to-face workshops, coaching and mentoring programmes, small study groups;
- e-learning based on the extend communication in distance situation and without immediate connection.

The instruction is realized by the Moodle platform for e-learning which is selected on the base of the top university's experience. Moodle platform support the creating and delivering of the different teaching materials and activities: e-book, multimedia interactive lessons, vocabulary, forum, wiki pages, chat, test, quizzes, homework, workshop, etc. Hypermedia laboratory (e-lab) at Technical faculty in Čačak is equipped with the videoconferencing system to teaching activities of visiting professors. The modern conception of the programmes content gives direction to students' activities (there are week guides to learning) and learning plan development. The evidence of student activities, automatic monitoring of student advancement, realization of pre-exam activities etc. The Moodle supports different students, but it supports the teachers and faculty staff, too.

In 2008/2009, the first generation of master students for e-learning attends the courses. At the end of the courses, they evaluated curriculum and courses on the scale from 1 – the lowest grade to 5 – the best grade (Milosevic et al. 2009: 266): evaluation of the curriculum structure and content – 4.40; evaluation of the goals and outcomes – 4.27; evaluation of the teaching organization – 4.21; evaluation of the process of student evaluation, grading and testing – 4.45; evaluation of the e-content organization – 4.68; evaluation of the LMS and technical support – 4.69; general impression – 4.54; evaluation of teachers – 4.59; composite curriculum grade – sum of grades – 4.44.

## 5. CONCLUSION
E-teaching requires a wide spectrum of e-roles. It is necessary for teachers in e-education environment to aquire sufficient knowledge about e-teaching and e-learning.

According to Kleiman, "e-learning can contribute to addressing each challenge by enhancing the preparation of new teachers, providing high quality and readily accessible professional development opportunities for active teachers, and making the teaching profession more attractive (e.g., by providing online resources for teachers and new connections to colleagues and mentors) to help address the teacher recruitment and retention problem." (Kleiman, 2004).

Different e-learning master programmes are implemented in the teacher pre-service and in-service education.

E-learning master programme at Technical Faculty Čačak is realized in 2008/2009 school year as a part of teacher in-service formal education. The programme is focused on the differentation and development of e-teachers' roles and application in Serbian school environment. The curriculum is adaptable to teachers' initial education, too. However, it is more effective as a part of the in-service education than as a part of the pre-service undergraduate education. There are differences between student-teachers and active teachers in terms of their educational needs. Active teachers recognize their professional roles better than prospective teachers.

The paper suggests that e-learning potential is a powerful tool for directing the teachers' quality challenges and obtaining e-teaching competencies. E-learning for teachers must reflect the principles of effective teachers' professional development.

What is so unique in the teachers' master curriculum for e-learning? What is the difference between the teacher education for e-teachers/e-learning experts and the other e-learning experts from different professional groups? There are many questions and new research topics regarding teacher education in the future.

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