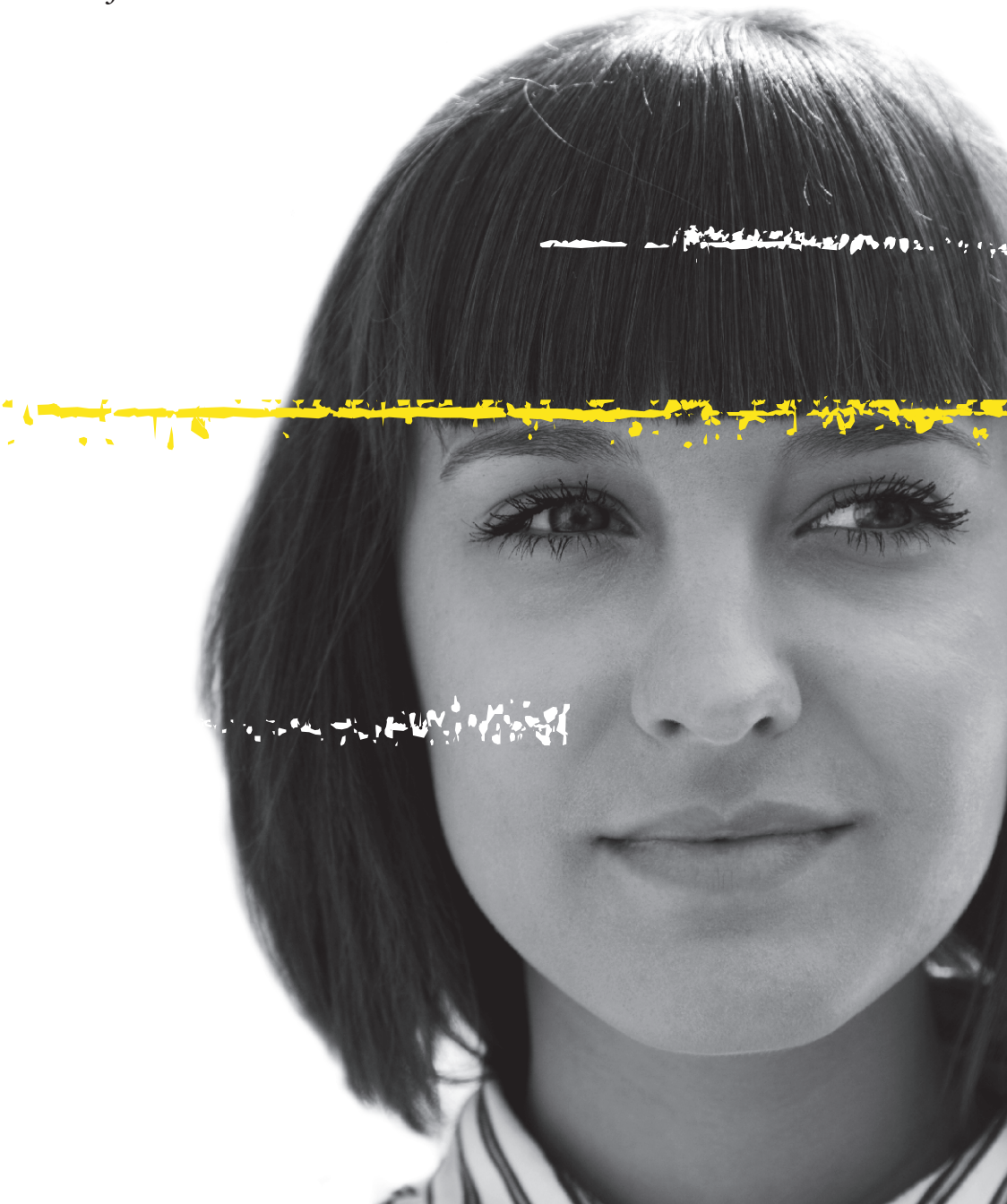
TEACHING AND RESEARCH IN THE PROFESSIONAL SOCIALISATION OF JUNIOR RESEARCHERS

Editors: Jasminka Ledić and Marko Turk



Published by:
Faculty of Humanities and Social Sciences in Rijeka
Sveučilišna avenija 4, Rijeka 51000, Croatia

For publisher:
Associate Professor Ines Srdoč-Konestra, PhD

Editors:
Professor Jasminka Ledić, PhD
Marko Turk, PhD

Reviewers:
Associate Professor Slavko Cvetek, PhD, University of Maribor, Slovenia
Professor Jana Kalin, PhD, University of Ljubljana, Slovenia

English translation:
Vedrana Baretić

Expert text editing:
Bojana Vignjević

Croatian language editor:
Snježana Beronja

Graphic design:
Kristina Rena, Dragon Ltd, Rijeka, Croatia

Preprint:
Tempora Rijeka, Croatia

Printed by:
Printing Office Grafika Helvetica Ltd, Viškovo, Croatia

First edition. Print run of 150 copies

ISBN 978-953-7975-55-5

The CIP code for this book is available in the electronic catalogue of the University Library Rijeka under the number 131208096.

The publishing of this book was co-financed by the Croatian Science Foundation within the project *Academic Profession Competency Framework: Between New Requirements and Possibilities* (APROFRAME) number I-2148-2014, and the Faculty of Humanities and Social Sciences in Rijeka within the framework of the programme Publishing Activity.

TEACHING AND RESEARCH IN THE PROFESSIONAL SOCIALISATION OF JUNIOR RESEARCHERS

Editors: Jasminka Ledić and Marko Turk

Faculty of Humanities and
Social Sciences in Rijeka
Rijeka, 2017

CONTENTS

PREFACE: JUNIOR RESEARCHERS BETWEEN TEACHING AND RESEARCH

The book *Teaching and Research in the Professional Socialisation of Junior Researchers* is the result of the research conducted as part of the research project *Academic Profession Competency Framework: Between New Requirements and Possibilities* (APROFRAME), funded by the Croatian Science Foundation within the framework of the "Research Projects" tender from October 2013. It is a three-year project for the period from 2014 to 2017. The project is the result of the research team members' extensive work in the research areas of higher education and academic profession, on a number of the specific topics within the context of the following fields – the quality of teaching in higher education, the teacher competencies of university teachers, management in higher education, university civic mission, the academic profession competencies, and junior researchers.

The research goals within the APROFRAME project were defined by taking into account the research team members' prior research results, a number of international studies and recommendations, as well as the recent changes within the European and national educational policies. The first research goal was to determine how academics in Croatia evaluate the importance of, and mastery of the proficiency in the academic profession competencies, and thus propose the appropriate competency profile. The results obtained on the basis of the first research goal presented a starting point for the formation of the second research goal. Namely, in addition to being partly expected and in accordance with the findings of other studies, the results of the conducted research demanded further consideration and new studies. In that context, the group of junior researchers came into focus because their personal self-evaluations of the importance of, and the mastery of the proficiency in the academic profession competencies revealed a statistically significant difference in comparison to the participants who are senior academics, but also demonstrated a certain level of contradiction. The second research goal was formulated on the basis of the obtained results and its aim was to describe and explain the process of professional socialisation (of junior researchers) within the system of higher education and science in the Republic of Croatia. Taking into account the complexity and specificity of the academic profession, the research conducted within the framework of the

Project combined two research approaches – quantitative and qualitative. The aim was to present an authentic outline of the current state within the academic profession, and determine the connection between the (possible) differences in the obtained results with regard to different research approaches.

One book has already been published within the APROFRAME project – *Academic Profession Competencies: Fata Volentem Ducunt, Nolentem Trahnut*. It presented the results of the quantitative research and proposed the competency profile of the academic profession. The aforementioned book marked the completion of the quantitative research and provided the competency profile of the academic profession (in Croatia).

This book outlines the results which are based on the combination of the quantitative and qualitative research approaches, with a special emphasis on the description and explanation of the process of professional socialisation (of junior researchers) within the system of higher education and science in the Republic of Croatia. It also correlates the obtained results with the results of the previously conducted research within the framework of this project. In that context, this book presents a logical continuation of the exploration of the topic of academic profession competencies. It also provides new research results with regard to the academic profession competencies in Croatia, and expands on the previous research results, in the process focusing on junior researchers and their teacher and research competencies. There are two reasons for the specific content-related focus on junior researchers and the aforementioned two groups of their competencies. The first reason is that, in the previous national studies and within this project's framework, junior researchers were identified as a special group of stakeholders within the higher education system whose professional experiences require further exploration and elaboration. The second reason is the differentiation of the core academic activities, since the majority of recent studies show that teaching and research are still considered as the core academic activities which, *nota bene*, also represent the mainstay of the junior researchers' work at universities.

This book consists of five chapters. The concept of the book assumes that its chapters (with the exception, to an extent, of the chapter *Methodological framework for the research on the professional socialisation of junior researchers in Croatia*) can be read as independent texts, even though they would function more successfully if read in sequence.

In the first chapter, titled *The nexus between teaching and research: The policies and challenges of integration*, the authors (Marko Turk, Jasminka Ledić, and Ivana Miočić) provide a (theoretical) framework for the research area explored in this monograph. In the first part of the chapter, the authors consider the contemporary educational policies in higher education which are predominantly connected to the characteristics of the postmodern universities (the massification of higher education and diversification of the student body), which leads toward the strengthening of the regard for teaching and the positioning of students in the centre of the teaching process, as well as toward the establishment of the research-teaching-study nexus (R-T-S). The authors point out that students are no longer considered to be the members of the social elite, and that the university teachers face new demands and the requirement of the mastery of the competencies which are needed for the successful teaching of the new

generations of students. Nevertheless, in light of the discussions on the university rankings and the universities' orientation toward the research activities, the authors point to a paradox by concluding that the top universities which define the standards of excellence do not in fact experience the diversification of the student body in the same way as the majority of higher education institutions: the internationalisation and globalisation have contributed to the recognition of the students from the top universities as an elite student body, meritocratically selected, and facing the requirement of high achievement. Despite this paradox, and on the basis of the relevant educational policy documents at the international (predominantly European) level, the authors come to a conclusion that the European educational policies increasingly advocate the importance of teaching in higher education.

Furthermore, the authors of the chapter explore the concepts of the relationship between teaching and research in higher education. Readers might be surprised by a relatively large space devoted to the detailed description of the studies conducted by Hattie and Marsh (1996, 2004), but the reasoning behind such a decision can be found in the fact that, in addition to being widely quoted and exceptionally relevant studies of the relationship between teaching and research, the work of Hattie and Marsh is insufficiently explored in the Croatian research papers. Therefore, the attention paid to their work can be viewed as a contribution to the national research on this topic. Through the analysis and further discussion on the relationship between teaching and research in higher education, the authors point to an integration of these two activities, and conclude that the universities are still perceived as the exponents of two inseparable processes – research or the creation of (new) knowledge, and education or teaching as the transmission of the created new knowledge. After considering the challenges of the integration of learning, teaching, and research from the perspective of the authors of the recent works in that field, the authors conclude that the majority of research results indicate the importance of interconnecting and coordinating these core academic activities in order to institutionally and professionally strengthen the academic profession. The final part of this chapter is devoted to the analysis of the explored area in the national context from two aspects: the first is the analysis of the research results on teaching and research with regard to the national circumstances, and the second is the analysis of the selected national legislation and university strategies in the context of teaching and research. The research analysis points to a conclusion that the researchers of higher education in the national context have predominantly focused on the topic of teaching in higher education and its specific determinants, while the research activities and the connection between teaching and research have remained relatively unexplored. The authors conclude that the studies highlight the absence of the promotion criteria connected to the teaching activity, which leads to the neglect of the teaching profession and the inability to advocate the development of teacher competencies in higher education. Following this conclusion, the authors analyse the national legislation (Scientific Activity and Higher Education Act from 2013, Ordinance on the Criteria for Appointment to Research Ranks from 2013, and Decision on the Required Criteria for the Evaluation of Teaching and Professional Activity in the Appointment Process for Senior Academic Ranks from 2005), as well as the universities' strategic development documents – the development strategies of all the Croatian public universities. They point out that the research results have not been adequately utilised in order to create the national policies in higher education which is, in that context, characterised by the lack of formal support for the teaching and research work, the

challenges in connecting the teaching and research activities, and the absence of coordination with regard to the research, teaching, and professional criteria for promotion. This leads to the disownment of teaching, especially when it comes to the evaluation of its importance in relation to other academic activities. As can be observed from the outlined content of the chapter, this text attempts to present the policies and challenges of the integration of teaching and research in higher education in the international, and especially the national context, at the same time providing the framework for the following chapters.

The second chapter, *Methodological framework for the research on the professional socialisation of junior researchers in Croatia* (authors: Marko Turk, Marija Brajdić Vuković, and Nena Rončević), outlines the research methodology which was used in both studies within the APROFRAME project's framework, the first utilising the quantitative, and the second the qualitative research approach. The aim of the first research within the APROFRAME project was to answer the following research question – *Which competencies do the academics / university teachers require at the beginning of their academic careers?,* and consequently propose the competency profile of the academic profession. The research was conducted in mid-2014 on a sample of 1130 academics – university teachers of all the senior and junior academic ranks from seven public universities in Croatia. The research examined the academics' perception of importance of the particular competencies for a successful performance in the university teacher role at the beginning of the academic career, as well as the self-assessment of the mastery of the (stated) academic profession competencies. The research instrument was a multiple choice questionnaire consisting of a preamble and three content-based sections. One of the main research findings points to a conclusion that the junior academics regard the majority of the suggested academic profession competencies as less important in comparison with the senior academics, and at the same time they assess their mastery level as higher than the senior academics. This research result, which directed the attention toward junior researchers, shaped the second, qualitative research within the APROFRAME project. Therefore, the focus of the second study was the analysis of the process of the junior researchers' competency acquisition. Special attention was given to the segment of the junior researchers' professional socialisation. The research on professional socialisation examines it from the aspect of three levels: (a) macro-level or the disciplinary and general research level; (b) meso-level or the institutional level which includes the educational institutions, their organisational units, but also research projects as the fundamental functional forms of research activities; and (c) micro-level or the personal level which represents the individual's personal level and involves personal attitudes and values, the experiences in the approach to profession, as well as the socio-economic origin, sex, family, and other personal issues related to the possibility of development within the profession. This research utilised the phenomenology and narrative analysis as the two most adequate starting points. For the phenomenological research on the competency acquisition process during the junior researchers' professional socialisation, the protocol was developed for the purpose of data collection in the form of a semi-structured interview with the research participants. In order to collect the data for the narrative analysis, the protocol with a biographical approach to the phenomenon of the junior researchers' professional socialisation was constructed, and it encompassed the period from the secondary school to present day (reconstructed by the participants). To collect data through the semi-structured interviews, required for the aforementioned analyses, a purposive

sample was constructed through the method of *maximum variation sampling*. For the purpose of determining the sample framework, junior researchers were defined as all the employees of all the public universities' constituents and from all the scientific disciplines in the Republic of Croatia who have been employed within the system for at least five years, who were employed before turning 30 years of age, and who received their PhD title not more than five years prior. Twenty-one narrative and fourteen phenomenological interviews were conducted. The approach to data analysis was consensual, which the authors highlight as a special characteristic of this research, and the MAXQDA qualitative data analysis software was used for data analysis.

However, since this book which focuses on teaching and research in the junior researchers' professional socialisation presents only a portion of the results obtained through the two studies within the APROFRAME project (one part of the results has already been published, and one part is awaiting publication), this methodological chapter describes in more detail the research methodology which will be used in order to obtain responses to the two formulated specific research questions: (1) How do junior researchers assess the importance and mastery of the teacher and research competencies, and are there any differences with regard to the independent variables of sex, research field, and the type of university integration?; and (2) What are the junior researchers' individual experiences in the professional socialisation process with regard to the teaching and research activities? The chapter provides a detailed description of the methodology which is derived from the methodology of the first and second research within the APROFRAME project, with the aim of obtaining the responses to the two formulated specific research questions which are the focus of the following two book chapters.

Teacher and research competencies of junior researchers in Croatia by authors Bojana Ćulum, Ivana Miočić, and Nena Rončević is the next book chapter. It aims to answer both of the formulated specific research questions by utilising the mixed research approach in order to gain a wider perspective of, and deeper insight into the defined research problem. The research results and their interpretation point to a great advantage of the mixed research approach used in this paper. In their pursuit of the challenges which emerged during the analysis of the quantitative research results within the APROFRAME project (the junior academics regard the majority of the suggested academic profession competencies as less important in comparison with the senior academics, and at the same time assess their mastery level as higher than the senior academics), the authors selected a sample of 696 participants, including all the junior academic ranks and one group of senior academic ranks within the system of higher education institutions in Croatia (teaching assistant, junior researcher – teaching assistant, senior teaching assistant, junior researcher – senior teaching assistant, postdoctoral researcher, and assistant professor), thus forming the sample of *junior researchers*. While answering the research question on how junior researchers assess the importance and mastery of the teacher and research competencies (grouped into the core and developmental competencies), the authors point to a consistently high assessment of the importance of teacher and research competencies, but also to an even higher assessment of the mastery of those competencies. In the interpretation of these results, the authors conclude that there is a lack of serious critical self-assessment of personal competencies, as well as the possibility of unfamiliarity with the complex networks of ability, knowledge, skills, attitudes, and values inherent to these competencies. Additionally, the authors explore the possibility that the junior researchers

assess their personal engagement in teaching, or experiential learning, as a significant learning factor which contributes to the high evaluation of the teacher competencies' mastery. They point out that the junior researchers' high self-assessments in terms of the teacher competencies' mastery could be selectively explained as the absence of any kind of need for further engagement in the enhancement of the culture of teaching in higher education within the national context. Therefore, they argue against such a scenario and advocate the stimulation of future research in order to determine the junior researchers' level of familiarity with the particular (teacher and research) competencies explored in this study. The authors pursue the additional explanation of the high assessment of the teacher and research competencies' mastery by conducting analysis of the semi-structured phenomenological interviews (21 research participants), with the aim of gaining a deeper insight into the participants' individual experiences, and determining the general tendencies and common patterns connected with the process of the acquisition and development of the junior researchers' (teacher and research) competencies. On the basis of the participants' experiences, the authors identify six common patterns of teacher competencies acquisition: (1) self-reliant management due to the absence of systematic support during the process of introduction to teaching; (2) the importance of the support from mentors and colleagues during the process of introduction to teaching; (3) the absence of the opportunity for professional development with regard to the acquisition and development of teacher competencies; (4) positive attitudes toward the need for professional development in teaching and advocacy of equal institutional possibilities; (5) added responsibility in teaching and its advancement through promotion; and (6) the lack of connection between the research and teaching activities. When it comes to the process of the acquisition and development of research competencies, the following common patterns were identified: (1) a weak contribution of formal education (doctoral studies) to the acquisition and development of research competencies; (2) unfamiliarity with the research methodology and statistical data analysis; (3) the importance of the mentors' support during the process of the introduction to research activities and the disciplinary community; and (4) the developmental path of engagement on projects. The authors highlight the evident discrepancy between the results of the quantitative and qualitative studies, and in the final part of the text they outline different possibilities for the interpretation of the results and provide recommendations for future activities.

The final, fifth chapter of this book is the work of authors Marija Brajdić Vuković and Bojana Vignjević, titled *"I mean, that amount of work would consume me at one point": The narrative analysis of the life history experiences of female junior researchers during the professional socialisation into the teaching and research profession in the Croatian higher education system.* In this chapter, the authors use narrative research as the research method in order to explore the life histories of female junior researchers about the professional socialisation into the academic profession within the Croatian higher education system, attempting to understand what the experiences of female junior researchers, explored through the life histories about professional socialisation, reveal about the Croatian higher education system, what can be learned from those experiences, and what could facilitate the future enhancement of the professional socialisation into the academic profession within the Croatian higher education system. Following the analysis of 11 female junior researchers' narratives, conducted through the combination of what is known as the Mishler-Labov structural method of narrative analysis, the authors identified and described three basic types of experience related to teaching: (1) the

experience of support, a positive environment, and the self-confident professional development; (2) the experience of the lack of support, a positive environment, and the professional development with a happy ending; and (3) the experience of the lack of support, a negative environment, and the continued struggle for the personal professional development. Furthermore, they identified and described three types of experience in the researcher development: (1) the experience of the stimulating research environment and involvement in the projects with a productive development; (2) the experience of the non-stimulating research environment, absence of the involvement in projects accompanied by individual struggle and productive development; and (3) the experience of the non-stimulating research environment, absence of the involvement in projects, and the weak unproductive development.

On the basis of the female junior researchers' experiences, the authors conclude that the conditions in the Croatian academic system are difficult for women, who are often overburdened with teaching and administrative work, and face the lack of support in their teaching and research activities. These experiences are mostly characterised by the female junior researchers' enthusiasm and their struggle for personal development which is almost rendered impossible once they find themselves in a negative research environment. However, during the analysis of the research results, the authors identify one concept as an important factor in the female junior researchers' professional socialisation: the concept of academic community. The authors note that the majority of literature recognises the existence of the "tacit dimension of learning" as an important segment of socialisation; that is, the acquisition of the knowledge, skills, values, and norms which cannot be clearly defined and verbally transmitted, but are acquired through the experiential observation of other individuals at work, or through participating in a group whose full member one wishes to become. While the majority of theoreticians define the tacit knowledge as the private, personal knowledge, a number of authors also identify the collective tacit knowledge, comparing it to the organisational abilities and skills, or the routines and procedures characteristic of organisation. Bourdieu, in his explication of the scientific habitus, as well as Mitroff and Gerholm, call the tacit knowledge the "rules of the game," whose transmission during the scientific socialisation is subject to the disciplinary, socio-organisational, and cognitive differences. The authors conclude that the most important factor for the uninterrupted flow and acquisition of the experiential, tacit knowledge during the scientific socialisation is the intensive contact between the experienced researcher (or researchers), and the novice researcher. Furthermore, the authors introduce the concept of "intellectual community" whose culture contains the "hidden curriculum" on the purpose of, and the commitment to the profession and roles, as well as creates the environment which enables the creative and critically deliberate behaviour and creation. Focusing on the intellectual community reveals that the junior researchers' professional socialisation is a period of learning, and that the creation of the intellectual community of learning is the optimal method for forming a nexus between the teaching and research roles of the academic profession. According to the authors' conclusion, the conducted research largely supports this opinion. In other words, the research data, the narrative stories about the female junior researchers' experiences of professional socialisation, show that the solution to every high-quality professional socialisation lies in its positioning or immersion into the community of thought, the community of "erudition" which provides opportunities for the implicit (and explicit) learning.

The research results on the role of teaching and research in the junior researchers' professional socialisation point to a number of challenges which need to be confronted, some of which have already been recognised and described in literature, and now the obtained results confirm and expand upon them in a particular manner. It can be concluded that the research results reveal a serious and urgent necessity for a discussion on the systematic support for the processes of the junior researchers' professional socialisation.

On the basis of the presented and consolidated research results, the possible recommendations intended for the different levels within the system of higher education and science should be highlighted. In the process, the creators of the educational policies at the national and university levels should be taken into account, from the institutional management policies to the personal (e.g., mentoring) levels of the junior researcher management. However, it is of great importance that the junior researchers who are at the beginning of their professional careers contemplate the creation of their own professional identity – to independently contemplate the required and desirable competencies for the performance of the (everyday) academic activities. In that context, special attention will have to be paid to the systematic support in the processes of the junior researchers' professional socialisation, which should include the implementation of the specific support programmes intended for junior researchers, in addition to the general recommendations. Furthermore, the aforementioned support programmes would also need to encompass the population of mentors in order for them to acquire and develop the required competencies necessary for managing the new generation of researchers. Taking into account the research participants' positive attitudes toward the need for professional development, the implementation of these recommendations within the national system of science and higher education should be relatively efficient. In addition, the processes of the systematic support development, as well as the aforementioned professional development programmes, should be incorporated or closely connected to the existing and/or new doctoral study programmes. In that context, those programmes should and could become the integral part of the doctoral study programmes.

Professor Jasminka Ledić, PhD

Marko Turk, PhD

THE NEXUS BETWEEN TEACHING AND RESEARCH: THE POLICIES AND CHALLENGES OF INTEGRATION

Marko Turk, Jasminka Ledić, Ivana Miočić

Learning, teaching, and research at the postmodern universities: The recommendations of educational policies

Starting with the establishment of the first autonomous universities (*studium generale*) in the Middle Ages and continuing to the present day, universities have always represented the centres of the scientific and social development. During the years, universities have developed and adjusted to the social context and the changing requirements and demands of society, developing accordingly their core academic activities – teaching, research, and university civic mission (Ćulum & Ledić, 2010a). In that context, Arimoto (2014) highlights the three phases of societal changes (agricultural society, industrial society, and knowledge society) which influenced the formation of the university's role in society, and generated the division into the medieval, modern, and postmodern universities. In the phase of the development of medieval universities, the largest emphasis was placed on the process of teaching, while the idea of the integration of teaching and research as the foundation of the modern universities is linked to Wilhelm von Humboldt who lived and worked in the 19th century Berlin. The idea then spread to the United States of America where universities were predominantly teaching institutions at that time.

However, the nexus between teaching and research implied by the Humboldt model seems to be compromised at the postmodern universities, since there has been an evident attempt to strengthen the universities' research function during the recent decades. This is unquestionably in part the consequence of, for example, the internationalisation of higher education and the need for the "objectivisation" of its quality which can be translated into the terms of university rankings.[1]

1 Academic ranking of the World Universities (ARWU) bases its rankings upon the following indicators: the total number of the alumni and professors of an institution who are winners of Nobel Prizes and Fields Medals, the

Altbach (2004) emphasises excellence in research as the main characteristic of the top universities.[2] The initiatives which aim to improve the excellence of universities (e.g., German Universities Excellence Initiative) also place emphasis on excellence in research. Nevertheless, the criticism of this strong tendency has been apparent from the 1990s, clearly explicated and accepted through Boyer's work (1990). Boyer underlines that teaching is about learning. In his terms, teaching is not some routine function, something almost anyone can do. When defined as scholarship, teaching both educates and entices future scholars (Boyer, 1990). Teaching must be carefully planned and continuously examined. Teachers stimulate active learning and encourage students to be critical thinkers. Good teaching means that faculty, as scholars, are also learners. There is no doubt that Boyer's work started a movement which strives toward the strengthening and recognition of the status of teaching in higher education, as well as initiated a number of discussions on university teaching, and the role of the modern universities and academic profession (Hutchings & Shulman, 1999; Trigwell, Martin, Benjamin & Prosser, 2000, McKinney, 2006; Hutchings, Huber & Ciccone, 2011).

The contemporary (postmodern) universities face a new challenge of defining their core activities, since they have to respond to the needs of a complex society whose future is uncertain and difficult to predict. In addition, the process of globalisation and the increasing population mobility have generated the changes in the structure of student population. The massification and the growing (economic, social, ethnic) diversification of the student body are the challenges faced by the higher education system on a global scale. Students are no longer perceived as the members of the social elite, which was a characteristic of the modern universities, and today's university teachers are confronted with new demands and the requirement of proficiency in the competencies necessary for successful teaching of the new generations of students.[3] This feature of the postmodern universities which concerns the

---

number of highly cited researchers, the number of papers published in Nature and Science journals, the total number of papers indexed in Science Citation Index – Expanded and Social Sciences Citation Index, and per capita performance. Retrieved from: http://www.shanghairanking.com/Academic-Ranking-of-World-Universities-2015-Press-Release.html.

2 Geiger (1993) points out that the American research universities became a global model around the middle of the 20th century. It should be noted that, according to the ARWU ranking of world universities for 2015, among the ten best ranked universities, eight were American and two were British. Nevertheless, to gain wider insight into the American universities, it should be emphasised that the majority of academics working at the American universities are employed by the institutions which focus on teaching – less than 10% of American universities (around 200) are focused on research (Shin & Cummings, 2014).

3 In continuing the discussion on the university rankings and their orientation toward research activities, and in the context of the aforementioned changes facing the contemporary (postmodern) universities, especially the understanding of the characteristics of the student population that is no longer considered a member of the social elite, the perception of research universities as elite and meritocratic should be noted. Altbach (2011) points out that the research universities must "proudly proclaim these characteristics." At those institutions, students are selected according to the principle of meritocracy and are among the best in the world; therefore, they are expected to reach a high level of achievement. In fact, this represents a paradox to an extent since the top universities evidently do not share the characteristics of postmodern universities when it comes to the aspect of the described democratisation of higher education and diversification of the student body. Indeed, the processes of the internationalisation and globalisation of higher education in this context could contribute to the top universities' student bodies being

structural changes within the student population is the one that leads toward the strengthening of the regard for teaching, and the positioning of students into the centre of the teaching process.

In the context of the discussion on the particularities of the postmodern universities, Arimoto (2014) makes an argument for a strong nexus between research and teaching. Even though a number of discussions focus on the universities' orientation toward research and/or teaching (Ramsden 1987, Ramsden & Moses, 1992; Neumann, 1992; Braxton, 1993; Hattie & Marsh, 1996, 2004; Diamond & Adam, 1997; Bess, 1998; Colbeck, 1998, 2002; Rice, Sorcinelli & Austin, 2000; Kuh & Hu, 2001; Ball, 2003; Skelton, 2005; Kogan & Teichler, 2007; Locke & Teichler, 2007; Brew, 2006, 2012), Arimoto (2014) introduces a new dimension into the discussion – the dimension of learning or studying. The author points out that the universities should equally nurture a research and teaching nexus (R-T), and a research, teaching and study nexus (R-T-S). Studying, which in its original meaning signifies an in-depth and thorough learning, thinking and research, enables the students to learn how to cope with the challenges of the unpredictable future. Arimoto (2014) believes that it is necessary for teachers to connect teaching with research, and that students should learn through research. Students should be expected to study and, therefore, learn and research in an in-depth and thorough manner, and not to simply receive knowledge from their teachers. In that context, Barr and Tagg (1995) state that the postmodern universities need to change the instruction paradigm. The authors point out that the change would signify a shift from the instruction paradigm to the learning paradigm. The approach to teaching which is focused on content and the transmission of information is discarded, and there is an attempt to implement the approach focused on the student, his or her individual needs, and the independent learning and construction of new knowledge. In the academic context in which there is a heightened pressure to achieve research productivity, it is exceptionally challenging to equally acknowledge the processes of learning, teaching, and research. However, the interconnectedness of these processes is an important precondition for successful functioning of the contemporary university in the knowledge society (Arimoto, 2014).

In the discussion on the academic quality culture criteria, Marentič Požarnik (2009) differentiates between: (1) the quality culture of academic research; and (2) the quality culture of teaching in higher education or academic learning and teaching. The author points out that the quality culture of teaching in higher education primarily implies the concern for, and investment into the development of the teacher competencies of university professors as the principal creators and mechanisms of the learning and teaching processes in higher education. This understanding of the quality culture of teaching in higher education is also present on the

---

formed by the global level intellectual elite, the best young people from all over the world, more "elite" than their ancestors who belonged to the generations which were not greatly affected by the internationalisation and globalisation processes. The paradox lies in the fact that the top universities are not postmodern in a manner that is stated in Arimoto's (2014) description of postmodern universities because they do not experience the student body diversification the way it is happening at the majority of higher education institutions, despite the fact that those universities are the ones which predominantly influence the definition of the standards of excellence.

level of the projects and documents of the European, as well as the more recent national educational policies. For example, the final report of the project *Tuning Educational Structures in Europe* (2001-2002) points out the following: "Since traditionally universities have conceived their task as limited to the elaboration and transfer of disciplinary knowledge, it is not surprising that many academics are not used to considering the issues of teaching/learning methods and are not familiar with (or even diffident towards) the vocabulary and the conceptual framework used to describe and classify those methods," while the European Association for Quality Assurance in Higher Education (ENQA) states in the Guidelines for the national external quality assurance systems: "Institutions should have ways of satisfying themselves that staff involved with teaching of students are qualified and competent to do so" (ENQA, 2007), and further: "...institutions should ensure that their staff recruitment and appointment procedures includes a means of making certain that all new staff have at least the minimum necessary level of competence." In the national environment, the role and importance of teaching in higher education is emphasised through the Strategy of Education, Science and Technology (2013). The Strategy highlights teaching or educational activities as one of the four primary segments of higher education activities in Croatia, along with the research/artistic activities, organisational, management and professional activities, and involvement in the third mission.

In a number of documents and reports published by the referential European educational institutions during the recent years, a growing advocacy of the idea of interdependence of teaching and research is noticeable, as well as adjustment of the process of teaching to the requirements of the new generations of students. For example, the European University Association (EUA), in their reports on the trends in higher education within the European area, continues to emphasise the advantages of the application of the student-centred teaching approach as one of the key determinants for creating an efficient teaching environment. The EUA report from 2010 (*Trends 2010: A Decade of Change in European Higher Education*) highlights the necessary change of the instruction paradigm; that is, the need to position students at the centre of the teaching process. This report devotes great attention to the student-centred teaching approach, which at the same time provides an insight into the trends and changes taking place at a number of European universities, prompted by the introduction of the Bologna process. The student-centred teaching approach introduces the change into the relationship and roles of teachers and students, in the process approaching the student as an individual, and taking into account his or her previous experiences, learning style, and individual needs. The need for the higher level of individual approach stems from the fact that the student population is becoming increasingly heterogeneous, which leads to the impossibility of the teaching process unification. In the learning process, the teacher stimulates the development of critical thinking, while the student constructs the meaning individually, through pro-active learning, discovery, and reflection. The emphasis is placed on the interdiciplinary learning, with the goal of attaining a higher level of generic skills and knowledge. In addition, the assessment is formative, and the feedback continuous. The application of the principles of this approach implies the development of learning outcomes, and the learning goal which is not only a transfer of knowledge, but also involves deeper understanding and critical thinking about the content of teaching. It should be emphasised that the content-centred approach and the student-centred approach are not mutually exclusive, and that the learning process should exist in a continuum between these two approaches.

Furthermore, the student-centred approach does not minimise the importance of the teacher's role, but changes the understanding of that role, as well as the student's role. The teacher's role is to lead, direct, and help in the learning process during which the student is not a passive receiver of knowledge and information, but an active participant who shares a common responsibility with the teacher when it comes to the realisation of the learning outcomes (EUA, 2010).

In the recent European Commission report on the implementation of the Bologna process (*The European Higher Education Area in 2015: Bologna Process – Implementation Report*), the student-centred teaching incorporates the following, also broadly defined elements – learning outcomes; tasks based on learning outcomes; student assessment of the teaching process; training in teaching for staff; independent learning; recognition of prior learning; student/staff ratio; and learning in small groups. The report states that the majority of countries within the framework of the European Higher Education Area (EHEA) have included the concept of student-centred teaching in their legislation, while only a smaller number of countries do not mention this concept in their strategic documents. The report indicates that the countries or educational systems which have included the student-centred teaching in their documents highly value the elements of that approach, while the second category of countries provides a significantly weaker evaluation of the specific determinants of the student-centred teaching.

The paradigm change in the approach to teaching demands an additional effort with regard to the enhancement of the quality in university teaching. The implementation and efficient realisation of the teaching process which is centred on students and learning outcomes demands learning in small groups, an adequate student/staff ratio, and especially providing the conditions for the development and advancement of teacher competencies which are the key precondition for the implementation of this principle (EUA, 2010).

One of the key recommendations of the most recent EUA report, *Trends 2015: Learning and Teaching in European Universities,* is precisely the development of teacher competencies, and providing the conditions for the professional development of university teachers. The report presents the results of the research which included 451 higher education institutions from 46 countries in the European Higher Education Area (EHEA). The results show that 90% of the institutions profile themselves as equally oriented toward teaching and research. These results point to a conclusion that, despite the increased demands for research productivity, the university's teaching role is perceived as equally important as its research role. That conclusion is supported by the results which indicate that 59% of the institutions demonstrate a growing awareness of the importance of teaching, and 57% of the institutions have introduced innovative teaching methods and techniques. In addition, 75% of the institutions provide a possibility to participate in the optional didactic and pedagogic professional development programmes, while 40% of the institutions provide compulsory programmes. Furthermore, the research shows that 54% of the institutions agree with the claim that research plays a more important role than teaching for the career development of junior academics. When it comes to the implementation of the student-centred approach, a significant progress in the implementation of learning outcomes, which is one of the important criteria of this approach, was noticed in the period from 2010 to 2015. The final EUA report from 2015 states that 64% of the institutions have introduced learning outcomes for all their courses.

In addition to the recent EUA reports, the European Commission publication *Improving the quality of teaching and learning in Europe's higher education institutions* (2013) also emphasises the importance of academic teaching, and it provides the recommendations and guidelines for the enhancement of the quality in teaching and learning at the European higher education institutions. One of the recommendations is that all the staff teaching in higher education institutions should receive certified pedagogical training by 2020. These requests are in line with the European Union targets for 2020, which include increasing the number of young people with a university-level qualification to 40%. In order to provide an adequate education for them, the professional teaching staff should be available. The OECD report *Fostering Quality Teaching in Higher Education: Policies and Practices* (2012) should also be mentioned, since it strongly advocates the student-centred teaching process, and highlights the interdependence of teaching and research. The report provides seven guidelines which are crucial for the change of the teaching approach in higher education. The aforementioned guidelines refer to raising awareness of teaching quality, developing excellent teachers, building the system open for change and stimulating to teaching leadership, aligning institutional policies to foster teaching quality, highlighting innovation as a driver for change, and assessing the teaching effectiveness (OECD, 2012).

In the analysis of the most recent documents which highlight the importance of learning and teaching in the system of higher education and the context of the European Higher Education Area, the publication *Standards and Guidelines for Quality Assurance in the European Higher Education Area* should not be omitted. It was published in 2015 as the result of the work of a number of the European educational institutions.[4] This document provides the guidelines for higher education institutions with regard to quality assurance in learning and teaching, and the creation of the environment which stimulates research and innovation. One of the factors that contribute to the quality is the student-centred teaching, and it is recommended that higher education institutions should ensure the implementation of the programmes which encourage students to perform an active role in the learning process. This document defines the student-centred teaching as a respect for the students' diversity, concern for their needs, and facilitation of flexible learning; consideration and application of different learning methods; flexible application of various pedagogical methods where possible; regular evaluation and modification of the teaching and pedagogical methods; autonomy in learning, and the appropriate support and guidance from teachers; mutual respect between teachers and students, and the application of adequate procedures while resolving the students' complaints. Furthermore, the document emphasises that the higher education institutions should ensure the implementation of the programmes with the defined learning outcomes during the process of quality assurance, and recommends that the conditions for the development of the teaching staff competencies should be provided.

4 ENQA (European Association for Quality Assurance in Higher Education); ESU (European Students' Union); EUA (European University Association) and EURASHE (European Association of Institutions in Higher Education) in collaboration with EI (Education International); BusinessEurope and EQAR (European Quality Assurance Register for Higher Education).

That same year (2015), the Yerevan Ministerial Conference was held, and it gathered the ministers of education from the countries in the European Higher Education Area (EHEA). The conference established the priorities of higher education in the EHEA countries, and an attempt will be made to implement them during the following years. The intent is for the EHEA countries to make a common contribution to the realisation of the following goals: enhancing the quality and relevance of learning and teaching; fostering the employability of graduates throughout their working lives; fostering the inclusion in higher education by taking into account the current socio-demographic changes; and implementing the agreed structural reforms. It should especially be noted that the first stated goal refers precisely to learning and teaching. In that context, the EHEA countries have committed to the support of the higher education institutions and their employees in the promotion of pedagogical innovations and student-centred teaching, and to the strengthening of the connection between learning, teaching and research at all the university levels. It is the European countries' task to ensure the implementation of the higher education programmes and effective activities which would enable the students to develop their competencies, personal aspirations, and social needs. Furthermore, they advocate the transparency in defining the learning outcomes, and the application of the suitable, flexible teaching and evaluation methods. The importance of quality assurance in teaching and providing the possibility for the improvement of teacher competencies is also highlighted. The abovementioned information points to the conclusion that the European educational policies are increasingly advocating the importance of teaching in higher education, as well as the approach which perceives teaching as the process of support for student learning.

Conceptions of the relationship between teaching and research

Teaching and research are traditionally viewed as the core academic activities which are also considered to be the most important activities within the academic promotion system. Each of them individually, or their interconnectedness (and distinctness), is at the centre of a number of, predominantly international, research studies (Ramsden & Moses, 1992; Neumann, 1992; Braxton, 1993; Diamond & Adam, 1997; Bess, 1998; Colbeck, 1998, 2002; Rice, Sorcinelli & Austin, 2000; Kuh & Hu, 2001; Ball, 2003; Skelton, 2005; Brew 2006; Kogan & Teichler, 2007; Locke & Teichler, 2007). In addition to contributing to an improved knowledge of the nature of academic activity, the aforementioned studies have also influenced different institutional, government, and educational policy practices on the national level (Ćulum, Rončević & Ledić, 2013).

However, the presence of different factions within the academic community is noticeable, the one which supports the unity of these two activities, and the other which advocates their mutual independence. In their research, Ramsden and Moses (1992) explore the relationship between the conceptions of the university teachers' research and teaching activities. On the basis of the obtained results, the authors provide three possible conceptions of the aforementioned relationship: (1) completely integrated – the concept is based on the position that it is necessary to be an active researcher in order to be a good university teacher; (2) partly integrated – according to which the research and teaching activities should be connected, not on an individual level, but on the level of institution or section/department/division; and

(3) independent – which emphasises that a causal relationship between the two roles does not exist, and that they are mutually independent.

The research conducted by Hattie and Marsh (1996) had a great influence on the future studies and the funding policies for the core academic activities – teaching and research (Hattie & Marsh, 2004). It included the analysis of 58 different research studies which explored the relationship between the academics' teaching and research activities. In a similar manner to Ramsden and Moses, the authors provide three groups of models which regard the relationship between teaching and research. By correlating these two elements of academic activities, the authors discuss the models of negative, positive, and zero correlation between teaching and research. The correlated relationships, the names of the models, and the corresponding evidence are shown in Table 1 (Hattie & Marsh, 1996, p. 519).

As can be seen from the presented relationships, these authors discuss the integrated – positive relationships, unintegrated – negative relationships, and zero – independent relationships, in a similar manner to the previously discussed authors. For each of the stated relationships, the authors provide a corresponding model and evidence which supports the models.

In the discussion on the negative relationship between teaching and research, the authors propose three possible models: the scarcity model, the differential personality model, and the divergent rewards model.

In order to explain the **scarcity model**, the authors employ four arguments which support it. In that context, they point out the existence of three dimensions of the scarcity model which can be in conflict – time, energy, and commitment. Hattie and Marsh (1996) state that those academics who are productive in research invest a lot more time and energy into research activities than into teaching activities, and vice versa, which results in the negative correlation between the time and energy devoted to teaching and research. This negative correlation leads to a positive relationship between the time devoted to teaching and teaching quality, but not research quality, as well as to the positive relationship between the time devoted to research and research productivity. In order to support this claim, the authors point out (Jencks & Riesman, 1968, as cited in Hattie & Marsh, 1996) that academics have a limited amount of time and energy, and it would be pragmatic to invest it into research activities more than into teaching activities, in pursuit of professional standing and advancement. In the context of the discussion on the commitment to one of the academic activities – teaching or research, the authors emphasise that the majority of academics consider teaching to be the primary role, as opposed to research. This claim is supported by the results of the research (Mooney, 1991, as cited in Hattie & Marsh, 1996) conducted on the sample of 35,000 participants from 392 universities, in which 98% of the participants claimed that to be a good teacher is an essential element of academic work, while 59% of the participants claimed it is to be a good researcher. Therefore, they conclude that the commitment to teaching activities is negatively correlated to the commitment to research activities because they are either on two different sides of the academic professional path, or mutually contradictory – "The most productive researchers have the least favourable attitudes to teaching, while the least productive are the most committed to teaching." (Ramsden & Moses, 1992, as cited in Hattie & Marsh, 1996, p. 510).

Table 1. **Correlated models of the relationship between teaching and research** (Hattie & Marsh, 1996, p. 519)

Type of relationship	Model	Evidence
Negative relationship	Scarcity model	Time devoted to research and teaching is negatively correlated.
		Time devoted to teaching is positively correlated to teaching quality.
		Time devoted to research is positively correlated to the number of research publications.
		Commitment to teaching or research is negatively correlated.
	Differential personality model	Personal characteristics in the context of teaching and research are negatively correlated. Researchers are more independent, teaching is a communal process.
	Divergent rewards model	Research and teaching are motivated by different reward systems.
Positive relationship	Conventional wisdom model	Research performance is a prior condition for good teaching.
	G model[5]	Research and teaching share similar underlying qualities (e.g., high commitment, creativity, investigativeness, and critical analysis).
Zero relationship	Different enterprise model	Research and teaching have no common underlying dimensions in common.
	Unrelated personality model	The personality attributes of teachers and researchers are orthogonal.
	Bureaucratic funding model	The financing of teaching and research, if independent, will lead to better resourcing and thus increased quality of both research and teaching.

The second model of the negative relationship is the **differential personality model** which points toward the negative relationship between teaching and research because they represent the academic activities which involve the contrasting personality traits of the individuals

5 The name "G" model is derived from the construct *good teacher = good researcher*.

performing them. On the basis of the research results (Eble, 1976, as cited in Hattie & Marsh, 1996), it is pointed out that researchers predominantly work alone, have a low tolerance for outside distractions and pressures, and find it easier to individually work with ideas, data or materials of a discipline than to communicate with students or engage in the teaching process. In contrast, teachers collaborate with others more frequently, cope with pressure and changes easily, and prefer to discuss the ideas and information with their students and colleagues.

The **divergent reward model** is the third model of the negative relationship between teaching and research. This model suggests that teaching and research are in a negative relationship because they have differing systems for rewarding success. It is pointed out that the success in research brings an increase in monthly earnings, scientific prizes, and promotion as a consequence. In contrast, teaching success is rewarded by positive student evaluations and possible (public) commendation.[6]

The discussion of the positive relationship is based on two models which provide arguments for the positive correlation in the relationship between teaching and research – the conventional wisdom model, and the "G" model.

The **conventional wisdom model** is based on the research results (Jencks & Riesman, 1968; Borgatta, 1970; Deming, 1972; Ferber, 1974; White, 1986; Halsey, 1992, as cited in Hattie & Marsh, 1996) which point to a conclusion that the positive correlation between teaching and research is obvious and unambiguous, and that it is impossible to describe these two activities as disconnected within the academic community. The authors point out that the majority of the research participants (Halsey, 1992, as cited in Hattie & Marsh, 1996) claim that "an active research interest is essential if a person is to be a good university teacher" (Halsey, 1992, as cited in Hattie & Marsh, 1996, p. 522). Similarly, Jencks and Riesman (1968, p. 532, as cited in Hattie & Marsh, 1996, p. 511) maintain that if a university teacher ceases his or her research activity, then he or she "...begins to repeat himself and eventually loses touch with both the young and the world around him." Studies systematically point to a nexus between teaching and research activities. The research conducted by Jauch in the 1970s (1976, as cited in Hattie & Marsh, 1996) shows that 91% of the interviewed academics think that research activity increases the teaching efficiency and that those two activities are inseparable in the academic discourse. Therefore, the authors conclude that in order to be a good teacher, it is necessary for an individual to also be a good or productive researcher.

The second model of the positive relationship is what is called the **"G" model**. This model is based on the premise that successful teachers and successful researchers share similar abilities. The characteristics associated with good teachers and researchers are high commitment

6 This model seems to be the most similar to the analysis of the current state within the system of academic promotion in the national context where analyses point to the research success of academics resulting in larger benefits than the teaching success.

(perseverance, dedication, and hard work), creativity (imagination, originality, and inventiveness), investigativeness, and critical analysis.

The discussion on the zero relationship is based on three models – the different enterprises model, the unrelated personality model, and the bureaucratic funding model.

The **different enterprises model** is based on the belief that research and teaching are two completely different academic enterprises and that it is impossible to discuss their positive or negative correlations (Barnett, 1991; Honigman, 1992; Martin & Berry, 1969; Rau & Baker, 1989; Rugarcia, 1991; Seldin, 1985; as cited in Hattie & Marsh, 1996). For example, researchers are valued for their evidence or research, while teachers are valued for how they prepare students for research or future profession; researchers discover, while teachers encourage and stimulate; researchers do not refuse research or the examination which leads to new realisations and knowledge, while teachers often face the students' refusal to participate in the process of learning; communication is secondary for researchers, and primary for teachers; the act of research is primarily private, independent and personal, while the act of teaching is primarily public.

The **unrelated personality model** is based on the research conducted by Rushton, Murray, and Paunonen (1983, as cited in Hattie & Marsh, 1996) which demonstrated that the correlated personality attributes of teachers and researchers are orthogonal. The research showed that researchers are more likely to be ambitious, enduring, unambiguous, dominant, showing leadership, aggressive and independent, while rarely or almost never supportive of their collaborators. In contrast, teachers are more liberal, sociable, showing leadership, extroverted, patient, objective, supportive, nonauthoritarian, not aggressive, and aesthetically sensitive. According to the authors, the majority of personality attributes are positioned orthogonally, and the only shared personality attribute is leadership, while the ability to support is more pronounced in teachers than in researchers.

The **bureaucratic funding model** is the third model of the zero relationship. This model is based on a funding system for academic activities according to which the financing should depend on the activities' efficiency or success. Therefore, financing should be divided into two basic groups – the financing of researchers, and the financing of teachers. According to Hattie and Marsh (1996), the only way to rethink the development of these activities at universities is to follow the model introduced by the United Kingdom government and fund them separately. Furthermore, this model would also have a number of positive implications, especially for the undergraduate curricula, which would not be tied to strong research interests, and would be developed according to the students' educational level and interests.

On the basis of their research results which revealed the largest number of negatively and zero correlated relationships, Hattie and Marsh (1996) conclude that the belief in an unbreakable relationship between teaching and research is a long-standing myth within the academic community, and that, at best, a weak connection between these two segments of academic activities can be claimed. However, their research results should be carefully considered, since the authors predominantly base their conclusions on research productivity; that is, the number of

published articles and publications as an indicator of research effectiveness, or student evaluations as an indicator of teaching effectiveness.[7]

Partly on the trail of the previously discussed authors, Kuh and Hu (2001) present the results of their research on the relationships between the research and teaching segments of academic activities, and subsequently agree with the conclusions provided by Hattie and Marsh (1996). However, the authors' discussion (Kuh & Hu, 2001) is conducted within the context of the topic of research universities, and strongly features the advocacy of one segment of academic activities – research activities. Therefore, it is debatable if it can be considered an objective contribution to the discussion on the relationship between these academic activities.

In contrast to those who point to the separation of teaching and research as the core academic activities, there are authors who advocate and make arguments for their connectedness and indivisibility. As opposed to Hattie and Marsh (1996), Brew and Boud (1995), and Arimoto (2014) argue that there is a clear connection between teaching and research, introducing the third term into this duality of relationships – learning. According to the aforementioned authors, there are two basic reasons for this position. The first is that (quality) teaching leads to efficient learning, and the second is that research represents the process of learning. Middlehurst (1997) points out that one of the fundamental university missions is the creation, transmission, and dissemination of knowledge, and that universities are often characterised as "knowledge-intensive organisations." Indeed, learning is one of the fundamental and immanent activities of every academic who participates in the creation of new knowledge. Both processes – teaching and research – involve the process of research and discovery of the existing knowledge, and assume an attempt at creating the meaning of the products of learning. The positive effects that Jensen (1988, as cited in Hughes, 2004) identifies as the result of the interconnectedness of teaching and research are the following: monitoring the new methodological approaches and the development within the particular research field; maintaining the awareness of the research field as a whole; supporting the conceptualisation of the narrower research topics; and stimulating research interest through the students' engagement.

Brew (2006) points out that the conclusions presented by Hattie and Marsh (1996) were rejected exactly because a number of prior, but also consequent studies confirmed a necessary synergy between these two core academic activities.

---

7 In their later work, while discussing the reactions to their research results, Hattie and Marsh (2004) warn about the implications and wrong interpretations of their research. They emphasise that their results consistently point to a conclusion that there is no nexus between teaching and research on the individual and department levels (lower organisational units). According to them, a wrong interpretation of the results has led to the idea of disassociating the funding of research and teaching. That decision could be made in the case of negative correlation. The research results which show that there is no nexus between teaching and research do not mean that university teachers are either good teachers or good researchers; they could equally be both good teachers and researchers. In other words, the fact that an individual is a good researcher does not mean he or she is also a good teacher, and vice versa. Hattie and Marsh (2004) claim that the main responsibility for finding a solution to the challenge of teaching and/or research resides with the institutions/universities which should regulate that relationship through their missions. To conclude, the authors' results demonstrate that it is not correct to presuppose that a successful researcher is also a good teacher.

For example, Kenneth Ruscio in his discussion from 1987 on the academic profession and the necessary nexus between the core academic activities – teaching and research – points out that "...united we stand, divided we fall" (Ruscio, 1987, p. 332). He states that teaching without applying the research results is worthless and empty, while the research results which exist in a vacuum, without a possibility of transfer through teaching, are only a "dead letter on the pages of research papers and the books on library shelves" (Ruscio, 1987, p. 334). He points out that in the relationship between teaching and research there is a "reverse transfer" (Ruscio, 1987, p. 337), a relationship in which research results enrich teaching, and are utilised, commented upon, and explored from the perspective of students and teachers within the framework of the process of teaching.

The more recent studies provide similar conclusions about the inseparable relationship between these two core academic activities. Enders (1999) discusses a conglomerate of the teaching and research activities at universities which are interconnected and form an inseparable unit. In addition to perceiving teaching and research as inseparable processes of the academic community, Brew (2006) observes them within a wider context. The context entails students being active participants of the teaching process and users of the research results. They implement the new knowledge acquired through the research results presented during the teaching process. From a long term perspective, the wider context also takes into account the sustainability of the community based on the research results obtained and/or learned through the teaching process. Cummings (2009, p. 39) similarly highlights teaching and research as the "fundamental and inseparable activities of academic life," while Taylor (2010) identifies the anxiety about the increase in the research orientation of the American universities as one of the indicators of the university and higher education crisis in the USA, which indirectly results in the neglect of the teaching process and students' education.

Grey (2012, p. 41) also explores the relationship between teaching and research as the indivisible processes of academic work. He points out that the "...fundamental idea of every university is the search for, and the dissemination of knowledge. The knowledge which stems from research results and is transmitted to students during the process of teaching."

Finally, it should be noted that the commitment to the synthesis of research and teaching, and their functional connection are among the most important characteristics of the concept of knowledge society which is built into the foundations of the Bologna process. For example, one of the fundamental principles of the *Magna Charta Universitatum* is that "Teaching and research in universities must be inseparable if their tuition is not to lag behind changing needs, the demands of society, and advances in scientific knowledge" (Magna Charta Universitatum, 1988, p. 2). The Bologna Declaration on the European Higher Education Area (1999) confirmed the *Magna Charta* principles, and the Berlin Declaration (2003)[8] strongly defined the synergy

8 Full document title: Realising the European Higher Education Area. Communiqué of the Conference of Ministers responsible for Higher Education in Berlin (2003).

between the European Higher Education Area (EHEA) and the European Research Area (ERA). Furthermore, the European Commission document *Preparing Europe for a New Renaissance: A Strategic View of the European Research Area* (2009) additionally strengthened the efforts devoted to research development, and the consequent generation of research knowledge through the teaching process.

Even though there are different discussions on the relationship between teaching and research at universities, it would appear that the postmodern (European) academic activity and educational policies base (or should base) the direction of their development on the inseparability and integration of these two activities, and hence following the conclusions of the aforementioned researchers (e.g., Clark, 1987; Enders, 1999; Brew, 2006; Entwistle, 2009; Cummings, 2009; Finkelstein, 2010; Taylor, 2010; Teichler, 2010; Gray, 2012) who see teaching and research as the inseparable elements of every university, or academic activity.

Therefore, it can be concluded that universities are still perceived as the exponents of two indivisible processes – research or the creation of (new) knowledge, and education or teaching as the transmission of the created new knowledge. Recent studies introduce the notion of learning into this traditional connection, as the process which is performed outside the (strictly) defined framework of teaching, and which significantly highlights students as active stakeholders in the academic community. In accordance with that conclusion, the traditional roles and competencies of academic workers should comply with the current social changes and be critically redefined according to the new demands, in the process respecting the academic tradition, environment, and the specific features of the particular research fields. Therefore, an assumption can be made that the shift from the instruction paradigm to the (active) learning paradigm and a significant emphasis on students as active stakeholders in the academic community is the fundamental factor which will critically redefine the relationship between teaching and research at the future modern university.

The challenges of the integration of learning, teaching, and research

It has been evident during the recent years that the documents which represent the European Higher Education Area policies strongly emphasise the trend of integrating learning, teaching, and research. However, there seems to be a discrepancy between these policies and their implementation. For example, the *Bologna With Student Eyes* document (2015) states that the student-centred learning (SCL), one of the key notions of the Bologna process, has not taken hold as much as it should have. The presented research results demonstrate that the students' familiarity with the SCL concept is low, and that a significant progress should be made in the work of universities in order for the student-centred learning to be substantially implemented.

The awareness of the discrepancy between the set principles and their implementation renews the discussion on the social changes and the expectations which are placed on the academic profession. Arimoto (2014) points out that in the knowledge society, the research-based teaching is necessary on all the educational system levels, and that the academic profession is expected to satisfy the knowledge society's needs. In that context, the integration

of research, teaching, and study (R-T-S) becomes unavoidable. However, the author also states that the integration is rarely achieved due to a strong trend of differentiation between research and teaching (Arimoto, 2014, p. 31). In other words, the R-T-S integration becomes a great challenge for the academic profession: the trend of the democratisation and universality of higher education demands – on the one hand – focusing on the teaching activities and communicating with the diversified student body at the lower levels of higher education, and – on the other hand – the strengthening of doctoral education which influences the reinforcement of the research orientation.

The challenges of the R-T-S integration result in a number of questions: for example, how do the national higher education and university policies position themselves toward the priorities/balancing of teaching and research, their stimulation/rewarding, and what are – consequently? – the academic profession's preferences with regard to teaching or research? In that context, the results of the international comparative research Changing Academic Profession (CAP) started in 2006 are indicative (Shin, Arimoto, Cummings & Teichler, 2014).[9]

Teichler (2014, p. 69) points out that the majority of academics in all the countries accept the nexus between teaching and research (in other words, the majority of academics do not express preference exclusively for one or the other activity). However, young academics in Germany are more oriented toward research: 33% have a prime preference for research, and 7% a prime preference for teaching. According to Teichler (2014, p. 69), this finding is the result of the fact that a significant number of young academics do not participate in teaching. This can be linked to the research result which indicates that university professors in Germany are more involved in non-traditional teaching activities (individualised instruction, learning in projects, computer-assisted learning, etc.) than the younger academics (Teichler, 2014, p. 73). Furthermore, it is important to note that the majority of university professors in Germany (86%, a similar number to other countries) agree with the claim that their research supports teaching, while (only) 60% of the younger academics agree with the claim. In general, the research results regarding the German academic community indicate that the nexus between teaching and research is highly valued, but also reveal the presence of tensions: the academics who devote more time to research than teaching rate their professional situation as more positive than those who devote more time to teaching (Teichler, 2014, p. 85).

9 The book presents the case studies from the selected countries which participated in the CAP research, grouped according to the research results indicating the emphasis placed on teaching or research at the particular countries' universities. The group of countries with a strong tradition in research included Germany, the Netherlands, Finland, Portugal, and Korea; the countries with a strong tradition in teaching included Mexico, Brazil, Argentina, Malaysia, and the Republic of South Africa; and the countries with a tradition of balance between research and teaching included the USA, the UK, Canada, and Australia. The CAP questionnaire provided four categories within the question on the preference for teaching or research: (1) primarily in teaching; (2) in both, but leaning toward teaching; (3) in both, but leaning toward research; and (4) primarily in research (Teichler, U., 2014, p. 69).

The research results regarding the academic profession in the United States of America indicate the existence of differences between scientific fields, as was previously noted by Burton Clark (1987). In the period from 1992 to 2007, the research results related to the scientific areas remained similar: academics working in the field of natural sciences committed more working hours to research and less to teaching, worked more hours, and published almost twice more than their colleagues working in the fields of social sciences and humanities (Finkelstein, 2014, p. 306). The same persisting trend could be noticed in the matter of gender differences: in comparison to women, men were more oriented toward research, spent less time teaching and more time researching, and published more. However, that trend was halted in 2007 – recent studies indicate that women work more hours than men, and that the disparity with regard to publishing is on the decline. The results demonstrate the rebalancing of teaching and research in favour of teaching. Working hours devoted to teaching are on the increase, and time devoted to research is on the decline (Finkelstein, 2014, p. 317). The type of institution, scientific area, and sex remain the dominant variables which determine the differences in the academic profession, but the type of employment is also becoming a significant factor which is shaping the academic profession. According to Finkelstein (2014, p. 318), the type of employment is exactly what indicates the increased specialisation in the academics' professional tasks, rendering the questions of the relationship between teaching and research – irrelevant.

William Locke (2014) interprets the relationship between teaching and research in the United Kingdom in a similar manner. He points out that teaching and research significantly differ among the institutions, departments, and even employees within the department, depending on the signed contract. Furthermore, there is a clear hierarchy between research and teaching, with research being the more valued activity. Depending on the strategy of the institution or department, teaching and research are in a positive, neutral, or independent relationship. However, the author emphasises that teaching and research do not encompass all the activities of the higher education institutions, and that the analysis should include the activities which are performed along with teaching and research, and which connect them and provide them with a new direction.[10]

Furthermore, the relationship between the core academic activities has also been discussed in the context of the analysis of the geographic models of universities. In their discussion on the universities' orientations, Arimoto and Ehara (1996, as cited in Teichler, Arimoto, & Cummings, 2013) present a three-part classification of the core academic activities based on the different geographic models: (1) the German model, predominantly present in the countries with a strong Humboldtian tradition – Germany, Austria, and partly Switzerland,

10 Locke (2014) points out that those activities (community service, administration, academic citizenship, engagement, knowledge exchange, collaboration with business and the community), which he calls the "third dimension", are differently described in different countries, which also reveals a lot about the nature of academic roles in different cultures.

possessing a strong research orientation[11]; (2) the Anglo-Saxon model with a relatively equal orientation toward teaching and research, developed as a combination of the British and American higher education institutions; and (3) the Latin American model with a stronger emphasis on teaching.

It is evident that the experiences and challenges in the integration of learning, teaching, and research differ within the frameworks of the specific national, institutional, and disciplinary examples. However, it can be concluded that, excluding the particular examples of differences, the majority of research results point to the importance of interconnecting and coordinating these core academic activities with the aim of the institutional, but also professional strengthening of the academic profession.

Teaching and research in the national context: the research results

During the last two decades, the research and discussions on higher education in Croatia have explored a number of topics about teaching in higher education, which is considered as one of the core academic activities along with research.[12] The conducted research explored the management systems and quality in teaching (Ledić 1992, 1993, 1994; Ledić, Kovač, Rafajac 1998; Kovač, Ledić, Rafajac 1998; Peko, Mlinarević & Buljubašić-Kuzmanović, 2008; Bognar & Kragulj, 2010; Cvetek, 2015; Aškerc et al., 2016), the specific teaching methods and approaches in higher education (Kovač, 1996; Turk, 2009; Ćulum & Ledić, 2010b), an active role of students in the creation and evaluation of the teaching process (Bezinović & Bajšanski, 2007), the legislation on the system of promotion related to teaching activities (Ledić, 2009; Turk & Ledić, 2016a; Turk, 2016), professional training and development, and the competencies of higher education teachers (Kovač, 2001; Vizek Vidović, 2009; Turk, 2016; Turk & Ledić, 2016a,

11 In that context, Teichler, Arimoto, and Cummings (2013) point out that the discussions on the strong research orientation of universities on a global level have been increasingly present in the recent works on the changes in higher education. In accordance with that, the authors note that the research universities are becoming increasingly present on the international higher education scene, and in that way are pushing the teaching activities into the background. Therefore, the question is if the traditional role of the European universities as the institutions in which teaching and research are the integrated and inseparable processes is changing, and does it influence the (re) definition of the requirements for the knowledge and skills of their (academic) staff.

12 In addition to teaching and research, the third mission should be highlighted – the civic mission of universities which relates to the contribution of universities to society and the community. The idea that universities should endeavour to connect the core academic activities and the needs of the (local) community has a stronger presence in the international environment, while in the national context the discussions on the university's community service and social responsibility started only ten years ago. One of the first works significant for the establishment of this topic was published by Ledić (2007), and it was followed by the research conducted by Ledić, Ćulum, Nuždić and Jančec, 2008; Ćulum and Ledić, 2010, 2011; Ćulum, Turk and Ledić, 2012; Ćulum, Rončević and Ledić, 2013. The results of the aforementioned studies point to a weak development and integration of the civic mission of universities in the national environment. However, it should be noted that the current Strategy of Education, Science and Technology (2004) identifies the need for the introduction of the civic mission of universities; that is, the need for the university activities to be directed toward the contribution to the community development and enhancement, which can be recognised as the impetus to change the paradigm of the perception of the university's core activities.

2016b). The majority of these studies depart from the premise based on the importance of teaching within the framework of the core academic activities, a necessary concern for its quality and continuous and systemic enhancement, a development of the new and specific methods and approaches in the implementation of the teaching process, and raising the awareness of the students' active role in the creation and evaluation of the teaching process. The conducted studies reveal three groups of conclusions. The first group regards the connection between the evaluations on the low level of quality in teaching, and the lack of an adequate support system in teaching. The second group concerns the need for the creation of the professional development programmes focused on teaching and intended for the higher education teachers, while the third group of conclusions regards the recommendations on the revision of legislation related to the academic promotion which would lead to the uniform evaluation of the academics' teaching and research activities.

The analysis of the conducted research reveals that the researchers of higher education in the national context have predominantly focused on the topic of teaching in higher education and its specific determinants, while the research activities and the nexus between teaching and research have remained relatively unexplored. In contrast to the discussions on teaching in higher education, for a number of years the Croatian research scene has been deprived of the results and discussions on the research activities of higher education teachers/academics. However, a number of studies (Golub, 2001; Adamović & Mežnarić, 2003; Prpić, 2004; Polašek, 2008; Brajdić Vuković, 2012, 2013) on the position of junior researchers and their academic promotion have been published during the last decade, and especially during the last several years. The studies predominantly focus on the (general) position of junior researchers within the system, the youth remaining in, or "escaping" from science (Golub, 2011), the migrations of junior researchers (Adamović & Mežnarić, 2003), or the specific challenges predominantly linked to their research activities. The aforementioned studies especially emphasise the absence of a formal system for the support and development of the junior researchers' research competencies, their advancement, and professional development. It is noted that, within the segment of research activities, junior researchers in Croatia often have to rely on self-control and the investment of their free time into research. The studies state that different factors, such as an excessive teaching workload, work on commercial projects, a poorly developed system of supervision and/or mentorship, and the broader structural and personnel conditions, have influenced and continue to influence the weaker development of research activities (Brajdić Vuković, 2012, 2013). Although rare, the studies on the nexus between teaching and research, especially with regard to junior researchers (Brajdić Vuković, 2012), identify the fact that the junior researchers' teaching, organisational, and practical work takes precedence over their work in research as one of the biggest problems of professional socialisation, which jeopardises the idea of their professional socialisation, but also the development of the research-based teaching in higher education. In accordance with the results of the research conducted on the selected sample of junior researchers (Brajdić Vuković, 2012), the junior researchers' experiences reveal that the universities do not monitor if and how they cope with teaching, and how successful they are at that task, despite the organisational priority of teaching. On the one hand, the teaching workload slows down or renders impossible the high-quality research activity of junior researchers, and on the other hand, the quality in teaching is completely

irrelevant. Regardless of a small number of studies, the discussions on research activity are not rare in the Croatian academic community, but are predominantly and almost exclusively focused on the question of research productivity. The representatives of different research fields have different attitudes toward the topic, but also different demands stemming from the differing formal regulations on the promotion criteria.

In addition to the aforementioned studies, a long-standing imbalance in the research regarding the nexus between teaching and research in the Croatian higher education has been changed in part through the recent studies on the changes in, and the competencies of the academic profession (Rončević & Rafajac, 2010; Ćulum, Ledić & Rončević, 2012; Ćulum & Turk, 2012; Turk, 2015, 2016; Turk & Ledić, 2016a, 2016b). The aforementioned studies were conducted within the framework of the international (comparative) research projects on the changes in the academic profession.[13] Departing from the holistic perspective in the analysis of the academic profession, the aforementioned studies present a comprehensive outline of the changes in, and the competencies of the academic profession, and create connections between different academic activities – teaching, research, contribution to the development of the community and society, and academic governance and management, as well as the corresponding competencies. The results of the conducted research show that the majority of university teachers in Croatia agree with the claim that there is an equal level of interest for both components of academic activity, with a slight tendency toward the preference for

13 The projects in question are *The Changing Academic Profession* (CAP), *The Academic Profession in Europe: Responses to Societal Changes* (EUROAC), and *Academic Profession Competency Profile: Between New Requirements and Possibilities* (APROFRAME).
The CAP project is a continuation of the research on the topic of academic profession which was conducted on the international level in the period from 1991 to 1993, with the support of the *Carnegie Foundation for the Advancement of Teaching*, and it involved 15 countries (to be more specific, 14 countries and one "territory") – Australia, Brazil, Chile, Egypt, Hong Kong, Israel, Japan, Mexico, the Netherlands, Germany, the Republic of Korea, Russia, the United States of America, Sweden, and the United Kingdom. *The Changing Academic Profession* (CAP) project, which was conducted in the period from 2005 to 2007, can be considered as a continuation of the Carnegie study. Croatia became part of the CAP project in 2009 by conducting the research on the changes in academic profession (Rončević & Rafajac, 2010).
With the project *Academic Profession and Societal Expectations: Challenges for University Civic Mission,* Croatia joined the EUROAC project, along with seven other European countries – Austria, Finland, Ireland, Germany, Poland, Romania, and Switzerland. The main goal of the project is to carry out an (in-depth) examination and comparative analysis of the changes in academic profession at the European level. The project's research groups were formed in accordance with three narrower areas of the research on academic profession, based on the results of previous studies, the Carnegie study and the CAP project: (1) governance, management and evaluation; (2) development and structure of academic careers; and (3) professional differentiation in higher education.
The Croatian research team conducted the project *Academic Profession Competency Profile: Between New Requirements and Possibilities* (APROFRAME) in the period from 2014 to 2017, as a continuation of the research on higher education and academic profession. In accordance with the results of the previously conducted studies, this project proceeds from the results which point to a conclusion that the changes and expectations in the social environment result in the need to redefine the traditional roles of academic profession, and the need for a more comprehensive perception of academic profession, which leads toward the requirement of developing new competencies. The goal of the research is to determine how the academics in Croatia evaluate the importance of, and proficiency in the academic profession competencies, and describe how the competencies are acquired during the period of the junior researchers' professional socialisation.

research. In comparison with the responses obtained in other countries which conducted the comparative research on the changes in the academic profession (CAP), the Croatian participants were least inclined to agree with the attitude marked by a predominant interest in teaching (Rončević & Rafajac, 2010, p. 58). Nevertheless, the Croatian academics display a tendency toward the unity of the academic profession's core functions, teaching and research, highlighting the importance of quality in research whose results are transmitted to students during the teaching process, and the unity of the research and teaching activities as the specificity of the higher education system. Furthermore, it is emphasised that the identification of academics as primarily teachers is not the result of personal choices or preferences, but the conditions and demands within the professional environment (Turk & Ledić, 2016b). In addition, the results of the conducted research on the academic profession competencies (Turk & Ledić, 2016a; Turk, Rončević & Ledić, 2016) provide indicative conclusions about the assessments of the importance of the Croatian academics' teaching and research competencies. The research results point to a conclusion that the academics from the scientific areas of humanities and social sciences, and the artistic areas make a statistically significant assessment of teacher competencies as more important, in comparison with the participants from the natural, technical, and biotechnical sciences. Furthermore, female participants rate this group of competencies as more important in comparison with men. However, it is interesting to note that junior researchers, and the participants with less work experience assess teacher competencies as less important in comparison with the participants who have a senior academic rank and more work experience (Turk & Ledić, 2016a; Turk & Ledić, 2016c). On the other hand, the assessments of the importance of research management competencies, which are related to research activities differ. The participants from the fields of natural, technical and biotechnical sciences, as well as male participants, give a statistically significant assessment of this group of competencies as more important in comparison with female participants and the participants who work in the fields of humanities and social sciences. However, identical results were obtained from the group of junior researchers with regard to this group of academic competencies because the statistically significant differences were determined in their assessments of the aforementioned competencies as less important in comparison with the senior researchers or those who have more work experience. In that context, Turk and Ledić (2016b) highlight the challenges in the teaching and research segment of the academic activities in Croatia. Even though there is an awareness of their interconnectedness and the need for their equal development and support, both segments are burdened with problems and contradictions. For example, the dominance of the pressure related to teaching is linked to the neglect of research activities and the excessive time invested into teaching activities. Furthermore, the support system for the enhancement and development of the teaching and research activities is negligible or non-exsistent, which presents a serious challenge for the quality and desired balance of the core academic activities within the system of science and higher education in Croatia (Turk & Ledić, 2016b).

The studies on the academic profession and higher education in Croatia increasingly focus attention on the professional socialisation of junior researchers and their positioning within the framework of teaching and research (Brajdić Vuković, 2012, 2013; Vizek Vidović, Brajdić Vuković & Matić, 2014; Ledić, 2016; Rončević, Turk & Vignjević, 2016). Within the framework of other topics, the studies (Ledić, 2016; Rončević, Turk & Vignjević, 2016; Vignjević, Turk &

Ledić, 2016) also explore the junior researchers' relationship toward, and perception of teaching. For example, Ledić (2016), and Vignjević, Turk and Ledić (2016) explore the topic of excellence in higher education and conclude that, in the national context, excellence in higher education (teaching and research) is not necessarily valued, which is a discouraging result for the Croatian academic community. Furthermore, the research results show that excellence is primarily linked to increased productivity and the number of research papers published in the relevant international journals. It is indicative for this discussion that teaching is not one of the stated criteria for excellence or promotion.

Taking into account the previous conclusion, Rončević, Turk and Vignjević (2016) identify five factors which form the basis of the junior academics' perception of, and attitude toward teaching – personal attitude, the existence of (formal) education, intuitive attitude toward teaching, the existence of (formal-mentoring) support, and the existence of the formal mechanisms for evaluation. The authors highlight the absence of (formal) education for teaching, the frequent absence of mentoring support, and the absence of formal (national) mechanisms for evaluation and promotion based on teaching. This attitude toward teaching is alarming if compared to the European educational policies' advocacy of teaching in higher education, which points to a necessary need for the modernisation and enhancement of higher education, as well as the obligation of the formal acquisition of teacher competencies for the teachers working in higher education by the year 2020. Furthermore, the research results indicate the discrepancy between the educational policies and the current situation regarding the attitude toward teaching.

The majority of recent studies touch upon or reopen the discussion which examines the legislative framework regarding the academic promotion in Croatia (Turk & Ledić, 2016a, 2016b; Turk, 2016) because the prior recommendations of researchers (Kalin 2004; Ledić, 2009)[14] on the need for teacher training and professional development in the academic profession provoked no response in the national and university policies. Taking into account the aforementioned discussions on the legislative framework for academic promotion, the studies point to absence of the promotion criteria connected to the academics' teaching activity in Croatia, which leads to the disregard of teaching as a profession, and inability to advocate the development of teacher competencies in higher education (Turk & Ledić, 2016a).

14 On the basis of the analysis of the formal criteria for the promotion of university teachers, Kalin (2004) discusses their teacher competency and concludes that there is an insufficient or almost non-existent recognisability of teacher competencies when it comes to higher education teachers, and even less of a need for their formal acquirement. Similarly, Ledić (2009) examines the attitude toward the importance of the teachers' education as the basis for the enhancement of educational processes in the Croatian educational system, by asking the question "Do university teachers stimulate contempt toward teacher education?" On the basis of the presented argumentation which reveals the imbalance between the research and teaching criteria for the promotion of university professors, the author concludes with a rhetorical question "...is it possible to confirm the hypothesis that the importance of the teachers' education as the basis for the enhancement of the educational processes in the Croatian educational system is disvalued by the model of (or requirements for) promotion for university teachers? If it is, what are we to do?" In this way, and in the context of the discussed topic, the author emphasises the need to focus the discussion on legislation, and the direction of the educational policies in Croatia.

Teaching and research in legislation and university strategies in the Republic of Croatia

Taking into account the particularities of the academic profession, which are mostly dependent on the national and university systems, it is necessary to include the analysis of the national legislation and strategic documents in the discussion on the nexus between teaching and research, since their criteria and strategic directions of development imply the developmental course of the core academic activities. Therefore, this chapter will present the analysis of the following national legislation: the Scientific Activity and Higher Education Act from 2013, the Ordinance on the Criteria for Appointment to Research Ranks from 2013, and the Decision on the Required Criteria for the Evaluation of Teaching and Professional Activity in the Appointment Process for Senior Academic Ranks from 2005; that is, the Croatian Rectors' Conference criteria. Furthermore, it is important to explore how the universities define the relationship between teaching and research in their strategic development documents. The results of the analysis of the strategies of all the Croatian public universities will also be outlined.

The academic career promotion and ranks within the system of public universities in the Republic of Croatia are regulated through the following documents: The Scientific Activity and Higher Education Act from 2013 (in further text: the Act), the Ordinance on the Criteria for Appointment to Research Ranks from 2013 (in further text: the Ordinance), and the Decision on the Required Criteria for the Evaluation of Teaching and Professional Activity in the Appointment Process for Senior Academic Ranks from 2005 or the criteria of the Croatian Rectors' Conference (in further text: the Croatian Rectors' Conference criteria). However, the universities and their constituents are allowed to stipulate the additional criteria for the promotion of their staff, within the framework of their autonomy.[15] The Ordinance stipulates the criteria for the appointment to research ranks, while the Croatian Rectors' Conference criteria should stipulate the required criteria for the evaluation of the teaching and professional activities. However, the studies (Turk & Ledić, 2016a, Turk, 2016) suggest that the promotion in the academic career at universities is predominantly implemented/evaluated based on the research component. That is, even though the Croatian Rectors' Conference criteria pertain to the evaluation of the teaching and professional activities, the analysis of their criteria reveals that they are predominantly oriented toward the research segment of the academics' work. This conclusion is supported by the quantitative indicators of the analysis of the Croatian Rectors' Conference criteria which show that, out of the total of 32 criteria, five (16%) can be

15 The academic tradition and practice shows that the examples of the universities and their constituents which stipulate such criteria are rare. It should be noted that the Josip Juraj Strossmayer University of Osijek is the only university which stipulates the requirement of professional development within the segment of teaching activity in its Ordinance on appointment to scientific, scientific-educational, artistic-educational, educational, associate and professional titles and corresponding employment positions from 2012. Even though other Croatian universities implement the teacher training programmes intended for the higher education teachers (e.g. the University of Zagreb, University of Rijeka, and University of Zadar), they are not stipulated as required, but are undertaken according to the interests and preferences of university teachers.

defined as teaching criteria, 18 (56%) can be defined as research criteria, 9 (28%) contain both teaching and research components, while only 1 (3%) criterion falls under the category of other (professional) criteria (Turk & Ledić, 2016b; Turk, 2016). Even though the legislation currently in force, in the context of the required criteria, does not define the importance of a particular group of promotion criteria, its quantitative indicators can lead to a conclusion that those criteria which are more represented in number can also be considered more important for the academic promotion in Croatia. Therefore, the validity of these promotion criteria is questionable, since it can be concluded that there is an intensive research-based, and an insufficient teaching-based evaluation of the academics in Croatia.

In the context of the discussion on the promotion criteria, the results of the research conducted within the framework of the project *"Strengthening Social Dialogue in the Sector of Science and Higher Education"* (Radeka et al., 2016) on the sample of 2520 participants who are employed within the science and higher education system in the Republic of Croatia should be highlighted. The results of the conducted research show that the participants consider the Croatian Rectors' Conference criteria to be significantly easier to satisfy than the criteria stipulated in the Ordinance, while 36% of the participants[16] think that they should be fundamentally changed.[17] Furthermore, the results indicate a long-standing divide in the science and higher education system between the individuals employed at the universities (education based institutions) and those employed at the research institutes (research based institutions). To elaborate, there are significant differences in the participants' responses in the context of the discussion on the promotion criteria. It is pointed out that the majority of the participants who work at the research institutions think that the promotion criteria should be more rigorous "...in order for the most productive and excellent individuals to be promoted to the highest ranks" (Radeka et al., 2016, p. 32), and that greater emphasis should be placed on the publishing of papers in the scientific journals which are indexed in the internationally recognised databases. These results are not surprising because the researches who work in institutes have a minimal or non-existent contact with teaching at universities. Therefore, it is impossible to expect their approach to the discussion on the need for the redefinition of the teaching and professional criteria for promotion to academic ranks to be affirmative and supportive with regard to teaching. On the contrary, the exclusive focus of this group of participants on research productivity (which, *nota bene*, does not always imply the quality of research activity) is justified and expected. However, if

16 In order to contextualise the stated percentage, it should be noted that when it comes to the question of the necessary redefinition of the Croatian Rectors' Conference criteria, the response distribution was the following: 36% of the participants stated that they need to be changed, 16% of the participants stated that they do not need to be changed, while 48% of the participants did not provide a response.

17 It should be noted that during the writing of this publication, the Croatian Rectors' Conference criteria were undergoing redefinition. During its 7th session in the academic year 2013/2014, the Croatian Rectors' Conference named the Committee for the interpretation and development of the draft amendments to the required criteria for appointment to ranks. According to the most recent information from the Record taken at the 1st session of the Croatian Rectors' Conference in the academic year 2016/2017, which is available on the official internet site of the Croatian Rectors' Conference, the committee's draft is in its final phase and should be soon available for public discussion.

the goal is to achieve the balance between these two groups within the science and higher education system, it would be advisable to consider the redefinition of the promotion criteria which would clearly differentiate between the requirements and criteria intended for the employees in the science-based and art-based educational institutions, and the employees in the research institutions. In that case, the intention would not be to advocate the approach which would lower the research criteria for the appointment of the university teachers, or to undermine the researchers' work in institutes. However, it is necessary to point out clearly and unambiguously that, on the level of educational policies and legislation, these are two different systems with different core activities (which partly overlap, but are not identical) and requirements, as well as different possibilities and criteria for promotion.[18]

In addition to (national) legislation, the development of, and investment into the core academic activities is defined and determined through the principal strategic documents of a particular university. In order to ascertain the determinants of the teaching and research activities, and their connection to the university missions and visions as the basic starting points and indicators of the strategic direction of a particular university, seven strategies of the Croatian universities[19] and one elaboration document on the basic prerequisites for the development and transformation of the University of Zagreb were analysed.[20]

---

18 This conclusion is supported by the results of the aforementioned research (Radeka et al., 2016), which shows that there is a great difference between the status of employment positions in the higher education institutions and research institutions. In that context, the division of working hours for employees in higher education institutions is 50% for teaching activities, and 50% for research activities. However, this research shows that for a number of reasons (teaching overload, increase in administrative tasks, etc.) they are not able to devote 50% of their working hours to research, while the employees in research institutions devote their working hours exclusively to research activities. It should be noted that these results confirm the identical results of the prior studies on academic profession in Croatia (Rončević & Rafajac, 2010; Brajdić Vuković, 2015; Ledić, 2012; Turk, 2015) which show the uneven distribution of working hours (in favour of teaching), and the work overload of employees in higher education institutions. In this context, it is especially unjust to establish the same criteria for promotion into research ranks in biomedical sciences for the employees in higher education institutions who have cumulative employment in hospitals and faculties, taking into account that the criteria for promotion into research ranks for those employees are identical to the criteria for promotion into research ranks in institutes. Furthermore, Radeka et al. (2016) point out that that the same criteria are established with regard to the promotion into research ranks of the employees in higher education institutions, and the employees in research institutions, even though the latter have (at least) twice as much time for fulfilling the research criteria. Therefore, it is concluded that the work conditions for these two employee groups within the system of science and higher education are not only unequal, but also significantly differ according to the type of institution where they are employed.

19 The analysis included: the University of Rijeka Strategy 2014-2020 (2014), the University of Split Strategy 2015-2020 (2015), the Strategy for Development of the University of Dubrovnik 2016-2025 (2015), the Strategy for Development of the Juraj Dobrila University of Pula 2016-2020 (2015), the University of Zadar Strategy 2011-2017 (2011), the Strategy of Josip Juraj Strossmayer University of Osijek 2011-2020 (2011), and the Strategy for Development of the University North 2015-2020 (2015).

20 The document in question is The Development and Transformation of the University of Zagreb: Elaboration of the Basic Prerequisites (2014). On the basis of the document, the following eight thematic strategies of the University of Zagreb, distributed according to the activity areas of the University, were established: the Strategy for the Quality Assurance System of the University of Zagreb, the Strategy for Study Programmes and Studying of the University of Zagreb, the Strategy for the Student Support Development of the University of Zagreb, the Strategy for the Spatial and Functional Development of the University of Zagreb, the Strategy for Sport of the University of Zagreb, the Strategy for the

The analysis of the nexus between teaching and research in the Croatian universities' missions and visions reveals two relationships: (1) there is a nexus between teaching and research in the mission and vision, and (2) teaching and research are highlighted in the mission and vision, but the nexus between them is not indicated. The results of the conducted analysis are presented in Table 2.

Table 2. **The nexus between teaching and research in the strategies of Croatian universities**

University	There is a nexus	There is no nexus, but both activities are highlighted
University of Zagreb		●
University of Split		●
University of Rijeka	●	
University of Osijek	●	
University of Zadar	●	
University of Dubrovnik		●
University of Pula		●
University North	●	

On the basis of the conducted analysis whose results were shown in Table 2, it can be observed that four Croatian universities – the University of Rijeka, the Josip Juraj Strossmayer University of Osijek, the University of Zadar, and the recently founded University North – indicate the nexus between the core academic activities, teaching and research, in their missions and visions. For example, the mission of the University of Rijeka explicitly points out that the "University of Rijeka engages in scientific, artistic and development research, provides undergraduate, master's, post-master's and lifelong learning education founded on research, and stimulates the social and economic development of its region" (University of Rijeka Strategy

Development of Education in Art, Artistic Creativity and Research of the University of Zagreb, the Strategy for Research, Technology Transfer and Innovations of the University of Zagreb, and the Strategy for Internalisation of the University of Zagreb. In order to conduct the analysis, the document The Development and Transformation of the University of Zagreb: Elaboration of the Basic Prerequisites was explored, since it represents a starting point for the development of specific strategies, and defines the mission and vision of the University of Zagreb. From the research perspective, it is interesting to note that out of eight thematic strategies of the University of Zagreb, not one is specifically focused on teaching. Even though the indicators of teaching are represented in four out of eight thematic strategies (the Strategy for the Quality Assurance System of the University of Zagreb, the Strategy for Study Programmes and Studying of the University of Zagreb, the Strategy for the Student Support Development of the University of Zagreb, and the Strategy for the Development of Education in Art, Artistic Creativity and Research of the University of Zagreb), the absence of the unified strategy focused exclusively on teaching (similar to the one focused on research) is indicative in the context of the advancement of the development of teaching in the university's strategic guidelines.

2014-2020, 2014, p. 12).[21] The University of Osijek defines itself in its mission as an "educational institution which connects scientific research, artistic endeavour, studying, and teaching in order to develop science, profession and art, and prepare students for performing professional activities based on the scientific facts and methods, as well as artistic values..." (Strategy of Josip Juraj Strossmayer University of Osijek 2011-2020, 2011, p. 15), while the University of Zadar primarily defines itself as a research institution in its mission, but also emphasises its partnership and connection with all the participants in the process of education and research, as well as its collaboration with the business sector. The recently founded University North presents itself as a "...dynamic organisation that continually monitors, implements and incorporates scientific and professional knowledge in the modernisation of the existing and the development of new study programmes, promotes the concept of lifelong learning, and deepens relations with the business sector" (Strategy for Development of the University North 2015-2020, 2015, p. 37).

The remaining Croatian universities do not highlight the nexus between teaching and research in their missions and visions, even though they recognise the two activities. For example, the University of Zagreb as the largest Croatian university states that it will develop as a "... comprehensive university with a wide scope of research and study programmes in accordance with the society's economic possibilities and needs" (Development and Transformation of the University of Zagreb: Elaboration of the Basic Prerequisites, 2014, p. 3). The Juraj Dobrila University of Pula bases its future development on "...teaching and learning through the continual quality enhancement of the learning outcomes, research and innovation, support to the local community, and management according to the sustainable development principles" (Strategy for Development of the Juraj Dobrila University of Pula 2016-2020, 2015, p. 7), while the University of Dubrovnik defines its mission as the advancement of social interests through "providing education at undergraduate, graduate and postgraduate study programmes, lifelong learning, research, artistic and professional work – based on the sustainable development principles, socially responsible behaviour and excellence" (Strategy for Development of the University of Dubrovnik 2016-2025, p. 4). The University of Split defines its primary task as "performing the teaching, research, artistic and professional work based on the principles of respecting, controlling and assuring the quality and EU standards" (University of Split Strategy 2015-2020, 2015, p. 4).

21 To some extent, the new University of Rijeka Strategy shows progress when it comes to the positioning of the core academic activities and their interconnectedness. In the prior University of Rijeka Strategy 2009-2013 (2008), the University primarily defined itself as a research university in its mission and vision. In that context, the researchers of higher education (Ledić, 2009; Ćulum & Ledić, 2010) warned about the insufficient representation of the other core academic activities (teaching, and contribution to the community and society) in the University's strategic direction. Despite the conclusion that the changes in higher education at the national level are (predominantly) not based on research results (Ledić, 2014), the definition of this mission demonstrates that there is a positive progress toward the connection between research and the (positive) changes in the educational/strategic policies of higher education.

Nevertheless, taking into account the fact that the nexus between teaching and research, which the studies and the recommendations of the European (educational) policies recognise as the core academic activities, is not a new concept, these results are partly surprising. A number of studies (Ruscio, 1987; Brew & Bound, 1995; Middlehurst, 1997; Brew, 2006) emphasise the importance of the nexus between, and transfer within the core academic activities, as do the documents of the European (educational) policies (e.g. *Horizon 2020, Agenda For New Skills and Jobs*, *European Platform Against Poverty*, *Resource Efficient Europe*, *Industrial Policy for Globalisation ERA*), which observe the development not only of higher education and science, but also society in general, through the prism of the aforementioned transfer. Even though the harmonisation process between the national and European higher education areas continues, the affirmative attitudes based on the empirical research results which would direct and advocate their stronger connectedness are of great importance. Indications of such an approach can be found in the (current) *Strategy of Education, Science and Technology* (2013), which places a special emphasis on the importance of the nexus between teaching and research, but also in the strategic development directions of the particular national universities.

The analysis of the strategies reveals some improvements in the context of the development of teaching at the Croatian universities. For example, the majority of strategies emphasise the necessary professional development of teaching staff in higher education institutions designed to improve the teaching process. The strategies of the universities in Split, Rijeka, Zadar and Osijek point out the necessary insurance of the additional and continued investment into teacher training. The Strategy for Study Programmes and Studying of the University of Zagreb highlights the importance of competent teachers, and especially emphasises the necessary "support for the development of teacher competencies, since the majority of constituents do not have a detailed system for their development or sustained professional training" (p. 9), while the University of Dubrovnik Strategy states that the "additional teacher training will be ensured in order to modernise the teaching methods and introduce innovative teaching methods" (p. 29). Similarly, the Strategy for Development of the Juraj Dobrila University of Pula devotes a special attention to junior researchers and highlights that it is necessary to "develop the mechanisms of professional development and training of junior researchers for teaching – the programmes intended for acquiring teacher competencies" (p. 19).

In the context of the prior discussion on excellence in higher education, and the research results which point to a conclusion that teaching is not valued, nor does it represent a criterion for excellence, some strategically important improvements should be emphasised. In contrast to other Croatian universities, the strategies of the University of Zadar and the University of Dubrovnik state the development of the educational excellence criteria as their strategic goal. In the chapter on the strategic aims of quality assurance in higher education, the University of Zadar Strategy 2011-2017 (2011) cites as one of the aims "To develop the reward and sanction mechanisms for teachers, to define the educational excellence criteria, and to propose its measurable parameters." (p. 19), while the Strategy for Development of the University of Dubrovnik 2016-2025 (2015) similarly emphasises as one of the aims the need to define the educational excellence criteria and propose its measurable parameters.

The conducted analysis of the national context points to several possible conclusions. The first conclusion regards the research results which have not been adequately utilised in the creation of the national higher education policies. The researchers point out that the current state in higher education is characterised by: (1) absence of formal support for teaching and research; (2) challenges in connecting the teaching and research activities; and (3) absence of coordination with regard to the research, teaching, and professional criteria for promotion, which results in the disownment of teaching, especially when it comes to the evaluation of its importance in relation to other academic activities.

References

1. Adamović, M., & Mežnarić, S. (2003). Potential and actual "brain drain" of young scientists from Croatia: Empirical research. *Sociological Review*, *34*(3-4), 143-160.
2. Altbach, P.G. (2004). The costs and benefits of world-class universities. *Academe*, 90: 1.
3. Altbach, P. G. (2011). The Past, Present, and Future of the Research University. In P. G. Altbach and J. Salmi (Eds.). *The Road to Academic Excellence. The Making of World-Class Research Universities*, (pp. 11-29). The International Bank for Reconstruction and Development / The World Bank.
4. Arimoto, A. (2014). The teaching and research nexus in the third wave age. In J.C. Shin, A. Arimoto, W. K. Cummings, and U. Teichler (Eds.). *Teaching and Research in Contemporary Higher Education* (pp. 15-33). Springer: Netherlands.
5. Aškerc, K., et al. (2016). *Improving the quality of teaching and learning in higher education: From theory to practice, from practice to theory.* Ljubljana: The Centre of the Republic of Slovenia for Mobility and European Educational and Training Programmes.
6. Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, *18,* 215-228.
7. Barr, R. B., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change, 27*(6), 13-25.
8. Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003). Retrieved 14 December 2016, from: http://www.revistanegotium.org.ve/pdf/10/Doc2.pdf.
9. Bess, J. L. (1998). Teaching well: Do you have to be schizophrenic? *The Review of Higher education*, *22*(1), 1-15.
10. Bezinović, P., & Bajšanski, M. (2007). Development of the organizational structure and procedures for quality assurance at the University of Rijeka. In P. Lučin (Ed.). *Quality in Higher Education*. (pp. 99-112). The National Foundation for Science, Higher Education and Technological Development of the Republic of Croatia.
11. Bognar, L., & Kragulj, S. (2010). The Quality of University Teaching. *Life and School: Journal for the Theory and Practice of Education*, *56*(24), 169-182.
12. Boyer, E. (1990). *Scholarship reconsidered: Priorities of the professoriate.* Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

13. Brajdić Vuković, M. (2012). *Social actors of young researchers' professional socialisation in natural and social sciences.* Doctoral thesis. Zagreb: Faculty of Humanities and Social Sciences.

14. Brajdić Vuković, M. (2013). Problems of the professional socialisation within the "scientific novice" program: cases of natural and social sciences. *Croatian Journal of Social Policy*, *20*(2), 99-122.

15. Braxton, J. M. (1993). Selectivity and rigor in research universities. *Journal of Higher Education, 64,* 657-675.

16. Brew, A. (2006). *Research and Teaching. Beyond the Divide*. New York: Palgrave Macmillan.

17. Brew, A. (2012). Teaching and research: New relationships and their implications for inquiry-based teaching and learning in higher education. *Higher Education Research and Development*, *31*(1), 101-114.

18. Brew, A., & Boud, D. (1995). Research and learning in higher education. In B. Smith and S. Brown (Eds.), *Research, teaching and learning in higher education,* 30-39, London: Kogan Page.

19. Clark, B. R. (Ed.) (1987). *The Academic Profession. National, Disciplinary and Institutional Settings.* Berkeley & Los Angeles: University of California Press.

20. Colbeck, C. L. (1998). Merging in a seamless blend: How faculty integrate teaching and research. *Journal of Higher Education*, *69*(6)**,** 647-671.

21. Colbeck, C. L. (2002). Integration: Evaluating faculty work as a whole. *New Directions for Institutional Research*, *114***,** 43-52.

22. Croatian Rectors' Conference (2016). *The Record of the 1st Session in the Academic Year 2016/2017*. Retrieved 13 January 2017, from: http://www.rektorski-zbor.hr/sjednice/.

23. Cummings, W. K. (2009). Teaching *versus* research in the contemporary academy. In RIHE (Ed.). *The changing academic profession over 1992-2007: International, comparative and quantitative perspectives*, (pp. 39-56). Hiroshima: Hiroshima University.

24. Cvetek, S. (2015). *Learning and teaching in higher education: Theory and practice.* Ljubljana: Buča knjigotrštvo.

25. Ćulum, B. & Ledić, J. (2010a). *University Civic Mission: An Element in Traces*. Rijeka: Faculty of Humanities and Social Sciences.

26. Ćulum, B. & Ledić, J. (2010b). Service-Learning: The Integration of Higher Education and the Community in the Process of the Education of Socially Responsible and Active Citizens. *Croatian Journal of Social Policy*, *17*(1), 71-88.

27. Ćulum, B., Ledić, J., & Rončević, N. (2012). Academics and Community Engagement. In J. Ledić (Ed.). *Changes in the Academic Profession: Responses to Societal Changes?* (pp. 53-91), Rijeka: Faculty of Humanities and Social Sciences.

28. Ćulum, B., Rončević, N., & Ledić, J. (2013). Facing new expectations—Integrating third mission activities into the university. In B. M. Kehm and U. Teichler (Eds.). *The academic profession in Europe: New tasks and new challenges* (pp. 163-195). Springer, Netherlands.

29. Ćulum, B. & Turk, M. (2012). What society expects from the academic community: University teachers' perspective. In J. Ledić (Ed.). *Changes in the Academic Profession: Responses to Societal Changes?* (pp. 97-118). Rijeka: Faculty of Humanities and Social Sciences.

30. Decision on the Required Criteria for the Evaluation of Teaching and Professional Activity in the Appointment Process for Senior Academic Ranks, *Official Gazette*, 106/2006.

31. Development and Transformation of the University of Zagreb: Elaboration of the Basic Prerequisites (2014). Zagreb: University of Zagreb. Retrieved 1 December 2016, from: http://www.unizg.hr/fileadmin/rektorat/O_Sveucilistu/Dokumenti_javnost/Dokumenti/Strateski_dokumenti/RiP_SuZ_-_razrada_konacna.pdf.

32. Diamond, R. M., Adam, B. E. (1997). *Changing priorities at research universities: 1991-1996.* Syracuse, NY: Syracuse University Center for Instructional Development.

33. Enders, J. (1999). Crisis? What Crisis? The Academic Professions in the 'Knowledge' Society. *Higher Education*, *38*(1), 71-81.

34. ENQA (2007). *Guidelines for national external quality assurance systems*. Retrieved 13 January 2017, from: http://www.ehea.info/pid34784/quality-assurance-2007-2009.html.

35. ENQA (2015). *Standards and Guidelines for Quality Assurance in the European Higher Education Area*. Retrieved 14 December 2016, from: http://www.eua.be/Libraries/quality-assurance/esg_2015.pdf?sfvrsn=0.

36. Entwistle, N. J. (2009). *Teaching for Understanding at University: Deep Approaches and Distinctive Ways of Thinking.* Basingstoke, Hampshire: Palgrave Macmillan.

37. ESU (2015). *Bologna With Student Eyes. Time to meet the expectations from 1999.* European Students' Union: Brussels. Retrieved 14 December 2016, from: http://media.ehea.info/file/ESU/32/8/Bologna-With-Student-Eyes_2015_565328.pdf.

38. EUA (2010). *Trends 2010: A decade of change in European Higher Education.* Brussels: European University Association. Retrieved 5 December 2016,from: http://www.eua.be/Libraries/publications-homepage-list/Trends2010.

39. EUA (2015). *Trends 2015: Learning and Teaching in European Universities.* Brussels: European University Association. Retrieved 5 December 2016, from: http://eua.be/Libraries_/publications-homepage-list/EUA_Trends_2015_web.

40. European Commission (2009). *Preparing Europe for a New Renaissance: a Strategic View of the European Research Area.* Luxembourg: Office for Official Publications of the European Communities.

41. European Commission (2013). *Report to the European Commission on improving the quality of teaching and learning in Europe's higher education institutions.* Retrieved 1 December 2016, from: http://ec.europa.eu/dgs/education_culture/repository/education/library/reports/modernisation_en.pdf.

42. European Commission, EACEA, Eurydice (2015). *The European Higher Education Area in 2015: Bologna Process Implementation Report.* Luxembourg: Publications Office of the European Union.

43. Finkelstein, M. J. (2010). The balance between teaching and research in the work life of American academies, 1992-2007: Is it changing?. In RIHE (Ed.), *The changing academic profession in international and quantitative perspectives: A focus on teaching and research activities*: *Report of the international conference on the changing academic profession project 2010*, (pp. 213-234), Hiroshima: Hiroshima University.

44. Finkelstein, M. J. (2014). The balance between teaching and research in the work life of American academics. In J. C. Shin, A. Arimoto, W. K. Cummings, and U. Teichler (Eds.). *Teaching and Research in Contemporary Higher Education,* (pp. 299-318). Springer Netherlands.

45. Geiger, R. L. (1993). *Research and relevant knowledge: American research universities since World War II*. Oxford University Press.

46. Golub, B. (2001). Junior Researcher's Dilemma: To Remain or to Escape. *Sociological Review*, *32*(1-2), 1-16.

47. Grey, H. H. (2012). *Searching for Utopia. Universities and Their Histories*. Berkeley & Los Angeles: University of California Press

48. Hattie, J., & Marsh, H. W. (1996). The Relationship between Research and Teaching: A Meta-Analysis. *Review of Educational Research*, *66*(4), 507-542.

49. Hattie, J., & Marsh, H. W. (2004). One journey to unravel the relationship between research and teaching. In *Research and teaching: Closing the divide? An International Colloquium* (pp. 18-19). Marwell Conference Centre, Colden Common, Winchester.

50. Hénard, F., & Roseveare, D. (Eds.). (2012). *Fostering Quality Teaching in Higher Education: Policies and Practices. An IMHE Guide for Higher Education Institutions*. Retrieved 14 December 2016, from: http://search.oecd.org/edu/imhe/QT%20policies%20and%20practices.pdf.

51. Hughes, J. (2004). Technology learning principles for preservice and in-service teacher education. *Contemporary Issues in Technology and Teacher Education, 4*(3), 345-362.

52. Hutchings, P., Huber, M., & Ciccone, A. (2011). *The Scholarship of Teaching and Learning Reconsidered*. San Francisco: Jossey-Bass.

53. Hutchings, P., & Shulman, L. E. (1999). The scholarship of teaching: New elaborations, new developments. *Change, 31*(5), 10-15.

54. Kalin, B. (2004). On the Teaching Competence of University Lecturers. *Methodical Review*, *11*(1), 43-62.

55. Kogan M., & Teichler U. (Eds.) (2007.) *Key Challenges to the Academic Profession.* Kassel: International Centre for Higher Education Research, University of Kassel.

56. Kovač, V. (1996). Discussion as a teaching method in higher education. *Napredak – a journal for pedagogical theory and practice*, *137*(4), 433-440.

57. Kovač, V. (2001). *Academic staff development.* Rijeka: Faculty of Humanities and Social Sciences.

58. Kovač, V., Ledić, J., & Rafajac, B. (1998). The quality criteria of higher education teaching: Approach to a research. *Napredak – a journal for pedagogical theory and practice*, *139*(3), 298-306.

59. Kuh, D. G., & Hu, S. (2001). Learning Productivity at Research Universities. *The Journal of Higher Education, 72*(1), 1-28.

60. Ledić, J. (1992). Approach to the Pedagogical Development of University Teachers, *Napredak – a journal for pedagogical theory and practice*, *2*, 195-199.

61. Ledić, J. (1993). Toward the New Standards of Teaching in Higher Education. *Napredak – a journal for pedagogical theory and practice*, *134*(2), 187-196.

62. Ledić, J. (1994). TQM – New Approach to Quality in University Education. *Napredak – a journal for pedagogical theory and practice, 135*(4), 456-465.

63. Ledić, J. (2007). Looking for University Civic Mission. In the anthology V. Previšić, N. N. Šoljan, and N. Hrvatić (Eds.), *Pedagogy – towards lifelong learning and the knowledge society. Volume 1, The Proceedings of the First Congress of Croatian Pedagogues*, (pp. 123-134), Zagreb: Croatian Pedagogy Society.

64. Ledić, J. (2009). Do university teachers stimulate contempt toward teacher education? Presentation at the round table on "Pre-higher education: Croatian qualification framework, scientific basis, and education of teachers," Zagreb: Croatian Academy of Sciences and Arts. Retrieved 7 May 2012, from: http://info.hazu.hr/upload/file/HKO/Jasminka%20Ledic.pdf.

65. Ledić, J. (2016). Does the academia instigate excellence?. Presentation at the 13th international conference *Excellence & Innovation in Basic-Higher Education & Psychology. Creativity–Innovation–Latest Development in Research & Practices*. Rijeka, 18 – 21 May 2016.

66. Ledić, J., Kovač, V., & Rafajac, B. (1998). Students' position regarding the quality of the teaching process at the university. *Društvena istraživanja: journal for general social issues*, *7*(4-5), 619-637.

67. Locke, W. (2014). Teaching and research in English higher education: The fragmentation, diversification and reorganisation of academic work, 1992–2007. In W. Locke and U. Teichler (Eds.). *Teaching and Research in Contemporary Higher Education*. (pp. 319-334). Kassel: International Centre for Higher Education Research, University of Kassel.

68. Locke, W., & Teichler, U. (Eds.) (2007). *The Changing Conditions for Academic Work and Careers in Selected Countries*. Kassel: International Centre for Higher Education Research, University of Kassel.

69. Magna Charta Universitatum (1988). Retrieved 1 July 2012, from: http://public.mzos.hr/fgs.axd?id=10750.

70. Marentič Požarnik, B. (2009). Improving the quality of teaching and learning in higher education through supporting professional development of teaching staff. *Napredak – a journal for pedagogical theory and practice*, *150*(3-4), 341-359.

71. McKinney, K. (2006). Attitudinal and structural factors contributing to challenges in the work of the scholarship of teaching and learning. *New Directions for Institutional Research*, *129*, 37-50.

72. Middlehurst, R. (1997). Reinventing Higher Education: the leadership challenge, *Quality in Higher Education*, 3(2), 183-198.

73. Neumann, R. (1992). Perceptions of the teaching-research nexus: A framework for analysis. *Higher Education, 23,* 159-171.

74. Ordinance on the Criteria for Appointment to Research Ranks, *Official Gazette*, 84/05, 138/06, 42/07-Decision of the Constitutional Court of the Republic of Croatia, 120/07, 71/10, 116/10, 38/1.

75. Peko, A., Mlinarević, V., & Buljubašić-Kuzmanović, V. (2008). The Need for Improvement of Instruction at University Level. *Educational Sciences*, *10*(1 (15)), 195-208.

76. Polašek, D. (2008). *Scientific successfulness of research trainees.* Doctoral thesis. Zagreb: The University of Zagreb School of Medicine.

77. Prpić, K. (2004). *Sociological Portrait of Junior Researchers.* Zagreb: Institute for Social Research.

78. Radeka, I. (Ed.). (2016). *What kind of future do we want for the science and higher education system?* Zagreb: Independent Union of Research and Higher Education.

79. Ramsden, P. (1987). Improving teaching and learning in higher education: The case for a relational perspective. *Studies in Higher Education, 12*(3), 275-286.

80. Ramsden, P., & Moses, I. (1992). Associations between Research and Teaching in Australian Higher Education. Higher Education, 23, 3, 273-295.

81. Rice, R. E., Sorcinelli, M. D., & Austin, A. (2000). *Heeding new voices: Academic careers for a new generation, New Pathways (Faculty Careers and Employment for the 21st Century, Inquiry*). Washington, D.C.: American Association for Higher Education.

82. Rončević, N., & Rafajac, B. (2010). *Changes in Academic Profession: A Comparative Analysis*. Rijeka: Faculty of Humanities and Social Sciences.

83. Rončević, N., Turk, M., & Vignjević, B. (2016). Research development competencies: Junior academics'perspective. *ICERI2016 Proceedings,* 8847-8857.

84. Ruscio, K. P. (1987). Many Sectors, Many Professions. In B. R. Clark (Ed.), *The Academic Profession. National, Disciplinary and Institutional Settings*, (pp. 331-368), Berkely and Los Angeles: University California Press.

85. Scientific Activity and Higher Education Act, *Official Gazette*, 123/03, 198/03 (Regulation), 105/04, 174/04, 2/07 Decision of the Constitutional Court of the Republic of Croatia, 46/07, 45/09, 63/11, 94/13, 139/13, 101/14 Decision of the Constitutional Court of the Republic of Croatia.

86. Shanghai Academic Ranking of the World Universities – ARWU (2015). Retrieved 12 December 2016, from: http://www.shanghairanking.com/Academic-Ranking-of-World-Universities-2015-Press-Release.html.

87. Shin, J. C. & Cummings, W. K. (2014). Teaching and Research across Higher Education Systems: Typology and Implications Education Systems. In J.C. Shin, A. Arimoto, W. K. Cummings, and U. Teichler (Eds.). *Teaching and Research in Contemporary Higher Education* (pp. 381-394). Springer: Netherlands.

88. Shin, J. C., Arimoto, A., Cummings, W. K., & Teichler, U. (2014). *Teaching and research in contemporary higher education*. Springer, Netherlands.

89. Skelton, A. (2005). *Understanding teaching excellence in higher education: Towards a critical approach.* London: Routledge.

90. Strategy for Development of the University North 2015-2020 (2015). Koprivnica/Varaždin: University North. Retrieved 1 December 2016, from: https://www.unin.hr/wp-content/uploads/Strategija-razvitka-Sveu%C4%8Dili%C5%A1ta-Sjever.pdf.

91. Strategy for Development of the University of Zadar 2009-2014 (2009). Zadar: University of Zadar. Retrieved 1 December 2016, from: http://www.unizd.hr/Portals/0/pdf/Stategija_razvitka_znanosti_2009_2014.pdf.

92. Strategy for Development of the Juraj Dobrila University of Pula 2016-2020 (2016). Pula: Juraj Dobrila University. Retrieved 1 December 2016, from: http://www.unipu.hr/uploads/media/Strategija_razvoja_Sveucilista_JD_2016-2020.pdf.

93. Strategy for Development of the University of Dubrovnik 2016-2025 (2015). Dubrovnik: University of Dubrovnik. Retrieved 1 December 2016, from: http://www.unidu.hr/datoteke/17izb/STRATEGIJA_RAZVOJA_SVEUCILISTA_U_DUBROVNIKU_2016-2025.pdf.

94. Strategy for Development of the University of Rijeka 2014-2020 (2014). Rijeka: University of Rijeka. Retrieved 20 November 2016, from: http://www.biotech.uniri.hr/files/Dokumenti/Strategija_UNIRI_2014_2020_HR.pdf.

95. Strategy for Development of the Josip Juraj Strossmayer University of Osijek 2011-2020 (2011). Osijek: University of Osijek. Retrieved 2 November 2016, from: https://www.unios.hr/wp-content/uploads/2015/07/SJJS_Strategija_Sveucilista_HR.pdf.

96. Strategy of Education, Science and Technology. (2014). Zagreb: Government of the Republic of Croatia. Retrieved 28 November 2016, from: http://www.universitas.hr/wp-content/uploads/2013/10/Strategija-OZT.pdf.

97. Taylor, M. C. (2010). *Crisis on Campus. A Bold Plan for Reforming Our Colleges and Universities*. New York: Alfred A. Knopf.

98. Teichler, U. (2010). Teaching and research in Germany: Narrowing the gaps between institutional types and staff categories? In RIHE (Ed.), *The changing academic profession in international and quantitative perspectives: A focus on teaching and research activities*: *Report of the international conference on the changing academic profession project 2010*, 41-60, Hiroshima University.

99. Teichler, U. (2014). Teaching and research in Germany: The notions of university professors. In J.C. Shin, A. Arimoto, W. K. Cummings, and U. Teichler (Eds.). *Teaching and Research in Contemporary Higher Education,* (pp. 61-87). Springer, Netherlands.

100. Teichler, U., Arimoto, A., & Cummings, W. K. (Eds.) (2013). *The Changing Academic Profession.* Netherlands: Springer.

101. Trigwell, K., Martin, E., Benjamin, J., & Prosser, M. (2000). Scholarship of Teaching: A model. *Higher Education Research and Development*, 19:2, 155-168.

102. Turk, M. (2009). Importance of active learning in higher education as a precondition to learning for and about creativity. In L. Bognar, J. Whitehead, B. Bognar, M. Perić-Kraljik, and K. Munk (Eds.). *Encouraging Creativity in Education*, (pp. 107-115), Zagreb: Profil International.

103. Turk, M. (2015). *Academic Profession Competencies Profile*. Doctoral thesis. Zagreb: Faculty of Teacher Education in Zagreb.

104. Turk, M. (2016). (New) competencies of the academic profession in Europe. *Napredak – a journal for pedagogical theory and practice*, *157*, 145-164.

105. Turk, M. & Ledić, J. (2016a). *Academic profession competencies. Fata volentem ducunt, nolentem trahunt.* Rijeka: Faculty of Humanities and Social Sciences.

106. Turk, M. & Ledić, J. (2016b). Between teaching and research: Challenges of the academic profession in Croatia. *CEPS Journal: Center for Educational Policy Studies Journal*, *6*(1), 95.

107. Turk, M. & Ledić, J. (2016c). How do the Academics in Croatia Value Teaching Competencies. *International Conference Improving University Teaching and Learning*. (6 April 2016, Brdo pri Kranju, Slovenija).

108. Turk, M., Rončević, N., & Ledić, J. (2016). Research Management Competencies: Croatian Academics' Perspective. *The European Proceedings of Social & Behavioural Sciences EpSBS*, *16*, 167-178.

109. Vignjević, B., Turk, M., & Ledić, J. (2016). *Excellence Challenges in Higher Education: Young Researchers' Experiences.* Presentation at the 3rd Days of Educational Sciences – Educational Change: Challenges and Expectations, Zagreb: Institute for Social Research in Zagreb.

110. Vizek Vidović, V. (2009). *Planning the competency-focused curriculum for teacher education*. Zagreb: Faculty of Humanities and Social Sciences in Zagreb & Faculty of Teacher Education in Zagreb.

111. Vizek Vidović, V. , Vuković, M. B., & Matić, J. (2014). *ISRZ Manual for Mentoring Young Researchers.* Zagreb: Institute for Social Research in Zagreb.

112. Yerevan Communique (2015). Retrieved 5 December 2016, from: http://bologna-yerevan2015.ehea.info/files/YerevanCommuniqueFinal.pdf

METHODOLOGICAL FRAMEWORK FOR RESEARCH ON THE PROFESSIONAL SOCIALISATION OF JUNIOR RESEARCHERS IN CROATIA

Marko Turk, Marija Brajdić Vuković, Nena Rončević

Taking into account the previous chapter on theory, it is evident that the changes taking place in the global area of higher education have also affected the active stakeholders in the higher education system, members of the academic profession. Constant challenges and (new) expectations demand deliberation on the need to (re)define the existing, and introduce new academic staff competencies required for performing the daily professional activities. In the process, it is of great importance to consider the modes of their acquisition during the process of professional socialisation, especially when it comes to the academics who are in the initial stages of their professional life. In that context, it is important to highlight the research results (Fumasoli & Gostelac, 2013; Höhle & Teichler, 2013) which point to a conclusion that the professional socialisation into the academic profession lasts from 10 to 13 years on average, which is a significantly longer period of time in comparison to other professions. Furthermore, according to the results of the aforementioned studies, some of the fundamental preconditions for a successful continuation of the academic professional path are acquired during that period. Even though the studies indicate a range of different (new) activities of the academic profession (Altbach, 2002; Kelly & Murphy, 2007; Altbach, Reisberg & Rumbley, 2009; Turk, 2016), the discussions on the nexus between the core activities – teaching and research – are especially important, and consequently also the discussions on the corresponding competencies (Ramsden & Moses, 1992; Neumann, 1992; Braxton, 1993; Diamond & Adam, 1997; Bess, 1998; Colbeck, 1998, 2002; Rice, Sorcinelli & Austin, 2000; Kuh & Hu, 2001; Ball, 2003; Skelton, 2005; Brew 2006; Kogan & Teichler, 2007; Locke & Teichler, 2007; Turk & Ledić, 2016b).

In that context, a quantitative research was planned and conducted within the framework of the first research in the APROFRAME project, with the goal of answering the research question – *Which competencies do the academics/university teachers require at the beginning of their academic careers?* and consequently propose the competency profile of the academic profession. The research was conducted in mid-2014 on a sample of 1130 academics – the university teachers of all the senior and junior academic ranks from seven public universities in Croatia. The research examined the academics' perception of the importance of the specific competencies for a

successful performance in their roles as university teachers at the beginning of the academic career, as well as the self-assessment of the mastery in the (stated) academic profession competencies. In this research, an online survey was employed as a research method, while a questionnaire was used as a research instrument. On the basis of the obtained results, a competency profile of the academic profession was proposed, and it consisted of six thematically structured, non-hierarchical groups of academic profession competencies – teacher competencies, research management competencies, third mission competencies, advisory and innovation competencies, research development competencies, and general (academic) competencies (Turk & Ledić, 2016a). The research results were partly expected, some were in accordance with the results of prior studies, and some were surprising, challenging, and demanded further deliberation and new research (Turk & Ledić, 2016a; Turk, Rončević & Ledić, 2016). One of the main research results revealed that junior academics (teaching assistants, junior researchers – teaching assistants, senior teaching assistants, junior researchers – senior teaching assistants, and postdoctoral researchers) regard the majority of the suggested academic profession competencies as less important in comparison with the senior academics (assistant professors, associate professors, full professors, and tenured full professors), and at the same time assess their mastery level as higher when compared with the senior academics. The qualitative research conducted within the framework of the APROFRAME project's second part was an attempt to explain these results and additionally elaborate on the topic of the professional socialisation into the academic profession.

The aforementioned results of the research conducted within the APROFRAME project, and the results of (other) national and international studies on the (competencies of) academic profession (Teichler, 1996; Golub, 2001; Adamović & Mežnarić, 2003; Prpić, 2005; Polašek, 2008; Brajdić Vuković, 2012, 2013; Fumasoli & Gostelac, 2013; Höhle & Teichler, 2013; Turk & Ledić, 2016a) especially emphasise the position and role of junior researchers in the process of the professional socialisation into the academic profession.[1] In that context, the second, qualitative research within the APROFRAME project focused on the analysis of the process of the junior researchers' competency acquisition. Special attention was given to the segment of the professional socialisation of junior researchers[2], and their work within the science and higher

1 The majority of the aforementioned studies point out the frequent and almost necessary practice of the academic mobility of junior researchers (Fumasoli & Gostelac, 2013). Even though it provides a number of benefits, it also causes daily private and existential challenges for junior researchers, as well as the reduced probability of finding and maintaining a (secure) employment position within the academic community where the process of learning and maturing is significantly longer than in other professions (Höhle & Teichler, 2013). Furthermore, the process of the professional socialisation into the academic profession is often unregulated, fluid, institutionally and personally managed in an unorganised manner, with a weakly regulated goals and key points, which sometimes causes the (junior) academics to falter on their professional paths (Turk & Ledić, 2016a).

2 For the purpose of the qualitative part of the research within the APROFRAME project, we will use the term *junior researcher* instead of the term *junior academic* for two reasons. The first reason is that the majority of national literature which explores the topic of junior researchers predominantly uses the aforementioned term, while the international literature mostly employs the terms *early career researcher, junior researcher,* or *junior academic* (Teichler, 1996; Golub, 2001; Adamović & Mežnarić, 2003; Prpić, 2005; Polašek, 2008; Brajdić Vuković, 2012, 2013; Fumasoli & Gostelac, 2013; Höhle & Teichler, 2013; Turk & Ledić, 2016a). The second reason is that assistant

education system in the Republic of Croatia. The research on professional socialisation examines it from the aspect of three levels: (a) macro-level, or the disciplinary and general research level which encompasses the general scientific and disciplinary socialisation, and is (trans)national by nature, supersedes the Croatian science (and social) system within which it is situated, but also includes the internationally referential communities and standards, and is connected to the disciplinary socialisation or the development of cognitive competencies during the professional socialisation; (b) meso-level, or the institutional level which includes educational institutions, their organisational units, but also the research projects as the fundamental functional forms of research activities, on this level the interweaving of the disciplinary and organisational cultures occurs, the relationship with a mentor and the whole research group (if applicable) is important, and the protagonists or "significant others" who provide learning opportunities have the greatest importance; and (c) micro-level, or the personal level which represents the individual's personal level and includes personal attitudes and values, the experiences in the approach to profession, and socio-economic origin, sex, family and other personal questions related to the possibility of development within the professional sphere. It is interesting to observe how sex, family, and origin influence the development, but also the final outcomes and the perception and interpretation of the culture in which the professional socialisation occurs.

On the basis of the stated framework, the research **goal** of the second study within the APROFRAME project is to describe and explain the process of the professional socialisation into the system of higher education and science in the Republic of Croatia. The intention of the second part of the APROFRAME project was to explore the processes of competency development and the junior researchers'[3] perception of particular events, people and social/institutional context during that development, and phenomenology and narrative analysis were determined as the most appropriate starting points. Even though all the starting points for qualitative research have a common goal of understanding the meaning that people ascribe to phenomena, and all the successfully conducted qualitative studies enable a vivid, detailed, and complete description of the phenomena, as well as the application of the natural language of the explored phenomena due to the applied methods (Eisner, 1991; Miles & Huberman, 1994; Polkinghorne, 1995), it is important that the researcher's starting position is in accordance with the research problem. The research problem of the APROFRAME project, within the qualitative methodology framework, is focused on the *process* of competency acquisition, a practical everyday experience of the competency acquisition and implementation within the system, as well as the content/description of the competencies in all their diversity.

---

professors, who are not part of the junior academic ranks according to the national academic classification, were added to the group of junior academics during the qualitative research. In that manner, the quantitative and qualitative studies were coordinated, and the results of both studies are presented in this monograph. A detailed explanation of the sample selection in the qualitative research can be found in the part of this chapter which describes the aforementioned qualitative research.

3 In accordance with the international Frascati classification, the term *junior researchers* implies the first two levels – *First Stage Researcher* which includes all researchers/scientists up to the doctorate level, and *Recognised Researcher or R2* which includes researchers/scientists with a doctorate who are still not completely independent.

Taking into account the complexity of the professional socialisation process, this publication will present the results of the research on the acquisition of the teacher and research competencies which are required for the work within the system as the dominant aspects of academic activity.

Two **basic research questions** were formulated:

1. How do junior researchers assess the importance and mastery of the teacher and research competencies, and are there any differences with regard to the independent variables of sex, research field, and the type of university integration?
2. What are the junior researchers' individual experiences in the professional socialisation process with regard to the teaching and research activities?

In order to answer the first basic research question in this publication, the results of the quantitative research were used, while the data collected during both the quantitative and qualitative studies in the APROFRAME project were utilised to answer the second basic research question.

Description of the quantitative research

The quantitative research approach was employed to answer the first research question. From the total research sample of the first research, a sample of 696 participants (junior researchers) was selected and the results were obtained within the framework of the quantitative research in the APROFRAME project. For the purpose of this publication, and in order to synchronise the research sample of two studies with different research approaches, quantitative and qualitative, all the junior academic ranks and one group of senior academic ranks within the system of public higher education institutions in the Republic of Croatia were included in the sample of junior researchers. In that context, the sample consisted of the following ranks – teaching assistant, junior researcher – teaching assistant, senior teaching assistant, junior researcher – senior teaching assistant, postdoctoral researcher, and assistant professor.

In accordance with the prior studies on higher education in the international and national context (Gilligan, 1982, 1993; Noddings, 1984, 2003; Kovač, 2004; Kovač, Ledić & Rafajac, 2004; Ćulum, 2011; Ćulum & Ledić, 2012; Rončević & Rafajac; 2012; Turk & Ledić, 2016a), three independent variables were used during the analysis of the data collected in the quantitative research – research field, the type of university integration, and sex. Some of the independent variables were recoded for the purpose of data analysis. Since the participants were categorised according to the research field of their most recent academic rank[4], during data analysis they were

4 The applied categorisation is based on the Ordinance on scientific and artistic areas, fields and branches from 2009, which classifies the scientific and artistic areas as follows: natural sciences, technical sciences, biomedicine and health, biotechnical sciences, social sciences, humanities, field of arts, interdisciplinary sciences, and interdisciplinary arts.

grouped analogously to the research field into four categories: (1) natural sciences; (2) technical and biotechnical sciences; (3) biomedicine and health; and (4) social sciences and humanities, field of arts, and interdisciplinary arts. Due to the low number of participants, the field of interdisciplinary sciences was excluded from the analysis. On the basis of the type of university integration, three categories were formed: fully-integrated universities (University of Dubrovnik, University of Zadar, and University of Pula), semi-integrated universities (University of Split, University of Rijeka, and University of Osijek), and the University of Zagreb as a separate category of the non-integrated university.

In the aforementioned research, whose results regarding junior researchers are presented in this publication, an online survey was used for data collection.[5] The research instrument was the multiple choice questionnaire consisting of a preamble and three content-based sections.[6] The first section contained the demographic data defined on the basis of the independent research variables – rank, research field, university, sex, and age.[7] The second section contained the personal assessment scale of the particular competency's importance for the successful performance of the university teacher role at the beginning of the academic career (1 – very low, 2 – low, 3 – average, 4 – high, 5 – exceptional importance of competency). The third section contained the assessment scale of the mastery of the specific competency up to the present academic rank (1 – very low, 2 – low, 3 – average, 4 – high, 5 – complete mastery of the specific competency).

The Statistical Package for the Social Sciences (IBM SPSS, 24.0.) was used for data analysis. During data analysis, the following methods were applied: the methods of univariate statistics (percentages, measures of central tendency, and measures of variability), and the methods of bivariate statistics (the Pearson correlation coefficient was applied in order to determine the correlation between the importance and mastery with regard to the teacher competency pairs). In order to determine the differences between the importance and mastery in the core and developmental teacher and research competencies, the three-way variance analysis 2×3×4 was conducted to establish the existence of differences with regard to sex (male, female), the types of university integration (fully-integrated, semi-integrated, and the University

5 The reasons for this choice of approach stem from the prior positive personal experiences, and the experiences of other researchers in the application of this method (Ćulum, 2010; Rončević, 2009; 2011; Ledić, Staničić & Turk, 2013), relatively low expenses of implementation, the possibility of the automatic data generation, and the possibility of the automatic generation of electronic mail messages sent to potential participants.
For the purpose of creating the questionnaire, the following technologies were used: HTML, CSS, PHP, and mySQL. The web configuration of the questionnaire consisted of the web pages where the participant responded to the formulated questions, and the "background" which communicated with the database, collected data on the chapters completed by the participant, and recorded the participant's responses.

6 For a detailed description of the methodology and results of the first research which focused on the population of the academic profession in Croatia, see: Turk & Ledić (2016a).

7 Even though the research instrument included data on the participants' age, this independent variable was not used in the assesment of differences because data analysis was conducted exclusively on the sample of junior researchers; therefore, it was ommited from the research results presented in this publication.

of Zagreb as a non-integrated university), and research field (natural sciences, technical and biotechnical sciences, biomedicine and health, social sciences and humanities, and field of arts). All the tests were conducted at the risk level of 5%. A statistically significant difference was evaluated from the effect size aspect, from 0.01 to 0.05 being a small effect size, from 0.06 to 0.13 a medium effect size, and from 0.14 a large effect size (Cohen, 1988; Miles & Shevlin, 2001). The effect size is an objective and standardised measure of the observed influence's size and it assists in the interpretation of the obtained statistical significance, especially in the cases of large samples when even the negligible difference can often prove to be statistically significant. In the instances when the difference is statistically significant, but the effect size is less than 0.01, the results will not be interpreted; that is, in the text it will be noted that there is a statistically significant difference with regard to the independent variable, but the effect size will be shown only in parentheses.

Description of the qualitative research

The qualitative research collected data in order to respond to the second research question – What are the junior researchers' individual experiences with regard to teaching and research?

In order to obtain more information about the process itself, and the possible factors that influenced the process, it was decided to approach a number of the participants from the perspective of the (professional) biographical narrative analysis. A narrative approach to the research problem is based on the narrative cognition which focuses on the unique and specific characteristics of human activities that are performed in a unique social environment. Polkinghorne (1995) states that narrative inference observes the differences in, and diversity of human behaviour, pays attention to the context of time and the complex interactions of the elements that render every situation special. The focus of narrative analysis is the sequence of events, expressed verbally in a chronological order and through the participants' manner of speech, which enables us to understand the processes connected to the studied phenomenon and their development. Narrative analysis is characterised by an ideographic approach to the problem, which means that the primary goal is to investigate the meaning of individual experiences from the individual's perspective, within the narration itself. It employs an emic perspective which places the concepts and language used in the narrative into the foreground, and the individual experience is explained through the individual's language and concepts. The purpose of narrative analysis is to enable the reader to understand how and why the events happened in the described manner, and how and why the participants behaved in the described manner; the final story constructed through narrative analysis appeals to the reader by assisting her or him to empathise with the protagonist's lived experience as an expanded human phenomenon (Alleyne, 2014). In order to collect data for the narrative analysis, the protocol with a biographical approach to the phenomenon of the junior researchers' professional socialisation was constructed, and it encompassed the period from the secondary school to present day (reconstructed by the participants). During the conversation, the participants described the more significant events of their professional socialisation, but the aim was to allow the participants to tell their story independently and from personal perspective, or as spontaneously as possible. This approach was adopted in order to employ Mishler's model

(1995) and conduct what is called a strategy of connecting within the narrative analysis which would reveal how the events in the narrative "story" function as a whole, the discourse of the narrative, and the features of the textual form in which the story is told; that is, the vocabulary, the representation of other significant individuals during the socialisation, places and objects, the story's grammatical features, and the account of the time flow within the story. Furthermore, the aforementioned approach was chosen because it enables the researcher to connect the diachronic elements in a chronological manner during the analysis, and determine which events were the cause, and which the consequence in the acquisition of professional competencies.

Within the framework of the qualitative research methodology of the APROFRAME project, it was determined that the phenomenological study of the process of the teacher and research competency development would be useful. Phenomenology explores the manner in which people construct meaning from their lived experience, and it involves the employment of in-depth and extensive descriptions and the detailed analysis of the lived experience in order to understand the manner in which the meaning is formed through the individual's perception.

Phenomenologists strive to determine the meaning, and the common characteristics or the essence of an experience or event through a detailed exploration of personal experiences (e.g. Hycner et al., 1985). In the APROFRAME research, the emphasis is placed on the experience of compentencies development phenomenon in teaching and research. Therefore, a protocol was constructed for the purpose of data collection in the form of a semi-structured interview with the research participants. During the construction of the research protocol, it was taken into consideration that the collected data should provide the basic essence of the experience of the teacher and research compentencies development, through the in-depth descriptions of the experiences, and the meanings which the research participants ascribe to the experiences. In order to achieve the goal, the paradigmatic analysis was conducted. It relies on the paradigmatic mode of cognition, a mode of thought which we use to organise the experience chronologically, in the process taking into consideration the general features and common categories and characteristics. According to Polkinghorne (1995), the paradigmatic mode of cognition produces the cognitive networks of concepts which enable individuals to construct the experiences as similar by emphasising the common reoccurring elements. During the paradigmatic analysis, the results are formed around the description of the common topics, and in the collected stories "the researcher is looking for the patterns, narrative topics, and tensions within or through the individual experiences, and in the social context" (Alleyne, 2014, p. 49).

In order to collect data through the semi-structured interviews, required for the aforementioned analyses, a purposive sample was constructed through the method of *maximum variation sampling*. In the approach to determining the sample framework, junior researchers were defined as all the employees of all the public universities' constituents and from all the scientific disciplines in the Republic of Croatia who have been employed within the system for at least five years, who were employed before turning 30 years of age, and who received their PhD title not more than five years prior to the interview. For the first part of the research within the APROFRAME project, a database containing the academics of all the

junior and senior academic ranks employed at the public universities in the Republic of Croatia was created. The database was also used for the second part of the research. It was decided that the sample would alternate between the smaller and larger universities, the research fields and the research participants' sexes. It was also determined that 10 narrative and 30 phenomenological interviews would be conducted. The interviews were conducted by the researchers engaged on the APROFRAME project, who also transcribed the interviews in detail. The highest ethical standards of social research were respected in the approach to the research participants, during the process of conducting the semi-structures interviews, as well as during the data analysis which followed. In that regard, the participants were provided with a consent form which outlined the research purpose, the description of the research process, and the research demands and rules, as well as informed them that all data would be treated in a confidential manner, and that the participants' identity would only be known to the researchers during the data collection, deposition and analysis. The participants were also given guarantees that special attention would be paid to the safeguarding of their identity during the research data analysis and presentation.

The researchers adopted a team approach to data analysis, as well as to the other aspects of research. In order to achieve that, the *consensual* approach was applied to the analysis and to the other segments of the methodological approach (instrument creation, sampling, transcribing), which increased the validity and credibility of our qualitative research (Hill et al., 1997). What is called a *consensual qualitative research* relies on the team members' application of the methods which enable agreement through open dialogue. The greatest value of this process is the collaborative work of the team of researchers on the shared understanding of the studied phenomenon, and a willingness to enable the equal respect of all opinions through compromise and open-mindedness. The approach is based on the belief that a multiplicity of perspectives ensures a greater probability of attaining truth, and decreases the influence of the researchers' prejudices (Marshall & Rossman, 1989). For example, following the initial coding completed by every researcher individually working on one part of the interview transcripts in the MaxQDA programme for qualitative data analysis, the analysis of the data collected through phenomenological interviewing was approached with an open dialogue and agreements were reached during extensive meetings, which resulted in the formation of the common dimensions and broader themes based on the initial codes. Additional coding followed, as well as the positioning into the dimensions and broader themes in the MaxQDA, which provided every researcher with a larger number of broader themes, dimensions and subcodes to additionally arrange and coordinate. This process, which was very demanding in terms of workload and time, was completed by connecting the individual broader themes, their dimensions, and subcodes into a common database. In that way, the data were prepared for further individual research analyses and strategies.

As a part of the analyses conducted for the purpose of this book, thematically oriented toward teaching and research as the core competencies of junior researchers, additional thematic analyses of consensual data (with regard to teaching and research) were conducted. In the chapter which applies the mixed methods approach, the data analysis is based on Lamnek's (2005) phases of the analytical coding process – initial, open, axial, and selective coding – and the specific steps of these phases. The second chapter presents the narrative analysis, and uses the Mishler-Labov model to construct the narratives about the experiences regarding the

teacher and research competencies, and consequently develop the teacher and researcher profiles. A detailed account of the conducted analyses can be found in each of the chapters.

References

1. Alleyne, B. (2014). *Narrative Networks: Storied Approaches in a Digital Age.* Sage Publications.
2. Eisner, E. W. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice.* Prentice Hall.
3. Gilligan, C. (1982/1993). *In a different voice*. Cambridge, MA: Harvard University Press.
4. Hill, C. E., Thompson, B. J., & Williams, E. N. (1997). A guide to conducting consensual qualitative research. *The counseling psychologist, 25*(4), 517-572.
5. Hycner, R. H. (1985). Some guidelines for the phenomenological analysis of interview data. *Human studies, 8*(3), 279-303.
6. Marshall, C., & Rossman, G. B. (1989). *Design qualitative research*. Calfornia: Sage.
7. Milas, G. (2005). *Research methods in psychology and other social sciences*. Jastrebarsko: Imprint Slap.
8. Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook.* Sage.
9. Mishler, E. G. (1995). Models of narrative analysis: A typology. *Journal of Narrative & Life History 5,* 87-123.
10. Noddings, N. (1984/2003). *Caring – a feminine approach to ethics and moral education*. Berkley & Los Angeles, CA: University of California Press.
11. Ordinance on scientific and artistic areas, fields and branches, *Official Gazette,* 118/09.
12. Polkinghorne, D. E. (1995). Narrative configuration in qualitative analysis. *International journal of qualitative studies in education, 8*(1), 5-23.

TEACHER AND RESEARCH COMPETENCIES OF JUNIOR RESEARCHERS IN CROATIA

Bojana Ćulum, Ivana Miočić, Nena Rončević

Introduction

Even though the (recent) changes in the academic profession have resulted in the appearance of various (new) jobs (Musselin, 2007), the teaching and research activities have always been a part of the academic profession's essence and are traditionally seen as the core academic activities (Colbeck, 1998). Therefore, it is not surprising that these two activities, individually or in the context of their interconnectedness, are the focus of a number of research studies. Those studies have significantly contributed to our knowledge of the nature of these academic activities and their interdependence (Neumann, 1992; Ramsden & Moses, 1992; Colbeck, 1998, 2002; Brew, 2006, 2012; Arimoto, 2014), the teaching and research workload of university teachers (McInnis, 2000; Greenbank, 2006; Kogan & Teichler, 2007; Locke & Teichler, 2007), and the knowledge and skills required for excellence in teaching and research (Bess, 1998; Ball, 2003; Skelton, 2005). A number of recent educational and science policies and documents[1] reflect the importance of teaching and research, and represent a significant contribution to the discussion on the teacher and research competencies in higher education, as well as the possibilities, challenges, and perspectives of their development and enhancement.

For example, in its recent report *Supporting Early Career Researchers in Higher Education in Europe: The Role of Employers and Trade Unions* (2015), the UCEA (Universities and Colleges

1 For example, Common European Principles for Teacher Competences and Qualifications (EU COM, 2004), Shared Dublin Descriptors (2004), Common European Principles for Teacher Competences and Qualifications (EC, 2004), Fostering Quality Teaching in Higher Education: Policies and Practices (OECD, 2012), Improving the quality of teaching and learning in Europe's higher education institutions (EC, 2013), The Researcher Development Framework (Vitae, 2009), Skills and competencies needed in the research field objectives 2020 (2010), Towards Knowledge Societies (UNESCO, 2005).

Employers Association)[2] emphasises the importance of the professional development of the relevant competencies during the initial phases of academic career in order to prepare junior researchers for a successful performance in teaching and research. The report states that the European higher education and research area[3] depends on the success of the new generation of (junior) researchers, which is why the support for their professional development that leads to the high-quality teaching and especially research work is of exceptional importance.

However, the studies reveal that junior researchers encounter a number of challenges and difficulties in their work environment, some of which manifest through the absence of (institutional, mentorial, and collegial) support, a sense of isolation, anxiety and fear due to the uncertainty of retaining their employment position, the teaching and administrative work overload, and the inexperience and a lack of competencies in teaching and research (Adams & Rytmeister, 2000; Adcroft & Taylor, 2010; Hakala, 2009; Petersen, 2011; Postareff & Lindblom-Ylänne, 2011; Remmik et al., 2011; Brajdić Vuković, 2013; McLeod & Badenhorst, 2014; Misiaszek, 2015). Even though there has recently been a stronger research interest in different aspects of the junior researchers' work and professional socialisation, some authors (Boeren et al., 2015) emphasise that the aspect of support provided to junior researchers during the process of the (relevant) competency development is an insufficiently explored phenomenon.

In the Croatian research area, a number of authors explore the (various) aspects of higher education and academic profession[4], but only the recent research conducted within the framework of the scientific project *Academic Profession Competency Framework: Between New Requirements and Possibilities* (APROFRAME) has fully focused on the question of the competencies required for a successful development of academic career, and the professional socialisation of junior researchers in the context of their training for teaching and research.[5] The (first) results of the aforementioned research reveal that the Croatian junior researchers are a specific and intriguing research group – they assess the majority of competencies as less important in comparison with the senior academics, but at the same time their self-assessment of mastery is significantly higher in comparison with the same group of the (more experienced) participants.

---

2 Universities and Colleges Employers Association (http://www.ucea.ac.uk/en/about/index.cfm).

3 European Higher Education Area (EHEA) and European Research Area (ERA).

4 For example, the topic of the teaching assistants' social position (Cifrić, Magdalenić & Štambuk, 1984), the topic of the university teachers' job satisfaction and time allocation (Kesić & Previšić, 1996), the topic of the junior researchers' professional and social position (Prpić, 2000), the topic of teaching in higher education (Kovač, 2001; Kovač, Ledić & Rafajac, 1999; Ledić, 1992; 1993a; 1993b; 1994), the topic of research productivity (Prpić, 1996), the topic of the researchers' social profile (Golub 2008; Golub & Šuljok, 2005), etc.

5 The project approached the process of determining the teacher and research competencies that are characteristic of the academic profession from the interdisciplinary perspective based on the theoretical and empirical pedagogical, psychological, didactic-methodical and docimological knowledge of the competencies, as well as the literature which explores the areas of academic profession, academic staff, (higher education) teaching and research, but also contextually – taking into account the expectations and recommendations of the (national and international) educational policy with regard to the professional development of university teachers (Turk & Ledić, 2016).

This result determined the further direction of the research; therefore, this paper explores the attitudes of junior researchers in Croatia toward teaching and research. More precisely, it analyses their assessment of the importance and mastery of the teacher and research competencies, and their experiences and challenges during the process of competencies' acquisition and development. With the aim of contributing to the academic discussion and developing a better understanding of the specific aspects of the junior researchers' professional development for teaching and research, the following research questions were developed:

- How do the junior researchers assess the importance and mastery of the teacher and research competencies, and is there a correlation between those assessments?
- Are there and what are the differences in the assessments of the importance and mastery of the teacher and research competencies with regard to the independent variables of sex, research field and type of university integration?
- What are the research participants' individual experiences with regard to the acquisition and (professional) development of the teacher and research competencies?
- What challenges do the junior researchers face during the process of acquisition and (professional) development of the competencies required for teaching and research?

The research is based on the mixed methods approach in order to gain a wider perspective and deeper insight into the selected research problem.

Methodological framework – a mixed methods approach in the analysis of the teacher and research competencies of junior researchers

A mixed methods approach is predominantly defined as a type of research in which a single research study combines the quantitative and qualitative research approaches, techniques, methods, concepts, and (academic) language (Sieber, 1973; Knapp, 1979; Trend, 1979; Madey, 1982; Greene & McClintock, 1985; Maxwell, Bashook & Sandlow, 1986; Mark & Shotland, 1987; Mathison, 1988; Creswell, 1999; Johnson & Onwuegbuzie, 2004). It is known as the "third wave" or "third research movement" in literature (de Waal, 2001), and it moves past the traditional conflict between the quantitative and qualitative paradigm. Its research logic includes the use of induction (discovery of patterns) and deduction (testing of theories and hypotheses), and enables the researcher to rely on the best features of both approaches during the analysis and interpretation of the obtained research results.

A mixed methods research approach enables the application of different research strategies in the research on the same phenomenon and, if the methodological approach is sufficiently rigorous, the achievement of what Johnson and Turner (2003) call a fundamental principle of mixed research. According to this principle, researchers should collect multiple data through different strategies, approaches and methods that are characteristic of both methodological repertories – quantitative and qualitative – with the applied combination contributing to the complementary advantage of the individual approaches in order to produce a comprehensive

analysis of the studied phenomenon (Johnson & Turner, 2003). In that context, a mixed methods approach is seen as a legitimisation of the application of different approaches and methods for the purpose of obtaining the high-quality and comprehensive answers to the defined research questions (Johnson & Onwuegbuzie, 2004).

In order to provide a comprehensive answers to the research questions presented in this paper, an explanatory mixed research design was used. A prominent feature of this model is a sequential implementation of research, and the application of different research approaches or methods and procedures for the evaluation of the same research phenomenon, which is why this approach is also called a two-phase or sequential approach (Greene, Caracelli & Graham, 1989). A quantitative approach is characteristic for the first phase of this approach, while a qualitative approach is used in the second phase with the purpose of providing additional explanation of the data obtained in the first (quantitative) research phase (Creswell, 1999; Creswell et al., 2003). The qualitative research segment is designed to follow from, or connect with the results of the first, quantitative research (Creswell & Plano Clark, 2006). This (research) approach is common and useful when researchers require qualitative data in order to gain a deeper insight into, and additional explanation of the statistically significant results, and the unusual or unexpected quantitative research results (Morse, 1991).

Creswell and Plano Clark (2006) distinguish between two models of the explanatory (sequential) research design – the follow-up explanations model, and the participant selection model. Even though both models have a quantitative phase as their initial phase, they differ in the method of connecting and prioritising the two phases; that is, they differ in the emphasis they place on the quantitative or qualitative study.

The follow-up explanations model is used when researchers require qualitative data in order to (better) interpret or expand the quantitative research results which are especially interesting or more difficult to explain (Creswell et al., 2003). After gaining insight into the results of the first part of research, the specific quantitative findings which require additional explanation need to be identified, such as the statistical differences among the participant groups, the high assessments of the specific groups or individuals which are extreme and differ from the sample, or unexpected results. The qualitative research phase then follows, during which the research participants are selected for a sample due to being rich source of information relevant for gaining further insights into, and explanations of the obtained results (Creswell & Plano Clark, 2006). This model therefore places greater emphasis on the quantitative part of research.

The second model of the explanatory (sequential) research design – the participant selection model – is used when qualitative research is the primary focus, but quantitative data are required in order to enable the identification and purposeful selection of the target (selected) group which is relevant for the further in-depth exploration of the studied phenomenon (Creswell & Plano Clark, 2006). This model therefore places greater emphasis on the second, qualitative research phase.

A mixed methods research approach based on the explanatory research design was used in this study, along with the follow-up explanations model. The result obtained during the first

(quantitative) part of the research in the APROFRAME project – junior researchers provide significantly lower assessments of the importance of the teacher and research competencies, and at the same time significantly higher self-assessments of the mastery of the same competencies in comparison with the senior academics – was identified as the specific quantitative finding which required additional explanation. In accordance with the fact that junior researchers were recognised as a specific and intriguing research group, they were selected for the second (qualitative) research phase which was based on the assumption that junior researchers are a population which is a rich source of information relevant for gaining further insights into, and explanations of the obtained results (Creswell & Plano Clark, 2006).

Description of the first research – a quantitative approach

The quantitative part of this research answers to the research questions related to the junior researchers' assessments of the importance and mastery of the teacher and research competencies, the interconnectedness of those assessments, as well as the differences with regard to the independent variables of sex, research field, and type of university integration.

The sample of the junior researchers who participated in the first (quantitative) research within the APROFRAME project is shown in Table 1. Out of the total number of 696 research participants (junior researchers), 62.2 % were women and 37.8% were men. The sample included all the junior academic ranks (for detailed explanation of sampling see the chapter Methodological framework for the research on the professional socialisation of junior researchers in Croatia). Since the participants were categorised according to the research field of their most recent academic rank, they were grouped into four categories according to their research field – (1) natural sciences; (2) technical and biotechnical sciences; (3) biomedicine and health sciences; and (4) social sciences and humanities, field of arts, and interdisciplinary arts. Due to a low number of the participants, the field of interdisciplinary sciences was excluded from the analysis. Bearing in mind the national context of higher education institutions, three categories were formed in line with the type of the university integration - (1) fully-integrated universities (University of Dubrovnik, University of Zadar, and University of Pula), semi-integrated universities (University of Split, University of Rijeka, and University of Osijek), and the University of Zagreb as a separate category of the non-integrated university.

Table 1: **The quantitative research sample**

Sex	Men	263	37,8 %
	Women	433	62,2 %
Rank	Junior researcher – teaching assistant	104	14,9 %
	Teaching assistant	124	17,8 %
	Junior researcher – senior teaching assistant	60	8,6 %
	Senior teaching assistant	119	17,1%
	Postdoctoral researcher	27	3,9 %
	Assistant professor	262	37,6 %
Type of university integration	Fully-integrated university	89	12,8 %
	Semi-integrated university	281	40,4 %
	Non-integrated university (University of Zagreb)	326	46,8 %
Research field	Natural sciences	91	13,1 %
	Technical and biotechnical sciences	182	26,1 %
	Biomedicine and health sciences	84	12,1 %
	Social sciences and humanities, and field of arts	339	48,7 %
Total number of research participants		**696**	**100 %**

The questionnaire on the academic profession competencies was created in which the participants shared general information, and the personal assessments of the the academic profession competencies' importance for the successful academic career (on a scale of 1- very low, 2 – low, 3 – average, 4 – high, 5 – exceptional importance of competency), as well as the assessments of the mastery of the stated competencies (on a scale of 1 – very low, 2 – low, 3 – average, 4 – high, 5 – complete mastery of the specific competency).

The Statistical Package for the Social Sciences (IBM SPSS, 24.0.) was used for data analysis. The univariate (measures of central tendency, measures of variability, percentages), bivariate (Pearson correlation coefficient), and multivariate (three-way variance analysis) statistics were applied for data analysis. In order to determine the differences between the importance of, and mastery of the core and developmental teacher and research competencies, the three-way variance analysis 2x3x4 was conducted to establish the existence of differences with regard to sex (male, female), type of the university integration (fully-integrated, semi-

integrated, and the University of Zagreb as non-integrated), and the research field (natural sciences, technical and biotechnical sciences, biomedicine and health sciences, social sciences and humanities, and field of arts). All the tests were conducted at the risk level of 5%. A statistically significant difference was evaluated from the effect size aspect, from 0.01 to 0.05 being a small effect size, from 0.06 to 0.13 a medium effect size, and from 0.14 a large effect size (Cohen, 1988; Miles, & Shevlin, 2001). The Pearson correlation coefficient was applied in order to to determine the correlation between the assessments of importance and mastery of the teacher and research competencies.

Description of the second research – a qualitative approach

The qualitative research presented in this paper answers the research questions related to the junior researchers' experiences and challenges during the process of the acquirement and development of the teacher and research competencies. The aim was to gain a deeper insight into the modes and methods of the acquisition and development of the required teacher and research competencies, as well to identify challenges, in order to additionally explain the high self-assessments of the mastery of both the teacher and research competencies.

The research was conducted through the method of the semi-structured phenomenological interviews. The interviews followed the highest ethical standards (for more details see the chapter Methodological framework for the research on the professional socialisation of junior researchers in Croatia) and were conducted by the APROFRAME project researchers during 2015 and 2016. The interviews lasted around 90 minutes on average, they were recorded and transcripts were made. In order to conduct the research, a purposive sample of junior researchers in Croatia was constructed using the method of maximum variation sampling. Junior researchers have been defined as the employees of all the public universities and from all the scientific disciplines in the Republic of Croatia who have been employed within the system for at least five years, who were employed before turning 30 years of age, and who received their PhD title not more than five years prior to participating in the research.

Twenty-one (21) phenomenological interviews were conducted, and the sample (shown in Table 2) alternated between the different types of universities' integration the participants' ranks, research fields, and sexes. The participants' age ranges from 29 to 45 years of age. Twelve women and nine men participated in the research. With regard to rank, thirteen senior teaching assistants/postdoctoral researchers, and eight assistant professors took part in the research. With regard to the type of the university integration, three (3) participants come from the fully-integrated universities, fourteen (14) from the semi-integrated universities, and four (4) from the non-integrated university (University of Zagreb). Participants from all but interdisciplinary sciences and arts, were included in the sample. Out of the total number of participants, five (5) participants work in the field of technical sciences, four (4) in the field of humanities, four (4) in the field of social sciences, three (3) in the field of natural sciences, and biomedicine and health sciences, while two (2) participants work in the field of biotechnical sciences. The participants' personal data (sex, age, years and institution of employment) are classified and known only to the project team. Every participant was given a numerical

designation which represented an ordinal number from the database of research participants, and the research field designation (NS – natural sciences; TS – technical sciences; BTS – biotechnical sciences; BMHS – biomedicine and health sciences; SS – social sciences; and H – humanities).

Table 2: **The qualitative research sample**

Sex	Men	9
	Women	12
Rank	Senior teaching assistant/postdoctoral researcher	13
	Assistant professor	8
Type of university integration	Fully-integrated university	3
	Semi-integrated university	14
	Non-integrated university (Univerity of Zagreb)	4
Research field	Natural sciences	3
	Technical sciences (TS)	5
	Biotechnical sciences (BTS)	2
	Biomedicine and health sciences (BMHS)	3
	Social sciences (SS)	4
	Humanities (H)	4
Total number of participants		**21**

The coding of phenomenological interviews relies on the paradigmatic thinking, or the thinking skill used in order to organise the participants' experience in a sequential and consistent manner, taking into consideration the general features, and common categories and characteristics. Within the framework of the APROFRAME project, the approach to the coding of the phenomenological interviews was consensual, and the process is described in details in the chapter on methodological framework.

In order to gain a deeper insight into the (individual) experiences of the research participants, and determine the general tendencies and common patterns with regard to the process of the junior researchers' acquisition and development of the (teacher and research) competencies, the consensually prepared and coded data were subjected to the thematic analysis. Literature describes thematic analysis as an analytic process focused on the identification of the recognisable themes and patterns of life or behaviour (Taylor & Bogdan, 1984; Benner, 1985; Leininger, 1985; Aronson, 1995). During the analysis, the phases of the process and specific steps as defined by Braun and Clarke (2006), and Elo and Kyngäs (2008) were used as guidance.

The research participants' individual experiences with regard to the acquisition and development of the teacher and research competencies were organised into broader analytical patterns which addressed the current state, and the possibilities and challenges in the process of the acquisition and (professional) development of the teacher and research competencies. The codes were connected (where possible) according to the conditions and the context in which the experience happened, the participants' behavioural strategies, and the consequences of those strategies (Lamnek, 2005). This approach to thematic analysis enabled us to form the general concepts and categories in order to identify the common themes, or the conceptual manifestations discovered in the participants' data. Since we were guided by the research questions, the analysis included only those events, or the junior researchers' descriptions, which were relevant for an in-depth analysis of their experiences related to the acquisition and development of the teacher and research competencies, as well as the identified challenges.

The results and discussion

This chapter is organised according to the mixed research approach. The research results regarding the teacher competencies will be presented first, and the research results regarding the research competencies will follow. In both parts, the presentation and interpretation of the results are organised to reflect a mixed research approach – the quantitative research results regarding the assessments of the importance and mastery of the teacher and research competencies are analysed first, followed by the analysis of the qualitative research results regarding the junior researchers' experiences and challenges during the process of the acquisition and development of the (teacher and research) competencies.[6]

Teacher competencies of the academic profession

Recent studies on teaching in the context of the academic profession (Tigelaar et al., 2004; Koster & Dengerink, 2008; Postareff & Lindblom-Ylänne, 2011; Henard & Roseveare, 2012; 19; Marentič Počarnik & Lavrič, 2015), as well as the current European educational policy guidelines[7] point to the fact that the topic of teaching or teacher competencies[8] has generated

6 The discussion on the results will include the results of the research "Changes in Academic Profession" (CAP) which was conducted in 2009 on the representative sample of university teachers in Croatia. The main results of the aforementioned research were described by Rončević and Rafajac (2010), and for the purpose of this research the results from the CAP research database were available to the research team members and used accordingly. The presented CAP research results pertain to the sample of junior researchers (junior researchers, teaching assistants, senior teaching assistants, and assistant professors), and they were used for an improved interpretability of, and comparison with the results obtained within the APROFRAME project.

7 See chapter "The nexus between teaching and research: The policies and challenges of integration" for more.

8 Literature points to a discrepancy in terminology, and the lack of consensus when it comes to the terms "teaching" and "teacher" competencies. If the focus is on the competencies which are specifically related to the lesson

an increased research and professional interest during the last decades. The complexity of the teaching profession renders the possibility of providing a comprehensive definition of teacher competencies more difficult, and it is especially challenging due to the dynamic changes in the contemporary academic environment which dictate the new trends in the teaching and learning. Caena (2011) provides a comprehensive definition of teacher competencies based on the analysis of the European educational policy documents and the relevant discussions on the topic. She describes teacher competencies through the categories of knowledge, skills, and values. The knowledge area includes the subject matter knowledge and the pedagogical knowledge, as well as the fundamental knowledge of educational sciences, educational policies, educational technology, and developmental psychology. The teaching profession skills include the planning, managing, coordinating, assessing, negotiating, collaboration aspect and enhancement of the teaching and learning processes, while the values relate to the teacher's personal practice which encompasses the disposition to change, contemplation of the personal level of success, commitment to work, etc.

The studies conducted in the national academic environment point to a predominant division of teacher competencies into the pedagogical-psychological and didactic-methodical competencies (Bratanić, 2003; Munjiza & Lukaš, 2006; Bognar & Kragulj, 2010; Rački, Peko & Varga, 2010; Brust Nemet, 2015). The pedagogical-psychological competencies are those competencies which enable the teacher to understand the learning processes, have knowledge of different learning styles and approaches, create a stimulating environment for learning, encourage active learning, critical thinking and creative problem solving, adapt the teaching process to the social dynamics of the student group and the students' individual needs, and acquire the communication skills, as well as the public and oral presentation skills. On the other hand, the didactic-methodical competencies mostly include the knowledge of the teaching principles (general teaching principles, principles of content selection, principles on the position of teachers and students in teaching); the knowledge of the taxonomy of educational objectives and the learning and teaching outcomes; the knowledge of (contemporary) teaching methods; the knowledge of the teaching process phases (lesson planning and preparation, lesson presentation and articulation, lesson analysis and evaluation); the knowledge of the methods and techniques for assessment, observation and evaluation (docimological principles); the understanding of their own importance in the teaching process (self-evaluation and self-reflection); and the experience exchange among colleagues (Borić, 2013).

---

implementation and realisation, then the term "teaching" competencies is used, while "teacher" competencies are mostly defined in the context of the specific features and characteristics which enable teachers to be successful in their performance (e.g., enthusiasm for teaching, empathy toward students, etc.). Nevertheless, it should be noted that in the national environment (taking into account the current studies, legislation, ordinances, and strategies in the field of education) the term "teacher" competencies is predominantly used, and it encompasses different groups of competencies related to both the teaching process and the desirable characteristics of teachers, which is also the main reasoning behind the selection of terminology within the APROFRAME project and in this paper.

Teacher competencies can be defined as the specific abilities, knowledge, and skills required for successful management of all the phases of the teaching process. Therefore, Kyriacou (1998) discusses the essential teaching skills connecting them with the phases of the teaching process, and defining them as lesson planning and preparation, lesson presentation, establishing a pleasant classroom climate and discipline, assessing students' progress, and evaluating one's own teaching practice in order to improve the teaching process.

In addition to the aforementioned (traditional) teacher competencies, the discussions on the required (new) knowledge and skills demand the redefinition of teacher competencies for higher education teachers, predominantly as a result of technology development, student demands, and the changes in the social and political environment. During the last decade, there has been an increased demand for the use of information technology and e-resources, which could potentially contribute to student learning in a significant manner (Herdlein, 2004; Waple, 2006; Kuk, Cobb & Forrest, 2007). Recent discussions on the social dimension of education (Puzić, Doolan & Dolenec, 2006; Farnell & Kovač, 2010; Farnell et al., 2013) highlight the need for the development of (new) approaches, and the acquisition of the competencies which would enable university teachers to conduct a successful modification of the teaching process and content for the students with special needs. In accordance with the changes in the (higher education) environment, as well as the demands for the new teacher competencies, the Eurydice network in its report *"The teaching profession in Europe: Profile, trends and concerns"* (2003:6) emphasises the use of information and communication technology in teaching, integration of the students with special needs, and work in the mixed and multicultural groups, as well as the contemporary challenges facing teachers. In his analysis of the modern university, Arimoto (2014) advocates the teaching paradigm change and calls for a stronger nexus between research and teaching as the main characteristic of the postmodern university. The change advocated by Arimoto (2014) demands that university teachers develop the (teacher) competencies which would contribute to the research-teaching-study nexus in higher education.

In accordance with the discussion on the teaching and teacher competencies in the relevant literature and (educational) policies, two groups of competencies were created for the purpose of this paper – *core* and *developmental*[9] teacher competencies which are the linear composites of items (Table 3).

9 The use of the terms "core" and "developmental" does not imply the greater importance of one group over the other. The core teacher and research competencies are grouped according to the knowledge, skills, and abilities which are required for a successful management of all the phases of the teaching and research processes. The developmental teacher competencies pertain to the competencies which university teachers require for a continued enhancement of the teaching process and the introduction of innovations, while the developmental research competencies regard the enhancement of the research process.

Table 3. **The core and the developmental teacher competencies**

Teacher competencies	
The core teacher competencies	Developing syllabus
	Understanding and implementing the theories which form the basis of the learning and teaching process
	Specifying clear objectives and outcomes
	Lesson planning and implementation
	Applying different teaching methods in accordance with the learning outcomes
	Applying different methods of students' assessment and grading in accordance with the learning outcomes
The developmental teacher competencies	Applying active learning techniques
	Creating an encouraging environment for student learning
	Applying research results in teaching
	Applying e-learning
	Modifying teaching for students with special needs
	Observing and advising junior colleagues
	Introducing changes into the syllabus

In the context of teacher competencies, the core competencies pertain to the ability to successfully implement all the teaching process phases, while the developmental competencies represent a combination of the cognitive, functional and personal competencies which include the knowledge and skills required for the enhancement, innovation and modification of the teaching process according to the contextual needs. The developmental teacher competencies are complementary to the student-centred learning which aims to meet the students' individual needs, develop the critical thinking skills and the skills of an in-depth content understanding, and stimulate students to be active participants in the teaching and learning process.

Importance and mastery of the core teacher competencies

This part of the paper focuses on the results of the junior researchers' self-assessment of the importance and mastery of the following core teacher competencies: *developing syllabus; understanding and implementing the theories which form the basis of the learning and teaching process; specifying clear objectives and outcomes; lesson planning and implementation; applying different teaching methods in accordance with the learning outcomes; applying different methods of students' assessment and grading in accordance with the learning outcomes.* The analysis of the

similarities and differences in the assessment of the importance and mastery of of this group of competencies was conducted with regard to sex, type of university integration and research field. The Pearson correlation coefficient was calculated to determine the existence of the correlation between the assessment of importance and mastery of the competencies. Table 4 shows the assessments of the importance of the core teacher competencies of the academic profession, and Table 5 shows the self-assessments of the mastery of the same competencies. The tables also show the arithmetic means, standard deviations and response percentages on the Likert-type scale, with the combined response percentages in the categories “very low” and “low” (1+2), and “high” and “exceptional” (4+5).

Table 4: **Assessment of the importance of the core teacher competencies**

Importance of the core teacher competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Developing syllabus	15,2	24,5	60,3	3,57	1,02
Understanding and implementing the theories which form the basis of the learning and teaching process	9,5	23,8	66,7	3,78	0,96
Specifying clear objectives and outcomes	2,6	15,3	82,0	4,15	0,79
Lesson planning and implementation	3,2	7,5	89,3	4,34	0,80
Applying different teaching methods in accordance with the learning outcomes	7,6	24,8	67,5	3,81	0,92
Applying different methods of students' assessment and grading in accordance with the learning outcomes	7,6	27,0	65,3	3,78	0,92

Taking into account the arithmetic means of the particular competencies, it is evident that the junior researchers assess the importance of the core teacher competencies as relatively high. The arithmetic means range from the lowest (M=3.04) to the highest (M=3.94), with all the competencies assessed as highly or exceptionally important. These results are not surprising since they pertain to the core teacher competencies, significant for the academic profession.

Lesson planning and implementation was evaluated as the most important core teacher competency, with 89.3% of the junior researchers assessing it as a highly or exceptionally important competency, and only 3.2% of the participants assessing its importance as (very) low. The authors who explore teacher competencies and teaching in higher education (Angelo & Cross, 1993; Knight, 1995; Kovač, 2001; Lammers & Murphy, 2002; Rychen & Salganik, 2003; Henard & Roseveare, 2012; Kreber, 2007; Taylor, 2010; Donaldson, 2013; as cited in Turk & Ledić, 2016) highlight the competency of lesson planning and implementation as the

main feature of the teaching process knowledge, or a high-quality/competent higher education teacher.

The junior researchers consider the development of syllabus as the least important competency (even though it received a relatively high average score of 3.57). From that, 60.3% of the participants assess the competency as highly or exceptionally important, while 15.2% of the participants rate the competency importance as low or very low.

In order to determine the differences in the importance of the core teacher competencies, a linear composite of the items shown in Table 4 was created (Cronbach Alpha=0,843), and the three-way variance analysis 2x3x4 was conducted to determine the (possible) differences with regard to the independent variables (sex, research field, and structural forms of university management). The main effect of the research field was determined ($F(3,673)=6,761$, $p=0,000$), and it revealed that the junior researchers from social sciences and humanities ascribe greater importance to the core teacher competencies ($M=4,08$, $SD=0,595$) in comparison with those from technical and biotechnical sciences ($M=3,64$, $SD=0,699$). The effect size is small ($\eta^2=0,029$). Taking into account the traditional dichotomy within the disciplinary preferences for "hard" (natural, technical and biotechnical sciences, and medicine) and "soft" sciences (social sciences and humanities) (Biglan, 1973; Becher, 1989), consistently present in the results of a number of prior studies, this result is also not surprising. For example, Polio (1996) states that the teachers from humanities express a more significant advocacy of the teaching activity in comparison with their colleagues from natural sciences, which manifests through their engagement – they spend a significantly larger number of working hours on the preparation and realisation of the teaching process in comparison with their colleagues from natural and technical sciences. Furthermore, the results of the CAP research (*Changes in Academic Profession*), in which Croatia also participated, show that the participants from social sciences and humanities prefer teaching to research (Teichler, Arimoto & Cummings, 2013). In the national context, Golub (2008) discusses the primary orientation of the "social scientists" towards teaching, and points out that the researchers from social sciences have an increased professional teaching workload.

When it comes to self-assessment of the mastery of the core teacher competencies, shown in Table 5, the junior researchers provide even higher assessments in comparison with the previously presented assessments of importance, which is indicated by the arithmetic means ranging from the lowest ($M=4,07$) to the highest ($M=4,07$). In addition to assessing the competency of lesson planning and implementation as the most important, the junior researchers (91.2% of them) rate their mastery of same competency as high or completed. Equally large percentage of the junior researchers (90.2%) consider their mastery of the competency of specifying clear objectives and outcomes as high or completed, while only 1.6% rate their mastery of this competency as (very) low. Out of all the core teacher competencies, the participants rate their mastery of the competency of syllabus development as the lowest, and they also previously rated the said competency as the least important core teacher competency. However, these assessments are still very high – 76.5% of the participants assess their mastery of the same competency to be complete.

Table 5: **Assessment of the mastery of the core teacher competencies**

Mastery of the core teacher competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Developing syllabus	6,9	16,7	76,5	4,07	0,95
Understanding and implementing the theories which form the basis of the learning and teaching process	3,2	15,2	81,6	4,20	0,85
Specifying clear objectives and outcomes	1,6	8,2	90,2	4,48	0,74
Lesson planning and implementation	2,1	6,7	91,2	4,50	0,74
Applying different teaching methods in accordance with the learning outcomes	2,4	16,9	80,7	4,19	0,82
Applying different methods of students' assessment and grading in accordance with the learning outcomes	4,5	16,9	78,7	4,12	0,88

In order to determine the differences in the level of mastery of the core teacher competencies, a linear composite of the items shown in Table 5 was created (Cronbach Alpha=0,863), and the three-way variance analysis 2x3x4 was conducted. The main effect of the research field was determined (F(3,673)=4,655, p=0,003), as well as a statistically significant interaction between (one) research field and the type of university integration (F(6,673)=2,214, p=0,040). The participants from biomedicine and health sciences at the semi-integrated universities (University of Split, University of Rijeka, and University of Osijek) demonstrate a lower level of mastery of the core teacher competencies (M=4,03, SD=0,725) in comparison with those from biomedicine and health sciences at the University of Zagreb (M=4,44, SD=0,483). The effect size is small ($\acute{\eta}^2$=0,019). Taking into account the fact that this difference was determined only in the field of biomedicine and health sciences, it is difficult to consider this finding in a wider context without further insight into the teaching activity of the representatives of this scientific field, especially at the University of Zagreb.

The Pearson correlation coefficient indicates statistically significant correlation between the assessments (r=0,355, p=0,000), demonstrating that a higher assessment of importance is connected to a higher self-assessment of mastery of the core teacher competencies, with 12.6% of the common variance.

Taking into account the fact that these are the core teacher competencies, the research results which reveal the high assessments of their importance are not surprising. However, the junior researchers' exceptionally high self-assessment of their mastery of the core teacher competencies, which are even higher than their assessments of competencies' importance,

were not entirely expected. Namely, the studies on teaching (in higher education) and the professional socialisation of the junior researchers in the national context systematically point to a number of difficulties and challenges in ensuring the high-quality teaching in higher education, and the lack of, or the absence of the opportunities for acquiring teacher competencies. Some studies emphasise the low quality level of teaching and the lack of an adequate support system for teaching (Ledić 1992, 1993, 1994; Ledić, Kovač, Rafajac 1998; Kovač, Ledić, Rafajac 1998; Kovač, 2001; Peko, Mlinarević & Buljubašić-Kuzmanović, 2008; Bognar & Kragulj, 2010), the absence of the professional development programmes for teachers in higher education and the acquisition and development of teacher competencies (Kovač, 2001; Vizek Vidović, 2009; Turk, 2016; Turk & Ledić, 2016a, 2016b). Furthermore, some studies indicate the students' dissatisfaction with the quality of teaching and the necessity of quality enhancement (Peko, Mlinarević & Buljubašić-Kuzmanović, 2008), as well as the disparate evaluation of teaching and research, with the quality of teaching being almost irrelevant (Brajdić Vuković, 2012).

It is presumed that the institutional differences, along with the disciplinary differences, can have a significant influence in the context of the (expectations, needs, and possibilities of) competency development for (junior) researchers (Ehrenberg et al., 2010). Therefore, it is possible that those institutions which are primarily oriented toward teaching and/or the integration of teaching and research have developed the (complementary institutional) policies and practices which support an investment into the (professional) development of teacher competencies. However, when it comes to the assessments of importance and especially mastery of the competencies, the results of this research show that junior researchers are very homogenous in their maybe insufficiently self-critical assessments.

Importance and mastery of the developmental teacher competencies

The group of developmental teacher competencies is comprised of seven competencies which are discussed from the perspective of the junior researchers' self- assessment of their importance and mastery, while the similarities and differences with regard to sex, type of university integration, and research field are analysed. The developmental teacher competencies are the following: *applying active learning techniques; creating an encouraging environment for student learning; applying research results in teaching; applying e-learning; modifying teaching for students with special needs; observing and advising junior colleagues and introducing changes into the syllabus.* Table 6 presents an outline of the developmental teacher competencies based on the assessment of importance, while Table 7 presents an outline based on the self-assessment of mastery of the same competencies. The tables show the arithmetic means, standard deviations and response percentages on the Likert-type scale, with individual responses grouped as previously stated (1+2, 3, 4+5).

Table 6: **Assessment of the importance of the developmental teacher competencies**

Importance of the developmental teacher competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Applying active learning techniques	10,6	30,9	58,5	3,65	0,98
Creating an encouraging environment for student learning	3,7	19,8	76,6	4,01	0,81
Applying research results in teaching	9,1	20,5	70,5	3,87	0,98
Applying e-learning	27,0	25,3	47,6	3,30	1,25
Modifying teaching for students with special needs	41,7	30,9	27,4	2,76	1,16
Observing and advising junior colleagues	28,8	25,6	45,6	3,18	1,23
Introducing changes into the syllabus	13,5	24,0	62,6	3,67	1,09

The average values shown in Table 6 point to somewhat lower assessments of the importance of the developmental teacher competencies in comparison with the core competencies, with arithmetic means ranging from the lowest (M=2,76) to the highest (M=4,01). The majority of the junior researchers (76.6%) assess the creating an encouraging environment for student learning as highly or exceptionally important, while 70.5% of the participants assess the applying research results in teaching in the same manner, as highly or exceptionally important. The research conducted by Rončević and Rafajac (2010) reveals the Croatian junior researchers' equal interest in the teaching and research activities, as well as their synergy. Arimoto (2014) strongly advocates the integration of research and teaching in the context of the instruction paradigm change, even though he is aware of a number of (internal and external) challenges existing at the modern and postmodern universities which render the said integration impossible or at least more difficult.

In comparison with these two highly rated competencies, the remaining competencies have significantly lower assessments of importance. For example, less than a third of the junior researchers (27.4%) consider modifying teaching for students with special needs to be exceptionally important (M=2,76). Turk and Ledić (2016a) point out that within the framework of the APROFRAME project this competency was rated as the least important out of all 45 specified competencies of the academic profession, not only by junior researchers, but from the total sample of participants (N=1130, M=2,89, SD=1,19). Taking into account the recent academic discussions on the Croatian universities' social sensibility and their obligation to reduce social inequality and remove obstacles for the enrolment into, and completion of the study programmes for vulnerable social groups (Farnell & Kovač, 2010), it is easy to agree with

the assumption presented by Turk and Ledić (2016a, p.95) that academics in Croatia are not sufficiently sensitive to the issues of the students with special needs. This conclusion is supported by the results of the research conducted by Cvitan et al. (2011) according to which 68% of the students who face physical or mental difficulties during their studies believe that their problems are not taken into (serious) consideration. In addition to the successful modification of the teaching process and content for the students with special needs, the use of modern information and communication technology and e-resources in teaching is one of the contemporary demands which (university) teachers face, and which stems from the dynamic changes in education (Eurydice, 2003; Herdlein, 2004; Waple, 2006; Kuk, Cobb & Forrest, 2007). However, less than half of the junior researchers who participated in the survey (47.6%), consider this competency to be highly or exceptionally important.

In order to determine the differences with regard to the importance of the developmental teacher competencies, a linear composite of the items shown in Table 6 was created (Cronbach Alpha=0,812), and the three-way variance analysis 2x3x4 was conducted. The main effect of research field was determined ($F(3,673)=3,142$, $p=0,025$). In a similar manner to the previous results regarding the assessment of the importance of the core teacher competencies, the participants from social sciences and humanities consider the developmental teacher competencies to be more important ($M=3,64$ $SD=0,664$) than those from technical and biotechnical sciences ($M=3,29$, $SD=0,796$). The effect size is small ($ή2=0,014$). In accordance with the previously stated assumptions and explanations, these results can also be explained by the disciplinary differences and a greater orientation toward teaching of those junior researchers affiliated to social sciences and humanities.

When it comes to the self-assessment of the mastery of the developmental teacher competencies, the junior researchers demonstrate even higher assessments in comparison with their prior assessments of importance, which is indicated by the arithmetic means ranging from the lowest ($M=3,87$) to the highest ($M=4,53$), as shown in Table 7. Similar findings were obtained during the assessment of the core teacher competencies, with the junior researchers providing the competencies' mastery assessments as significantly higher than the assessments of the competencies' importance.

In addition to rating the competency of creating an encouraging environment for student learning as the most important, 92.4% of the junior researchers claim they have completely mastered this competency, while only 2% assess it as (very) low. Similarly, 84.5% of the junior researchers assess their mastery of the applying research results in teaching as completed. The high self-assessments of the mastery of this competency differ from the results of the recent studies in Croatia according to which a significant number of university teachers (63.5%) claim their teaching and research activities are (very) disconnected (Rončević & Rafajac, 2010). Furthermore, almost one half of the junior researchers (45.4%) state that their teaching and research activities are (very) disconnected, while only 14.8% think those activities are interconnected. However, the same research shows that, when the synergy is possible and achievable, university teachers evaluate the influence of their own research on the enhancement of their teaching work as positive (Rončević & Rafajac, 2010), with 66.5% of the junior researchers stating that their research obligations enrich their teaching activities.

Table 7: **Assessment of the mastery of the developmental teacher competencies**

Mastery of the developmental teacher competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Applying active learning techniques	4,2	13,2	82,6	4,17	0,85
Creating an encouraging environment for student learning	2,0	5,7	92,4	4,53	0,72
Applying research results in teaching	3,2	12,3	84,5	3,25	0,84
Applying e-learning	8,4	23,7	68,0	3,87	1,01
Modifying teaching for students with special needs	7,5	20,2	72,3	3,93	0,96
Observing and advising junior colleagues	8,8	16,6	74,6	3,97	1,00
Introducing changes into the syllabus	4,3	14,5	81,2	4,12	0,86

The junior researchers provide equally high self-assessments of their mastery of the applying active learning techniques, with 82.6% of the participants claiming to have completely mastered this competency. Since the competencies were not additionally explained in the research questionnaire, it would be justified to question the junior researchers' familiarity with the active learning and teaching strategies, and the level of their prior knowledge of the said strategies.[10] Taking into account the complexity of the active teaching and learning strategies, it

10 The essence of active teaching is reflected in the continued intellectual participation of students in the learning process (Prince, 2004), and it presumes a role reversal; that is, the students' involvement in the process of curriculum and content development, or the process of students teaching their colleagues a segment of the content since that type of student involvement stimulates the development of their procedural knowledge, and their integration of the declarative and metacognitive knowledge (Zanchin, 2002). The methods of active teaching are numerous and diverse, and not the focus of this paper, but it is important to emphasise their complexity in order to better interpret the obtained research results. Chiari (2010), as cited in Močinić (2012), highlights the methods of simulation, imaginary situation, role play, discussion, case study, and brainstorming. Mattes (2007) defines the active teaching methods as dialogue, brainstorming, interactive lessons, group work, pair work, experiments, role play, and project lessons. The authors who explore this topic agree that the active teaching strategies or methods should have the following characteristics: cognitive integration and practical activities, sensitivity to different learning styles, diverse and correct methodological approach to the teaching of individual disciplinary content, stimulation of cognitive interaction with colleagues or other adults, establishment of the environment that will stimulate the development of the higher-level cognitive processes, facilitation of reflection and metacognition, empowerment of students for task realisation and stimulation of their continued motivation for learning, and last but not less important, ensuring the continued observation of the students' progress, and the sensitivity for their (individual) diverse learning styles and prior knowledge (Zanchin, 2002).

is evident that the enhancement of this particular developmental competence relies on experience, professional development, self-reflection, and the continued enhancement of personal teaching activities, as well as the personal preference for this particular teaching and learning style. A recent study conducted by Ćulum and Ledić (2012) shows that the junior researchers are not inclined to introduce changes and innovations into their everyday teaching activities. In that context, it can be argued that there is a lack of serious self-critical assessment of the junior researchers' mastery of the competencies. Additionally, it can be argued that junior researchers have low level of knowledge pertaining to the complex networks of abilities, knowledge, skills, attitudes, and values which characterise these competencies, which could also be reflected in their (uninformed) high self-assessments.

In order to determine the differences in the level of mastery of the developmental teacher competencies, a linear composite of the items shown in Table 7 was created (Cronbach Alpha=0,857), and the three-way variance analysis 2x3x4 was conducted to determine the existence of differences with regard to the independent variables. The main effect of the research field was determined ($F(3,673)=3,216$, $p=0,022$). The participants who from social sciences and humanities demonstrate a higher level of mastery of the developmental teacher competencies ($M=4,21$, $SD=0,846$) in comparison with those from natural sciences ($M=3,88$, $SD=0,846$). The effect size is small ($ή^2=0,014$). This result could also be interpreted from the perspective of the disciplinary differences, preferences and orientations towards teaching. In addition, it needs to be taken into account that junior researchers from social sciences and humanities have closer professional connections with the disciplinary fields which explore the concepts and processes of both teaching and learning. The Pearson correlation coefficient ($r=0,314$, $p=0,000$) indicates statistically significant correlation between the assessments of importance and mastery of the developmental teacher competencies, with 9.9% of the common variance between the assessments.

The research shows that the junior researchers evaluate the developmental teacher competencies as less important than the core teacher competencies, but their self-assessments of their mastery are very high in both instances. Croatian higher education system has been facing a systematic, evidence-based and well-argued criticism for a number of years, due to the absence or lack of concern for the quality of teaching. The criticism has been particularly focused on the facilitation of the acquisition and development of the relevant teacher competencies. Being aware of such (national) context, it is difficult to find an explanation for such high self-assessment of the junior researchers' mastery of both core and developmental teacher competencies.

In the system which does not support the formal professional development for teachers in higher education, it is possible that the junior researchers consider their personal engagement in teaching, or experiential learning, as a significant learning factor which contributes to the mastery of teacher competencies. The CAP research results could in part contribute to the explanation, since they show that the junior researchers devote 18.18 average working hours a week to their teaching tasks. The aforementioned research also reveals that a significant number of the junior researchers are engaged in different aspects of the teaching process. For example, 89.5% of the junior researchers in Croatia engage in traditional teaching, and 80.3%

engage in individual teaching or consultations. A significant percentage of the junior researchers (82.1%) also claim personal participation in the development of the teaching materials.[11]

The junior researchers' high self-assessments of their own mastery of the teacher competencies could be selectively reinterpreted and explained as the absence of any kind of need for further engagement in the enhancement of the culture of teaching in higher education in the national context. To avoid this scenario, it is important to facilitate future research in order to determine the junior researchers' level of knowledge with regard to the specific (teacher and research) competencies explored in this research, or their constructs, with the aim of finding the evidence-based explanations for the obtained high assessments.

The teacher competencies of junior researchers – in pursuit of additional explanations for the high self-assessments of competencies' mastery

The research results presented in the previous two chapters show the Croatian junior researchers' high self-assessments of their mastery of teacher competencies, and it is a challenge to explain the reasons for such exceptionally high assessments. The junior researchers assess the core teacher competencies as more important than the developmental ones, but they assess their own mastery of competencies in both categories as high or complete, claiming to have completely mastered those competencies. The assessments are indeed very high – the 'smallest' number of the participants (68%) assess their mastery of the competency of modifying teaching for students with special needs as completed, 90.2% of the participants state they have completely mastered the competency of specifying clear objectives and outcomes, 91.2% of the participants rate their mastery of the lesson planning and implementation as completed, and the largest number of the participants (92.4%) claim they have completely mastered the competency of creating and encouraging environment for students learning. The applied data analysis methods point to the statistically significant higher assessments of the importance and mastery of teacher competencies from those juniors researchers' in social sciences and humanities in comparison with those affiliated to natural and technical sciences (with the small effect size).

There is a possibility of the selective and purposeful (re)interpretation and misuse of such research results, as they seem to imply that the junior researchers in Croatia know everything they are supposed to know about the quality in teaching and do not require professional development. Additionally, the research result imply that the challenges seem to exist only for the minority of junior researchers since 70-90% of them claim they have completely mastered the teacher competencies. On the other hand, previous studies conducted in the national higher education context reveal a number of challenges with regard to teaching, and a significant lack of educational policies pertaining to the acquisition and development of teacher

11 Unpublished results of the research "Changes in Academic Profession" (CAP).

competencies (Kovač, 2001; Peko, Mlinarević & Buljubašić-Kuzmanović, 2008; Brajdić Vuković, 2012; Turk & Ledić, 2016).

The thematic analysis of the qualitative data was conducted in order to obtain additional explanations for such high self-assessments, with the aim of analysing the junior researchers' experiences and challenges in the process of the (teacher) competencies acquisition and development.

Although individually diverse, the research participants' experiences in the process of the teacher competencies acquisition and development point to six common patterns: (1) self-reliant management due to the absence of systematic support during the process of introduction to teaching; (2) the importance of the mentorial and collegial support; (3) the absence of the opportunity for professional development with regard to the acquisition and development of teacher competencies; (4) positive attitudes toward the need for professional development in teaching and advocacy of equal institutional possibilities; (5) accountability for own teaching advancement increases with obtaining higher ranks; and (6) the lack of connection between the research and teaching activities.

The research participants often comment that they had to rely on themselves in the initial phases of their teaching work, learning from their own experience, and depending on a trial-and-error model, or as one participant describes it, *"you learn everything by yourself, as you go"* (16, H). The participants point out that they were not provided with an opportunity to learn what and how to teach and that there was an absence of the systematic learning and support during the process of introduction to teaching. The junior researchers use different approaches to overcome the challenges of the acquisition of knowledge about teaching and learning, but the process of the teacher competencies acquisition predominantly involves independent work, or in the words of one of the participants, *"I have learned everything by myself, so it was more a question of practice"* (14, H). Some of the junior researchers found the guidelines for their teaching work in literature and other available (teaching) materials provided by their colleagues working in the same field at other universities:

> *"Of course, literature helps, provides an insight into other people's practices, makes available, presentations from other universities and such. Therefore, you can sort of see how it's supposed to look or how it should look, so you have some guidelines."* (19, TS)

> *"I read different materials online, borrowed books from the library on the topic of content presentation. The books were mostly focused on the primary and secondary school, and a lot less on university or adult education."* (35, TS)

In spite of the fact that some participants had the support of the more experienced colleagues, that level of support was displayed in the form of the junior researchers' observation of their mentor's lessons, but without any analysis, critical reflection, and feedback from mentors – lessons are observed, notes taken and afterwards „replicated," which is illustrated by the following statement:

> *"When it comes to teaching, my colleague and I had to attend our professor's lessons. For two semesters, we attended and observed the lessons and seminars for the classes we now teach* (...). *Out of the three classes that we observed, we took over two and then it was useful because we were given the list of literature and taken written notes. And that was it."* (15, H)

Even though the participants rarely experience the mentorial and collegial support, that support is positively evaluated and recognised as a significant contribution to learning and the development of (some) teacher competencies. The statement of one of the participants reflects the importance of the support from senior colleagues, especially mentors from the same disciplinary field. The research participants point out that by observing the mentor's lessons they acquire new and expand existing knowledge about the disciplinary relevant content, but also the teacher competencies because they observe the (teaching) strategies that are used to (successfully) transmit the content to the new generations.

> *"I attended lessons from various professors, including my mentor's who especially wanted me to observe some of her particular classes at which I also worked as a teaching assistant, and I would also attend the classes of the head of the course. In that way, you learn about the content and the presentation of courses, that's how you learn..."* (37, SS)

In the context of the teacher competency acquisition and development, the importance of collegial support has been recognised even in the instances when the colleagues belong to another disciplinary community. The following statement points to the importance of the "proximity" to educational specialists and "absorption" of their knowledge, in this case regarding the instruction on developing the learning outcomes and course syllabi:

> *"I spend time with educational specialists and then I "absorb" their advice on syllabus writing!* (...) *We are in an advantageous position compared to the colleagues from other faculties because we are connected. I can knock on somebody's door, and ask one of the educational specialists to help me with writing the learning outcomes, while someone from the Faculty of Economics, or the Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture has to write the same things, and they've never even heard of it."* (14, H)

A number of the previously mentioned studies on teaching in higher education in Croatia (e.g., Kovač, 2001) have consistently emphasised an absence or lack of the teacher (professional) development opportunities[12], and the participants of our research have similar personal experiences.

12 The CAP research shows similar tendencies – only 17.5% of the junior researchers in Croatia state that their institution provides a relevant professional development programme for quality enhancement in teaching, while more than a half (56.3%) point out that their (parent) institutions do not provide the aforementioned programmes.

"We rarely attend professional development programmes and it all comes down to the personal initiative and professional development through the projects that just aren't there. (...) *There aren't any professional development programmes focused on the communication with students, interaction, maybe working with the students with special needs. There is no professional development programme for diction, speech. Maybe that's something that's missing."* (11, BTS)

"Several months ago, we had one lecture on writing the learning outcomes. We didn't know how to write those. Not just I, but nobody at the Faculty, we've never been taught that. Now you have to write a syllabus, but don't know how to write the learning outcomes." (14, H)

The lack of training which would enable the junior researchers to learn how to define learning outcomes is identified as a problem by the participants in the qualitative research. On the other hand, the quantitative research results show that 90.2% of the junior researchers claim they have completely mastered this competency.

The research participants have a predominantly positive attitude toward the professional development for teachers, especially those who attended the professional development programmes and, more importantly, had an opportunity to apply their knowledge, which is reflected in the following statements:

"I think it's useful because you get to see the content of high-quality lectures, exercises, how to maintain people's attention, how to introduce some new teaching methods apart from group work. I mean, some of the things I've heard there I would not be able to hear anywhere else or I would have to sit and google, but I doubt it. I think it's very useful and applicable, I use some of the things I've learned there and they are effective." (39, TS)

"Teacher competencies are exceptionally important because you have to learn how to prepare for lessons, how to do a presentation, what the presentation should look like. (...)*"* (14, H)

"I think that the professional development for teachers is very useful, and I think it should be introduced at the beginning of employment. It shouldn't be introduced as a requirement for assistant professors, but it should be introduced at the teaching assistant level at the beginning of employment, and also for the teachers who have senior ranks, but have not previously attended those programmes. It was a real drag for most of us because you know, you teach lessons, then you go there, then you go back – we were in a time crunch, but it was very useful." (39, TS)

The research also reveals that only 21.8% of the junior researchers believe that their (parent) institution stimulates the development and improvement of teaching skills based on the lesson evaluation results, while 45% have the opposite experiences at their institutions (the unpublished results of the research "Changes in Academic Profession" – CAP).

In addition to considering the educational opportunities for the teacher competencies acquisition and development as necessary, the participants also advocate equal institutional opportunities during that process, which is illustrated by the following statement:

> *"That is why we constantly support the idea that all the university teachers should attend that type of the professional development programme, where they would learn how to write a syllabus, how to teach, and actually acquire those teacher competencies."* (14, H)

Even though they often face the challenge of performing a number of their tasks in a high-quality manner, the junior researchers express a desire and the need for the introducing changes into the teaching process. A desire and the sense of responsibility for the introduction of innovations increase with a higher academic rank, and the position of the head of the course seems to be a turning point, which the following statements demonstrate:

> *"I have really always tried to be 'up-to-date' with teaching as much as I could, and often when I fail I have a guilty conscience, so to speak. I always love to implement something new, even though the seminars are the same, the exercises, the lectures. I still try. Or if nothing else, I try to present the same thing in a different manner."* (29, BMHS)

> *"Now I am the head of the course and the head of the division, so it's a change compared to the previous status of the senior teaching assistant and, of course, I look at the whole situation differently. As the head, I have more responsibility and I have teaching assistants who collaborate with me, so I coordinate work. I have a sense of responsibility and some kind of planning, which direction would I want for the course, and how to introduce some innovations. Those are some of the things I think about more than before, even though I had that freedom back then, but now I feel like it's my obligation to implement it somehow."* (26, TS)

In the context of the discussion on the specificities of the postmodern universities, Arimoto (2014) highlights another important responsibility of the university teachers – a strong nexus between teaching and research – advocating in the process a necessary reversal of the instruction paradigm at higher education institutions which would enable the students to learn through research. Even though 84.5% of the junior researchers claim they have completely mastered this competency, the analysis of the data obtained in the qualitative part of the research tells a different story of the junior researchers' teaching, which actualises Argyris and Schön's (1974) theory on the contradiction between personal beliefs (espoused theory) and reality (theory-in-use). In order to emphasise how disconnected their teaching and research activities are, some of the participants repeat a negation – *"No, no. No, no. Really, no"* or *"No, no, no, it's something completely different, there is absolutely no overlap, not even one bit"* or *"There isn't really, no, there isn't"* (29, BMHS).

It is certainly possible that, before their appointment to the head of the course position, junior researches teach in those scientific areas which are not part of their research interests

and activities – in that context, a lack of connection between teaching and research is to be expected. On the basis of the conducted empirical studies on the nexus between teaching and research, Verburgh et al. (2007) come to a conclusion that there are very few studies that tackle the extent to and the manner in which research is integrated into the teaching process. Within the framework of this topic, researchers more frequently explore the teaching approach – e.g., the clarity of presentation, lesson structure or objectivity of evaluation, and rarely the approaches or strategies for the integration of teaching and research. Taking into account the evident lack of studies in that area, a recommendation for future research would be to analyse the above-mentioned aspects, especially in the national context.

Even though the research participants have different experiences in the context of the teacher competencies acquisition and development – the colleagues' openness and willingness to help (from the same or other disciplinary communities), the support from mentors or senior professors (with whom junior researchers collaborate in their role as teaching assistants), as well as the usefulness of (mostly one-time) professional development courses – they are unanimous in highlighting an insufficient level of support during the introduction to teaching, and the lack of professional development opportunities for teachers (in higher education). Therefore, a significant part of the process of the teacher competencies acquisition and development depends on personal "management," individual interests, and the institutional opportunities or possibilities for professional development. In this context, the results of this part of the research contribute to the corpus of the literature which has been discussing these challenges in the national context for several decades.

However, the discrepancy between high self-assessments of the mastery of both core and developmental teacher competencies and the qualitative research results, requires further examination and discussion. One of the possible explanations of this "divergence," already discussed in the previous chapter, is that junior researchers in Croatia have insufficient knowledge of the theoretical and practical psychological-pedagogical-didactic-methodical foundations of learning and teaching, as well as a lack of understanding and knowledge of the complex abilities, knowledge, skills, and attitudes that are a part of the assessed teacher competencies. A number of the participants' statements further confirm this assumption because they reveal that the activities of lesson preparation and its implementation, as well as lesson and students' assessment are predominantly perceived as administrative tasks. Namely, some research participants refer to the development of the syllabus as "paperwork," and describe the lesson assessment and the regular monitoring and assessment of the students' progress as "additional and unnecessary administrative tasks that have to be performed in order to comply with the superiors' requests," not realising that those activities are an integral part of the teaching process.

The second assumption, also presented in the previous chapter, is insufficient self-criticism of the junior researchers in their assessments of their mastery of the teacher competencies. Taking into account the fact that self-perception is formed through personal experience, the interpretation of the working environment, and on the basis of the evaluations from significant others (Hubner & Staton, 1976, as cited in Lacković-Grgin, 1994), the high assessments of the mastery of the teacher competencies can be (partly) explained by the junior researchers' social

comparison – depending on the subject of comparison, they tend to underestimate or overestimate themselves.

Research competencies of the academic profession

The development of the research competencies is an important topic in the discussion on the professional socialisation of junior researchers, especially taking into account the fact that excellence in research is considered to be the main characteristic of the top universities (Altbach, 2004), and that the list of the top ten universities in the USA and UK is comprised of research universities (Arimoto, 2014). The document *Skills and competencies needed in the research field objectives 2020* is often used as a point of reference for the understanding of the desirable research competencies. It provides a systematic and comprehensive overview of the research competencies required from the junior researchers employed in both sectors – public and private (Deloitte/APEC, 2010).

The first group of competencies outlined in the aforementioned document are "scientific competencies," and they include the extensive scientific knowledge (theoretical and practical), an ability to learn and identify relevant information, and capacity to adapt information in order to maintain a high level of scientific excellence; an ability to formulate innovative research questions; an ability to use sophisticated tools and softwares in research analysis, work in an interdisciplinary environment, and incorporate the existing studies, knowledge and technologies.

The second group of competencies outlined in the aforementioned document are "project and team management skills." This category includes an ability to work in a team, manage and steer teams, and develop research networks; communication and language skills; an ability to assess; business culture and management skills, project management skills, and awareness of the pertinence of the research and its impact on the environment.

The third group of competencies required for excellence in research, outlined in the aforementioned document, are "personal aptitudes and interpersonal skills." This group includes creativity, motivation and involvement in research, an open-minded approach which enables research of the unfamiliar topics or a willingness to work in a multicultural team, adaptability, and an ability to self-assess.

Taking into account the discussion on the (required and desirable) research competencies, two groups of competencies which are the linear composites of items were created for the purpose of this paper – *the core and developmental research competencies* (Table 8).

Table 8: **The core and the developmental research competencies**

Research competencies	
The core research competencies	Knowledge of the research methodology and statistical data analysis
	Applying effective strategies for the scientific and professional literature searching
	Applying effective strategies for the critical evaluation and analysis of scientific literature
	Knowledge of the basic principles of academic writing and publishing
The developmental research competencies	Working in an interdisciplinary environment
	Observing and advising junior colleagues
	Conducting peer reviews
	Familiarising oneself with the research programme / project management (writing, applying for and managing research programmes / projects)
	Familiarising oneself with various possibilities of financing research projects
	Forming and maintaining (international) research networks

The core research competencies are predominantly related to the research process/cycle. They include the competency items which are related to the analysis and critical evaluation of literature and current knowledge, the knowledge of research methodology and its application, and the principles of disseminating personal research findings. The developmental research competencies are more contextual and connected to the enhancement of the (research) process; therefore, they encompass the competencies related to different characteristics of the (academic) context in which the junior researchers work today.

Importance and mastery of the core research competencies

The group of the core research competencies, shown in Table 9, consists of four competencies which are discussed from the perspective of the junior researchers' self- assessments of importance and mastery, in a similar manner to the previous discussion on teacher competencies. The core research competencies are *knowledge of the research methodology and statistical data analysis; applying effective strategies for the scientific and professional literature searching; applying effective strategies for the critical evaluation and analysis of scientific literature* and *knowledge of the basic principles of academic writing and publishing.* The analysis of the similari-

ties and differences with regard to sex, type of university integration and research field was conducted, and the Pearson correlation coefficient was applied in order to determine the correlation between the assessments of importance and mastery. The tables show the arithmetic means, standard deviations, and response percentages on the Likert-type scale, with combined individual responses (1+2, 3, 4+5).

Table 9: **Assessment of the importance of the core research competencies**

Importance of the core research competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Knowledge of the research methodology and statistical data analysis	11,4	27,9	60,7	3,70	1,01
Applying effective strategies for the scientific and professional literature searching	2,1	10,9	87,0	4,30	0,76
Applying effective strategies for the critical evaluation and analysis of scientific literature	6,4	25,1	68,6	3,85	0,91
Knowledge of the basic principles of academic writing and publishing	2,5	10,0	87,4	4,30	0,77

In a similar manner to the (core) teacher competencies, the junior researchers provide very high assessments of the importance of the core research competencies. They rate the application of effective strategies for the scientific and professional literature searching, and knowledge of the basic principles of academic writing and publishing as the most important core research competencies (M=4,3 for both). Those results are not surprising since these competencies are considered to be the basic prerequisite for successful performance of the research activities, especially at the beginning of a research career (Vizek Vidović, Brajdić Vuković & Matić, 2014).

In comparison with the aforementioned competencies, the junior researchers assess the competency of the application of effective strategies for the critical evaluation and analysis of scientific literature as less important (M=3,85), and the competency of the knowledge of research methodology and statistical data analysis as the least important (M=3,7). Taking into account the response percentages pertaining to the assessment of importance, it can be concluded that around 40% of the junior researchers do not deem this knowledge (exceptionally) important for their academic career. This result is partly disconcerting because junior researchers are expected to acquire knowledge about methodology and statistics as a prerequisite for successful and high-quality research activity. However, it should be noted that a similar perception of this competency's importance was detected on the total sample of the university teachers of all academic ranks (M=3,7), and that 37% of the university teachers did not rate this competency as (exceptionally) important (Turk & Ledić, 2016a). This encourages further exploration of the reasons why one part of the academics evaluate this competency's importance as low or average.

In order to determine the differences in the importance of the core research competencies, a linear composite of the items shown in Table 9 was created (Cronbach Alpha=0,766), and the three-way variance analysis 2x3x4 was conducted, but the main effects and statistically significant interactions were not obtained ($p<0,05$).

Table 10: **Assessment of the mastery of the core research competencies**

Mastery of the core research competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Knowledge of the research methodology and statistical data analysis	3,4	12,3	84,4	4,26	0,82
Applying effective strategies for the scientific and professional literature searching	1,1	6,8	92,0	4,53	0,69
Applying effective strategies for the critical evaluation and analysis of scientific literature	2,1	8,5	89,4	4,38	0,74
Knowledge of the basic principles of academic writing and publishing	1,4	5,0	93,6	4,63	0,67

The self-assessments of the mastery of the core research competencies are higher than the assessments of their importance, in a similar manner to the assessments of the teacher competencies. The self--assessment of the mastery of the core research competencies are extremely high, which is indicated by the arithmetic means ranging from the lowest (M=4,26) to the highest (M=4,63). A large percentage of the junior researchers (93.6%) claim they have completely mastered the competence related with the knowledge of the basic principles of academic writing and publishing, which makes this competency the highest ranked one among the research competencies. The high self-assessments of the mastery could be, to a certain extent, connected with a recent study (Jovanović & Zelenika, 2013) which points to the junior researchers' higher scientific productivity in comparison with their senior colleagues, especially full professors and tenured full professors – not only do junior academics publish considerably more and in the relevant scientific journals, but they do so in collaboration with foreign colleagues. Equally large percentage of the junior researchers (92%) assess that they are very successful in using the effective strategies for the scientific and professional literature searching, and 89.4% state they have completely mastered the application of effective strategies for the critical evaluation and analysis of scientific and professional literature. Special attention should be paid to the assessment of mastery with regard to the knowledge of research methodology and statistical data analysis, with 84.4% of the junior researchers claiming to have completely mastered this competency, even though (only) 60.7% assess it as important one.

In order to determine the differences of the core research competencies' mastery, a linear composite of the items shown in Table 10 was created (Cronbach Alpha=0,804), and the three-

way variance analysis 2x3x4 was conducted. The main effect of research field was determined ($F(3,673)=3,743$, $p=0,011$, $ή^2=0,016$), while the main effects of sex and the type of university integration were not identified as significant. The junior researchers from natural sciences demonstrate a lower level of self-assessment of the core research competencies' mastery in comparison with the participants from social sciences and humanities, and the field of arts. Taking into account the specific features of the junior researchers' professional context in the fields of natural and social sciences, these results are not entirely expected.

For example, the researchers from natural sciences obtain doctoral degrees earlier in comparison with the researchers from social sciences (the average age is 35.3), which enables them to engage in professional development relatively early (Golub, 2008). They are more often part of the international research networks and produce twice as many papers that are indexed in the WoS databases than the researchers from social sciences (Golub, 2008). On the basis of the differences between these two scientific fields, it can be claimed that the developmental path of acquiring the core research competencies is to an extent more adverse for the researchers from social sciences and humanities. However, the research results are indicative in this case since the junior researchers from social sciences and humanities make higher self-assessments of their mastery of this group of competencies than their junior colleagues affiliated to natural sciences. The interpretation of these results should take into account the aforementioned international context and networking of the junior "natural scientists" – they participate in the international disciplinary community more frequently, and collaborate more often with their foreign colleagues on different projects and publications. It is possible that it was the international (competitive) environment that formed their perception of scientific excellence, and in the process "humbled" them; that is, made them more self-critical in their assessments of the personal knowledge and skills with regard to research.

The three-way variance analysis was conducted, and a statistically significant correlation between sex and the types of the university integration was determined ($F(3,673)=3,427$, $p=0,033$, $ή^2=0,01$). Small effect size ($ή^2=0,01$) shows that the female junior researchers from the semi-integrated universities ($M=4,49$, $SD=0,521$) and from the University of Zagreb ($M=4,59$, $SD=0,468$) demonstrate a higher level of mastery of the core research competencies in comparison with their male colleagues from the semi-integrated universities ($M=4,21$, $SD=0,676$) and the non-integrated one, The University of Zagreb ($M=4,31$, $SD=0,658$). The Pearson correlation coefficient reveals a statistically significant correlation between the importance and mastery of the core research competencies ($r=0,329$, $p=0,000$), and demonstrates that a higher assessment of importance is linked to a higher self-assessment of mastery, with 10.8% of the common variance.

Importance and mastery of the developmental research competencies

The group of developmental research competencies, shown in Table 11, consists of six competencies – *working in an interdisciplinary environment; observing and advising junior colleagues; conducting peer reviews; familiarising oneself with the research programme / project*

management (writing, applying for and managing research programmes/projects); familiarising oneself with various possibilities of financing research projects and *forming and maintaining (international) research networks.* In the continuation of this paper, these competencies will be discussed from the perspective of the junior researchers' self-assessments of their importance and mastery, analysing the similarities and differences with regard to sex, type of university integration and research field. Furthermore, the Pearson correlation coefficient was calculated in order to determine the existence of the correlation between the assessments of importance and mastery of competencies. Table 11 shows the outline of the developmental research competencies based on the assessment of importance, and Table 12 based on the self-assessment of mastery. The tables show the arithmetic means, standard deviations, and response percentages on the Likert-type scale, with combined individual responses (1+2, 3, 4+5).

Table 11: **Assessment of the importance of the developmental research competencies**

Importance of the developmental research competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Working in an interdisciplinary environment	7,1	18,1	74,8	3,97	0,96
Observing and advising junior colleagues	24,9	27,4	47,6	3,27	1,16
Conducting peer reviews	28,4	19,9	51,6	3,31	1,34
Familiarising oneself with the research programme / project management (writing, applying for and managing research programmes / projects)	31,9	34,3	33,9	3,00	1,14
Familiarising oneself with various possibilities of financing research projects	31,4	36,8	31,9	2,99	1,09
Forming and maintaining (international) research networks	37,4	29,5	33,2	2,94	1,20

On the basis of the arithmetic means of the particular competencies, it is evident that the junior researchers provide relatively low assessments of developmental research competencies' importance in comparison with their assessment of the importance of the core research competencies. The arithmetic means on five of the six stated competencies range from the lowest (M=2,94) to the highest (M=3,27), which are the lowest obtained assessments on all the specified items. Taking into account the fact that the developmental competencies are predominantly part of the (contemporary) context of the higher education and research area and are mainly related to the new demands for the (re)definition of the academic profession competencies, the significantly lower assessments of the the developmental competencies' importance than of the core ones are surprising to an extent, since the majority of the research participants reached their scientific

"maturity" within that "new" context. Furthermore, the national educational policy was taken into account in the process of creating groups of competencies, within the context of the expected activities or outcomes required for promotion. Therefore, the low assessments of the importance of the competencies which have become an integral and indispensable part of the research activity and promotion in the national context are surprising.

Working in an interdisciplinary environment was assessed as the most important developmental research competency, with 74.8% of the participants recognising its (exceptional) importance. All other assessments have a significantly lower range, from 31.9% (*Familiarising oneself with various possibilities of financing research projects*) to 51.6% (*Conducting peer reviews)*. The competency of forming and maintaining (international) research networks is also in the lower range of the assessments of importance, with more than one third of the participants (37.4%) evaluating it as unimportant, and one third (33.2%) assessing it as highly or exceptionally important. It could be argued that the junior researchers in Croatia still have a relatively secure developmental path in their academic careers in comparisons to their colleagues in many other countries, and therefore they do not assess this competency as important for their own career development. At the same time, international studies increasingly highlight the importance of professional connections and networking with other researchers, which is mostly considered to be a part of the increasing internationalisation process of higher education, and a growing need for the international activities and strategic alliances among universities (Ismail & Rasdi, 2007). Mavin and Bryans (2002) argue that the process of networking in the academic community has completely redrawn the geographical and disciplinary boundaries and became the most important strategy for the development of (academic) career, especially for junior researchers (Hakim, 1994; Altman & Post, 1996; Arthur & Rousseau, 1996; Sullivan, 1999). Nevertheless, it seems that the junior researchers in Croatia (still) do not perceive the process of networking as relevant to such an extent.

The competency of familiarising oneself with the research programme / project management (writing, applying for and managing research programmes / projects) is also in the lower range of assessments, with almost one third of the junior researchers (31.9%) rating this competency as unimportant, and 33.9% rating it as highly or exceptionally important. Taking into account the financing opportunities for research projects in the national context, especially the possibilities of employing postdoctoral researchers on those projects, the junior researchers' low assessments of this competency's importance are surprising since some of them are (or were) undoubtedly employed on different research projects. Of course, it is possible that the majority of the junior researchers have not yet participated in the development of a research project at this point in their academic careers, nor have occupied the position of a project manager, which could explain the low assessments to an extent. On the other hand, they will certainly require the aforementioned competency during the future development of their academic careers in the national research area, if not international.

In order to determine the differences in the importance of the developmental research competencies, a linear composite of the items shown in Table 11 was created (Cronbach Alpha=0,822), and the three-way variance analysis 2x3x4 was conducted, but the main effects and statistically significant interactions were not determined ($p<0,05$). When it comes to the

perception of the importance of the developmental research competencies, the junior researchers are homogeneous in their assessments.

In accordance with the previous results, the junior researchers provide higher self-assessments of their mastery of the developmental research competencies in comparison with the assessments of their importance. This is indicated by the average values ranging from the lowest (M=3,89) to the highest (M=4,18), as shown in Table 12.

Table 12: **Assessment of the mastery of the developmental research competencies**

Mastery of the developmental research competencies	**1+2** %	**3** %	**4+5** %	**M**	**SD**
Working in an interdisciplinary environment	2,7	15,6	81,7	4,18	0,82
Observing and advising junior colleagues	9,3	17,0	73,6	3,96	0,99
Conducting peer reviews	6,1	19,2	74,6	4,02	0,94
Familiarising oneself with the research programme / project management (writing, applying for and managing research programmes / projects)	10,6	18,8	70,6	3,89	1,03
Familiarising oneself with various possibilities of financing research projects	8,3	17,7	74,1	4,00	1,02
Forming and maintaining (international) research networks	5,9	14,3	79,8	4,18	0,96

The junior researchers highly assess their own mastery of the competencies *Working in an interdisciplinary environment* (81,7%) and *Forming and maintaining (international) research networks* (79,8%). However, it is interesting to note that the competencies *Conducting peer reviews* and *Familiarising oneself with various possibilities of financing research projects* received quite high self-assessment as well, with over 74% of the participants claiming they have completely mastered the stated competencies. The philosophy of peer review in academic community is based on the idea that research has to "survive" rigorous assessment provided by the experts from the (scientific) field in order for the results to be presented to a wider scientific community as worthy of serious consideration (Wager et al., 2002). Literature therefore describes reviewers as the leading experts in a scientific field who are in possession of experience, knowledge and skills which enable them to evaluate whether the (other) authors' methods are correct, results valid, and interpretations reasonable (Wager et al., 2002; Smith, 2003). Even though the practice is traditionally ingrained in the academic community, some authors point out that this competency is not taught in the formal educational system, and is developed only through practice or experience (Winck et al., 2011).

The competencies which have been recognised as crucial for successful research activity in the dynamic research environment found themselves in the lower range of the junior researchers' assessments (albeit with very high assessments of mastery) – forming networks with foreign colleagues, writing applications for and managing the research projects, and familiarity with the possibility of financing research projects. Taking into account the fact that during the last decades, the European, but also national scientific policies have been strongly highlighting the development of research projects as the platform for the (junior) researchers' employment (Drennan et al., 2013; Goastellec et al., 2013; Goastellec & Pekari, 2013; Kwiek & Antonowicz, 2013), it is evident that the developmental research competencies related to the process of project application and management, and the collaboration with the (international) disciplinary community are those which are becoming increasingly important.

In order to determine the differences in the assessment of the mastery of the developmental research competencies, a linear composite of the items shown in Table 12 was created (Cronbach Alpha=0,868), and the three-way variance analysis 2x3x4 was conducted to determine the existence of differences with regard to the independent variables. The main effect of the type of university integration was determined ($F(2,673)=5,793$, $p=0,003$, $\acute{\eta}^2=0,017$), as well as a statistically significant correlation between the research field and the type of university integration ($F(6,673)=2,452$, $p=0,024$). The participants from biomedicine and health sciences at the semi-integrated universities demonstrate a lower self-assessment of mastery of the developmental research competencies ($M=3,75$, $SD=0,917$) in comparison with those from the same field at the University of Zagreb ($M=4,23$, $SD=0,658$), however with the small effect size ($\acute{\eta}^2=0,021$). A similar correlation between the assessments was also obtained with regard to the assessment of the mastery of the core research competencies, and it should be restated that, since this difference was determined only in the field of biomedicine and health sciences, it is difficult to consider this finding in a wider explainable context without further insight into the research activity of the representatives of this science field, especially at the University of Zagreb. In a similar manner to the previous results, the Pearson correlation coefficient reveals a statistically significant correlation between assessments of importance and mastery ($r=0,223$, $p=0,000$). However, there is only 5% of the common variance between the assessments of the importance and mastery of the developmental research competencies, which indicates a small effect size (Cohen, 1992, as cited in Field, 2009).

This research shows that the junior researchers assess the developmental research competencies as less important than the core research competencies, and similar results were obtained in their assessments of teacher competencies. However, the participants' self-assessments of their mastery of both core and developmental research competencies are extremely high. In addition, they assess their own mastery of the core competencies as higher than their own mastery of the developmental competencies. However, the result which demonstrates their low level assessment of the importance of forming and maintaining (international) research networks, as well as those competencies that encompass the research project writing, application, management, and funding, is surprising.

The studies conducted in the international, but also national context suggest that the work of (junior) researchers in the field of natural sciences is much more frequently realised within

the projects focused on the fundamental research than the work of those from social sciences. That context often requires a regular collaboration with international colleagues. Therefore, the (junior) researchers from natural sciences are more internationally connected and collaborate more often on international research projects in comparison with their colleagues from social sciences and humanities (Golub, 2008). Taking into account the traditional dichotomy between "hard" and "soft" sciences and a number of studies which indicate a stronger orientation of the scientists from natural and technical field of sciences toward the research activities (Biglan, 1973; Becher, 1989; Polio, 1996; Teichler, Arimoto & Cummings, 2013), the aforementioned differences were expected in the assessments of the importance and mastery of the core and developmental research competencies. However, the results of this research demonstrate that the junior researchers in Croatia are rather homogenous in their high self-assessments of the mastery of these competencies. Therefore, it is difficult to escape the impression that the lack of self-criticism and an inclination toward providing socially desirable responses are the reasons behind the high assessments of (personal) excellence in the context of the (complete) mastery of research competencies, in a similar manner to the assessments of the complete mastery of the teacher competencies.

Research competencies – in pursuit of additional explanations for the high assessments of competencies' mastery

In a similar manner to the self-assessments of their own mastery of teacher competencies, the junior researchers also provide significantly high assessments of their own mastery of the research competencies. The core research competencies are assessed as more important than the developmental research ones, but they also rate their own mastery of both groups of research competencies as completed. The assessment ratios are very high – 79,8% of the participants claim they have highly or completely mastered the forming and maintaining (international) research networks, 92% of the participants claim they have highly or completely mastered the application of effective strategies for the scientific and professional literature searching and 93.6% of them claim they have highly or completely mastered the competencies of knowledge of the basic principles of academic writing and publishing, and conducting peer reviews in their own disciplinary field.

The applied procedures of the data analysis indicate the unexpected differences with regard to research field. Namely, the junior researchers from natural sciences demonstrate lower self-assessment of the mastery of the core research competencies in comparison with their colleagues from social sciences and humanities, and the field of arts. This finding is unexpected because a number of studies describe the habitus of "natural scientists" through a stronger orientation toward the research activities, and the habitus of "social scientists" as oriented more toward the teaching activities (Biglan, 1973; Becher, 1989; Polio, 1996; Golub, 2008; Teichler, Arimoto & Cummings, 2013).

As was the case with the analysis of teacher competencies, the thematic analysis of the qualitative data was conducted in order to obtain the additional explanations of the high self-assessments, particularly those related with the mastery of research competencies.

Even though they are (expectedly) individually diverse, the junior researchers' experiences during the process of the research competencies' acquisition and development point to a number of common patterns: (1) a weak contribution of formal education (doctoral studies) to the acquisition and development of research competencies; (2) unfamiliarity with the research methodology and statistical data analysis; (3) the importance of the mentors' support during the process of the introduction to research activities and the disciplinary community; and (4) the developmental path of engagement on research projects.

The research participants' experiences point to a number of challenges that the junior researchers face at the beginning of their research careers in the context of the research competencies acquisition and development. The harshest criticism is directed at the formal system of doctoral education; that is, the doctoral studies. The participants state that their doctoral studies did not provide support, nor did they influence the acquisition of (new) knowledge, and some participants consider the process of doctoral education a waste of time, and describe their doctoral studies as "lame," which is illustrated by the following statements:

> *"Eh, the doctoral studies weren't really helpful...I mean...they were useful, but didn't significantly improve my knowledge or enlighten me."* (22, SS)

> *"Well, we had a lot of exams. At that time, we didn't have any classes at the postgraduate studies, you would write a seminar and that was it. So it wasn't very exciting, you know...it wasn't really useful, no. I mean, maybe a subject or two, but overall it was a waste of time. You know, I spent months reading those books, lecture notes, which in principle didn't have anything to do with my work, nor did I learn anything in general, but I did learn something about the specific fields of those people who gave lectures, which they didn't actually give, which was lame. So, the postgraduate study programme was lame."* (8, NS)

Dissatisfaction with the quality of doctoral studies is also present in the international academic community. For example, Golde and Dore (2001) argue there is a large discrepancy between the proclaimed purpose of the doctoral studies at the American universities, the aspirations of doctoral students, and the reality of their careers in the academic community. The results of their research reveal the doctoral students' exceptional dissatisfaction with the quality of doctoral studies because they do not fulfil their desires and requests, nor do they prepare them adequately for the future (research) positions (Golde & Dore, 2001).

In their criticism of the weak contribution of doctoral studies to the development of research competencies, the participants of our research highlight a small number of lectures and practical classes on the research methodology and the application procedures for statistical data analysis, which is illustrated by the following statements:

> *"For example, we had a course on the methodology of scientific research, but we didn't actually do anything at those classes, nor did we acquire anything implied by the title, and I must say I'm sorry because of that* (...)*"* (22, SS)

> *"I, but also my colleagues, we don't know statistics. I had several classes of statistics at my doctoral studies and we were introduced to the basics of SPSS, but that's not what's it's supposed to be."* (15, H)

> *"Statistics that I had at my studies, and even at the postgraduate studies, it is absolutely... I was aware of its existence, that those are the methods, but to have a statistical programme and use it* (...) *In the methodological sense nobody teaches you, nobody teaches you what would be methodologically good, statistics and such."* (29, BMHS)

The participants emphasise the weak contribution of doctoral studies to the development of this competency, and the inability to work independently on data analysis (*"I am not capable of independently working on statistics for my doctoral thesis."* – 15, H). The challenges are (rarely) overcome with the mentor, colleague, and friend support (*"my friend from Zagreb did statistics for me"* – 15, H), and more often with the use of the parallel "market system" for the statistical data analysis, in which case the experiences are not always positive.[13] Due to the lack of knowledge and ability to conduct the independent (statistical) analysis of the collected research data, the junior researchers often rely on the assistance of more experienced colleagues and mentors, who provides them with the guidelines and positively influence the acquisition and development of this competency, especially if they receive a competent mentor support, as illustrated by these statements:

> *"One of my colleagues helped me and taught me how to use a statistical programme. He showed me how to operate it, gave me advice, and invested a lot of time in it."* (11, BTS)

> *"I learned statistics from my mentor...she was all about statistics, so I observed.* (...) *Before that, I really didn't know anything about it. But I'm quite the visual type and if I really focus on something I can memorise it, so I learned a lot by observing her. I definitely think it's a big plus because even today some of my colleagues don't know some basics when it comes to statistics and ask me for help."* (29, BMHS)

13 The experiences of those participants who used the services provided by other individuals, including paid services, have not always been positive. One participant describes the challenges stemming from the lack of knowledge and ability to independently conduct statistical data analysis for the purpose of doctoral thesis: *"I am not capable of independently conducting statistical data analysis, which means that I have to find an expert in statistics. And then one colleague was recommended to me. (...) However, she just sent me a bunch of SPSS output, which meant nothing to me. I couldn't read any of it, any results, nothing. Nothing, nothing, nothing. I couldn't conduct an analysis. I expected her to... I mean, I know she can't provide an interpretation, but (...) And then I tried to ask her over e-mail and phone, Ok what does this number mean, and she simply stopped communicating with me. (...) And I paid her for that."* (15, H)

Mentor support is especially important during the process of competency acquisition and development, or as one of the participants vividly describes it, the process of "honing" the competency related to the knowledge of the basic principles of academic writing and publishing. The following two statements illustrate how crucial mentorial support is in the process of learning about the principles and techniques of academic writing:

> *"My mentor really pushed me when it came to research...when I started writing research papers, he pushed me in that...he corrected me, warned me, advised me, he was actually honing that scientific part; and since that scientific part wasn't very prominent during my studies, it was something that was missing. In my opinion, writing papers is more about practice and someone teaching you how to write. So my mentor was very helpful in that."* (14, H)

> *"There was a lot of communication during those several years when I worked in a lab, I was fine-tuning it, I would show my results to my mentor. She really coordinated my writing a lot, and in the beginning she would add stuff, I mean into my work, to refine it and improve it and such... In the beginning, there was a lot of verbal communication, and then it came down to track changes.* (...) *I learned a lot about writing papers and presenting results from her, and I definitely think that many didn't learn the same."* (29, BMHS)

However, the differences between the disciplinary communities reveal that in some contexts the junior researchers are not taught how to write papers, nor are they encouraged to do so, but mentors are the ones who take the responsibility of writing research papers upon themselves, which is demonstrated by the following statement – *"we had a lot of doctoral students here who only worked in the lab, and mentor would be the one writing papers"* (29, BMHS).

In addition to its importance during the professional socialisation into research, mentorial support is crucial during the process of the junior researchers' introduction into the (national and international) disciplinary community. This aspect is frequently discussed in literature from the perspective of the symbolic capital and the "network borrowing" of junior researchers who slowly build their legitimacy in the disciplinary or academic community through their mentors and the networks or contacts borrowed from them (Burt 1998, 2000; Aisenberg & Harrington, 1988; Atkinson & Delamont, 1990). The developmental competency of forming and maintaining (international) research networks is becoming a key criterion for visibility in a number of disciplinary communities; therefore, the engagement in international projects is very important for junior researchers during the process of forming and maintaining the international networks. The research participants' experiences highlight the importance of the mentor's influence and support during the process of international networking, as well as their assistance when it comes to the establishment of contacts within the disciplinary community, as illustrated by the following excerpts:

> *"My mentor gave me that support and in that sense, at the national and international levels, he always tried to connect me with someone, introduce me, emphasise that we collaborate together, so in that way he slowly introduced me into those circles. That*

way or in some future communication he would include me in some project or give me something to do, and I was slowly introduced to those people and established contact or some form of collaboration." (26, TS)

"We presented our results at the international congresses and then I was fascinated because I was accepted by the other researchers from other international institutions due to the fact that I was a part of my mentor's research group." (32, BMHS)

"If my mentor hadn't encouraged me back then and told me how important it was for my career and what it would bring, I probably wouldn't have had the courage to participate in the international COST project. So, in that way I saw it as an encouragement." (24, PS)

Taking into account the fact that in the national and especially international environment the project approach to the funding of research projects is predominant and that successful project management is crucial for the positive project evaluation, and consequently the new funding cycle, it is surprising that only one third of the participants in the first part of the (quantitative) research assess the developmental competency of the familiarising oneself with the research programme / project management (writing, applying for and managing research programmes / projects) as very or exceptionally important. On the other hand, more than two thirds of the participants (70.6%) claim they have completely mastered the aforementioned competency.

However, the results of this part of the (qualitative) research reveal a number of challenges which the junior researcher face, although some of them stem from the fact that they are not the project managers. In the context of project management, the junior researchers predominantly have to perform a number of administrative tasks, and it would appear that the type and amount of their engagement on research projects change according to the position which the junior researchers occupy in relation to their mentors. For example, this is how one of the participants describes her developmental path of the engagement on research projects and her transition from the project "secretary" to a researcher and respective author:

"When my mentor was the head of project, I was seen as a secretary – I had to do administrative tasks, deliver calls, write, insert data into a database... Now it's not like that, someone else is doing that now, and I deliver the research results and write papers." (21, SS)

The research participants report different (individual) experiences in the context of the research competencies' acquisition and development, especially if the perspectives of the disciplinary differences are taken into account. However, it is evident that the participants emphasise the insufficient contribution of formal education or doctoral studies which are characterised by the cancelled classes or the low quality of teaching which does not provide the expected learning outcomes. Therefore, it is not surprising that a number of participants describe the doctoral studies as "useless," "lame," and a "waste of time." The junior researchers also expressed their dissatisfaction with the possibilities for the scientific or professional

development during the CAP research, with almost half of the participants (47.1%) stating that they are (extremely) dissatisfied with the possibilities and opportunities for the scientific and professional development.[14]

Even though doctoral studies are harshly criticised by our research participants, the systematic and competent mentorial support is evaluated as exceptionally relevant for the different phases of the socialisation to research and disciplinary community, which is consistent with the international and national studies. Remmik et al. (2011) state that mentoring is one of the most effective support mechanisms in the process of professional development and socialisation because the high-quality mentoring relationship contributes to the decrease in the sense of isolation, increases self-confidence and professional growth, and improves self-reflection and problem solving abilities of junior academics. Certain Croatian authors (e.g. Brajdić Vuković, 2013) recognise the (low-quality) mentoring relationship as one of the key obstacles to professional socialisation of junior researchers. In the context of this part of the research, mentorial support has been identified as crucial for the acquisition of a number of the relevant core and developmental research competencies.

Final considerations

The results of the quantitative part of the APROFRAME research suggest that the majority of the junior researchers who participated in the study, have mostly or fully acquired the teacher and research competencies required for a successful performance in the academic community. They asses the importance and mastery of the core (teacher and research) competencies as higher in comparison with the developmental competencies. Therefore, the findings indicate that the junior researchers are more traditionally oriented toward the competencies required for the implementation of the teaching and research processes at the beginning of their careers, and less focused on the developmental competencies which are directed toward the enhancement and innovation of both teaching and research. Even though the research reveals the differences in the assessments of the importance and mastery of the competencies predominantly with regard to research field, the small size effects points to a conclusion that the research participants are a homogenous population when it comes to their self-assessments of the (complete) mastery of both the teacher and research competencies. These research findings suggest that the junior researchers are completely competent in their teaching and research roles at the beginning of their academic careers.

However, the results of the qualitative research point to a number of challenges or difficulties which the junior researchers face during the process of acquisition and development of the teacher and research competencies. Their introduction to teaching relies on personal

14 Unpublished results of the research "Changes in Academic Profession" (CAP).

effort, without a systematic support and feedback on the quality of their performance, and with very rare educational possibilities for the teacher competencies' acquisition and (professional) development. The research participants' experiences reveal that the reality is contrary to the recommendations of the European (higher education) policies and educational organisations which emphasise the importance of providing the right conditions for the development and enhancement of teacher competencies (EUA, 2010), as well as recommend the obligation of obtaining the pedagogical training certificate for teaching in higher education (EUA, 2015). The isolated experiences of the participants who attended the (one-time) professional development programmes for teachers are positive and the participants emphasise their usefulness when it comes to the applicability of the learned content in terms of their teaching activity and its enhancement. However, those positive experiences are an exception and not a rule; therefore, it is debatable if Croatian higher education institutions will be able to follow the *Standards and guidelines for quality assurance in the European Higher Education Area* (ENQA, 2015)[15] which emphasise the importance of providing the professional development opportunities for the teaching staff and the facilitation of the professional training for teachers, with the aim of the study programme development and implementation, and the stimulation of the active role of students in the learning process.

In addition to the lack of opportunities for the teacher competencies acquisition, the research participants harshly criticise the doctoral studies which are supposed to contribute to the research competencies' acquisition and development, but are instead described as lacking in quality and insufficiently influential. Moreover, the junior researchers claim that the time they invested into doctoral studies was wasted and that the expected learning outcomes were not achieved. Similar criticism of the quality of doctoral studies can be found on the European level as well, and Kehm (2006) warns that there is conventional wisdom and frequent criticism that when doctoral students finish their studies, they do so without acquiring the knowledge, skills, and abilities or competencies which would ensure their future professional development, especially if they decide to pursue a career outside the academic community. However, Kehm (2006) points out that the globalisation and the increasing demands for internationalisation have a significant influence on the perspective and conceptualisation of the doctoral education and training, which is why a number of European countries, or the universities themselves, have initiated a serious reform of their doctoral studies in order to make them more appealing and competitive.

The qualitative research results also reveal the various strategies which the junior researchers employ in order to respond to the challenges during the process of acquisition and development of the relevant (teacher and research) competencies. In that context, it is important to highlight the collegial support, and the interaction with other colleagues from the

15 In accordance with a draft of the revised document *Standards and guidelines for quality assurance in the European Higher Education Area* (ESG) adopted by the Bologna Follow-up Group (BFUG) on 19 September 2014, and by the ministers of the European Higher Education Area (EHEA) on 14 and 15 May 2015 during the conference in Yerevan. ESG was published by the European Association for Quality Assurance in Higher Education (ENQA).

national and international scientific community. Although rare, the experiences of some participants reveal the potential of the generational and intergenerational, as well as the disciplinary and cross-disciplinary collegial support. The junior researchers' intensive contact with their more experienced colleagues is considered crucial for the process of experiential learning during their professional socialisation (Delamont & Atkinson 2001; Parry, 2007). A number of studies recognise the importance of collegial support for the development of teacher competencies, and Hendry and Oliver (2012) emphasise the importance of peer observation, and the advantages and benefits it provides to university teachers, especially at the beginning of their academic careers. Hendry and Oliver (2012) also state that reciprocal peer observation, feedback, and critical reflection on the quality of teaching significantly contribute to the development of teacher competencies and the enhancement of the quality of teaching in higher education. However, the participants in this research have not experienced this type of support during their introduction to teaching.

Even though the experiences of (some of) the research participants reflect the importance of collegial support, research data points to a conclusion that mentorial support is the key factor in the processes of the acquisition and development of a number of the (teacher and research) competencies. The experiences of the (majority of) research participants who did not have high-quality mentorial support during their professional development reveal that its absence was disadvantageous for their academic developmental path. On the other hand, the (rare) experiences of those participants who had the support and leadership of competent mentors during the process of professional socialisation into the teaching and research emphasise their immeasurable influence on the personal learning process and competencies acquirement. This research demonstrates the particular importance of mentorial support that facilitates the "immersion" of junior researchers in their disciplinary community (national and international). Additionally, mentorial support is recognized as crucial for the acquisition of the research competencies, but also in the context of the empowerment, networking and independence of junior researchers, which is in accordance with the recent national and international studies (Remmik et al., 2011; Scaffidi & Berman, 2011; Brajdić Vuković, 2013; Vizek-Vidović, Brajdić Vuković & Matić, 2014; van der Weijden et al., 2014). The positive influence of mentoring relationships in the context of the junior researchers' professional socialisation is not a novelty because a number of studies from various disciplinary fields have highlighted the importance of the mentors' instrumental role in the professional, but also personal development of their junior colleagues (Dalton, Thompson & Price, 1977; Levinson et al., 1978; Phillips-Jones, 1982; Kram, 1983, 1985; Mathias, 2005; Foote & Solem, 2009; Hopwood, 2010; Cox, 2011; Baker, Pifer & Griffin, 2014; Browning, Thompson & Dawson, 2014; Boeren et al., 2015; Sood, Tigges & Helitzer, 2016).

However, in the context of this research, the finding which indicates the importance of such mentorial support, but at the same time the insufficient (mentorial) support and other forms of the systematic support in the process of the acquisition and development of the teacher and research competencies, enables a new perspective on the (exceptionally) high assessments of the mastery of the teacher and research competencies. It is possible that the quantitative results point to the junior researchers' high motivation and desire to perform both – teaching and research – in a high-quality manner; therefore, junior researchers' claim that

they have completely mastered analysed competencies could be interpreted as the socially desirable responses. It is also possible that the junior researchers want to perceive themselves as competent teachers and researchers. However, it is difficult for them to make (informed), constructive, and critical self-assessments while they are "immersed" into their regular (teaching and research) activities which are, as the qualitative research results suggest, (mainly) implemented without any referential framework which would enable critical self-assessment, without the professional development opportunities, without or with minimal (collegial and mentorial) support, without feedback on the quality of their work, and without self-analysis of their own competencies.

In the environment which does not enable the creation of the realistic self-image, the junior researchers are evidently creating an ideal one. In that context, it is highly likely that the (exceptionally) high self-assessments of the mastery of both the teacher and research competencies are the result of the socially desirable responses and the junior researchers' self-projection based on the desire to perceive and declare themselves as the (exceptionally) competent teachers and researchers. That self-perception of excellence – and it is indeed questionable to what degree it is based on the familiarity with, and understanding of the competencies' complexity - obstructs the idea that personal development and continuous enhancement of the teacher and research competencies is a necessity.

References

1. Adams, M., & Rytmeister, C. (2002). Beginning the academic career: How can it best be supported in the changing university climate? In L. Richardson and J. Lidstone (Eds.), *Flexible Learning for a Flexible Society,* 20-29: ASET and HERDSA.
2. Adcroft, A. P., & Taylor, D. (2010). Developing a conceptual model for career support for new academics. *International journal of teaching and learning in higher education*, 22(3), 287-298.
3. Aisenberg, N., & Harrington, M. (1988). *Women of academe: Outsiders in the sacred grove*. Univ of Massachusetts Press.
4. Altbach, P. G. (2004). The costs and benefits of world-class universities. *Academe*, 90(1), 20-23.
5. Altman, B. W., & Post, J. E. (1996). Beyond the "social contract": An analysis of the executive view at twenty-five large companies. *DT Hall & Associates, The career is dead-Long live the career*, 46-71.
1. Angelo, T. A., & Cross, K. P. (1993). *Classroom assessment techniques: A handbook for college teachers.* San Francisco: Jossey-Bass.
2. Argyris, C., & Schön, D. (1974). *Theory in practice: increasing professional effectiveness.* San Francisco: Jossey-Bass Publishers.
3. Arimoto, A. (2014). The teaching and research nexus in the third wave age. In J.C. Shin, A. Arimoto, W. K. Cummings, and U. Teichler (Eds.). *Teaching and Research in Contemporary Higher Education,* (pp. 15-33). Dordrecht: Springer

4. Aronson, J. (1995). A Pragmatic View of Thematic Analysis. *The Qualitative Report,* 2(1), 1-3. Retrieved 17 January 2017, from: http://nsuworks.nova.edu/tqr/vol2/iss1/3.
5. Arthur, M. B., & Rousseau, D. M. (1996). A career lexicon for the 21st century. *The Academy of Management Executive*, 10(4), 28-39.
6. Atkinson, P., & Delamont, S. (1990). Writing about teachers: How british and american ethnographic texts describe teachers and teaching. *Teaching and Teacher Education*, 6(2), 111-125.
7. Baker, L. V., Pifer, J. M., & A. Griffin, K. (2014). Mentor-protégé fit: Identifying and developing effective mentorship across identities in doctoral education. *International Journal for Researcher Development*, 5(2), 83-98.
8. Ball, S. J. (2003). The teacher's soul and the terrors of performativity. *Journal of Education Policy*, 18, 215-228.
9. Benner, P. (1985). Quality of life: A phenomenological perspective on explanation, prediction, and understanding in nursing science. *Advances in Nursing Science,* 8(1), 1-14.
10. Bess, J. L. (1998). Teaching well: Do you have to be schizophrenic?. *The Review of Higher education*, 22(1), 1-15.
11. Biglan, A. (1973). The characteristics of subject matter in different academic areas. *Journal of applied psychology*, 57(3), 195.
12. Boeren, E., Lokhtina-Antoniou, I., Sakurai, Y., Herman, C., & McAlpine, L. (2015). Mentoring: A Review of early career researcher studies. *Frontline Learning Research*, 3(3), 68-80.
13. Bognar, L., & Kragulj, S. (2010). The Quality of University Teaching. *Life and School: Journal for the Theory and Practice of Education*, 56(24), 169-182.
14. Borić, E. (2013). *Teaching Methods at the University Level: Contributions to the Development of Teaching Methods in University Courses.* Osijek: Faculty of Teacher Education in Osijek.
15. Brajdić Vuković, M. (2013). Problems of the professional socialisation within the "scientific novice" program: cases of natural and social sciences. *Croatian Journal of Social Policy*, 20(2), 99-122.
16. Brajdić Vuković, M. (2012). *Social actors of young researchers' professional socialisation in natural and social sciences.* Doctoral thesis. Zagreb: Faculty of Humanities and Social Sciences.
17. Bratanić, M. (2003). Pedagogical competence of higher education teacher. In H. Vrgoč (Ed.), *Education and pedagogy in the development of Croatian society – Collected papers of the Council of Croatian Pedagogues* (pp. 262-267). Zagreb: Croatian Literary-Educational Association.
18. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
19. Brew, A. (2006). *Research and Teaching. Beyond the Divide*. New York: Palgrave Macmillan.
20. Brew, A. (2012). Teaching and research: new relationships and their implications for inquiry-based teaching and learning in higher education. *Higher Education Research & Development,* 31(1), 101-114.

21. Browning, L., Thompson, K., & Dawson, D. (2014). Developing future research leaders: Designing early career researcher programs to enhance track record. *International Journal for Researcher Development*, 5(2), 123-134.

22. Brust Nemet, M. (2015). Social competence of the attendants of the pedagogically-psychological and didactical-methodical education. *Magistra Iadertina, 9*(1), 99-109.

23. Burt, R. S. (2000). The network structure of social capital. *Research in organizational behavior*, 22, 345-423.

24. Burt, R.S. (1998). The gender of social capital. *Rationality and Society,* 10, 5–46.

25. Caena, F. (2011). *Literature review. Teachers' core competences: requirements and development*. Bruxelles: European Commission.

26. Cifrić, I., Magdalenić, I., & Štambuk, M. (1984). *The Social Position of University Assistants in the Socialist Republic of Croatia*, IDIZ: Zagreb.

27. Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.

28. Colbeck, C. L. (1998). Merging in a seamless blend: How faculty integrate teaching and research. *Journal of Higher Education*, 69(6), 647-671.

29. Colbeck, C. L. (2002). Integration: Evaluating faculty work as a whole. *New Directions for Institutional Research*, 114, 43-52.

30. Cox, M. D. (2011).The impact of communities of practice in support of early-career academics. *International Journal for Academic Development,* 18(1), 18-30.

31. Creswell, J. W. (1994). *Research design: Qualitative and quantitative approaches. Thousand Oaks*, CA: Sage.

32. Creswell, J. W., & Plano Clark, V. L. (2006). *Designing and Conducting Mixed Methods Research,* Thousand Oaks, CA: Sage.

33. Creswell, J. W., Plano Clark, V. L., Gutmann, M., & Hanson, W. (2003). Advanced mixed methods research designs. In A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioural research*, (pp. 209-240). Thousand Oaks, CA: Sage.

34. Cvitan, M., Doolan, K., Farnell, T., & Matković, T. (2011). *The social and economic profile of student life in Croatia: National EUROSTUDENT research report for Croatia*. Zagreb: Institute for the Development of Education.

35. Ćulum, B., & Ledić, J. (2012). *Academics and University Civic Mission*. Rijeka: Faculty of Humanities and Social Sciences.

36. Dalton, G. W., Thompson, P. H., & Price, R. L. (1977). The four stages of professional careers - A new look at performance by professionals. *Organizational Dynamics*, 6(1), 19-42.

37. de Waal, C. (2001). *On Peirce. Belmont*. CA: Wadsworth.

38. Delamont, S., & Atkinson, P. (2001). Doctoring uncertainty: Mastering craft knowledge. *Social studies of science*, 31(1), 87-107.

39. Deloitte/Apec (2010). *Skills and competencies needed in the research field objectives 2020*. Retrieved 10 January 2017, from: http://www.eurocadres.org/IMG/pdf/APEC_EN_ Skills _and_competencies_needed.pdf.

40. Drennan, J., Clarke, M., Hyde, A., & Politis, Y. (2013). The research function of the academic profession in Europe. In U. Teichler and E. A. Höhle (Eds.), *The work situation of the academic profession in Europe: Findings of a survey in twelve countries* (pp. 109-136). Dordrecht: Springer.

41. Ehrenberg, R.G., Zuckerman, H., Green, J.A., & Bruckner, S.M. (2010). *Educating Scholars: Doctoral Education in the Humanities.* Princeton: Princeton University Press.

42. Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing*, 62(1), 107-115.

43. ENQA (2015). *Standards and Guidelines for Quality Assurance in the European Higher Education Area*. Retrieved 14 December 2016, from: http://www.eua.be/Libraries/quality-assurance/esg_2015.pdf?sfvrsn=0.

44. Eurydice (2003). *The teaching profession in Europe: Profile, trends and concerns. Supplementary report. Reforms of the teaching profession: a historical survey (1975-2002).* Brussels: Eurydice.

45. Farnell, T., & Kovač, V. (2010). Removing Inequities in Higher Education: Towards a Croatian Policy for Widening Participation. *Croatian Journal of Social Policy,* 17(2), 257-275.

46. Farnell, T., Matković, T., Doolan, K., & Cvitan, M. (2013). *Social inclusion in Croatian higher education: An analysis*. Zagreb: Institute for the Development of Education.

47. Field, A. (2009). *Discovering statistics using SPSS*. London: SAGE Publications.

48. Foote, K. E., & Solem, M. N. (2009). Toward better mentoring for early career faculty: results of a study of US geographers. *International journal for academic development*, 14(1), 47-58.

49. Goastellec, G., & Pekari, N. (2013). The internationalisation of academic markets, careers and professions. In U. Teichler and E. A. Höhle (Eds.), *The Work Situation of the Academic Profession in Europe: Findings of a Survey in Twelve Countries*, (pp. 229-248). Dordrecht: Springer.

50. Goastellec, G., Park, E., Ates, G., & Toffel, K. (2013). Academic Markets, Academic Careers: Where Do We Stand? In B. M. Kehm and U. Teichler (Eds.), *The academic profession in Europe: New tasks and new challenges,* (pp. 93-120). Dordrecht: Springer.

51. Golde, C. M., & Dore, T. M. (2001). *At Cross Purposes: What the Experiences of Today's Doctoral Students Reveal about Doctoral Education.* Wisconsin University: Madison, USA.

52. Golub, B. (2008). The social and professional profile of natural and social scientists. In K. Prpić (Ed.), *Beyond the Myths about the Natural and Social Sciences: A Sociological View,* (pp. 21-71). Zagreb: Institute for Social Research in Zagreb.

53. Golub, B., & Šuljok, A. (2005). *The Social Profile of Scientists and its Changes (1990 -2004).* In K. Prpić (Ed.), *Knowledge Elites in the Knowledge(less) Society,* (pp. 123-183). Edition Science and Society. Zagreb: Institute for Social Research in Zagreb.

54. Greenbank, P. (2006). The academic's role: The need for a re-evaluation? *Teaching in Higher Education*, 11, 107-112.

55. Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational evaluation and policy analysis*, 11(3), 255-274.

56. Hakala, J. (2009). Socialization of junior researchers in new academic research environments: Two case studies from Finland. *Studies in Higher Education*, 34(5), 501-516.

57. Hakim, C. (1994). *We are all self-employed.* San Francisco, CA: Berrett-Koehler.

58. Hénard, F., & Roseveare, D. (2012). *Fostering Quality Teaching in Higher Education: Policies and Practices*. OECD. Retrieved 15 February 2013, from: http://www.oecd.org/edu/imhe/QT%20policies%20and%20practices.pdf

59. Hendry, G. D., & Oliver, G. R. (2012). Seeing Is Believing: The Benefits of Peer Observation. *Journal of University Teaching and Learning Practice*, 9(1), 7.

60. Herdlein III, R. J. (2004). Survey of chief student affairs officers regarding relevance of graduate preparation of new professionals. *NASPA journal*, 42(1), 51-71.

61. Hopwood, N. (2010). Doctoral experience and learning from a sociocultural perspective. *Studies in Higher Education*, 35(7), 829-843.

62. Ismail, M., & Rasdi, R. M. (2007). Impact of networking on career development: Experience of high-flying women academics in Malaysia. *Human Resource Development International*, 10(2), 153-168.

63. Johnson, B., & Turner, L. A. (2003). Data collection strategies in mixed methods research. *Handbook of mixed methods in social and behavioral research*, 297-319.

64. Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed Methods Research: A Research Paradigm Whose Time Has Come, *Educational Researcher,* 33(7), 14-26.

65. Jovanović , Ž., & Zelenika, S. (2013). Science and higher education in Croatia at the verge of entering the EU, *Periodicum Biologorum,* 115(1), 27-31.

66. Kehm, B. M. (2006). Doctoral education in Europe and North America: A comparative analysis. *Wenner Gren International Series*, 83, 67-78.

67. Kesić, T., & Previšić, J. (1996). Work Satisfaction and Time Allocation of Academics at University of Zagreb. *Društvena istraživanja: journal for general social issues*, 5(1/21), 147-159.

68. Knapp, M. S. (1979). Ethnographic contributions to evaluation research. In T. D. Cook, and C. S. Reichardt (Eds.), *Qualitative and quantitative methods in evaluation research,* (pp. 118-139). Beverly Hills, CA: Sage.

69. Knight, P. (1995). *Assessment for Learning in Higher Education.* London: Kogan Page.

70. Kogan M., & Teichler U. (Eds.) (2007.) *Key Challenges to the Academic Profession.* Kassel: International Centre for Higher Education Research: University of Kassel.

71. Koster, B., & Dengerink, J. J. (2008). Professional standards for teacher educators: how to deal with complexity, ownership and function. Experiences from the Netherlands. *European Journal of Teacher Education*, 31(2), 135-149.

72. Kovač, V. (2001). *Academic Staff Development.* Rijeka: Faculty of Humanities and Social Sciences.

73. Kovač, V., Ledić, J. & Rafajac, B. (1999). Preparation of Higher Education Assistants for Teaching. In V. Rosić (Ed.), *The Proceedings of the Second International Scientific Colloquium - The Teacher as a Contributor to Quality in Education*, (pp. 41-48). Rijeka: Faculty of Humanities and Social Sciences.

74. Kram, K. E. (1983). Phases of the mentor relationship. *Academy of Management journal*, 26(4), 608-625.

75. Kram, K. E. (1985). *Mentoring at work: Developmental relationships in organizational life.* Glenview, Ill.: Scott, Foresman.

76. Kuk, L., Cobb, B., & Forrest, C. S. (2007). Perceptions of competencies of entry-level practitioners in student affairs. *NASPA Journal*, 44(4), 664-691.

77. Kwiek, M., & Antonowicz, D. (2013). Academic Work, Working Conditions and Job Satisfaction. In U. Teichler and E. A. Höhle (Eds.), *The Work Situation of the Academic Profession in Europe: Findings of a Survey in Twelve Countries*, (pp. 37-54), Dordrecht: Springer.

78. Kyriacou, C. (1998). *Essential Teaching Skills.* Zagreb: Educa.

79. Lacković-Grgin, K. (1994.). *Self-perception of young people*. Imprint Slap: Jastrebarsko.

80. Lamnek, S. (2005). *Qualitative social research*. Weinheim: Beltz PVU.

81. Ledić, J. (1992). Approach to the Pedagogical Development of University Teachers, *Napredak – a journal for pedagogical theory and practice,* 132(2), 195-199.

82. Ledić, J. (1993). Toward the New Standards of Teaching in Higher Education. *Napredak – a journal for pedagogical theory and practice*, 134(2), 187-196.

83. Ledić, J. (1994). TQM – New Approach to Quality in University Education. *Napredak – a journal for pedagogical theory and practice,* 135(4), 456-465.

84. Ledić, J., Kovač, V., & Rafajac, B. (1998). Students' position regarding the quality of the teaching process at the university. *Društvena istraživanja: journal for general social issues*, 7(4-5), 619-637.

85. Leininger, M. M. (1985). Ethnography and ethnonursing: Models and modes of qualitative data analysis. In M. M. Leininger (Ed.), *Qualitative research methods in nursing*, (pp. 33-72). Orlando, FL: Grune & Stratton.

86. Levinson, D. J., Darrow, C. N., Klein, E. B., Levinson, M. A., & McKee, B. (1978). *Seasons of a man's life*. New York: Knopf.

87. Locke, W., & Teichler, U. (Eds.) (2007). *The Changing Conditions for Academic Work and Careers in Selected Countries*. Kassel: International Centre for Higher Education Research: University of Kassel.

88. Madey, D. L. (1982). Some benefits of integrating qualitative and quantitative methods in program evaluation, with illustrations. *Educational Evaluation and Policy Analysis,* 4, 223- 236.

89. Marentič Pozarnik, B., & Lavrič, A. (2015). Fostering the quality of teaching and learning by developing the "neglected half" of university teachers' competencies. *CEPS Journal*, 5(2), 73-93.

90. Mark, M. M., & Shotland, R. L. (1987). Alternative models for the use of multiple methods. In M. M. Mark and R. L. Shotland (Eds.), M*ultiple methods in program evaluation: New Directions for Program Evaluation,* (pp. 95-100). San Francisco: Jossey-Bass.

91. Mathias, H. (2005). Mentoring on a programme for new university teachers: A partnership in revitalizing and empowering collegiality. *International Journal for Academic Development*, 10(2), 95-106.

92. Mathison, S. (1988). Why triangulate? *Educational Researcher,* 77(2), 13-17.

93. Mattes, W., (2007), *Teaching methods: 75 compact reviews for teachers and students,* Zagreb: Imprint Ljevak.

94. Mavin, S., & Bryans, P. (2002). Academic women in the UK: Mainstreaming our experiences and networking for action. *Gender and Education*, 14(3), 235-250.

95. Maxwell, J. A., Bashook, P. G., & Sandlow, C. J. (1986). Combining ethnographic and experimental methods in educational evaluation. In D. M. Fetterman and M.A. Pitman (Eds.), *Educational evaluation: Ethnography in theory, practice, and politics,* (pp. 121-143). Beverly Hills, CA: Sage.

96. McInnis, C. (2000). Changing academic work roles: the everyday realities challenging quality in teaching. Quality in Higher Education, 6(2), 143-152.

97. McLeod, H., & Badenhorst, C. (2014). New Academics and Identities: Research as a Process of 'Becoming'. *Brock Education,* 24(1), 65-72.

98. Miles, J. & Shevlin, M. (2001). *Applying Regression and Correlation: A Guide for Students and Researchers.* London: Sage.

99. Misiaszek, L. I. (2015). "You're not able to breathe": Conceptualizing the intersectionality of early career, gender and crisis. *Teaching in Higher Education*, 20(1), 64-77.

100. Močinić, S. N. (2012). Active teaching strategies in higher education. *Methodological Horizons*, 15.

101. Morse, J. M. (1991). Approaches to qualitative-quantitative methodological triangulation. *Nursing Research,* 40, 120-123.

102. Munjiza, E., & Lukaš, M. (2006). Pedagogical-Psychological Education of Teachers Educated Through Different Teacher Training Programs at Colleges and Universities. *Educational Science,* 8(2): 361-383.

103. Musselin, C. (2007). Transformation of academic work: Facts and analysis. In M. Kogan and U. Teichler (Eds.). *Key challenges to the academic profession*, (pp. 175–190). Kassel: International Centre for Higher Education Research Kassel

104. Neumann, R. (1992). Perceptions of the teaching-research nexus: A framework for analysis. *Higher Education,* 23, 159-171.

105. Ordinance on appointment to scientific, scientific-educational, artistic-educational, educational, associate and professional titles and corresponding employment positions of the Josip Juraj Strossmayer University of Osijek (2002). Senate of the University of Osijek, 003-05/12-01/7. Retrieved 5 May 2017, from: http://www.unios.hr/uploads/50PRAVILNIK%20o%20izboru %20u%20zvanja%20HR.pdf.

106. Parry, S. (2007). *Disciplines and doctorates. Higher education dynamics,* 16, London: Springer.

107. Peko, A., Mlinarević, V., & Buljubašić-Kuzmanović, V. (2008). The Need for Improvement of Instruction at University Level. *Educational Sciences*, 10 (1/15), 195-208.

108. Petersen, E. B. (2011). Staying or going?: Australian early career researchers' narratives of academic work, exit options and coping strategies. *Australian Universities' Review,* 53(2), 34.

109. Phillips-Jones, L. L. (1982). *Mentoring and protégés.* New York: Arbor House.

110. Polio, R. H. (1996). *The Two Cultures of Pedagogy: Teaching and Learning in the Natural Sciences and the Humanities*. University Studies Publications. Retrieved 16 November 2016, from: http://trace.tennessee.edu/cgi/viewcontent.cgi?article=1004icontext= utk_ ustudiespubs

111. Postareff, L., & Lindblom-Ylänne, S. (2011). Emotions and confidence within teaching in higher education. *Studies in Higher Education*, 36(7), 799-813.

112. Prince, M. (2004). Does active learning work? A review of the research. *Journal of engineering education*, 93(3), 223-231.

113. Prpić, K. (1996). Characteristics and determinants of eminent scientists' productivity. *Scientometrics*, 36(2), 185-206.

114. Prpić, K. (2000). The publication productivity of young scientists: An empirical study. *Scientometrics*, 49(3), 453-490.

115. Prpić, K., & Brajdić Vuković, M. (2008). Self-reported research productivity: patterns and actors. In K. Prpić (Ed.), *Beyond the Myths about the Natural and Social Sciences: A Sociological View* (pp. 83-127). Zagreb: Institute for Social Research in Zagreb.

116. Puzić, S., Doolan, K., & Dolenec, D. (2006). Social Dimension of the Bologna Process and (Un)Equality of Chances of Getting High Education: Some Croatian Experiences. *Sociology and Space*, 172/173, 2/3, 243-260.

117. Rački, Ž, Peko, A., & Varga, R. (2010). Necessity of Lifelong Education of University Teachers: Pedagogical-Psychological and Didactic-Methodological Training. *Modszertani Kozlony*, 1(1), 36-49.

118. Ramsden, P., & Moses, I. (1992). Associations between Research and Teaching in Australian Higher Education. *Higher Education*, 23(3), 273-295.

119. Remmik, M., Karm, M., Haamer, A., & Lepp, L. (2011). Early-career academics' learning in academic communities. Int*ernational Journal for Academic Development,* 16(3), 187-199.

120. Rončević, N., & Rafajac, B. (2010). *Changes in Academic Profession: A Comparative Analysis*. Rijeka: Faculty of Humanities and Social Sciences.

121. Scaffidi, A. K., & Berman, J. E. (2011). A positive postdoctoral experience is related to quality supervision and career mentoring, collaborations, networking and a nurturing research environment. *Higher Education*, 62(6), 685-698.

122. Sieber, S. D. (1973). The integration of fieldwork and survey methods. *American Journal of Sociology,* 78, 1335-1359.

123. Skelton, A. (2005). *Understanding teaching excellence in higher education: Towards a critical approach.* London: Routledge.

124. Smith, R. (2003). The future of peer review. In F. Godlee and T. Jefferson (Eds.), *Peer review in health sciences,* 2nd edition (pp. 329-246), London: BMJ Books.

125. Sood, A., Tigges, B., & Helitzer, D. (2016). Mentoring Early-Career Faculty Researchers Is Important - But First "Train the Trainer". *Academic Medicine*, 91(12), 1598-1600.

126. Sullivan, S. E. (1999). The changing nature of careers: a review and research agenda. *Journal of Management*, 25, 457–484.

127. Taylor, S. J., & Bogdan, R. (1984). *Introduction to qualitative research methods: The search for meanings.* New York: John Wiley & Sons.

128. Teichler, U., Arimoto, A., & Cummings, W. K. (2013). The design and methods of the comparative study. In U. Teichler, A. Arimoto, and W. K. Cummings (Eds.), *The Changing Academic Profession,* (pp. 25-35). Netherlands: Springer.

129. Tigelaar, D. E. H., Dolmans, D. H. J. M., Wolfhagen, I. H. A. P., & van der Vleuten, C. P. M. (2004). The Development and Validation of a Framework for Teaching Competencies in Higher Education. *Higher Education*, 48, 2.

130. Trend, M. J. (1979). On the reconciliation of qualitative and quantitative analyses: A case study. In T. D. Cook and C. S. Reichardt (Eds.), Q*ualitative and quantitative methods in evaluation research,* (pp. 68-86). Beverly Hills, CA: Sage.

131. Turk, M. (2016). (New) competencies of the academic profession in Europe. *Napredak – a journal for pedagogical theory and practice*, 157, 145-164.

132. Turk, M. & Ledić, J. (2016a). *Academic profession competencies. Fata volentem ducunt, nolentem trahunt.* Rijeka: Faculty of Humanities and Social Sciences.

133. Turk, M. & Ledić, J. (2016b). Between teaching and research: challenges of the academic profession in Croatia. *CEPS Journal: Center for Educational Policy Studies Journal*, 6(1), 95.

134. van der Weijden, I., Belder, R., Van Arensbergen, P., & Van Den Besselaar, P. (2015). How do young tenured professors benefit from a mentor? Effects on management, motivation and performance. *Higher Education*, 69(2), 275-287.

135. Verburgh, A., Elen, J., & Lindblom-Ylänne, S. (2007). Investigating the myth of the relationship between teaching and research in higher education: A review of empirical research. *Studies in Philosophy and Education*, 26(5), 449-465.

136. Vizek Vidović, V. (2009). Competences and competence profiles in teaching profession. In V. Vizek Vidović (Ed.), *Planning the competency-focused curriculum for teacher education,* (pp. 33-39). Zagreb: Faculty of Humanities and Social Sciences in Zagreb.

137. Vizek Vidović, V., Vuković, M. B., & Matić, J. (2014). *ISRZ Manual for Mentoring Young Researchers.* Zagreb: Institute for Social Research in Zagreb.

138. Wager, E., Godlee, F., & Jefferson, T. (2002). *How to survive peer review*. London: BMJ Book.

139. Waple, J. N. (2006). An assessment of skills and competencies necessary for entry-level student affairs work. *NASPA journal*, 43(1), 1-18.

140. Winck, J.C., Fonseca, J.A., Azevedo, L.F. & Wedzicha, J.A. (2011). To publish or perish: How to review a manuscript, *Revista Portuguesa de Pneumologia,* 17(2), 96-103.

141. Zanchin, M. R., (2002). *Le strategie attive,* AA.VV., *Le interazioni educative*, Roma: Armando.

I mean, that amount of work would consume me at one point: THE NARRATIVE ANALYSIS OF THE LIFE HISTORY EXPERIENCES OF FEMALE JUNIOR RESEARCHERS DURING THE PROFESSIONAL SOCIALISATION INTO THE TEACHING AND RESEARCH PROFESSION IN THE CROATIAN HIGHER EDUCATION SYSTEM

Marija Brajdić Vuković, Bojana Vignjević

Introduction

This book explores the professional socialisation of junior researchers into the academic profession from the aspect of their professional training for the teaching and research work; that is, the role of the university teacher, and the role of the researcher in a specific research field. Those two roles require different competencies and significant effort during the academic profession development. The academic profession has been the subject of a number of studies and discussions, from the classic "Mertonian" perspective on the academic profession and its basic ideal type values (Merton, 1957) to the contemporary perception of academics as entrepreneurs in certain disciplines (Slaughter & Leslie, 1997; Etkowitz et al., 2000; Slaughter & Rhoads, 2004). Under the influence of the contemporary socio-political tendencies and due to the change of the role of science and technology in society, the academic profession has departed significantly from the initial roles and even norms, especially in the everyday practical aspect of academic performance (Slaughter & Rhoades, 2004; Henkel, 2005; Musselin, 2006; Illyjoki, 2008). Therefore, for the purpose of this book, it is important to discuss the characteristics and difficulties of the academic profession in contemporary society. In particular, the characteristics and difficulties of the professional training for the academic profession should be discussed, and that is the central topic of our study.

The process taking place in the majority of the science and higher education systems, which some authors call the "second academic revolution" (Martin & Etzkowitz, 2000), is radically changing the conditions of academic work, as well as the types of academic employment. The comparative studies show that those changes, described as negative by the analysts and researchers within the field (El-Khawas, 2008), have also influenced the mature and developed science and higher education systems in spite of their specificities (Boyer, 1996; Altbach, 2003; Enders & Musselin, 2008). The most frequently discussed sector changes are the (under)funding, the imposition of market competitiveness and the business and industry partnerships, as well as the sudden and substantial increase in the number of students – or what

is called the massification of higher education. The radical changes in the function of science and universities are also called the "academic capitalism" by some authors (Slaughter & Leslie, 1997; Slaughter & Rhoads, 2004) or "entrepreneurial university" (Clark, 1998; as cited in Ylijoki, 2008), while the proponents of changes suggest the normative models which would redirect universities toward the entrepreneurial activities and additionally strengthen the interaction with the industry, as well as the rest of society (Gibbons et al., 1994; Etzkowitz, 2003a, 2003b). In the sector of science, the pressure toward the market competition is exerted through the demand for the "applicability" of the research results and the inclusion of research goals into the "national strategy" framework (Valimaa, 2008). The instrumentalisation of the science policies for the aforementioned purposes results in the scientist's professional position often resembling that of a "supplier" in the service of the industry and economic policy requirements (Valimaa, 2008; Ylijoki, 2008). The aforementioned factors have a significant influence on the autonomy of researchers, as well as the science communities and the higher education communities in general.

In addition to the discipline which always has a prominent and important place in the discussion, autonomy is one of the key questions of academic identity. On the individual level, autonomy implies the freedom to independently select research questions and organise projects, as well as to establish the personal and work priorities and independently organise all life areas. On the collective level, it implies that the aforementioned individual freedom enables the truly autonomous functioning of the scientific community in terms of research and values, and in accordance with the requirements of science and its advancement (Henkel, 2005, pp. 169-170). The studies which place the academic identity within the framework of the recent European science policies oriented toward the market requirements or what is called the "academic capitalism" (Salughter & Rhoades, 2004), have systematically emphasised the importance of the socio-structural and historically contextualised approach to the issue of academic identity (Bauer et al., 1999; Bleiklie et al., 2000; Henkel, 2000, 2005; Kogan & Hanney, 2000; Valimma & Ylijoki, 2008). Under the pressure of the aforementioned structural turmoil, and in a time when the question of identity is increasingly explored through its "fluidity" and "openness" (Bauman, 1996; Henkel, 2000), academic identity is increasingly perceived as a battlefield, and not through the prism of harmony and accord. The recent study regarding the case of the eminent Finnish scientist (Ylijoki, 2008) describes the personal and social identity crisis that he experienced when faced with the increasing pressure of the administrative tasks related to project management, ensuring the financial support, reporting on his activities, and other non-scientific obligations. His crises were reflected in the inability to find the purpose and motivation in everyday work, and the feeling of emptiness and a lack of purpose in his profession, due to the reduced possibility of focusing on the tasks of disciplinary value. Consequently, a number of findings reveal that there has been an increase in the dissatisfaction with employment in the academic professions during the last decades (El-Khawas, 2008). The second aspect of the autonomy of scientific activity is related to the traditional understanding of the sector of science and higher education as an autonomous sphere managed by the researchers themselves (Ferlie et al., 2008). The ideology of that perception is based on the academic freedom and autonomy as the university's inalienable rights, which disregards the relationship between the organisation and employees; that is, it removes the "working-class" aspect of academic employment from the labour market world (Bleiklie & Michelsen, 2008).

Due to the outside pressure which renders the university and research activity more open and subject to observation, evaluation and orientation toward the external goals, and at the height of the reduced funding and the need for the managerial leadership of academic organisations, the academic employment is increasingly acquiring the negative characteristics of the contemporary labour market, those of instability, flexibility, and precariousness (Slaughter & Rhoades, 2004; Henkel, 2005; Musselin, 2007; Ylijoki, 2008).

The professional socialisation of junior researchers occurs in the aforementioned turbulent environment. The research conducted on the sample of junior researchers (Brajdić Vuković, 2012, 2013, 2014) shows that similar processes are taking place in Croatia, and indicates decreased autonomy, increased administrative workload, and engagement in commercial projects with the goal of financing the primary scientific project (which is underfinanced in terms of public funding). This research reveals that, in spite of the legislative protection provided by the system to junior researchers through the employment legislation, the professional socialisation within the system is characterised by work overload of the junior academics engaged in the commercial projects commissioned by third parties, a notable increase in the number of students, and the lack of teaching and administrative staff, as well as the consequential work overload of the academic staff, and finally the lack of crucial funding for academic work. These structural conditions unquestionably have a significant influence on the culture of the organisations where the professional socialisation occurs, and the course and outcomes of the professional socialisation of junior academics in the system. As previously stated in the chapter on methodology (see chapter: *Methodological framework for the research on the professional socialisation of junior researchers in Croatia*), this paper is a part of the APROFRAME project whose general goals are to understand the culture of the scientific and higher education institutions in Croatia, and the manner in which they influence the professional socialisation of junior researchers and the development of their competencies. Therefore, the focus of the project is the "positioning" of the professional socialisation in the particular structural and socio-historical conditions which are in an active interrelationship with the socialisation. This paper approaches the specified topic in a particular manner: through the exploration of the experiences of competencies development in teaching and research, by conducting the narrative research through the method of the semi-structured life history interviews with female junior researchers.

The question of female representation in the system of science and technology in the EU area has been prominent in the EU policies during the last twenty years (Müller et al., 2010), but the discussion intensified in 2012 when the European Commission issued the guidelines for the enhancement of gender equality in the common European Research Area (ERA), with the "intention of remedying a waste of talent which is unaffordable, and diversifying the perspectives and approaches to research, as well as enhancing excellence" (Caprile et al., 2012, p. 15). In their recommendations for achieving that goal, the European Commission instructs the member states to facilitate the removal of legislative and other barriers for the advancement of the women scientists' careers through the complete harmonisation with the EU legislation regarding gender equality. Furthermore, the member states are invited to address gender inequality in their decision-making and integrate the gender dimension into the research programmes. The member states are especially instructed to "establish partnerships with the

financing agencies, research organisations and universities in order to facilitate the cultural and institutional change" (Caprile et al., 2012, p. 34) and ensure the minimum 40% participation of the underrepresented gender group in the decision-making with regard to careers in science, and in the councils connected to the research programme evaluation. These guidelines are necessary because the long-term studies on the careers in science and technology show that women occupy lower academic ranks at universities, and are more frequently employed in temporary positions (Long & Fox, 1995; Long, 2003), earn less in comparison to men in the same research fields (Astin & Cress, 2003; Fox, 2003; Shauman & Xie, 2003), and have less time and resources for research (Shauman & Xie, 2003). Nevertheless, the metaphor of the *pipeline thesis,* or the *leaky career pipeline,* has emerged as the most important concept for our paper, as well as the *Matilda effect* which is the equivalent of the *Matthew effect* when it comes to women in science.

According to the hypothesis of the career pipeline, the individual's career can be observed from the primary school to the initial employment and described as a pipeline; that is, a line of pipe which conveys oil or other liquids and gases. The rate of flow into the scientific careers is measured by the speed of passage at transition points, such as graduation, doctorate, and employment within the system (Etzkowitz et al., 2000). Nevertheless, it seems that the pipeline is leaky in many places when it comes to women. Angier (1995) states: "The best metaphor to describe the plight of women in science, and their continued scarcity at the upper reaches of their profession, is not the glass ceiling[1] or the broken ladder[2] or even the old boy and their clubs, but rather a segment from the plumbing terminology: the leaky pipe. It is a pipe with leaks at every joint along its span, a pipe that begins with a high-pressure surge of young women at the source – a roiling Amazon of smart graduate students – and ends at the spigot with a trickle of women prominent enough to be deans or department heads at major universities or to win such honors as membership in the National Academy of Sciences or even, heaven forfend, the Nobel Prize." As the author states, the experiences show that the start itself is not a problem, or the beginning of doctoral studies, when there is a sufficient number of young and talented future women scientists who are interested in pursuing a career. The problem is that at every stage of the scientific career a large number of women abandon their career paths, give up or are eliminated due to a number of structural and social reasons; therefore, a small number of women reach the very "end" of that pipeline (Angier, 1995). Indeed, studies show that the cultural beliefs on the capabilities of women and men influence the self-assessment of abilities (Correll, 2001); consequently, when it comes to women and men of equal capabilities, women tend to engage in self-promotion or ask for promotion a lot less often than men (Fiorentine, 1987; Rudman, 1998). Furthermore, the tenders for awards

1 The concept of *glass ceiling* was first used by the feminist and author Marilyn Loden in 1978 in one of her speeches. Since then, it has become known as the concept which describes the invisible structural barriers which prevent women's advancement in careers, especially when it comes to the competitive careers in the fields of science and technology, politics, and business.

2 The concept of *broken ladder* refers to the career development theories which discuss the fact that many people's career paths are not continuously upward mobile, but intermittent and involve different employments along the way (e.g., Campbell & Cellini, 1981; Thomas, 1980).

and the award conditions are stereotypically connected to men because the description of desirable candidates often contains typically male characteristics, such as leaders or individuals who like to take risks (Carnes et al., 2005). In addition, the Matilda effect reveals the system's similar tendencies to "oust" women from science or devalue their achievements. It seems that the Mertonian principle of the universality of science, which states that the scientific work should be evaluated regardless of the author's socio-demographic features (Merton, 1957), is not fully applied with regard to gender, since the studies show that women's efforts in science are systematically devalued and less appreciated, as well as considered less valuable in comparison to men's efforts (Long & Fox, 1995; Goldin & Rouse, 2000; Heilman & Haynes, 2005; Wenneras & Wold, 1997). Rossiter (1993) named this concept the *Matilda effect* and used it to describe the cases in which the contributions of women in science are often attributed to men or completely ignored.

These two concepts, frequently discussed in the studies on women's position in science, demonstrate the importance of research on women's experiences of socialisation in the academic system. Namely, by exploring the vulnerable population we can reach the best understanding of the structural and cultural conditions which benefit or damage the competencies development in future generations. In addition, according to the most recent data available from the Ministry of Science and Education, 60% of junior researchers in Croatia are women, and in some disciplines the number exceeds 70% (Brajdić Vuković, 2012). Therefore, it is possible to perceive their experiences as a depiction of the system's level of success in shaping the competent male and female junior scientists.

Theoretical and methodological framework for the research – the study on the professional socialisation of female junior researchers from the narrative perspective

As has been previously stated, there are two methodological features which render this study different in comparison to other research in this field, and therefore provide novelty in the approach to the topic of the professional socialisation of junior researchers into the culture of organisation and discipline through the life history narrative interviews (life stories) with female junior researchers, and the systematic narrative analysis of the life stories.

In sociology, the life stories have great importance because they can reveal the limiting impact of structural relationships, derived from the structural sociological perspective. The life stories should not be perceived as the personal stories which are isolated or independent from the social influences. According to Mills (1959), the life story narratives develop simultaneously on several levels: historical, social, and personal. Therefore, attention should be paid to the different levels revealed by the individual life stories, and sensitivity should be displayed toward the historical and social layers of the story. On the basis of the considerable experience in using a life-stories approach in research on the sociological phenomena, Ferrarotti (1981) emphasises the importance of the conclusions obtained by the sociological exploration of the life stories: (1) society is historical; (2) every individual is both unique and universal; and (3) there are segments which act as mediators between the macro-social processes and personal lives, and

those are local institutions, families, and peer groups. Munro (1998) states that researchers can consider the life stories useful for their work from multiple aspects because they provide a holistic perspective on life and therefore a biographical image of an individual, and they also provide a historical contextual dimension and the possibility to explore the dialectic of the relationship between the self and society through the life story analysis. Therefore, from the sociological and socio-methodological perspective, as well as the perspective of the research methodology for narrative analysis, the life history stories about the junior researchers' life, work, and development within the academic community in Croatia enable the comprehensive overview of the structurally significant factors of the professional socialisation into the academic profession.

Narrative analysis is a special research strategy which was used systematically in our study, from the approach application in the research protocol, to the analysis and presentation of the data obtained in the research. The purpose of the narrative analysis is to enable the readers to understand *how* and *why* the events (discussed during the research) happened in the described manner, and *how* and *why* the participants behaved in the described manner. The final story constructed through the narrative analysis appeals to the readers by assisting them in empathising with the protagonist's (the research participant's) lived experience as a close and understandable human phenomenon (Kim, 2016). In the process, narrative analysis focuses on the cases, activities, events, and other elements within data in order to construct a unique plot, with the emphasis on the connotation and the metaphorical wealth of the individual's life (professional) story. The advantage of the narrative analysis over all the other qualitative methods is its *ideographic approach* which focuses on the individual narrative and interprets meanings from the perspective of that individual narrative (see chapter: *Methodological framework for the research on the professional socialisation of junior researchers in Croatia*). That helps us to reconstruct the individual's complete story, without breaking it into pieces, extracting details, and translating them into the common categories which is a characteristic of the *nomothetic approaches*. In that manner, the context of the individual's life is not lost, which occurs in other qualitative (paradigmatic) approaches to analysis. It is also called a *connecting strategy of analysis*, and it focuses on how the events within the individual story are interconnected, pays attention to the story's discourse, and the textual manner in which the story is told: vocabulary, the representation of other individuals, objects, grammatical particularities, and the time flow within the story (Alleyne, 2015). A narrative story is a story about the experience or events that happened in a particular time period and context, it is a story told in a certain way, in a certain discourse. Or, as Polkinghorne (1988) describes it, the narrative within its form organises the human experience into a temporally and spatially meaningful stories. In the philosophical terms, according to David Hume's classification of the relations between ideas (Alleyne, 2015), the narrative method (model) involves the connection through the similarity between the events/ideas and the connection in the context (neighbourhood) of the spatial and temporal dimension (the context in which the events are taking place), but also a cause-and-effect connection due to the chronological content which is especially commendable for this research method.

Conducting research from the perspective of the narrative analysis as the specific method of qualitative research in social sciences and humanities demands a maximally rigorous approach

to the research problem, both theoretically and methodologically. According to Kim (2016), it is important to approach the research problem distinctly on all three theoretical levels, the holistic macro level, the intermediary methodological level, and the micro level of the individual disciplinary theories and findings connected to the research topic. At the macro level of theory, the holistic approach or paradigm, this paper uses the qualitative methodology, as well as the interpretive approach in the ontological terms, and the constructivist approach in the epistemological terms. In other words, this research explores the meanings which individuals ascribe to the social phenomena in order to understand the social phenomena which are perceived primarily as human constructs. This type of social research focuses on the detailed and vivid descriptions of human interaction within the local social context in order to reveal the individual and group perspectives, as well as the perspectives of different social groups (Geertz, 1973). In the process, the aim is to obtain the in-depth descriptions of the social reality from different corners of the human experience and describe the social phenomenon's influence on the individuals and society in general.

On the intermediary or meso level of theory, the theoretical approach which supports the methodology and the perspective of the narrative analysis itself should be explained in more detail since its frequent neglect has resulted in the perception of narrative analysis as atheoretical or insufficiently defined with regard to theory (e.g., Clandinin & Conelly, 2000; Behar – Horstein & Morgan, 1995). Two theories are important for our research; the first one is John Dewey's (1916/2011) theory of "experience", and the second one is Mikhail Bakhtin's (1981) theory of "novelness." Since narrative research is the research on experience, it requires the operationalisation of the concept of "experience." According to Dewey (1916/2011), experience consists of the passive and active segment because "we do something to the 'thing' and then it does something to us in return" (p. 78). This concept has two key elements; the principle of continuity or experiential continuum in which every experience expands from the previous experience and the current experience is a part of every future experience, and the principle of interaction with a set of internal and external objective conditions which shape what we call a situation, which is in a constant interaction with the experience. In simple terms, not one experience happens in a vacuum, it is constantly expanded with new experiences which contain all the previous experiences, and it is crucial to understand the context within which the experience is unfolding. That understanding of experience "denotes an active and alert interrelationship with the world, and in its highest sense is a full interpretation of itself and the event's object" (Dewey, 1934/2005, p. 18).

While the concept of experience helps us to understand the specific perspective of the research phenomenon through the participants' experience, the concept of novelness, which was developed by the Russian literary theoretician Bakhtin, enables us to understand how the individuals as the research participants position themselves in the narrative analysis. Even though the term "novelness" originates from the word "novel," in Bakhtin's theory it signifies any story told by humans, not only a novel. Unlike the epic which represents a monologue or a story told from one angle which is "official," Bakhtin (1981) states that the novel represents a number of different languages which compete for the truth from different perspectives. The world of the novel is complex, untidy, and incomplete, there is no formal beginning or end, but an impression of complete openness. Novelness is characterised by three basic features. The

first is polyphony which refers to the "plurality of independent and unmerged voices and consciousnesses" (1981, p. 6). It creates a *dialogic* and not a monologic truth, which in practice means that the researcher should pay attention to the multiplicity and equal representation of all the voices in the interpretation of the phenomenon. Another characteristic of novelness is a chronotope or an "intrinsic connection between the spatial and temporal links" in a story (1981, p. 84). It illustrates the historical, biographical, and social relationships that are crucial for the events and the experience of research. Finally, the third characteristic of novelness is what is called a carnival or carnivalesque. It gives voice to the otherwise silenced and marginalised voices because it celebrates openness and absence of hierarchy, while the norms can be distorted for the purpose of narrating the dialogic truth (1981, p. 7). On the basis of the aforementioned theory, Connelly and Clandinin (2006) provide recommendations on how to think narratively and list the following: envisioning of the individual's life space (where the life experience exists), envisioning of life as it was in the past (the narrative of life), and living life in the present. In the process, a researcher should find a balance between the story's temporality (the temporal transition of events, people, experiences), sociality (interest in the research participants' social and personal conditions), and place (where the experience takes place; e.g., school, home, higher education institution) or the influence of place on the experience (Conelly & Clandinin, 2006).

In this part of our paper, the micro level of theory, which concerns the specific disciplinary findings and theories connected to the research topic, pertains solely to the concepts required for the operationalisation of the research questions. The remaining theories and findings which were briefly mentioned in the introduction will be discussed in more detail in the analysis of the research results and in the conclusion, in accordance with the emergent design of the qualitative research. In this part of the paper, it is important to consider the concept of the academic profession and professional socialisation of junior researchers. The authors who explore the academic profession define professional socialisation as the process of the individuals' introduction into the scientific culture or disciplinary subculture (Zuckerman, 1977; Clark, 1987; Becher, 1989), or the community and organisation (Van Maanen, 1976; Tierney, 1988; Austin, 2002; Gardner, 2008a), which is crucial for the development or expansion of the individual's identity (Harre, 1983; Taylor, 1991; Weidman et al., 2001; Austin & McDaniels, 2006; Gardner, 2008b, 2009a). Socialisation requires more than mere training or learning and includes the acquisition of norms and standards, values and attitudes, as well as the knowledge, skills and behavioural patterns related to the particular statuses and roles, which are required for the efficient functioning in the organised social life and render an individual a more or less efficient member of society (Merton, 1957; Brim, 1966; Bragg, 1976, p. 3; Dunn et al., 1994, p. 375). Nonetheless, postmodernists perceive socialisation as a "cultural process" which is reciprocal and produces changes both in the individuals and the organisation, and not as a linear one-sided relationship oriented from the community toward the individual (Tierney & Rhoads, 1994, p. 2). Therefore, the culture of an organisation is the product of those who participate in the organisation, while the process of socialisation is perceived as dialectic because the members facilitate an interaction between their personal perspectives, values and ideas, and the organisational expectations (Turner & Thompson, 1993; Tierney & Rhoads, 1994; Tierney & Bensimon, 1996; Tierney, 1997; Austin & McDaniels, 2006). The specificity of the academic communities in comparison to other environments is the requirement of the

simultaneous socialisation of junior researchers into: (1) the role of doctoral students and the academic life and profession, or the scientific system in general (Zuckerman & Merton, 1971; Merton, 1973; Austin, 2002; Lindholm, 2004; Austin & McDaniels, 2006; Walker et al., 2008); (2) the work environment – an organisation (Van Maanen, 1983, 1984; Tierney & Rhoads, 1994; Tierney & Bensimon, 1996; Gardner, 2008a, 2009b, 2010); and (3) the discipline, as well as the subdiscipline and subspecialisation (Knorr-Cetina, 1977; Whitley, 1984; Clark, 1993; Becher, 1989; Delamont et al., 2000, 2002; Neumann, 2003; Parry, 2007). These dimensions should not be perceived as disconnected, but as intertwined, which is how Weidman, Twale and Stein (2011) approach the topic. They define the professional socialisation as the development of knowledge and skills, and a gradual and growing commitment to, and identification with the professional role. Their model of socialisation includes all those elements, the institutional culture (academic programme and peer climate) and the socialisation processes (interaction, integration, learning), along with the core elements (knowledge acquisition, personal investment and involvement) (Weidman, Twale & Stein 2001, p. 37). However, for every individual doctoral student, the process as a whole is in the continuous interaction with her or his personal background and predispositions. Furthermore, the process of socialisation is in a constant interaction with the personal and private communities (friends, family, other employees), and the experienced professionals who facilitate the identity acquisition and dedication to the profession (Weidman, Twale & Stein 2001, p. 36-40).

Research questions

The research questions employed in the analysis of the research problem were formulated in accordance with the theoretical framework of the methodological approach, the qualitative and narrative research, as well as the cognitive and general goals of the scientific research. They are primarily focused on the question of *whose stories* about *which event(s)* in which *particular context* are explored, and the wider repercussions of these stories within the context. The research questions formulated for the purpose of this paper are the following:

- What are the life histories of female junior researchers with regard to the professional socialisation into the teaching and research profession in the Croatian system of higher education?
- What are the experiences of female junior researchers with regard to the professional socialisation into the teaching profession, and the research profession?
- What do the experiences of female junior researchers recounted in their life histories about professional socialisation reveal about the Croatian scientific and higher education system?
- What can be learned from the experience of female junior scientists, and what could facilitate the future enhancement of the professional socialisation into the teaching and research profession in the Croatian higher education system?

Research method

The primary method applied in this narrative research were the semi-structured life history narrative interviews, and to an extent the gathering of documents in order to obtain additional data on the research participants. The protocol which was constructed in order to collect the life histories regarding the female junior researchers' experiences of professional socialisation in the Croatian scientific and higher education system was based on the criteria for the construction of the life story narrative (Dollard, 1935; as cited in Polkinghorne, 1995); that is, the protocol was employed to collect the following: the descriptions of the cultural context in which the experience occurs (the presumed norms, values and ideologies which represent the basis of understanding), the embodied disposition of the protagonist/research participant (in terms of the contextualisation of her or his story in their personal life cycle, within the framework of her or his gender and other personal characteristics which are important for her or his relationship with the world), the treatment of other important story protagonists (colleagues, families, friends), the research participants' choices and actions (the questions of intent, motivation, work toward the achievement of goals, and the failure to achieve goals), the historical continuity of protagonists (temporal development), and plot (a chronological sequence of experiential events).

The semi-structured interviews were conducted by the researchers engaged on the APROFRAME project and the highest ethical standards were followed (see the chapter on methodology). The collected data were transcribed in detail. In addition to information gathered through the semi-structured interviews, data were collected regarding the research field of female junior researchers, the classes they currently teach and/or collaborate on as teaching assistants, and their bibliography (research papers), as well as information about their mentors and the mentors' bibliography.

Sample

In order to collect the data through the semi-structured interviews, a purposive sample of female junior researchers was constructed through the method of maximum variation sampling. Female junior researchers were defined as the employees of all the public universities' constituents and from all the scientific disciplines in the Republic of Croatia who have been employed within the system for at least five years, who were employed before turning 30 years of age, and who received their PhD title not more than five years prior to the interview. It was decided that the sample would vary between the universities of different types of university integration, as well as disciplines and fields of science in which the research participants are employed. Twelve narrative interviews were conducted and they included all the scientific areas except the field of biotechnical sciences and the field of interdisciplinary sciences and arts. The twelve research participants work in the fields of chemistry, biology, basic technical sciences, basic medical sciences, veterinary medicine, economy, pedagogy, philology, history, and fine arts. The research participants are employed at both smaller and larger universities, they were aged 29-45 when the interviews were conducted, and all had academic ranks higher than senior teaching assistant/postdoctoral researcher.

The application procedures and particularities of the "Labov's model" and the "Mishler's model" of narrative analysis

In order to obtain a comprehensive response to the research questions, the data analysis was conducted through the combination of what is called the Mishler-Labov structural method of narrative analysis. Sociolinguist William Labov developed the primary model in collaboration with Joshua Waletzky (1967), and it later became known as the "Labov's structural model of narrative analysis." It focuses on the narrative's structural organisation, with the emphasis on how the narrative was "delivered" in terms of its discourse. Labov's model is the most influential model of narrative analysis with subsequent minor modifications and adjustments (e.g., Mishler, 1986, 1995; McCormack, 2004; Riessman, 2008; Patterson, 2013). As Patterson (2008) states, the key characteristic of this model is that it enables a simultaneous comparison of the individual narratives with the focus on the specificities of the individual stories. In order to achieve that, the model employs an analytical scheme which divides the narrative into functional categories, and each category responds to a certain type of question which enables us to better understand the narrative and observe it from different perspectives. The functional categories of Labov's analytical scheme, in their correct order, are the following:

I. Abstract: the summary of the story and its key segments

II. Orientation: providing the context such as place, time and participants in order to orient the reader

III. Complicating action: the plot's framework or an event which causes a problem and prompts the question „and what happened next?" This part can be enhanced by adding fears, anxieties, expectations, desires, failures, future developments, or anything that could complicate the participant's life. Revelations or sudden turns of events could also happen.

IV. Evaluation: value judgements/comments of events or the meaning ascribed to the event by the narrator – it is exceptionally important because those claims „reveal the attitude of the speaker toward the narrative and highlight the relative importance of some narrative units over the others," they are crucial for the interpretation because they provide indications which enable the understanding of the meaning ascribed by the participants to their experiences.

V. Result or resolution: resolution of the conflict or story

VI. Coda: returns the narrator and the listener back to reality (Labov & Waletzky, 1967).

Labov's model enables the story's recapitulation, the identification and emphasis of important elements, and a very clear description of the story's plot – the narrative. Nevertheless, the work of the methodologist Mishler (1986, 1995) who extended this model is very important because it furthers the analysis and interpretation of the narrative research data. Mishler utilises Labov's model in the first step and calls it "recapitulating the told in the telling." However, in the second step Mishler additionally analyses and extends the story, and that second step was employed in our data analysis. Mishler calls the second step "reconstructing the told from the telling: rearranging the story" and it implies the rearrangement of the told into temporal order

during the analysis. In data analysis, we often notice that what is told is not arranged in a logical sequence (chronologically or conceptually) in a manner which would make sense to us or other readers. The participants mostly do not talk about events and concepts in a sequential order and therefore their stories are often inconsistent and characterised by digressions from the main story, or the participants make general comments without clear focus. Our participants do not have to think in a linear manner, they can zigzag in their story depending on what they identify as important in a particular moment. Furthermore, multiple data sources are at our disposal and we can utilise them in order to make sense of the participant's story. Therefore, we need to rearrange the told from the interview and other data sources into the chronologically and thematically coherent stories (depending on the purpose of research). In that context, Mishler believes that the story should be analytically rearranged – reconstructed from the told in order for the reconstructed story to become the narrative used during the further analysis. We identified this step as useful because the professional socialisation into the academic profession consists of the steps which need to be temporally and procedurally taken, from the graduation to the introduction into the academic profession, writing first papers, starting teaching, and the most important phase – the doctoral title and consequently the possible appointment to the first academic rank. Therefore, the correct temporal sequence of the story was identified as very important and utilised during the analysis in order to obtain a response to the research questions.

The procedural approach to the data or the individual transcripts of the life history narratives required the initial emergent coding which would enable the researchers to familiarise themselves with the narrative in an analytical manner. After that, a narrative was created for the professional socialisation of each participant based on the aforementioned Mishler-Labov model. All the researchers engaged on the APROFRAME project participated in this phase. Nevertheless, for the purpose of this paper, specific narratives were created for every participant and they focused on the dimension of the professional socialisation into the teaching profession, as well as the professional socialisation into the research profession. They were based on the same analytical model/scheme and paid special attention to the story connected to teaching and the story connected to research, taking into account the context of the individual's full life and professional story.

In the final phase of the analysis, the authors-researchers compared the research participants' narratives and consensually (see the chapter on methodology) determined the possible types that would jointly represent a number of stories, as well as encompass the common elements contained within the experiences of the development of teacher and research competencies during the female junior researchers' professional socialisation.

The narrative analysis results

The authors followed the methodological recommendations on the narrative report writing (Dollard, 1935; as cited in Polkingorne, 1995; Conelly & Clandinin, 2006) in their consideration of the types most suitable to represent the narratives and facilitate the readers' understanding. In the process, they examined the cultural context in which the experience happened, the information about the research participants' embodied disposition in terms of

personal characteristics and their connection to the academic system, the question of other important protagonists and their position in the story (mentor, colleague, family, friends), the research participants' choices and actions (intentions, motivations, work toward the achievement of goals, and the failure to achieve goals), the question of understanding the personal development in time, and the question of plot (a chronological sequence of experiential events). The authors were also guided by the recommendations on the construction of types which would be true to the participants' life stories, and would imaginatively and metaphorically evoke their universal (and not only particular) value. Finally, within each type, the attempt was made to explain the contributions that the experiences, events and situations had on the resolutions in the individual narratives.

Types of narrative about the experiences of teaching

Three basic types of experience were identified through the comparison of the stories/testimonies about the female junior researchers' experiences of teaching which were analysed by employing the Mishler-Labov model. In all three types of experiences, the following elements were determined as crucial:

- the context of the female junior researchers' socialisation into the academic profession in terms of institution, department, section or institute of employment; that is, the context about which the narrative of experience was told, and which in the narrative analysis represents the situation in which the experience unfolds;
- the presence/absence of professional support during the teacher competency acquisition, which in the narrative analysis represents the important social and other aspects of the experience;
- the narrative about the experience of personal development from the beginning to the return of the story into the present time and context, which in the narrative analysis represents the participants' embodied disposition, their choices and actions, and the temporal understanding of personal development.

In the context of the aforementioned elements, the stories ranged from the positive to the negative environment, from the presence to the absence of support, from the self-confident development to the struggle for development and teacher competency acquisition. Furthermore, the experience encompassed the other protagonists' (especially students') impressions of the current formal method of teaching in the Croatian higher education system.

We named the first type of the teaching experience the *experience of support, a positive environment, and the self-confident professional development.*

The female junior researchers whose narratives describe this type of experience were exceptionally interested in their study programmes from the beginning and their engagement during the studies was mostly above-average. They describe their "love" for the discipline, the subjects and the possibility of learning how to conduct research, and develop professionally, as

well as the "deep affinity" toward their research field. In the supportive institutional context, the deep affinity and love sometimes led to the first student research and collaboration with the more experienced professors on the research paper writing. The participants who provided the aforementioned descriptions of experience were characterised by assertiveness, and a desire to act which was primarily connected to the love of the studied subject, and the passion for learning and working within the field. In spite of the visible fervour, effort and willingness to work hard, there is a noticeable discourse of "humbleness" in the stories because the participants' responses to the proposed employment in higher education are "I wasn't so arrogant to think that somebody would want to hire me here," "I was lucky," "I was surprised and frightened," and "It was a stroke of luck."

For this type of experience, the key element is the common story about collaboration with a mentor during the studies and graduation thesis writing who would later propose an engagement on a project followed by a teaching assistant position, or a teaching assistant position immediately. The mentoring experience is described as a good experience, an "exceptionally positive experience" and that element is characteristic of this type of story about the teacher development. The mentor is depicted as a supportive individual who observes the junior colleague's performance and development, reads and observes the first presentations connected to teaching and provides clear instructions and necessary support. The discourse on the experience of this relationship is warm and representative of the importance of the mentoring support, and it is described as "terribly important because you can't do it alone," and the importance of not being "thrown" into teaching is emphasised because "those who don't have the support are lost, or excessively self-assured, or forever insecure." Mentors are the role models when it comes to interacting with the students, and they teach how to provide a "continued student observation," the need to "be well prepared so that it doesn't seem like you don't know something," and the importance of "knowing much more than what you are displaying."

The discourse on students is warm. Even though it might seem that the "students today are different than they used to be," they are involved in all the processes at the university and know everything, it is important for them to "really learn" and they "know they are here for themselves." The story about the experience of studying and the consequent employment at the departments reveals that the female junior researchers learn not only from their mentors, but also from the environment which is a place of learning, studying, and introduction to work. The study and work environments are described as "high-quality" and "satisfactory for students," with the professors who are "much more giving than the context demands." Even when there is an occasional individual who is not very interested in working and interacting with students, which the participants describe in a negative manner, the environment is generally depicted as supportive, and it encourages the collaborative effort for the benefit of students and teaching (during the teaching and research activities with the students). The model acquired during university education is frequently implemented in the future work activity and the participants state that the experience of positive support has inspired them to introduce, in collaboration with colleagues, a number of formal practices with the students in order to establish the rule of extracurricular student activities.

Depending on the presence of research activity at the department within the organisation, this positive teaching experience is sometimes integrated with the love for the research subject, while research and teaching activities are successfully combined. Teaching is described as a "pleasure," even though there is sometimes a formal complication at the larger institutions with a large number of students: the female junior researchers occasionally face work overload because they have to take over the teaching activities from absent professors, as well as a lot of administrative tasks, and the experience is depicted as "being put through the wringer" and "that amount of work would consume in an instant." Teaching is generally described in a positive manner. However, the aforementioned experiences reveal that it is a comprehensive and grueling activity because the lesson preparation and student mentoring is time-consuming. Additionally, the narratives constantly reveal that the quality of teaching is imperative to our respondents which intensifies the experience of workload regarding the teaching activities. The experience of the female junior researchers shows that they are excellent individuals who strive to be good at everything. Therefore, the undertaking of the international mobility during the doctoral thesis preparation is described as a "safe haven," and as the possibility to fully dedicate time to the doctoral studies, accompanied by the admission that it is impossible to perform this task in a concentrated and high-quality manner in addition to teaching. Following the acquisition of the doctoral degree, the circumstances settle and teaching is described as the experience of the continued growth and development, as well as an attempt to introduce the new "modern" elements into teaching. This experience is characterised by the desire to remain in the same institution and continue the researcher development, as well as the teacher development and the development of the work with students.

We named the second type of the teaching experience the *experience of the lack of support, a positive environment, and the professional development with a happy ending.*

The female junior researchers whose narratives describe this type of experience predominantly did not make an immediate choice of profession after the secondary school and they changed the study programmes several times or were not admitted to their first-choice study programmes. Nevertheless, the selected study programme proved to be a good choice because they speak about their university experiences in an affirmative manner, and they were also "excellent" students. In the context of teaching, the professors and teaching assistants become the role models because they work "with pleasure and love," "systematically," and "teach you much more" than is required. They frequently mention these experiences in the narrative and sometimes highlight the influence of the aforementioned professors and teaching assistants on their work in teaching and the relationship with students.

They are invited to become part of the university staff by their former professors and graduate thesis mentors, or are recognised as experts in a particular field. The beginning of the teaching activity is characterised by insecurities, confusion and a notable teaching overload, and the participants sometimes state that the department policy is to "crush" the teaching assistants and junior researchers "with teaching." The aforementioned insecurities with regard to teaching are intensified due to the absence of support, mentor leadership or counselling, and the instructions for work are described as "scant" or nonexistent and result in "improvisation" and "learning by trial and error" when it comes to teaching. In that context, the female junior

researchers are left to their own devices from the beginning and have to "mentor themselves."At the same time, they are expected to possess a very high level of expertise in teaching, and are even required to plan the complete teaching process and introduce completely new subjects.

In some cases, the female junior researchers attempt to explain the absence of leadership in the context of teaching by the intention of the head of the course to "give them a free hand" in teaching or by the fact that the lack of guidance can be an expression of "trust" in their teacher competencies. Due to diversity of the curriculum content, the female junior researchers frequently have to study, expand their knowledge, and rigorously prepare in order not to "utter stupidities." Depending on the discipline in question, a mitigating circumstance is the fact that the teaching method for the practical classes and seminars is systematised in advance, and therefore "there is no need for too much fumbling," but unfortunately that is not always the case.

In spite of the lack of mentoring support in teaching, the participants sometimes point out that the knowledge acquired through the study programme has raised their awareness of what teaching "is supposed to look like." Furthermore, the female junior researchers' narratives reveal that they "love" teaching in spite of possible insecurities, and that they put considerable effort into their work with students, as well as contemplate their approach to teaching in detail. In addition to the challenge of the lack of support, one of the aggravating circumstances is the teaching overload which results in a lack of time for other activities, especially the research activities.

The participants evaluate the atmosphere in their immediate environment (departments) as generally good, and they believe that they were "met with understanding" and cooperativeness by their colleagues and superiors during the maternity leave and mobility which was part of their doctoral thesis preparation, as well as in the instances when they needed additional help (in terms of student assistants) in teaching. Taking into account their positive experiences, they are critical of the colleagues from other institutions who describe more negative experiences. They are successful in establishing good relationships with students and make continuous attempts to connect research and teaching, especially after obtaining a doctoral degree. The participants believe that the institutional attitude toward the students is positive and that their opinions are "taken into account." In addition to teaching and research, they feel it is important to direct the students toward a greater engagement in their own education, to "make them start learning," and to occasionally "strictly define the rules of the game." Similarly, the female junior researchers are critical of the Bologna process because the "criteria are lowered year after year" due to the organisation of teaching; therefore, the university education that the students acquire is insufficient and does not enable them to be the first-rate experts in their field. Even though the developmental path of these female junior researchers was characterised by a lack of structure, support, and guidance in teaching, their common characteristic is a desire to remain at the institution and implement the changes in their teaching activity.

We named the third type of the teaching experience the *experience of a lack of support, negative environment, and continued struggle for personal professional development.*

In contrast to the homogenous experiences of other types, the female junior researchers whose narratives describe this type of experience have the heterogeneous experiences of university studies. Some participants enrolled in their study programmes out of desire and love, some because of the inability to study what they loved, and some because they were not sure what they wanted to study/do in life. During their university studies, some participants were active, and some state that they were not able to be active because the study programme was too demanding. However, they had a number of different jobs prior to the employment in higher education or between two different higher education employment positions and have a distinctly negative opinion about the environment/department and/or the whole higher education institution where they are employed. They describe those institutions/departments/institutes as negative environments, and their colleagues as "irresponsible, careless and frivolous," "disinterested in teaching and students," "unprofessional," "superficial," "connected," "the mob," and "interested only in money." The atmosphere can even be toxic and the generational gaps and disagreements are noticeable, with the older generation extensively exploiting the younger generation. This negative atmosphere can have a considerable influence on teaching, and a number of academic collectives are described as the environments in which the "disobedient colleagues are removed from courses which are then given to others to prepare and teach" overnight. Some participants describe the collectives in which senior professors do not teach at all, even though "they teach on paper," and the workload is transferred to junior colleagues who consequently have an exceptionally large number of overtime teaching hours, while the senior colleagues "work elsewhere, teach at the doctoral studies everywhere," and "why would they do this when they're guaranteed a paycheck no matter what." Furthermore, the junior researchers are frequently asked to mentor a disproportionate number of the bachelor's and master's theses, and they do not feel competent for that task, nor do they have enough time to perform it in a high-quality manner.

Similarly to the second type of experience, in this type of the story about the experience of the teacher competency development, the experience of professional socialisation is characterised by a distinct lack of support in teaching; that is, as the experience during which "nobody gives you any instructions and you don't know what the expectations are," "a lecture is assigned to you and you could literally do whatever you wanted with it," and "neither did you observe the professor's work, nor did he tell you anything except: here you go, now work." However, in contrast to the second type, in this type of experience certain "irrational rules" are supposed to be followed at the course, such as the prescribed grades because "a lower grade than C is not to be given, and nobody's allowed to complain because the head of the course demanded so." In this type of the teaching experience, the stories about teaching overload are frequent, but the complete lack of focus on a particular topic and the regular transfers from subject to subject seem to be even more important. This lack of focus causes the female junior researchers to feel insecure, and even "very unhappy," and as they state "it is important to fully complete something that you have undertaken, not just bits and pieces because then you don't know what you're doing." In the beginning, all the participants describe the experiences of insecurity, strictness, fear of students, problems with setting boundaries, and problems with lesson preparation caused by the absence of instructions. Furthermore, they often describe the insufficient preparation time for particular courses which leads to the lack of knowledge in the initial stages of teaching because "you would need at least a year to adequately prepare for teaching and you have to do it in a week."

In a similar manner to the other types of experience, the participants discuss the students in the context of the Bologna process. They are described as the "spoiled" and "arrogant" individuals who "shed crocodile tears because they got a C." They are depicted as the individuals who crib and plot to string the teachers along, and who have been "spoilt too much" and are treated "as if they were kids." Nevertheless, the participants conclude that the students are not to be blamed because "it is our fault" and the fault of the system which allows it. The female junior researchers believe that a twofold effort is required for a high-quality performance in this system because it is not focused on quality, but on fast-tracking performance; therefore, on the one hand you have to contemplate how to motivate the students in short time, and on the other hand you have to be careful to sufficiently "distance yourself in order not to be strung along and manipulated."

All the participants feel more independent, calmer and more mature after obtaining of the doctoral degree and the years of experience. Even those participants who disliked teaching and felt fear have learned to love it and now it is their preferred profession. In spite of the negative experiences and the experiences of negative atmosphere, these female junior researchers have grown into the academics who want to remain employed in higher education. A number of them believe that the situation can only improve now that they have survived the beginning. They want to continue developing, be good teachers, and be good at their jobs.

Types of narrative about the experiences of research

Three types of experience were identified through the comparison of the testimonies about the female junior researchers' experiences of researcher development which were narrativised and analysed by employing the Mishler-Labov model. The common features in all the types of experience regard the following:

- the quality of research environment in which the (future) female junior researchers work, which in the narrative analysis represents the situation in which the experience unfolds;
- the level of involvement in research projects, which in the narrative analysis represents the important other protagonists, as well as a part of the situation in which the experience unfolds;
- the productive researcher development, not only with regard to the participants' personal perception of their level of researcher development (which is an important dimension of this issue), but also their productivity in terms of scientific publishing, which in the narrative analysis represents the participants' embodied disposition, their choices and actions, and the temporal understanding of personal development.

In the context of the aforementioned elements, the stories ranged from the negative (the absence of) research environment to the positive research atmosphere, from the inclusion in research projects to the complete absence of inclusion in research projects, and from the productive researcher development to the almost completely unsuccessful researcher development.

We named the first type of the research experience the *experience of a stimulating research environment and involvement in the projects with productive development.*

The female junior researchers whose narratives share this type of experience mostly familiarise themselves with the research activities during their university studies, they describe their discipline as scientifically interesting, and are motivated by the research activities as the "connection between the theoretical aspect of teaching and actual practice." The participants take the initial steps in research during the work on their theses which are described as "serious" and involve the research activities, or through the extracurricular activities and collaboration with professors. They often write and publish scientific papers in collaboration with their professors during this period and start thinking that they would like to "create something in the scientific context." A number of participants are very assertive and apply for the student research projects, while their professors provide positive reactions and full support. They are frequently invited to start working as teaching assistants or junior researchers by their mentors or university professors and in spite of other potential plans for the future, they accept the offer immediately or after gaining some research experience. Some of the participants start with the engagement on a research project, and begin teaching later. After enrolling into the doctoral programmes, often immediately following the employment in the institution, the first year of study is mostly described as useful, although sometimes "demanding" due to the number of exams that they need to pass. During the doctoral studies, the participants have their mentors' support and the possibility to consult them, and sometimes they have the department's support and are engaged on the various research projects lead by their senior professor colleagues. They start writing and publishing research papers immediately after enrolling in the doctoral programme or following the first year of study which is mostly used to "patch up" the possible gaps in knowledge. That is also the period during which they start attending the various, mostly international, conferences. The common characteristic of this type of experience are the supportive mentors who are described as "competent," sometimes "big shots in the field," and certainly as the individuals who "know a lot of people." In the beginning, mentors suggest the potential topics of doctoral theses which they develop in collaboration with the female junior researchers, but at the same time they are open to suggestions and not restrictive. They are depicted as open for communication, supportive, and "involved in, and knowledgeable about all the struggles with writing." Even though these female junior researchers are not immune to crises or the "doctoral mania and doctoral depression" during the doctoral thesis research and writing, the intensity of those feelings is reduced due to the support of mentors and other colleagues, but also the support within the personal sphere. At the same time, they are critical of the "stepmotherly attitude toward mentoring during the doctoral studies" because they are aware that some colleagues are "left to their own devices and have to select the topics and methods independently" which, according to them, has negative consequences in the context of the researcher development. Furthermore, mentors are recognised as important individuals with regard to the international and national networking and the female junior researchers are stimulated to "regularly attend conferences." The mentor's networks frequently provide the participants with an opportunity to transfer to the international institutions as doctoral students and postdoctoral researchers. These experiences are described as "really useful" and "very productive periods" because they enable the participants to completely devote themselves to the research activities and

collaborate with the "leading scientists." As a consequence of the experience of international mobility, they are sometimes critical of the national scientific community and they claim that the individuals who have an internationally successful career are "more modest and also greater people" than those who are only active at the national level and who "behave like know-it-alls and are extremely arrogant." It should be noted that they are regularly engaged on the international and national projects together with their mentors and other colleagues, and they believe that the project activity is very important in the context of "scientific excellence."

The female junior researchers describe the atmosphere at the departments where they are employed or attend their doctoral studies as "collegial" and they often find additional support among the colleagues who are for example ready to take over their teaching tasks when they undertake mobilities. There is an emphasis on the effective collaboration among the colleagues at the institution, even though the absence of assistance and collaboration is sometimes felt due to the "lack of networks" between the scientists, and each individual is in "their own mode" while attempting to obtain the doctoral degree or meet the criteria for promotion.

Today, the female junior researchers whose narratives describe the aforementioned experience are productive and their work and effort is "internationally recognised." They are not contemplating leaving the system because they recognise their work in science and higher education as "challenging" and "creative." Nevertheless, they believe that the research activity is reduced to "dabbling" in our system, as well as writing and publishing the research papers with the aim of personal promotion, and not "social benefit." They are often critical of the promotion process which is "set in stone" and in that context they emphasise the lack of time for writing and publishing which is frequently caused by teaching overload; therefore, they express a desire to once again become part of the international environment in order to intensify their research activity.

To conclude, it should be emphasised that the female junior researchers discuss their discipline spontaneously and with passion and love. They say that they have really "found" themselves in their profession, and some of them believe that they have a natural talent for their discipline which they discovered during their university studies. A number of participants recognised some interesting possibilities during their practical work following the university studies, as well as learned through the doctoral thesis "how the practical connects to the scientific methodology" and therefore gained the depth of understanding. They are all oriented toward the future international and national networking, have numerous project ideas, and a great desire for further learning and development.

We named the second type of the research experience the *experience of a non-stimulating research environment, the absence of involvement in projects accompanied by individual struggle and productive development.*

The female junior researchers whose narratives describe this type of experience are characterised by ambition and motivation, which is evident from their level of commitment during the university studies. They were predominantly excellent students who were additionally engaged in different associations or sports activities. Their experiences with regard

to the research activity during the university studies are diverse. Some of the participants experienced a complete lack of research activity, while others were engaged on research projects and even led them. Furthermore, the process of employment at the university is characterised by different experiences. A number of participants secured employment because they looked for a job or they came to the university after gaining work experience at other positions, and some were invited by the mentor who collaborated with them on their graduate thesis. The common characteristic is the initial lack of support in their research work that leads to the "fear" of the doctoral thesis writing which precedes the act of writing itself and stems from their realisation that they "should be engaging in some kind of scientific work" which "has to be done in order to be promoted," while they at the same time feel that the instructions are not provided, nor is anybody "particularly concerned" with those tasks. During the process of the doctoral thesis writing, mentors do not provide "substantial help" and often "never ask anything or give advice about the doctorate." In some cases, the doctoral thesis work is pushed into the background and becomes the "last thing somehow" which provokes "frustration" and dissatisfaction in the female junior researchers. The selection of the doctoral thesis topic is also frequently done independently and results in the topic selection which is "accidental," "personal," or connected to the existing project which provides guidelines, and rarely done with the mentors' or colleagues' assistance. Furthermore, it should be emphasised that the conference attendance and the research paper writing and publishing is often delayed due to the prioritising of teaching or specialisation (in medicine). This situation forces the female junior researchers to exert personal effort in order to successfully complete their doctoral thesis, which often involves obtaining the support of other senior and junior colleagues, and even the independent application for, and management of projects during which they collect and analyse data required for the doctoral thesis. Therefore, the participants learn to research and write "as they go" and "all by themselves," sometimes through their doctoral studies, and sometimes with the colleagues' support, or by going abroad with their mentors' support or through personal effort. If there is a possibility of going abroad, that period provides a "practical insight into what research really is" and an "opportunity to learn about real research." As has been previously mentioned, due to the lack of support from formal mentors, the participants' colleagues often take the role of informal mentors and in some cases become formal mentors. Those are the individuals who provide "loads of help" to the female junior researchers during their work on the doctoral thesis, as well as the support in the moments of the "nervous breakdown," and from whom they "learned the most." Nevertheless, in spite of all the difficulties, the participants are "proud" of their doctorate and today they feel more competent, have a "lot more self-confidence" with regard to research, and they are productive and part of the extensive national and international networks. From this perspective, the participants clearly state that a lack of mentoring support was the cause of the difficulties in their researcher development, but they also sometimes point out the potential lack of personal assertiveness in their relationship with the mentor.

The atmosphere at the department is often described as "stimulating" and "collegial," especially among the younger colleagues, but some environments are described as distinctly hierarchical with the "the younger ones reluctant to approach the older ones," which prevents constructive communication. The female junior researchers are critical of the higher education system in general, pointing out that it "leaves you to your own devices" or even mistreats you

by allowing entrance to the individuals who are "corrupt," unproductive and prepared to "degrade" themselves to obtain a position, while at the same time it does not reward the individuals who are excellent and therefore "promotes mediocrity." However, the participants see themselves employed in the same institutions in the future, primarily because of their love for the profession and the flexibility of the employment in the higher education institutions. In addition to the existing dynamic of writing and publishing, they hope for an unhindered path toward promotion and more secure positions that would enable them to exert more influence over the system.

We named the third type of the research experience the *experience of a non-stimulating research environment, absence of involvement in projects, and weak unproductive development.*

The common characteristic of the female junior researchers who describe this type of experience is the fact that they did not have a strong desire to enrol in the study programmes that they eventually attended, but they later developed a liking for the programmes and found them interesting, while some participants describe them as exceptionally demanding. The additional effort during the university studies was dependent on how demanding the programmes were; therefore, the participants who attended the less demanding programmes were active beyond their student obligations, and those who attended the more demanding programmes were not able to find time for the additional activity. The participants did not establish a significant contact with their professors during the university studies, and after obtaining their degree they were employed at various jobs in the profession. They describe it as a very useful experience which helped them following their employment in science.

Not one of these researchers wanted to find employment in science, and they describe it as an unexpected turn of events in their lives which happened because they received a verbal invitation after several years due to understaffing, encountered the future mentors in the street, or ended up at one employment position after looking for another. The participants' descriptions of experiences reveal that they became employed in higher education because "they didn't have another choice of employment" and "nobody else applied for that position." In accordance with this description, the environment of their employment is depicted as somehow displaced and characterised by the absence of the individuals who would be in charge of introducing the young newly employed researchers into the profession. The descriptions of the research experiences range from nonexistent "during the first four years I didn't do any research," partly mismanaged "I worked on something with my mentor, but it was misconceived and fell through," to the situation described thusly "if I engaged in research activities, it was because I organised it and attempted something, and not only did I not receive support, but they even tried to prevent me." While in some fields of hard science (e.g., natural and technical sciences) the change of mentor can result in the change in circumstances which leads to the selection of an easier and more lucrative doctoral thesis topic, in the fields of soft science (e.g., social sciences and humanities) the effort invested in the topic is completely independent. However, the second mentorship or the management of, and introduction to the work on the doctoral thesis never reaches the desired level of satisfaction, and mentors are often described as "rather lazy," but willing to help by connecting the participants with "those who can help." In that situation, with new mentors or the old disinterested ones, the completion

of the doctoral studies is often difficult and delayed due to one of the commission members' professional or even political reasons. These situations are described as very stressful, and characterised by impotence, despair and the lack of adequate support. The participants frequently compare themselves to others who "had it easy," "you should see their doctoral theses," "I worked really hard for my doctorate and then I'm mistreated like that."

The common and very important emergent characteristic of this type of experience regarding the research competency development is the sense of an inadequate professional training. Due to a lack of professional support and the absence of the community which would provide learning opportunities, the participants describe their attempts to educate themselves on the Internet or by collaborating with the individuals who have a higher level of knowledge about those skills. This is sometimes described as the collective experience during which the younger individuals make a joint attempt to acquire the skills that the older employees lack because "they didn't need them" and "science was done differently in their time." The participants describe the implicit "rules for writing the papers with the goal of ensuring promotion" and the said papers are depicted as "papers of the exceptionally low level of quality which couldn't be published anywhere else except in Croatia." This situation is strongly criticised and there is the occasional bitterness about the environment's low level of interest in a change that would result in higher quality and the "research papers as they are supposed to be done", as well as a lack of the adequate professional development, inability to attend the professional development courses at the international institutions where the required skills could be acquired, and a lack of funding for the additional professional development.

These female junior researchers share a desire to continue learning after the doctorate, to professionally develop in this field, and acquire the skills which would enable them to "become independent." They sometimes perceive the mobility as the solution, or transferring to the international institutions because "just being there would help me to become better," but the participants who have a family and young children see the solution in connecting with those researchers who have the required skills and consequently learning from them and with them.

The result of this situation is a low research productivity; that is, a dissatisfaction with the personal success in research and especially publishing. The participants often compare themselves to the colleagues who "write low-quality papers, but exactly in the way required for promotion." A desire to write papers well is also present, even though "it is more difficult to do high–quality work because you have to know how." The participants also make comparisons between some fields with regard to the ethics of signing papers because "it's easier for others since they all sign the papers among themselves," but in some cases the publishing productivity is secondary to the point of barely being mentioned as the criterion for promotion. In accordance with that fact, the sense of disciplinary community is primarily local and often negative. In spite of their desire for further education and personal development, the participants' inability to "extricate" themselves from the situation is noticeable, as well as their slightly broken spirit and will.

Discussion – the contextualisation of the junior researchers' narratives about the development in teaching and research

Following the presentation of the results, this part of the paper will provide a discussion on the research results and what they reveal in the context of our research questions, in the context of the micro theory/theories within the field that explores the academic professions, and the results of the previous studies conducted in Croatia and in the international context.

We will first discuss (1) what the life histories of female junior researchers with regard to professional socialisation into the teaching and research profession in the Croatian system of higher education are. In general, the research results obtained from the described types and based on the research participants' narratives show the dominance of the discourse on work overload, especially teaching overload. Regardless of the type of experience or the higher or lower level of support, teaching is perceived as a "grind," as something that "wears you down," and as something that has an inevitable continuity and demands a continuous engagement; therefore, an individual needs to withdraw from that task in order to perform other tasks (such as the doctorate, papers, research). Other recent studies in Croatia (Brajdić Vuković, 2013, 2014) have also revealed that the Croatian junior researchers perceive teaching as a burdening and even problematic aspect of their everyday tasks. However, this study's new finding reveals that in spite of the overwhelming experience and the enervation caused by teaching and administrative work, the female junior researchers show a very high level of volition, a desire to be excellent teachers, introspection and self-reflection on the personal teacher development, and considerable deliberation on the quality in teaching, the teaching process and the system of higher education in general. The participants who are more active in research attempt to connect the teaching and research activities, and want to present their work in an interesting manner in order to make it more approachable for students, to modernise the lectures, and to include more practical classes for students. The latter points to the fact that the female junior researchers possess the awareness of the importance of the nexus between teaching and research, even though the participants' stories imply that this method is not inveterate and customary, but the result of their personal contemplation of the teaching process enhancement. This reveals that, in spite of teaching being described as a burden and an obstacle to other types of tasks, the female junior researchers' stories about the professional socialisation in all the scientific disciplines show that they perceive teaching as an opportunity for the personal and professional development, often as a part of the professional socialisation.

The female junior researchers' life histories about the professional socialisation at the Croatian universities show that research is assigned as an everyday task or a continual encumbrance to a lesser extent in comparison to teaching. Teaching inevitably involves the feeling of being "thrown into" the activity, and it is described as a job which is measurable in a specified number of teaching hours, as well as fixed, assigned, and it forces the participants to cope, "swim" and develop by any means necessary. In contrast, the stories reveal that a prominent problem of the professional socialisation is the lack of insistence on the research activity and the lack of the inevitability of learning about the researcher role (therefore, it is possible not to learn anything useful during the professional socialisation). This is not a new finding because the prior studies have also shown that what is called the disciplinary

socialisation, which predominantly regards the research activity, is insufficiently supported in the institutional context with regard to the Croatian junior researchers (Brajdić Vuković, 2012, 2013, 2014). Nevertheless, in spite of the differences in the analytical types and the differences in the outcomes of the researchers' socialisation into the profession in terms of the lower or higher publishing productivity and involvement in projects, the female junior researchers' stories collected in this research demonstrate that the essence of their narratives is a desire for the development and a high-quality performance in the discipline. Regardless of whether they describe their experiences of the research activity as satisfactory or as a situation which resembles a drowning person's attempt to catch their breath instead of a specific active plan, the female junior researchers without exception want to provide a high-quality performance, possess skills, be independent, and perform in science "as it should be done."

When it comes to the (2) experiences of the female junior researchers with regard to the professional socialisation into the teaching profession and the research profession, narrative analysis enables us to observe the experiences of socialisation as a coherent unit through the described types, to observe the socialisation into teaching and research as a series of experiences which have causes and consequences, and to reach conclusions on the complete experience based on the research results. It is evident in all three types of the teacher and researcher development experience that the central story is the story about the structure and the specific support during development process, as well as the environment in which the development takes place. For this reason, the theoretical approach which perceives academic organisations primarily as the social constructs whose culture is crucial for the functioning of the organisation and all its members, especially newcomers, is especially useful (Mead, 1934; Burke, 1966; Blumer, 1969; Shutz, 1970; as cited in Teirney, 1994, p. 17). Namely, the recent evaluation studies on the doctoral programmes have very clearly shown that an organisation as the framework of the junior researchers' socialisation represents more than simply an administrative framework for the disciplinary functioning, and concluded that the culture of the institution in which the junior researcher undergoes socialisation is the crucial factor for the successful socialisation which can be measured in the early research productivity among other elements (Walker et al., 2008; Ehrenberg et al., 2010). According to the theoreticians who explore the culture of academic organisations, the process of the socialisation into the organisational culture unfolds in two stages – the anticipatory stage which provides the first insight into the attitudes, behaviours, and norms of the group whose members the newcomers want to become, and the organisational stage during which the newcomers come into contact with the culture of the institution through formal and informal relationships with the members of the group and initiate the personal (and organisational) change (Tierney & Rhoads, 1994; Tierney & Benismon, 1996). The initial acquisition of the culture of the group whose member the individual wants to become, in literature predominantly known as anticipatory socialisation, relates to the period of the junior researchers' undergraduate studies – all the prior experiences with research and teachers; however, it also relates to the graduate and doctoral studies. In the case of differences between the culture acquired during the anticipatory socialisation and the culture of the new institution of employment, the experience of the next phase – organisational socialisation – is predominantly transformative in its nature because the organisation attempts to modify the individual's qualities and personality according to its culture (Tierney & Rhoads, 1994). The authors call the first phase of the organisational

socialisation the *initial entry* and it occurs immediately following the arrival, during the first days in the institution. It is followed by the *role continuance* which is the most eventful and interesting part of the socialisation because it involves both *formal* and *informal* content. The process of entering employment is formal, but the conversations and relationships with colleagues within the organisation are considered as the informal socialisation experiences. The socialisation is almost entirely an informal process; it occurs through random events and is left to chance and the newcomers' personal interpretation (Tierney & Rhoads, 1994, p. 40; Tierney & Bensimon, 1996, pp. 53-59). In addition to the formal and informal experiences, the role continuance phase has a number of other dimensions. The remaining dimensions of the organisational socialisation in the role continuance phase are the *collective socialisation* in which the approach to all the members is collective, as opposed to the *individual socialisation* marked by the individualised approach, which is a more frequent situation in science. Furthermore, the *random socialisation* is characterised by the activities which do not lead toward a clearly defined goal, as opposed to the *sequential socialisation* which has a clearly defined goal and steps which need to be taken during the socialisation in order to advance in the organisation. As an example of sequential socialisation, Tierney and Bensimon (1996) describe the socialisation whose precise and clear goal is the attainment of the tenured academic ranks. The next dimension of socialisation is connected to its temporal aspect – the *fixed socialisation* in comparison to the *variable socialisation*; that is, the (non)existence of the specific timetable and (non)flexibility of the contract with the institution. The *systematic* and *unsystematic* socialisation regards the availability of experienced scientists as mentors and models that provide examples of roles. *Serial* socialisation occurs when the new employee is officially assigned to the individual who will provide guidance, while in the *disjunctive* socialisation the newcomers depend on themselves. A number of the aforementioned dimensions correspond to the empirical results on the junior researchers' experiences during the first two years of organisational socialisation which point to the loneliness and intellectual isolation of the new members as a reflection of the lack of collegiality from more experienced scientists, but also as a consequence of the hyperindividualised nature of the junior researchers' socialisation (Boice, 1991, 1992; Tierney & Rhoads, 1994; Tierney & Bensimon, 1996).

In accordance with the insights provided by the theoretical model which perceives organisational culture as the primary factor in the female junior researchers' socialisation, it can be claimed that the ideal cases, when the development in the teaching profession is smooth, self-confident, and unproblematic, feature a positive anticipatory and initial organisational socialisation during which teachers and future colleagues have a positive attitude toward students and their activities. The participants of our research learn that in the initial stages and later continue to employ the described approach in their work. When it comes to the significant others and the role continuance phase of the organisational socialisation, the significant of support, the specific inputs, and the assistance with subjects is evident because the participants' stories reveal that the "insecurities" and "fears" that their knowledge or understanding would be insufficient are a widespread phenomenon in all the types of experience at the beginning of the teaching career. Therefore, the socialisation is individual and sequential with clearly defined goals and steps, and at the same time systematic because the support is available, as well as serial because it is provided from the initial stages of employment in the organisation. However, as the second type of the teaching experience shows, even when the specific support is missing, but the experience of the

anticipatory and initial socialisation is positive, the role models are available and the knowledge about how to be a good professor is acquired, the environment of organisational socialisation is generally supportive, and there is a high likelihood of acquiring the adequate teacher competencies despite the presence of significant insecurities and difficulties. Nevertheless, it seems to be crucial that this story has a positive ending – the continuity in the taught subjects and a positive situation at the department/institution. The positive situation is defined as the positive interpersonal relations and attitude toward the female junior researchers, but the stories reveal that the positive situation can also imply a regulated attitude toward teaching, teaching focused on a specific field and subjects, and the absence of turbulence and changes, which would enable the female junior researchers to achieve independent development in their profession even in the cases of extreme workload. Therefore, the important characteristics of this part of the role continuance phase are that the socialisation into the social context is individual and sequential. However, the situation is completely different when there is a lack of support and at the same time the anticipatory and initial socialisations do not provide the positive role models and events. In that case, the role continuance phase of the organisational socialisation is characterised by the negative environment in terms of interpersonal relations and the attitude toward teaching which is unsystematic, random, and lacks focus, and therefore prevents the high-quality independent development of the junior researchers. This socialisation is collective, random (nonsequential), variable, unsystematic, but primarily *disjunctive* because the newcomers depend exclusively on themselves. The development is hindered, and the environment lacks the meaning, goal, and focus of the work with students, which is difficult for the junior researchers to attain independently, even though the stories of their motivations and actions reveal significant effort. Nevertheless, the agency has its limits in the adverse and even unfriendly environment which intensely hinders the development for various reasons. The stories reveal that, even in these negative circumstances, some form of attitude development toward teaching and students is inevitable, as well as a desire for a better performance and a will to be a "good professor." It would be difficult to say that these female junior researchers have not acquired any teacher competencies, as they remark that they feel more self-assured and mature, and that they are now able to determine the needed distance in relation to students in order not to be too strict or too lenient. It is evident that the teaching experience can be sufficiently important and instructive by itself and therefore lead to the acquisition of skills, even when it is marred by a number of problems. In the cognitive sense, on the basis of the available and described stories, it can be concluded that the depicted experiences are related to the development of teacher competencies, the independent acquisition of competencies, and the absence of development with the partial acquisition of competencies. In the context of the first described experience of the teacher competency development, there is a presence of support and positive environment. In the experience of the independent competency acquisition the development is incomplete, but there is an acquisition of important competencies due to the positive environment which facilitates independent learning. When it comes to the experience of the absence of development accompanied by the partial acquisition of competencies, the environment is either negative or completely devoid of content, and the support is nonexistent. Furthermore, it should be noted that in the stories about the environment, departments, institutions, and mentors in the context of teacher competencies, there is a significant difference between the departments which have continuity and the departments which do not have continuity. The first departments have a vision of common activity, a harmony in relationships based on the knowledge of the individuals' tasks and positions, while the socialisation

is individual, sequential and systematic, even when there is an absence of a direct support in teaching. In contrast, the second departments do not have continuity, either because the "real work" or the employees' everyday activities have been removed from the organisation and the common activity, or because the interpersonal relations can be characterised as the negative environment which encourages discontinuity, disruption, and negativity; that is, the disjunctive, random, and variable socialisation in the role continuance phase.

When it comes to the described cultures of the junior researchers' environment, the fact that both anticipatory and initial socialisations lack consistency and any type of positive experiences which provide learning opportunities is not helpful. However, it should be noted that this often occurs concurrently for a simple reason. In the Croatian academic community, junior researchers are often or almost always employed in the institutions where they have completed their studies. Therefore, the environments are continually the same in the junior researchers' stories. Sometimes it is a continually good situation, and other times it is unfortunately a negative situation.

The experiences of socialisation into the research activities and profession appear to be a different issue. It should be noted that all the stories reveal a remarkable lack of cognitive components connected to the disciplinary socialisation. The organisational differences are noticeable and they stem from differences in the scientific areas, such as the difference in the presence/absence of laboratory work, and the question of the co-authorship and distribution of work on papers. Nevertheless, other characteristics are identified as important and they are predominantly connected to the organisational culture and its orientation inward and/or outward in terms of the employees' investment and their orientation toward the institution and teamwork, or their orientation toward the work performed outside of the institution which leads to the perception of teaching at the institution as an isolated island/trade that is utterly individual (while the research activity is either nonexistent or completely displaced). In that context, the stories about the research activity are very similar to the stories about teaching in terms of the characteristics which are identified as important in relation to this "problem," or this dimension of the academic profession. It is evident that the experiences of research can be completely absent, and if there is a lack of involvement in research projects and the systematic work on the research competencies accompanied by some type of support, the independent effort and endeavour are not a guarantee of development. From the institutional and organisational perspective, for the majority of the higher education institutions in which the female junior researchers whose stories about the professional socialisation were analysed in this paper are employed, the favourable researcher development which is characterised by the frequent discussions on the discipline and personal work is the development in which this type of endeavour is present during the anticipatory socialisation and marked by the support of the significant others, especially mentors, from the moment of entering into the academic community. At the same time in the role continuance phase, in addition to the presence of support which renders the socialisation serial and conjunctive, the descriptions of the experiences demonstrate that the socialisation is sequential and individual, and leads to success in terms of the successful doctoral studies and early publishing productivity. However, it appears that in research, more than in any other dimension of the academic profession, mentors perform these socialisation functions connected to the organisational culture because their approach to junior

researchers is crucial for success. The two types of experience which are characterised by less supportive mentors show that the institution does not compensate for the lack of this role in any way. In other words, if the mentors are incompetent or, as observed in the third type of experience, their role is nonexistent, the socialisation is disjunctive, random, and variable, and it is difficult to independently replace the knowledge and skills required for the disciplinary performance. A criticism toward what is perceived as an inadequate practice of science is noticeable, as are the motivation and struggle for the personal development which sometimes requires a considerable amount of energy. However, it is also evident that the success is uncertain in those situations, if not impossible.

To conclude this discussion, let us focus on (3) what the experiences of the female junior researchers recounted in their life histories about professional socialisation reveal about the Croatian scientific and higher education system. The first inevitable conclusion drawn from the stories about the junior researchers' experiences in the Croatian academic system is that the socialisation institutions and their departments are highly diverse places and that the female junior researchers' positioning into that system resembles roulette. Unless we are informed about the details of the institution's/department's organisational culture, it is impossible to determine the final outcome. The prior studies on the Croatian specific novice system have shown that "even though the novice system has a well-formulated initial direction when it comes to the novice mentoring and a formal supervisor is assigned to every novice (...), the practice shows that this relationship is insufficiently formally defined or overly left to chance" (Brajdić Vuković, 2013, p. 116). The aforementioned research conducted on the sample of novices from the fields of natural and social sciences has revealed that the absence of the formal observation system for novice researchers frequently generates problems in the junior researchers' professional development and promotion within the system. In addition to teaching overload and the absence of formal support in teaching, the junior researchers' disciplinary socialisation is often not only unsupported, but almost rendered impossible in the practical everyday functioning of the system (Brajdić Vuković, 2013, 2014). The results of the data analysis which are presented in this paper directly correspond to the previous findings and prove that the situation in other disciplines is in fact identical. All the presented analytical types are also characterised by a negative relationship between teaching and research which corresponds to the scarcity model described by Hattie and Marsh (1996) according to which there is a discrepancy in the amount of time devoted to teaching and research, as well as a negative correlation between the attention paid to teaching and research. In the context of the nexus between teaching and research, the narrative stories collected in this research show that the institutional support of the synergy between teaching and research as the core academic activities is not evident. The synergy is more likely the result of individual consideration or the direct influence of mentors who transfer this method to junior researchers. It is also more likely the result of formal conditions than the formal support because the junior researchers know that they have to teach, and that teaching is continuous and inevitable, but at the same time they are also aware of the promotion criteria which are predominantly oriented toward the research criteria for promotion (see chapter *The nexus between teaching and research: The policies and challenges of integration* for more).

In brief, this research shows that the institutions involved in the junior researchers' professional socialisation are the places devoid of common vision, strategy, and goal in the public

activities and the activities within the framework of the dominant discipline, which consequently results in the lack of strategy for the junior researchers' professional training. According to the international studies, the defined strategy of the institutions and individual departments regarding the teaching, mentoring, and involvement of junior researchers in the organisation's work and everyday life is a source of important differences in the socialisation outcomes even within the same disciplines and specialisations (Ehrenberg et al., 2010). When this vision and strategy exists, at least embodied in the work of the individuals within the organisation who are also mentors, then the situation is completely different and could provide a positive final outcome.

Conclusion

In their study on the development of doctoral students at the universities in the USA, Walker et al. state (2008, p. 5) the following: "It is hard, in short, not to be disheartened by the waste of human talent and energy in activities whose purpose is poorly understood. Serious thinking about what works in doctoral education, and what no longer works, is an urgent matter." Inspired by this quote and aiming to respond to the final question about (4) what can be learned from the experience of the female junior scientists, and what could facilitate the future enhancement of the professional socialisation into the teaching and research profession in the Croatian higher education system, we will have to go a step further in our analysis. But before that, let us say something about the limitations and benefits of this type of research. The narrative research was conducted on the sample of 12 female junior researchers who work in different fields; therefore, statistical generalisations are contrary to the study's nature. However, the method of the narrative research and data analysis, the ideographic emic approach, and the analytical method of making connections within the individual narrative stories and the focus on the important narrative features, as well as the careful construction of the types which are described in detail, have allowed the application of other aspects of generalisation available to qualitative research, those being the analytic generalisation and case-to-case transfer (transferability) of the research findings (Polit & Tatano Beck, 2009, p. 1385; Campbell, 1986). These types of generalisation suggest that the information which is expressed in an authentic and credible manner enables the comprehension of the research topic as a whole, as well as that the diversity of perspectives contained within the research findings enables the generalisation of the research findings into the research topic as a whole. However, an objective disadvantage of this research is the comparison with the male experiences in science, and the lack of the male junior researchers' embodied disposition; therefore, a recommendation for the future narrative studies would be to explore their stories and place them into the common framework.

However, it should be noted that narrative analysis as the research approach has contributed to a better understanding of the phenomenon of the female junior researchers' professional socialisation. It has facilitated a complete understanding of the structural and cultural influence of organisations on this process, and the role of motivation and the protagonists' activity on the individual's destiny within the system, in the context of the teacher and research competency acquisition. Finally, it now also enables us to provide recommendations for the system improvement, and to emphasise the important features which should be supported in the high-quality development of junior researchers.

The female junior researchers' stories reveal that the conditions in the Croatian academic system are difficult for women. They are often overburdened with teaching and administrative tasks and there is a lack of support for the teaching and research activities. These experiences predominantly amount to the female junior researchers' enthusiasm and their struggle for personal development which is almost rendered impossible when their research context is negative. The experiences undeniably contain the elements which could explain the leaky pipeline thesis, which was mentioned in the paper's introduction, because in order to survive in the system of science, the characteristics frequently described as male are indeed sometimes required, such as stubbornness, persistence, assertiveness, and belief in one's own abilities. However, the research data analysis continually highlights one concept as an important factor in the female junior researchers' professional socialisation: the concept of academic community. The majority of authors recognise the existence of the "implicit dimension of learning" as an important segment of socialisation; that is, the acquisition of the knowledge, skills, values, and norms which cannot be clearly defined and verbally transmitted, but are acquired through the experiential observation of other individuals during work, or by being physically present in the group whose member the individual wants to become (Merton, 1957, 1973; Polanyi, 1962; Bourdieu, 1975, 2004; Zuckerman, 1977; Gerholm, 1990; Lave & Wenger, 1991; Reber, 1993; Wenger, 1998; Delamont & Atkinson, 2001; Collins, 2001; Lovitts, 2001; Gourlay, 2006; Leonard & Insch, 2005; Parry, 2007; Insch et al., 2008). Pierre Bourdieu believes that the individual's habitus is the product of socialisation, and the scientific habitus is a form of the expansion of the personal habitus, it is connected to the scientific being and contains predispositions for the understanding, evaluation, and behaviour of the scientist which are acquired through the interaction with her or his environment, following the logic of the scientific field. The theoretical knowledge is acquired in order to be converted into scientific practice in the form of a "craft," "sense of discipline," "knacks," and "eye," through which the scientist becomes a scientific field made flesh (Bourdieu, 2004, p. 41). Since it is defined as an implicit "rule," the acquisition of the scientific habitus demands practice with more experienced researchers, as well as an interaction with other individuals from the institution and discipline, and the science system in general (Bourdieu, 2004).

While the majority of theoreticians define the tacit knowledge as private, personal knowledge, a number of authors also identify the collective tacit knowledge (Lave & Wenger, 1991; Bourdieu & Wacquant, 1992) comparing it to the organisational capabilities and skills, or the routines and procedures characteristic of organisation (Gourlay 2006). Bourdieu in his explanation of the scientific habitus (1975, 2001), as well as Mitroff (1974) and Gerholm (1990), call the tacit knowledge the "rules of the game," whose transmission during the scientific socialisation is subject to the disciplinary, as well as socio-organisational and cognitive differences (Delamont & Atkinson, 2001; Parry, 2007). The most important factor for the uninterrupted flow and acquisition of the experiential, tacit knowledge during the scientific socialisation is the intensive contact between the experienced researcher (or researchers) and the novice researcher (Merton, 1973; Zuckerman, 1977; Delamont & Atkinson, 2001; Parry, 2007).

The doctoral study programme evaluators in the USA suggest that, in order to adequately develop, junior researchers should be involved in the "intellectual community" whose culture contains a "hidden curriculum" on the purpose of, and the commitment to the profession and

roles, as well as creates the environment which enables the creative and critically deliberate behaviour and creation. The authors believe that the focus on the intellectual community shows that the junior researchers' professional socialisation is a period of learning, and that the creation of the intellectual community of learning is the optimal method for forming a nexus between the teaching and research roles of the academic profession. Our research confirms this finding to a large degree, or in simple terms: our research data, the narrative stories about the female junior researchers' experiences of professional socialisation, show that the solution to every high-quality professional socialisation is its positioning or immersion into the community of thought, the community of "erudition" which provides opportunities for the implicit (and explicit) learning.

References

1. Altbach, P. G. (2003). *The decline of the Guru: The Academic Profession in Developing Countries.* New York: Palgrave.
2. Astin, H. S., & Cress, C. M. (2003). A national profile of academic women in research universities. In *Equal Rites, Unequal Outcomes* (pp. 53-88). Springer Netherlands.
3. Austin, A. E. (2002). Preparing the next generation faculty. *Journal of Higher Education* 73(1), 94-122.
4. Austin, A. E., & McDaniels, M. (2006). Preparing the Professoriate of The Future: Graduate Student Socialization for Faculty Roles. In J. C. Smart (Ed.), *Higher Education: Handbook of Theory and Research Vol. XXI,* (pp. 397-456). London: Springer.
5. Bakhtin, M. M. (1981). *The dialogic imagination: Four essays by MM Bakhtin* (M. Holquist, Ed.; C. Emerson & M. Holquist, Trans.).
6. Bauer, M., Askling, B., Marton, S. G., & Marton, G. (1999). *Transforming Universities. Patterns of Governance, Structure and Learning in Swedish Higher Education.* London: Jessica Kingsley Publishers.
7. Bauman, Z. (1996). From Pilgrim to Tourist – Short Story of Identity. U Du Gay, P. & Hall,S. (ur.), *Questions of Cultural Identity,* (pp. 18-36). London, Thousand Oaks, New Delhi: Sage.
8. Becher, T. (1989). *Academic Tribes and Territories: Intellectual Enquiry and the Culture of Discipline*. Milton Keynes, UK: Open University Press.
9. Behar-Horstein, L.S., & Morgan, R.R. (1995). Narrative research, teaching and teacher thinking: perspectives and possibilities. *Peabody Journal of Education, 70*(2), 139-161.
10. Bleiklie, I., Høstaker, R., & Vabø, A. (2000). *Policy and Practice in Higher Education: Reforming Norwegian Universities.* London: Jessica Kingsley Publishers.
11. Bleiklie, I., & Michelsen, S. (2008). The university as enterprise and academic co-determination. In *From Governance to Identity* (pp. 57-78). Springer Netherlands.
12. Boice, R. (1991). New Faculty as Colleagues. *Qualitative Studies in Education* 4(1), 29-44.
13. Boice, R. (1992). *The New Faculty Member*. San Francisco, CA: Jossey-Bass.
14. Bourdieu, P. (1975). The specificity of the scientific field and the social conditions of the progress of reason. *Social Science Information* 1975 (14), 19-47.

15. Bourdieu, P. (2004). *Science of science and reflexivity.* Cambridge, EN: Polity Press.
16. Bourdieu, P., & Wacquant, L.J.D. (1992). *An invitation to reflexive sociology.* Chicago: University of Chicago Press.
17. Boyer, E. L. (1996). The scholarship of engagement. *Bulletin of the American Academy of Arts and Sciences, 49*(7), 18-33.
18. Bragg, A. K. (1976). *The Socialization Process in Higher Education*. Washington, DC: The American Association of Higher Education.
19. Brim, O. G. (1966). *Socialization through the Life Cycle.* New York: Wiley.
20. Campbell, D. T. (1986). Relabeling internal and external validity for applied social scientists. In W.M.K. Trochim (Ed.), *Advances in quasi-experimental design and analysis, 31*, (pp. 67-78). San Francisco: Jossey-Bass.
21. Caprile, M., Addis, E., Castaño Collado, C., & Klinge, I. (2012). *Meta-analysis of gender and science research. Synthesis report.*
22. Clandinin, D.J., & Conelly, M. (2000). *Narrative inquiry: Experience and story in qualitative research.*
23. Clark, B. R. (1987). *The Academic Life. Small Worlds, Different Worlds.* Princeton: The Carnegie Foundation for Advancement of Teaching.
24. Clark, B. R. (1993). The Research Foundations of Post-Graduate Education. *Higher Education Quarterly* 47(4), 301-315.
25. Collins, H. M. (2001). Tacit Knowledge, Trust and the Q of Sapphire. *Social Studies of Science* 31(1), 71-85.
26. Delamont, S., Atkinson, P., & Parry, O. (2000). *The doctoral experience*. London: Falmer Press.
27. Delamont, S., & Atkinson, P. (2001). Doctoring Uncertainty: Mastering Craft Knowledge. *Social Studies of Science* 31(1), 87-107.
28. Dewey, J. (1916/2011). *Democracy and Education: An Introduction to Philosophy of Education.* Macmillan.
29. Dewey, J. (1934/2005). *Art as experience.* Penguin.
30. Dunn, D., Rouse, L.R., & Seff, M.A. (1994). New faculty socialization in the academic workplace. In J.C. Smart (Ed.) *Higher Education: Handbook of theory and Research* X, (pp. 374-416). New York: Agathon Press.
31. Ehrenberg, R.G., Zuckerman, H., Groen, J.A., & Bruckner, S.M. (2010). *Educating Scholars: Doctoral Education in the Humanities.* Princeton, NJ: Princeton University Press.
32. El-Khawas, E. (2008). Emerging Academic Identities: A New Research and Policy Agenda. In A. Amaral, I. Belkilie, and C. Musselin (Eds.), *From Governance to Identity: A Festschrift for Mary Henkel, Higher Education Dynamics Vol. 24,* (pp. 31-46).
33. Enders, J., & Musselin, C. (2008). Back to the Future? The Academic Profession in 21. Century. In *OECD Educational Research and Innovation: Higher Education to 2030, Volume 1, Demography.* (pp. 125-150). Centre for Educational Research and Education: OECD Publishing.

34. Etzkowitz, H. (2003a) Innovation in innovation: The Triple Helix of university-industry-government relations. *Social Studies Information 42*(3), 293-337.

35. Etzkowitz, H. (2003b). The European entrepreneurial university: an alternative to the US model. *Industry and Higher Education 17*(5), 325-335.

36. Etzkowitz, H., Webster, A., Gebhardt, C., & Cantisano Terra, B. R. (2000). The future of the university and the university of the future: evolution of ivory tower to entrepreneurial paradigm. *Research Policy* 29(2), 313-330.

37. Ferrarotti, F. (1981). On the autonomy of the biographical method. *Biography and society: The life history approach in the social sciences*, 19-27.

38. Fox, M. F. (2003). Gender, faculty, and doctoral education in science and engineering. In *Equal Rites, Unequal Outcomes* (91-109). Springer Netherlands.

39. Gardner, S. K. (2008a). Fitting the Mold of Graduate School: A Qualitative Study of Socialization in Doctoral Education. *Innovative Higher Education* 33(2), 125-138.

40. Gardner, S. K. (2008b). What's too much and what's too little?: The Process of Becoming an Independent Researcher in Doctoral Education. *Journal of Higher Education* 79(3), 326-350.

41. Gardner, S. K. (2009a). The Development of Doctoral Students: Phases of Challenge and Support. *ASHE Higher Education Report* 34(6).

42. Gardner, S. K. (2009b). Student and faculty attributions of attrition in high and low-completing doctoral programs in the United States. *Higher Education* 58(1), 97-112.

43. Gardner, S. K. (2010). Contrasting the Socialization Experiences of Doctoral Students in High- and Low-Completing Departments: A Qualitative Analysis of Disciplinary Contexts at One Institution. *The Journal of Higher Education* 81(1), 61-81.

44. Gerholm, T. (1990). On Tacit Knowledge in Academia. *European Journal of Education* 25(3), 263-271.

45. Geertz, C. (1973). *The interpretation of cultures.* New York, NY: Basic Books.

46. Gibbons, M., Limoges, C., Nowotny, H., Shwartzman, S. Scott, P., & Throw, M. (1994). *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies.* London: Thousand Sage.

47. Gourlay, S. (2006). Towards conceptual clarity for "tacit knowledge": A review of empirical studies. *Knowledge Management Research & Practice* 4(1), 60-69.

48. Harre, R. (1983). *Social Being.* Oxford: Basil Blackwell.

49. Henkel, M. (2000). *Academic Identity and Policy Change in Higher Education.* London: Jessica Kingsley.

50. Henkel, M. (2005). Academic identity and autonomy in a changing policy environment. *Higher Education*, 49, 155-176.

51. Leonard, N., & Insch, G.S. (2005). Tacit knowledge in academia: A proposed model and measurement scale. *The Journal of Psychology,* 139(6), 495-512.

52. Insch, Gary S., Nancy McIntyre, & David Dawley (2008). Tacit knowledge: A refinement and empirical test of the Academic Tacit Knowledge Scale. *The Journal of Psychology,* 142(6): 561-579.

53. Kim, J. H. (2016). *Understanding Narrative Inquiry: The Crafting and Analysis of Stories as Research.* Sage.

54. Knorr-Cetina, K. (1977). Producing and Reproducing Knowledge: Descriptive or Constructive?. *Social Science Information,* 16: 669-696.

55. Kogan, M., Moses, I., & El-Khawas, E. (1994). *Staffing Higher Education: Meeting New Challenges.* London: Jessica Kingsley Publishers.

56. Kogan, M., & Hanney, S. (2000). *Reforming Higher Education.* Higher Education Policy Series 50. London and Philadelphia: Jessica Kingsley Publishers.

57. Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation.* New York: Cambridge University Press.

58. Lindholm, J. A. (2004). Pathways to the Proffesioriate: The Role of Self, Others and Environment in Shaping Academic Career Aspirations. *The Journal of Higher Education,* 75(6), 603-635.

59. Long, J. S., & Fox, M. F. (1995). Scientific careers: Universalism and particularism. *Annual Review of Sociology,* 45-71.

60. Lovitts, B. E. (2001). *Leaving the Ivory Tower: The Causes and Consequences of Departure from Doctoral Study.* Lanham, MD: Rowman and Littlefield.

61. Martin, B. R., & Etzkowitz, H. (2000). The origin and evolution of the university species. *VEST,* 13 (3-4), 9-34.

62. Mills, C. W. (1959/2000). *The sociological imagination*.

63. Merton, R.K. (1957). *Social theory and social structure.* Glencoe, IL: The Free Press.

64. Merton, R. K. (1973). *The sociology of science*. Chicago: University of Chicago Press.

65. Mitroff, I. I. (1974). *The Subjective Side of Science: A Philosophical Inquiry into Psychology of the Apollo Moon Scientists.* Amsterdam: Elsevier.

66. Munro, P. (1998). *Subject to fiction: Women teachers' life history narratives and the cultural politics of resistance.* University of Philadelphia, PA: Open University Press.

67. Musselin, C. (2006). *The transformation of academic work: Facts and analysis.* Presented at the UNESCO Forum: Europe and North America Scientific Committee on The Changing Role of the Academic Profession and its Interface with Management, Kassel, Germany, 5–6 September.

68. Musselin, C. (2007). The transformation of academic work: facts and analysis. In M. Kogan and U. Teichler (Eds.), *Key Challenges to the Academic Profession* (pp. 171-190). Paris and Kassel: UNESCO Forum on Higher Education Research and Knowledge and International Centre for Higher Education Research Kassel.

69. Musselin, C., & Becquet, V. (2008). Academic Work and Academic Identites: A Comparison between Four Disciplines. In J. Välimaa and O-H. Ylijoki (Eds.), *Cultural Perspectives on Higher Education,* (91-108). London: Springer.

70. Müller, J, Castaño C., González A., & Palmen R. (2011). Policy towards gender equality in science and research. *Brussels economic review* 54, (2/3), 295-316.

71. Nettles, M. T., & Millet, C.M. (2006). *Three Magic Letters: Getting to PhD*. Baltimore, MA: The Johns Hopkins University Press.

72. Neumann, R. (2003). *The doctoral education experience: diversity and complexity.* Canberra: Commonwealth of Australia.

73. Parry, O., Atkinson, P., & Delamont, S. (1994). Disciplinary identities and doctoral work. In R. G. Burgess (Ed.), *Postgraduate Education and Training in Social Sciences*, (34-52). London: Jessica Kingsley.

74. Parry, S. (2007). *Disciplines and doctorates. Higher education dynamics, 16.* London: Springer.

75. Polanyi, M. (1962). Tacit Knowing: Its Bearing on Some Problems of Philosophy. *Reviews of Modern Physics* 34(4), 601-616.

76. Slaughter, S., & Leslie, L.L. (1997). *Academic Capitalism: Politics, Policies, and the Entrepreneurial University.* Baltimore, MD: The Johns Hopkins University Press.

77. Slaughter, S., & Rhoades, G. (2004). *Academic Capitalism and the New Economy: Markets, State and Higher Education.* Baltimore: The John Hopkins University Press.

78. Taylor, C. (1991). *The Ethics of Authenticity.* Cambridge, Mass: Harvard University Press.

79. Tierney, W. G. (1988). Organizational Culture in Higher Education: Defining the Essentials. *The Journal of Higher Education* 59(1), 2-21.

80. Tierney, W. G. (1997). Organizational Socialization in Higher Education. *The Journal of Higher Education* 68(1), 1-16.

81. Tierney, W. G., & Rhoads, R. A. (1994). *Faculty Socialization as a Cultural Process: A Mirror of Institutional Commitment. ASHE-ERIC Higher Education Report* 6. Washington, DC: The George Washington University, School of Education and Human Development.

82. Tierney, W. G., & Bensimon, E. M. (1996). *Promotion and Tenure: Community and Socialization in Academe*. Albany, NY: State University of New York Press.

83. Turner, C. S.V., & Thompson, J. R. (1993). Socializing women doctoral students: Minority and majority experiences. *Review of Higher Education* 16(3), 355-370.

84. Välimaa, J. (1998). Culture and Identity in Higher Education Research. *Higher Education* 36(2), 119-138.

85. Välimaa, J., & Ylijoki, O-H. (Eds.) (2008). *Cultural Perspectives on Higher Education.* London: Springer.

86. Van Maanen, J. (1976). Breaking in: Socialization to work. In R. Dubin (Ed.), *Handbook of Work, Socialization and Society,* (pp. 67-130). Chicago: Rand McNally.

87. Van Maanen, J. (1983). People processing: Strategies of organizational socialization. *Organizational Dynamics* 7(1), 18-36.

88. Walker, G. E., Golde, C. M., Jones, L., Conklin Beuschel, A., & Hutchings, P. (2008). *The Formation of Scholars: Rethinking Doctoral Education for the Twenty-First Century.* Stanford, CA: The Carnegie Foundation for the Advancement of Teaching.

89. Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education – A perilous passage?* ASHE-ERIC Higher Education Report

28(3). Washington, DC: The George Washington University, School of Education and Human Development.

90. Wenger, E. (1998). *Communities of Practice: Learning, Meaning and Identity.* New York: Cambridge University Press.
91. Whitley, R. D. (1984). *The Intellectual and Social Organization of Sciences.* Oxford: Clarendon Press.
92. Yliyoki, O-H. (2008). A Clash of Academic Cultures: The Case of Dr. X. In J. Valimaa and O-H. Ylijoki (Eds.), *Cultural Perspectives on Higher Education,* (198-215). London: Springer.
93. Zuckerman, H. (1977). *Scientific Elite: Nobel Laureates in the United States.* New York: Free Press.
94. Zuckerman, H., & Merton, R.K. (1971). Patterns of evaluation in science: institutionalization, structure and functions of referee system. *Minerva* 9, 66-100.

INDEX OF AUTHORS

INDEX OF TERMS

ABOUT EDITORS AND AUTHORS

Jasminka Ledić is a tenured full professor who has been employed at the Department of Education of the Faculty of Pedagogy/Faculty of Humanities and Social Sciences, University of Rijeka since 1982. She was appointed to the senior academic rank of tenured full professor in 2001. She has published thirteen scientific monographs independently or as a co-author, as well as a number of research and professional papers in the field of education. Her research interests are primarily related to higher education, the European dimension in education, history of education, and civic society. She has led and participated in a number of research projects on the international and national level. She is currently acting as the head of the Croatian Science Foundation's project "Academic profession Competencies Framework: Between New Requirements and Possibilities" (APROFRAME), and the University of Rijeka's project "The European Dimension in Education: Approaches and Challenges." During her long academic career, she has held various functions. She was the president of the Croatian Rectors' Conference's commission for redefining the minimum criteria for the evaluation of educational and professional activities in the appointment process for academic ranks. She was also a member of the National Science Awards Committee. Additionally, she held two terms as the Vice Dean for Research and International Cooperation at the Faculty of Pedagogy/Faculty of Humanities and Social Sciences, University of Rijeka. She is currently head of the postgraduate doctoral study programme of Pedagogy at the Faculty of Humanities and Social Sciences in Rijeka. She was a Fulbright grant recipient and completed the programme in the Indiana University Bloomington School of Education, USA. She was also awarded the Annual State Award "Ivan Filipović" for the contribution to the development of higher education. As a member of the Golden Section Association's Steering Committee, she received the City of Rijeka's annual award for the contribution to the popularization of science. She is one of the founders of the Association for the Development of Higher Education "Universitas" and acted as its president for a number of years. She is currently the president of the Association's Steering Committee.

Marko Turk is a research associate at the Department of Education of the Faculty of Humanities and Social Sciences, University of Rijeka. He obtained his master's degree at the study programme of Pedagogy and Philosophy at the Faculty of Humanities and Social Sciences in Rijeka in 2007, and his doctoral degree at the University of Zagreb in the field of higher education in 2015. From 2007 to 2009, he was employed as a member of the University of Rijeka's professional team in the position of an assistant to the director of the Foundation of the University of Rijeka. Since 2009, he has been employed as a junior researcher – teaching assistant at the Department of Education of the Faculty of Humanities and Social Sciences in Rijeka. He has participated in a number of international and national research projects. His research interests are related to the academic profession, higher education, competencies in education, and the European dimension in education. He was a recipient of three European Science Foundation grants for professional development and the Foundation of the University of Rijeka Annual Award in the academic year 2012/2013. He was a member of the University of Rijeka's working group for the preparation of the Statute of the Study Programme Accreditation, a member of the Council of the research project CIVICUS Civil Society Index in Croatia, and a member of the Council for the volunteering development of the Primorje and Gorski Kotar County. He is currently a member of the Quality Committee and the head of the part-time graduate study programme of Pedagogy at the Faculty of Humanities and Social Sciences in Rijeka. He was a long-standing member of the Executive Committee of the Association for the Development of Higher Education "Universitas" and is currently acting as the Association's president.

Marija Brajdić Vuković is an assistant professor at the University Department for Croatian Studies of the University of Zagreb where she teaches the courses on social research methods, social impact analysis, and sociology of science and technology at the undergraduate and graduate study programmes of Sociology. She obtained her master's degree in Sociology at the Faculty of Humanities and Social Sciences of the University of Zagreb, as well as a doctoral degree in 2012 in the area of social sciences, field of sociology with the doctoral thesis *Social Actors of Young Researchers' Professional Socialisation in Natural and Social Sciences.* Previously, she had occupied the doctoral and postdoctoral positions at the Institute for Social Research in Zagreb for ten years and, within the framework of the Institute's group for the sociology of science and technology, gained prominence in research on the topic of the researcher development potential in Croatia and the problems of the career development of researchers in the Croatian scientific and educational institutions. Marija is a methodologist of social research and a researcher of science and technology, and her research interests primarily concern the field of innovative methodological qualitative approaches to social research and, thematically, the field of research on the Croatian academic system and academic careers, the integrity of the scientific profession, the social role of science, and the influence and impact of the policies on the development of the system of science and higher education.

Bojana Ćulum is an assistant professor at the Department of Education of the Faculty of Humanities and Social Sciences, University of Rijeka. Her research interests include the area of higher education and civil society, especially the university third and civic mission and the concept of the engaged university, as well as the area of changes in the academic profession with an emphasis on junior researchers and the area of working with young people,

volunteering, and civic education. She is currently leading the "Community Based Learning: Narratives on Transforming Academic Identities" research project, within the framework of the Fulbright Visiting Scholar grant at the University of Portland (OR, USA). She is as a research collaborator on the "Academic Profession Competence Framework: Between New Requirements and Possibilities" (APROFRAME) project, funded by the Croatian Science Foundation. She is an author, co-author, and editor of a number of books, book chapters and papers. She is one of the founders of the ECHER network (Early Career Higher Education Researchers) and an active member of the Consortium of Higher Education Researchers. She initiated the University of Rijeka's membership in the Talloires network of the higher education institutions committed to social responsibility and community service, and was appointed as the University's representative. She is one of the founders of the Association for the Development of Higher Education "Universitas" and had been engaged as a member of executive or governing board for number of years. For the last ten years, she has been a member of the organising committee of the Science Festival in Rijeka.

Ivana Miočić is a doctoral student and a teaching assistant at the Department of Education of the Faculty of Humanities and Social Sciences in Rijeka. In 2005, she obtained her master's degree in Pedagogy at the Faculty of Humanities and Social Sciences in Rijeka, with the thesis on the topic of the European dimension in education. During her studies, she worked as a teaching assistant at the Department of Education, on the courses History of Education, History of Childhood, and European Dimension in Education (head of course Full Professor Jasminka Ledić, PhD). She was a member of the Quality Committee of the Faculty of Humanities and Social Sciences and a recipient of the Erasmus+ scholarship in the academic year 2013/2014, which enabled her to spend a summer semester at the Faculty of Arts, University of Ljubljana. She has been a member of the Executive Committee of the Association for the Development of Higher Education "Universitas" since 2014. She is participating in two research projects: "The European Dimension in Education: Approaches and Challenges" (supported by the University of Rijeka) and "Academic Profession Competencies Framework: Between New Requirements and Possibilities" – APROFRAME (supported by the Croatian Science Foundation). She started attending the postgraduate doctoral study programme of Pedagogy at the University of Rijeka in 2016 and is currently employed at the Faculty of Humanities and Social Sciences in a junior academic rank of teaching assistant within the framework of the Croatian Science Foundation's "Young Researchers' Career Development Project – Training of New Doctoral Students."

Nena Rončević is an assistant professor at the Department of Education of the Faculty of Humanities and Social Sciences in Rijeka where she teaches the courses on the methodology of social research and sociology of education. She completed her graduate study programme at the Department of Sociology of the Faculty of Humanities and Social Sciences in Zagreb and obtained a master's degree (2009) and a doctoral degree (2011) at the Department of Education of the Faculty of Humanities and Social Sciences in Rijeka. The topic of her doctoral thesis was "University and Sustainable Development: Analysis of Suppositions of Successful Implementation in the Core Academic Activities." From 2003 to 2007, she was employed in the Institute for Sustainable Development and Physical Planning of the Primorje – Gorski Kotar County where she planned, organised and implemented research, projects, and

programmes focused on the development of the local community and region. She is an author and co-author of a number of scientific monographs and scientific papers, and she also participated in one international and a number of national scientific and professional projects. She is currently head of the "Academic Profession in the Knowledge-Based Society" project which is funded by the University of Rijeka through the Initial Grants for Young Researchers programme. She is a member of the County's team for the implementation of the Plan for Health and Social Welfare of the Primorje and Gorski Kotar County for the period 2015 – 2018, as well as a member of the Croatian Sociological Association and the Association "Universitas."

Bojana Vignjević is a teaching assistant at the Department of Education, Faculty of Humanities and Social Sciences in Rijeka. She completed a graduate double major study programme of Pedagogy and English Language and Literature at the Faculty of Humanities and Social Sciences in Rijeka and she has been attending a postgraduate doctoral study programme of Pedagogy since 2015. Her prior work experiences include working as a pedagogue in a dormitory for pupils and as an English teacher in adult education. While working at the Adult Education Institution Dante, she participated in two international partnership projects within lifelong learning programmes funded by the Agency for Mobility and EU Programmes. She also attended an international professional development programme in the field of english language methodology supported by the Agency for Mobility and EU Programmes. She is momentarily participating in two research projects: "The European Dimension in Education: Approaches and Challenges" (supported by the University of Rijeka) and "Academic Profession Competencies Framework: Between New Requirements and Possibilities" – APROFRAME (supported by the Croatian Science Foundation). Her research interests pertain to higher education, vocational education as well as academics' and teachers' professional identity.

The book (and the research on which it is based) addresses relevant and challenging questions/issues in contemporary higher education in Croatia, particularly those related to the process of professional (teaching and research) development and professional socialisation of academics in the early stages of their academic (teaching and research) careers.

The book "Teaching and Research in the Professional Socialisation of Junior Researchers" is a thorough, professionally written and relevant scientific contribution to the knowledge base in the field of inquiry, and a valuable source of information and learning about several important, until now less known, and often marginalised aspects of the academic life in Croatia.

Associate professor Slavko Cvetek, PhD

The book "Teaching and Research in the Professional Socialisation of Junior Researchers" provides a number of research findings on the quality of higher education, the required teacher competencies of university teachers, the importance of university, as well as the needs and professional development of junior researchers who are entering the higher education system.

The recommendations for the development of higher education policies on the national, university and university constituent levels, as well as the individual, mentorship levels which are important for the professional development of junior researchers, make a significant contribution of this book. A considerable challenge on the individual level is the development of the junior researchers' professional identity which should be formed through mentorial support, doctoral study programmes, as well as the programmes for continual professional training and development of junior researchers.

Professor Jana Kalin, PhD

200,00 kn

ISBN 978-953-7975-55-5