PhD Programme: Educational Innovation and Lifelong Learning

INNOVATIVE TEACHING LEVEL IN UNIVERSITY CLASSROOMS IN UKRAINE

Universidad de Deusto

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To my father, in memoriam.

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ABSTRACT

This doctoral thesis proposes a descriptive quantitative investigation that mainly aims to gauge the level of innovative teaching in university classrooms in Ukraine. Specifically, this study examines the difference in the levels of innovative teaching depending on teachers' sociodemographic and cognitive characteristics.

The theoretical part of the thesis strives to distinguish innovative teaching in different contexts: teaching paradigm shift, learning theories, teaching practices, etcetera. In addition, based on related literature, we define the notion of innovative teaching, specify its characteristics and offer a research model. The model presented in this study encompasses two main components: teachers' characteristics (cognitive attributes and sociodemographic data) and innovative teaching level (dimensions: planning, application, evaluation). According to our model, teachers' characteristics make a difference in their level of innovative teaching.

Quantitative analyses allow us to fulfil research objectives and answer research questions established at the beginning of the work. According to the results, the innovative teaching level has been mainly upper-medium in total and across all teaching dimensions. Findings also indicate significant differences in innovative teaching depending on teachers' gender, faculty position, education degree, as well as all cognitive characteristics: self-efficacy, creativity and receptivity to change. Teachers with higher levels of these attributes tend to exhibit higher levels of innovative teaching. However, the results indicate a certain lack of student-centred approaches being used by teachers.

The results of our research can be useful in as much as they support teachers' lifelong education and self-study. They can also contribute to future teachers' theoretical training and enhance teachers' professional and entrepreneurial skills. This research is especially interesting in the context of the educational reforms that Ukraine is currently implementing.

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INTRODUCTION

Tempora mutantur et nos mutamur in illis…

Every period of human life has had its reflection in the different educational philosophies that strive to face the societal challenges of the era. Contemporary education has been conceptualized in the period of Knowledge society that is characterized with a new form of schooling. Nowadays, learners are expected to be constructors of knowledge instead of receivers of knowledge, whereas teachers must be facilitators of the learning process instead of being mere transmitters of knowledge. Moreover, face-to-face teaching has been complemented with many online possibilities. *Learner-centeredness*, *sharing ideas*, *collaboration*, *lifelong learning* perspectives and *information technologies* have become key words in contemporary pedagogical discourse. All these changes require teachers to possess cognitive attributes that enable them to cope with the pedagogical demands of the 21st century.

0.1. RESEARCH BACKGROUND

Regarding educational changes in Ukraine, a certain degree of progress has admittedly been made in the spheres of education policy, curricula design and the adaptation of teaching methods to common European principles. The new Higher Education Law, which came into effect in July 2014, touches the questions of university autonomy and quality assurance. It also reduces the workload for university teachers, among other modifications. This law seeks to help Ukrainian education evolve more rapidly into implementing higher standards of teaching at university level. Kvit (2014), a minister of education, states in one of his recent speeches: "Education should be interpreted as a comprehensive process of innovation in the development of society". These words confirm a tendency towards innovation in contemporary Ukrainian society.

Although many changes have been implemented in all fields of education, many questions remain unanswered. These issues, unresolved since the fall of Soviet Union, concern the transition from a post-Soviet to a European model of education. Soviet education was deemed to exhibit a number of totalitarian traits, such as excessive centralization; failure to

address national, cultural and historical traditions; and isolation from foreign theories and practices (Zgurovsky, 2002).

According to the theoretical basis for the present research, higher education in Ukraine is considered to be still in the process of change. Furthermore, according to Kutsyuruba (2011, p.304) "despite the declared transition from the Soviet era of modernism to post modernity, Ukrainian society possessed many characteristics of the modernist society" that persist today.

Ukrainian higher education has undergone two transitive contexts. One has been internal, involving changes from a post-soviet to a more democratic model of education; and the other has been external, regarding the convergence with a European model of education in the framework of the Bologna process. The changes required in order to Europeanise the educational system and join the principles of the Bologna Declaration add to the existing challenges that universities face (Osipian, 2014); challenges that include corruption and the lack of a systemic approach to reforms.

These transitive processes greatly affect education, not only on the macro level but also on the classroom level. The teaching that takes place in Ukrainian university classrooms has faced challenges such as the de-ideologisation and the humanization of teaching (Ryabenko, 2013; Virtukh, 2014). It is widely known that democratic changes aim to make education more person-centric; we also know that the process of innovative teaching is complicated because "teachers are often resistant to changing their methodology and this reflects fear, insecurity and ignorance" (Nicolaides, 2012 p.623). Weishaar, Fuchs and Williams (2012, p.13) conclude from the report of the Ministry of Education (2010) that teachers in Ukraine "feel scepticism about learner-centred change and their ability to make these changes". Thus, educational innovation, in many cases, has been happening formally, by excluding communist and Marxist ideology from universities. However, this leaves unsolved problems: teachers do not apply the new teaching methods, they resist changes and do not feel positive and optimistic concerning reforms.

In the context of classroom practices, teachers themselves also became both subject and object of societal transformations. Academics tend to become change agents in education (Fullan, 1993a, Heijden et al., 2015); they bring declared innovations (reforms) in the

classroom and may consequently need new cognitive attributes to implement these changes. In other words, it is necessary for the teaching staff in Ukraine not only to change teaching methods but also, in many cases, to change their perception regarding innovation. "We have to change much, including our mentality and vision for the future of society. There are no alternatives. We must go through these difficult transformations to become a better nation", stated Zghurovskiy (2014), former Minister of Education, during the press conference devoted to the recent education reform.

The concept of innovative teaching in Ukraine has been researched by different authors: Dychkivska (2001, 2004), Kozak (2011, 2014), Artykutsa (2006), among others. According to reviewed literature, much attention has been paid to the theoretical aspects of innovative teaching: its definition, components, approaches, contexts, etcetera. But, at the same time, there seems to be a contradiction between the degree of attention paid to the theoretical issues of innovative teaching ("What is innovative teaching?") and the lack of investigations regarding the level of innovative teaching ("What is really happening in the universities? What factors make a difference in innovative teaching?").

The issue of the level of innovative teaching is a matter of great importance for the Ukrainian education discourse. That is why this dissertation will focus on the level of innovative teaching currently in use in the university classrooms in three Ukrainian universities, depending on teachers' cognitive and sociodemographic characteristics. This research may facilitate the understanding of innovative teaching process in Ukraine, and define its controversial issues. Furthermore, knowledge of teachers' and students' perspective of innovative teaching can facilitate the application of innovations in university classrooms.

0.2. OBJECTIVES OF THE STUDY

In accordance with the research background, structured data collection and statistical analyses have been performed in order to answer the research questions:

I. What is the level of innovative teaching in university classrooms in Ukraine?

II. Do teachers' sociodemographic characteristics make a difference in the level of innovative teaching in university classrooms?

III. Do teachers' cognitive characteristics make a difference in the level of innovative teaching in university classrooms?

IV. What is students' perception of the level of innovative teaching in university classrooms?

V. Is there any difference between teachers' and students' perception of the level of innovative teaching?

Considering the aforementioned research questions, the following objectives were set for the study:

The **main objective** of the current research is to gauge the level of innovative teaching in university classrooms in Ukraine and to identify whether teachers' cognitive and sociodemographic characteristics make a difference in the level of innovative teaching.

Minor objectives of the current research are:

I. To gauge the level of innovative teaching used by teachers n university classrooms;

II. To examine the difference in the level of innovative teaching, depending on the teachers' sociodemographic characteristics;

III. To examine the difference in level of innovative teaching depending on teachers' cognitive characteristics;

IV. To gauge students' perception of the level of innovative teaching in university classrooms;

V. To determine whether there is any difference between teachers' and students' perceptions of the level of innovative teaching in university classrooms.

0.3. TYPE OF INVESTIGATION

This is a quantitative exploratory research. The theoretical part of the research is built on the principle of deduction, where material is presented from the general idea to the more specific. The empirical part of the investigation is designed as a survey. The teachers and their students participated in the survey concerning the level of innovative teaching applied in the classroom. The teachers also answered the Likert-scale questionnaire on their level of cognitive characteristics. Afterwards, the results were described and interpreted in order to answer the main research questions.

0.4. THESIS DESIGN

The design of the thesis consists of two main parts: a theoretical part, which consists of two chapters; and an empirical part, which includes a chapter for methodology, another chapter for research findings, and a final chapter for discussion and general conclusions, including limitations and recommendations for future research.

The first chapter outlines the theoretical background for the study, the state of the art that provides the basis for this research. It encompasses the concept of innovation, its definitions and several specific contexts of education innovation. It starts from the very general framework of innovation as an educational paradigm shift towards a more student-centric approach. Then the chapter continues with a description of educational contexts, including theories of learning, political changes and other related issues. After that, it analyses the historical and modern context for the Ukrainian educational reform. Finally, the chapter describes the range of specific pedagogic characteristics of innovative teaching and the dimensions of innovative teaching. Each dimension includes innovative didactic strategies that conform to our definition of innovative teaching applied in the university classroom.

The second chapter illustrates the process of the application of innovative teaching as a complicated cognitive process dealing with epistemic beliefs and psychological and personal characteristics, among others. Subsequently, in the process of literature review, a set of specific cognitive characteristics were selected, which may foster or hinder the implementation of innovation in the classroom; namely the sense of self-efficacy, creativity, and receptivity to change. As explained in the chapter, related literature

confirms that these cognitive components may make a difference in the level of innovative teaching in the classroom. The chapter finishes with a research model for the present study.

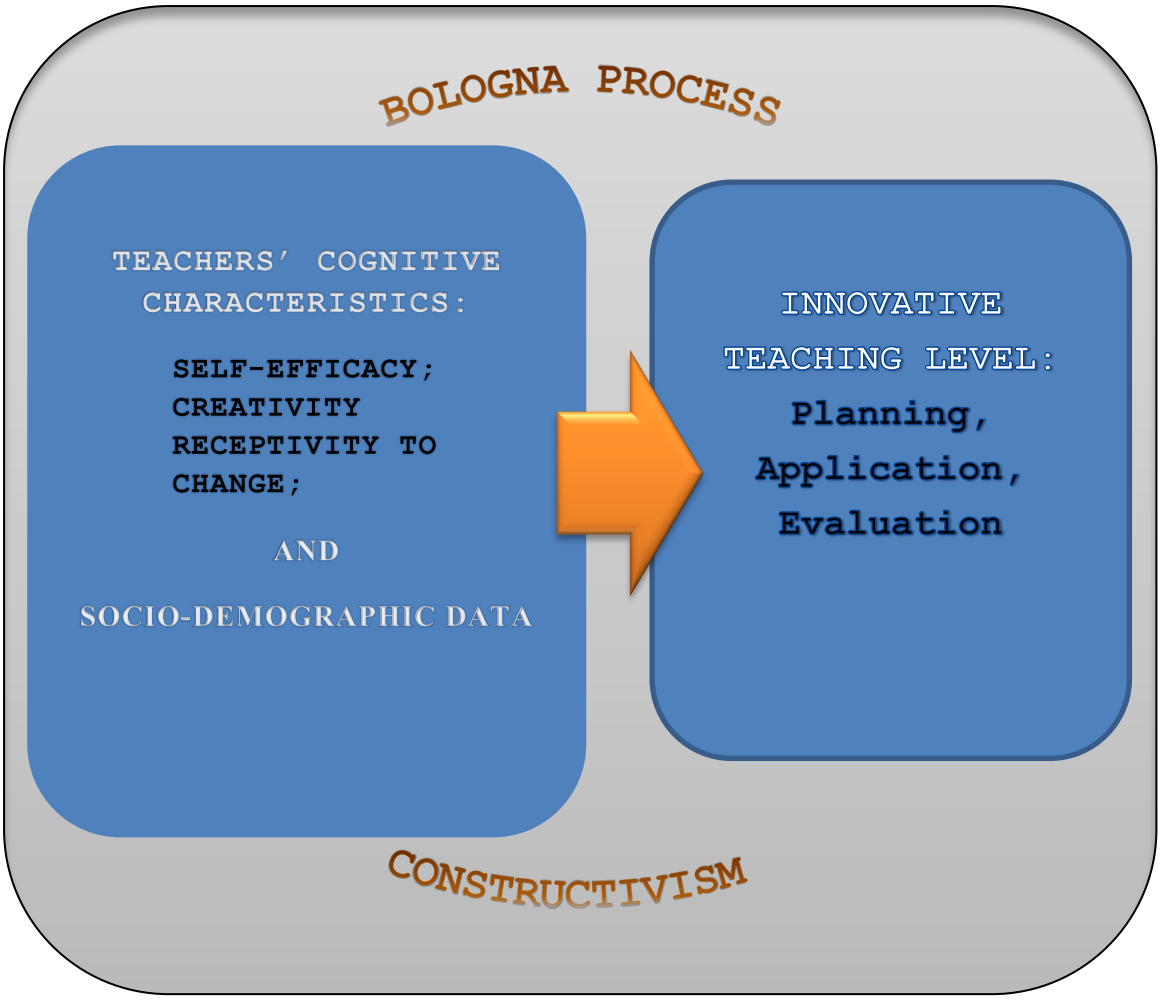

Figure 0.1: Research Model – "Innovative Teaching as Applied in the University Classroom"

The model presented in the current study is designed based on two main constructs: the teacher factor (cognitive and sociodemographic characteristics) – **independent** variables; and level of innovative teaching (planning, application, evaluation dimensions) – a **dependent** variable. According to our model, the characteristics selected for teachers (self-efficacy, creativity and receptivity to change) tend to make a difference in the level

of innovative teaching applied in the classroom. These constructs conform the core of the research model, whereas the Bologna Process and the Constructivist theory conform the research background. In other words, innovative teaching is conceptualized according to Bologna requirements and constructivist pedagogy.

The third chapter, methodology, describes research hypotheses, variables, sample, and instrument.

Subsequently, in the fourth chapter we present research findings in accordance with the objectives established in the introduction. In order to examine innovative teaching, we measure the level of innovative teaching strategies being applied by teachers in the classroom. We then characterize the difference in the level of innovative teaching according to the teachers' sociodemographic and cognitive characteristics.

In the last chapter of the present study, we discuss the results in the context of the research hypotheses established in the methodology section. Results are contrasted with existing literature on the subject. Then conclusions are presented, providing itemised summaries of research results as depending on each research question, and striving to answer all of them. Research limitations and suggestions for future investigations conform the final part of the last chapter.

0.5. SIGNIFICANCE OF THE STUDY

The goal of this project is to understand the nature of the innovation currently being implemented in the university classroom and to help Ukrainian professors and students majoring in pedagogy improve their academic competence and quality of teaching. It also seeks to help them realize the importance of psychological characteristics such as receptivity to changes, creativity, and self-efficacy.

This study can be useful in the context of teachers' lifelong education and self-study. It can also be a contribution to the theoretical preparation of future teachers, and it could enhance teachers' professional and entrepreneurial skills. Teachers and future teachers can perform a self-reported assessment of their personal psychological characteristics and then reflect on the results they have achieved in the key areas above listed.

THEORETICAL PART

CHAPTER ONE

INNOVATION IN EDUCATION: CONCEPT, CONTEXTS AND CHARACTERISTICS

In this chapter, the notion of innovation is investigated in the context of philosophical, political and pedagogical changes in the education sciences of the 21st century. The evolution of innovative teaching is presented in chronological order in different contexts: education paradigm shift, change in learning theories, and Bologna reform. Then, its pedagogical context is described in the framework of innovative curriculum attributes, new teaching strategies, and the use of new technologies in teaching. A proper understanding of innovative teaching is presented, based on a literature review. The final part of the chapter presents the Ukrainian context regarding innovative education.

1.1. THE CONCEPT OF INNOVATION

Ontogenesis of innovation has a very broad definition and its understanding is influenced by political, economic and societal changes. In general, and according to the New Oxford Dictionary of English (Pearsall & Hanks, 1998, p. 942), the word *innovation* means "making changes to something established by introducing something new". This definition can obviously suit vastly different areas of study. Furthermore, it is true that particular spheres of research may also have specific understanding of innovation. For instance, contemporary educational innovation is always student-centred (Geven & Santa, 2010) and aimed at improving the learning environment and or learning processes (Shen, 2009).

Although the process of change is complex and many different types of change are indeed possible (Credaro, 2006), it is clear that innovation must always entail progress: if the changes being effected lead to decadence, they are useless. Thus, new practices are devised in order to improve education in one way or another, and, in consequence, innovations in education should be regarded as "improvement", however the context of improvement may vary depending of innovation process participants' perspectives (OECD, 2009). Hannan (2000) also suggests that innovation implies change for better, not a change for the sake of doing something differently. This means that all innovations presuppose change, but not all changes presuppose innovation (Johnessenan, 2001).

Moreover, Manso (2011) states that innovation involves the exploration of new and hither to unknown approaches, which are likely to fail. In other words, besides improvement, innovation also presupposes some tolerance to failure. Obviously, in case of failure, it is necessary to search for another innovation that will lead to improvement.

In education sciences, the term "innovation" has been given a wide variety of meanings. For instance, it has been taken to refer to a "planned process of introducing change, intended to bring about improvements which may be new to a person, course, department, institution or higher education as a whole" (Silver, Hannan and English, 1997, p.2). Klarin (1997) also states that the term "innovation" not only refers to the creation and diffusion of new ideas, but also to the different types of activities and ways of thinking. The researcher, however, thinks of "innovation" as a process.

Podlasyy (2004, p.112) defines innovation as "changes inside the pedagogical system which are applied to improve the teaching process and its results" (translated from Russian). Similarly, Dychkivska (2004) understands educational innovation as different activities oriented toward dynamic changes in the learning environment (e.g. applying original methods, developing alternative ways of thinking, fostering creativity and adaptation abilities of personality). The first definition is more oriented towards systemic changes, whereas the second refers more to changes in teaching approaches.

For example, the definition Mioduser et al. (2003, p.25) provide for "innovation" is "a wide range of activities and means (curricular decisions, learning materials, learning configurations, lessons plans, tools, resources) that reflect the schools educational philosophical orientation toward lifelong learning". This definition focuses on the results of innovative teaching, which deals with methods, means and tools for the application of innovation, rather than with the process of change itself.

As we can see from the variety of definitions, when researchers understand innovation as a process, they focus on teachers' behaviour of aiming to improve teaching in the classroom by means of new strategies brought by paradigm changes. In contrast, when innovation is defined as a "product" or "results" (curriculum, particular strategies, approaches methods etc.) we speak about the particular results of such behaviour. Therefore, innovation can be considered both a way to implement a new idea and the new idea itself.

Thus, the definition of "innovation" for 21st century scientists combines system change approaches and novel methods of teaching application. We can find this combination in the Oslo Manual (Statistical Office of the European Communities, 2005), where innovation is defined as "the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations" (p.46). This definition can also be used for innovative teaching research.

The term *change* is used in the literature as a broad definition of restructuring, improvement, and the implementation of new technologies, among others. For instance, change can be described as the adoption of technology innovation (Carlopio, 1998). Fullan (1992, p.22) states: "Change is a process of learning new ideas and things. It is learning to do and learning to understand something new".

The term *systemic change*, which is one of the most important factors of educational innovation, has a different meaning: it clarifies the objectives of education and explains the reasons for it. Fullan and Miles (1992) defined the following stages of the process of understanding one's current system: identifying and understanding problems, identifying and managing change and relevant resources embarking towards a newly reformed system. Thus, in these contexts the word *change* is a generalized term connected with the use of technologies, learning new things and the reform of the education system, among others.

The term *reform* is also widely used in scientific literature. The educational reform and the concept of innovation are connected to new approaches to learning (OECD, 2008). According to the USA Encyclopaedia of the Social & Cultural Foundations of Education, the term *reform,* as a noun, is linked to changes in policy, practice, or organization (Provenzo, 2008). Furthermore, Henson (2015, p.4) argues that *education reform* "refers to systematic approaches on a national, state or local level to make significant improvements in education." Therefore, reform can be understood as a set of macro level improvements. However, Credaro (2006) quotes Fullan (1993b, p.46) and argues that education reforms are "hard to conceive and even harder to put into practice".

The report prepared for the UNESCO World Conference on Higher Education in 2009 states that academic changes of the late 20th and early 21st centuries are more extensive

due to their global nature and number of institutions and people it affects (Altbach et al., 2009). According to this report, macro-level changes are catalysed by such factors as globalization, massification, inequalities in access, increasing student mobility, quality assurance (creating new ways of teaching, learning, and designing curricula), financing of higher education, information and communications technologies, demographics and the impact of the current economic crisis. Thus, contemporary education faces the problem of transformation in several different macro-level spheres.

Additionally, the term *innovative university* appears in the education science literature and means innovation in the institutional context. Innovation offers flexibility that enables institutions to adapt in constantly changing environments (White & Glickman, 2007).

In the 90's, the notion of innovative universities firstly appeared in the works of different authors like van Vught, (1989), Clark (1993), Gibbons (2000) and Kennedy (1999). Researchers describe the innovative university as an active institution that makes changes in reactions to internal and external challenges. "It is about universities that want to change, want to adapt their missions to what is happening in their environment" (van Vught, 2009, p.2). Mamiseishvili (2009) researches new competences in the context of job perception as reported by students. She refers to different researches and assumes that the 21st-century community college has increased its responsibility "to develop global competency, international literacy, and intercultural understanding of its students, preparing them for work in today's interdependent global economy for example American Association of Community Colleges [AACC]" (p.26).

University level innovation combines the elements of reform and change (Levine, 1978). Rhoads (2006) concludes from the work of Borons (2006) that the concept of reform, as applied to the university context, should lead in some way to the increase of opportunities and access to knowledge. Universities experience change in accordance with the demand of society. van Vught (1999) states that universities need to innovate and this implies they need to rethink their roles and positions in at least three areas: research, teaching and learning, and knowledge transfer.

It is important to state that educational structures characteristics could be important in understanding the nature of innovation in higher education. The idea of paying attention to university characteristics appeared in the 70's. Nisbet (1978) stated that the

characteristics of educational structures are important factors for the adoption of innovation as well as the characteristics of the innovation being implemented.

Middle-level changes, which concern the innovative university, also involve some traits. Van Vught (2009) states that, contrary to traditional institutions with their emphasis on scholarship and isolationism, innovative universities combine scholarship with professionalism and they reach out to their environments. According to Clark, successful innovative universities show five basic characteristics: a strong steering core; a developmental periphery; a diversified funding base; stimulated academic heartland; and an integrated entrepreneurial culture (Clark, 1998).

In accordance with (Ginsberg, & Bernstein, 2012, p. 10) understanding of institutional change is impossible without "the intersection between the demands of the environment, including the balance between those that are internal and those that are external" that is a key component of change in institution. By external environments they mean provision of resources, including funds and intangible support, such as encouragement and shows of support. Thus innovative university nowadays is understood in the aforementioned article in the context of openness, intersection of internal environments (scholarship) and external environments (investments, collaboration with external colleagues etc.)

In conclusion, we must accept that, with such a spectrum of definitions, the term *innovation* is a problematic issue for analysis, as there is no common understanding of the issue (Smith, 2011).

Table 1

Levels of Innovation Concept in Higher Education

Level	Description
Macro level	System-wide change or reform, paradigm change
Middle level	System components change to improve system – Innovative University
Micro level	Teaching process change as a result of paradigm change - Curricula change - Teaching strategies implementation - New technologies adoption

Thus, as shown in Table 1, the concept of innovation can be defined as a complex, multilevel notion that presupposes different contexts. It can refer to macro-level changes in education policy, philosophy of education; to middle-level changes that mean adoption of innovation in the university; or to micro-level changes that imply a process of implementation of innovation carried out by teachers in the classroom.

After analysing the concept of educational innovation from different points of view, it is possible to make the following assumptions:

- Innovation in education happens in different levels: political, institutional, individual, etcetera.

- The term *reform* concerns systemic and political changes that can be regarded as macro-level change or middle-level change (institutional change).

- The term *innovation* generally concerns innovative methods or processes implemented in courses, departments, classrooms, etcetera. It is possible to consider micro-level changes *innovation*.

- Scientists most often use the term *change* when they talk about innovation in general. This term is broad and can refer to micro-level or macro-level reconstructions.

Following this assumption, in this research we will use the word *reform* to refer to "system-wide restructuring". We choose the word *change* as generalized definition for "improvement". Finally, *innovation* will refer to "the application of new teaching strategies in the classroom".

1.2. INNOVATION CONTEXTS

Literature on innovative teaching shows that the notion of innovative teaching emerged after World War II, in the 1950s, when USA was adapting and developing methodologies and materials specific for military training (Hannan & Silver, 2000). Innovative education began developing more intensively in the '80s and innovation started to be considered from the viewpoint of education system change. This understanding of innovation became the broadest conceptualization of education innovation. Thus, Berg and Östergren (1979, p. 266) understood innovation process as "a political process which takes place in a field of mutually opposing forces around equilibrium and its development". "Innovation" and "change" started appearing in government documents about education initiatives in information technology and in teaching and learning (Silver, Hannan, & English, 1998).

Later, in the 1990s, the nature of innovation definition in higher education became more problematic because of the development of new information and communication technologies (Silver et al., 1998). That is why the term "innovation" came to be related to technologies, which have since been used to improve learning and teaching (Hannan & Silver, 2000). In the last decade of the 20th century, researchers admitted that these technologies had initially been seen as management and organizational tools, but that they later started increasingly supplementing face-to-face teaching and supporting students' learning (Silver et.al, 1998).

At the end of '90s, the word "globalization" appeared in scientific articles from all spheres of knowledge. The world had become a "global village", which had its reflection in education and approaches to teaching. Certainly, globalization has become one of the catalysing factors in the current transformations of educational policies worldwide (Kwiek, 2004). For instance, Foucault and his followers argue that there have been significant shifts in Western humanist philosophy in the post-World War II period relating to the development of new neo-liberal governmentality that lead to globalization of the world (Tikly, 2013).

Due to the tendency towards globalization at the beginning of the 21st century, innovation in education started to be linked to the Bologna process. The Bologna process in Europe shifted the orientations of higher education in Europe towards a more widespread access to higher education, greater academic freedom and an increase in student mobility. One of

the main objectives of the Bologna process was the "elimination of the remaining obstacles to the effective exercise of the right to free mobility and equal treatment with particular regard to student access to all services" (van der Wende, 2000, p. 306). Thus, innovation in this sense is mainly understood as a set of political changes that affected education systems and, although in an indirect manner, had a profound effect on the teaching process (ETCS, mobility, outcome-based curriculum, etcetera).

Rowley (2000) expresses the idea that increasing the globalization of communities, together with the appearance of electronic journal formats, might have provoked changes in the way in which knowledge communities function. In the opinion of Lucas and Moreira (2009), the web's shift from "a place for telling" into "a place for talking" also happened in education, transforming it into a social platform. Information technologies have had an impact on what is understood as "valuable knowledge"; knowledge itself is seen as provisional, contextualized, culturally specific, constructed or designed rather than discovered (Sharpe, 2013). Thus, at the beginning of the 21st century, principles of active participation of learners became core values of the education based on communication technologies.

Nowadays, research in the sphere of implementation of innovation in the educational process encompasses a wide variety of disciplines and methods ranging from philosophical essays to computer science investigations. There is a wide variety of extremely different definitions and understandings of the notion of innovation. Considering existing research and taking into account the aforementioned stages of the evolution of innovation, in this research we distinguished the following main contexts of education change: philosophical paradigm shift toward learner-centeredness; Bologna and Lisbon policies; and New Modes and methods of teaching delivery**,** which have recently appeared in higher education since the inception of web-based education.

1.2.1. The Instruction Paradigm Context

> One should always remember that philosophy of education is a very flexible, changeable, unstable phenomenon that should constantly be renewed according the social context and students' needs. The specificity of educational philosophy development is also defined by social-economic conditions, local and global trends, and educational systems' uniqueness (Koshmanova, 2007, p.105).

The contemporary philosophical perspective of education resulted in a paradigm shift towards learner- and learning-centeredness. In other words, the area of higher education has been under the influence of a so-called "postmodern education turn" from content-oriented teaching to a more learner-centred teaching. According to Dychkivska (2004), this anthropocentric education paradigm emphasizes the potential of human creativity and readiness to accept and resolve new tasks.

A broader idea of "student-centred paradigm shift" is presented in Student-Centred Learning toolkit that is a EU-funded project under the Lifelong Learning Programme administered by the Education, Audio-visual and Culture Executive Agency (EACEA) (Attard et al., 2010):

> Student-Centred Learning represents both a mindset and a culture within a given higher education institution and is a learning approach which is broadly related to, and supported by, constructivist theories of learning. It is characterized by innovative methods of teaching which aim to promote learning in communication with teachers and other learners and which take students seriously as active participants in their own learning, fostering transferable skills such as problem-solving, critical thinking and reflective thinking (p. 5).

Since its inception, the paradigm change swiftly made its appearance in all the spheres of human being, brought by the rapid change of industrial society. At the end of the 1970s, Daniel Bell defined the emergent notion of "post-industrial society" as an "information society" or "knowledge society". "The strategic resource of the post-industrial society becomes theoretical knowledge, instead of a society based on labour theory of value, post-industrial society rests on a knowledge theory of value" (Bell, 1976, p.46).

Nowadays the most common definition of "knowledge society" is the concept defined in the UNESCO Report (2005) as "one in which institutions and organizations enable people and information to develop without limits and open opportunities for all kinds of knowledge to be mass-produced and mass-utilized throughout the whole society"(Binde (2005), p.141).

Following the idea of Cohen (2009, p.7), the post-industrial society or knowledge society establishes the link between two areas of activity: the conception of goods and the ways

these goods are channelled to their users. This idea may be transmitted to education sphere. Because of the connection between higher education and the production of knowledge and the modes knowledge delivery, academics define the term "knowledge society" as "the most adequate manner to define contemporary societies" (Sousa 2011, p.54).

Lifelong learning became one of the major achievements of what is now known as the "knowledge society", which is the blend of information, communication and broadcasting technologies (Longworth, 2013). The diversity of all the social and cultural groups, mobility, a focus on concrete competences, and a permanent personal and professional development are the core components of lifelong learning.

Thus, the knowledge society is characterized by a lifelong learning perspective, which becomes one of the key tendencies in the 21st century (Table 2).

Table 2

Decisions to break down barriers (from Longworth, 2003, p.15)

Education and training 20th C	**Lifelong Learning 21st C**	**Action of change**
Educational decision making is rooted in a 20th century mass education and training programme.	Decisions are made on individual learning needs, demands and styling of all the citizens of all ages, aptitudes and abilities.	Find barriers to learning and dismantle them. Develop and market strategy based on lifelong and life wide learning for all.

The understanding of education as a whole-life process (Gu, Gu, Laffey, 2011) is the essential part of post-industrial understanding of education. Lifelong learning is not the end in itself: it has to enable pushing the barriers in learning and teaching (Longworth, 2003) and open new perspectives. Longworth assumes that although the major barriers in education are in the minds, there are other influential issues like a lack of finance opportunities and attitudes of learning providers which could be also addressed (2003, p.17).

A term connected to the post-industrial society is "knowledge-building environment", which supports working creatively with ideas, where ideas themselves are developed from small to greater than could have been conceptualized before (Kozma, 2008). In the new education environment, the change in learning and teaching can be initiated in very different ways and such approaches will result in different outputs (Barth, 2013).

Post-industrial and lifelong learning also had their reflection in the postmodern philosophy of education, which played a crucial role in the new understanding of education. Postmodernist ideas that had already existed in aesthetic literature since 1950 became part of the social sciences in the 1980s (Rust, 1991). According to the postmodern perspective of education, it is complicated to predict what the citizens of the 21st century will need from their education institutions when objectives, content, pedagogy, evaluation and curriculum are fluid (Koo Hok-chun, 2002). Moreover, postmodernism raises questions about new teaching approaches and deconstructs prevailing belief systems (Fear et al., 2001). Post-postmodernism promotes increasing human knowledge and understanding; encourages openness to shifting boundaries and conceptual change; and emphasizes the importance of the students' own experiences, among other changes (Leicester, 2000).

According to Koo Hok-Chun (2002), a postmodern curriculum is characterised by the following features:

- The curriculum is process-oriented rather than focused on the product only.

This can be interpreted as meaning that, in order to improve learning and to obtain the desired product, it is necessary to control, regulate and optimize the process of learning. In other words, enhancing the learning process means improving learning. This does not mean that the product is not important; but, if teaching is focused only on the product and its improvement, the probability of success may be smaller. Therefore, if education is to be based and focused on learning, it is necessary to plan, evaluate and pay attention to the learning process.

- It lays emphasis on the development of higher order thinking skills and fosters creativity.

Students are supposed to create own knowledge that is why education aims to foster skills that enable knowledge constructs building.

- The teacher is no longer the authority in the classroom, acts as a facilitator.

Contemporary education focuses on educating young people to be creative and receptive to changes. "Postmodern theories provide students with techniques for analysing knowledge that enable them to see how knowledge exercises empower and therefore offer new insights into addressing issues of diversity […] but differences should become the starting point for teacher educators to begin to generate new knowledges and new visions…" (Ryan & Grieshaber, 2005, p.10)

The diversity of visions may give students more independence and tends to shift the teacher's role to that of a facilitator. Thus, nowadays, the student-centred paradigm of teaching tends to appear in university classrooms more often. For instance, Guillén & Sarmiento (2011) state that pedagogy is considered nowadays as training and not just instruction; in other words, pedagogy centres on the person, on creating a learning environment and the conditions to construct his/her unique knowledge.

Thus, the student-centred approach remains among the main frameworks in education due to its effectiveness in developing students' competencies, facilitating learning conditions and educate open, creative and efficacious person. It helps shift the role of "student" and "teacher" to "partnerships", and fosters the creation of positive learning environments for fulfilling contemporary students' needs, among other advantages.

Although we cannot state that student-centred perspective (as a result of education paradigm shift) has already become a reality for all universities and pedagogues, it is increasingly becoming a global tendency, a common goal for university and teachers in the framework of the contemporary vision of teaching and learning. For instance, the research of Lasry, Charles and Whittake (2014) showed that student-centred classrooms are effective only when the instructors' epistemic framework of teaching and learning is consistent with a student-centred pedagogy. However, the use of student-centred classrooms may change instructors' epistemic frameworks over time. Therefore, it is possible to improve teachers' student-centred approach if they use it more often.

1.2.2 Theories of Learning

The previously mentioned changes of education paradigms are mainly related to the philosophy of education and are quite generalistic. We can only outline the paradigm transition but it is quite complicated to determine its specific attributes. That is why the innovation in learning theories may become a more specific representation of the change in education, with their approaches to learning and the characteristics of both teaching and teachers.

Learning theories of the 20th century re-conceptualized the traditional idea of instruction:

- *Pragmatism*. The first innovative educational approaches were related to the Pragmatism ideas of John Dewey in the 1940's. According to him, philosophy and education were closely interrelated (Dewey, 1958). It was one of the the first attempts to see education in the context of diversity, tolerance and positive experience. Dewey's theory posited that experience arises from continuity and interaction (Sharpe, 2008). The discourse regarding Dewey's pragmatic view of education has nowadays been developed and enriched by different researchers, like Dyehouse (2014), Howe (2005) and others. For example, Biesta (2014) investigated the role of knowledge in the curriculum through the lens of John Dewey's transactional theory of knowing. He explains that it is important to discuss knowledge and the curriculum in this context and in the present day.

- *Humanism*. Humanism must be included in the discussion of current philosophical trends of education in general and in Ukraine in particular. A central assumption of humanism, according to Huitt (2009), is that people act with intentionality and values. Huitt (2009) also quotes Gage and Berliner (1991) and emphasizes that there are five basic objectives of the humanistic view of education: to promote positive self-direction and independence; to develop the ability to take responsibility for what is learned; and to develop creativity, curiosity, and an interest in the arts. The humanistic paradigm implies a change in the roles of students and teachers, which means that teachers should accompany students throughout their learning process and fulfil a tutorial function (Elias, 2012). Thus, the main feature of the humanistic approach to education is students' independence in discovering knowledge and their responsibility in the formation of knowledge.

- *Social Learning Theory*. The Social Learning Theory is connected to Bandura's academic works (1971, 1977 etc.). He assumed that, contrary to traditional theories of learning, which generally understand behaviour as a product of direct experiences, all learning phenomena could occur through observation of other people's behaviour and its consequences on them (Bandura, 1971). Correspondingly (van Dinther, Dochy, & Segers, 2011), social cognitive theory views human functioning in a transactional way, depending on reciprocal interactions between an individual's behaviours, their internal personal factors, and environmental events (cited by Bandura, 1997). Also Dinther et al. (2011) conceptualize from Reed (2010) that social learning is a process of social change in which people learn from each other in ways that can benefit wider social-ecological systems.

- *Constructivism*. It can be said that the background for student-centred approach to learning in higher education institutions changed during the second half of the 20th century, when theories of constructivism and constructionism gained popularity, the origins of which lie within Piagetian theory (Attard et al. 2010). Constructivism became a continuation of the cognitivists' ideas of learning that involve the transformation of information in the environment into knowledge that is stored in the mind. (Motschnig-Pitrik & Holzinger, 2002).

Schreurs and Al-Huneidi (2012) quote Loyens (2012), who understands the constructivist view of learning as having features such as knowledge construction, cooperative learning, self-regulated learning, and using real world problems. Constructivism in education appeared as a logical continuation of the transition from traditional to innovative, from knowledge-based education to competence-based education (Duffy & Jonassen, 1992). It focuses on more concrete outcomes, which can be seen as "competencies" or skills to solve contemporary problems. Knowledge construction has been one of the key components of the constructivism theory, where learners interpret new information using knowledge and experiences that they already have (Schreurs & Al-Huneidi, 2012).

In other words, Constructivism is an epistemological view, which considers finding a way to knowledge, as well as knowledge itself. Thus, for constructivists, the most important part of teaching and learning is the students' knowledge building. Additionally, Constructivism presupposes "alignment". According to Biggs (2003, 2011) the "alignment" aspect refers to what the teacher does, in organizing a learning environment that supports the learning activities for achieving the desired learning outcomes.

In the Table 3 main learning theories are presented in terms of learning process perspectives, locus of learning and education purposes.

Table 3

Learning theories (adapted from Ashworth et al., 2004)

	View of learning process	**Locus of learning**	**Purpose of education**
Behaviourist	Change in behaviour	Stimuli in external environment	Produce behavioural change in desired direction
Cognitivist	Internal mental processes including insight, information processing, memory perception	Internal cognitive structuring	Develop capacity and skills to learn better
Humanist	A personal act to fulfil potential	A personal act to fulfil potential	Become self-actualized and autonomous
Social learning	Integration with an observation of others in a social context, situated learning, communities of practice, distributed cognition	Interaction of persons, behaviour and environment	Model new roles and behaviour
Constructivist	Construction of meaning from experience	Internal construction of reality by individual	Construct knowledge

While Behaviourism, Cognitivism and Constructivism are currently the prevalent learning theories, they were introduced before learning was significantly impacted by new technologies (Siemens, 2004). Nowadays, the teaching and learning environment has been enriched with the Connectivist vision. Although Siemens (2004) calls it the "learning theory for digital age", it still does not belong in the list of main learning theories.

Connectivism has recently emerged from the generation of distance education (Siemens, 2004, 2014). This learning vision is based on a constructivist model of learning with the learner in the centre, connecting and constructing knowledge in a context that includes

not only external networks, but also, for instance, learners' own histories (Anderson & Dron, 2010). In Connectivism, learning happens when knowledge is created through the process of learners connecting and feeding information into a learning community (Kopf, 2008). The teacher is presented as critical friend, co-traveller, and fellow in the network (Allan & Pileicikiene, 2010; Anderson & Dron, 2012; Kopf, 2011).

> Connectivism is characterized by self-paced, autonomous learning that still provides opportunities for peer-to-peer learning networks. Flexible learning activities are designed in a way that encourages interaction between instructors and students and among learners. Learning occurs in short bursts and is driven by the needs and interests of the learners (Mallon, 2013, p.19).

The implementation of the Connectivism approach entails a new learning design that places the person, their social behaviour, and their community at the centre of the process of learning, by means of communication technologies (Ravenscroft, 2011). However, the problematic aspect of this innovative teaching approach, according to McLoughlin and Lee (2008), is its requirement to "facilitate learning, be less prescriptive, and be open to new media, tools, and strategies that can be achieved by employing the social software tools, resources, and opportunities" (p.20). The researchers propose, as a solution, to apply software tools, resources, communication technologies, etcetera, that help socializing, networking, and collaborating among students.

As we can conclude from the statements above, Connectivism arises from Constructivism and makes it more complete, as it relates to the technology revolution happening in higher education all over the world.

Thus, it is possible to summarize that modern education has been implemented in the context of an eclectic application of different learning visions, from Humanism to Connectivism. The main characteristic of the contemporary education theory is the change of learning from the simple reception of knowledge to encouraging students to become more active learners. In addition, it is possible to assume that Constructivism is the prevailing learning theory of the current period in education but that it is increasingly being seen through Connectivist points of view.

1.2.3 Bologna Context

The transformations that have happened in the education theory and philosophy in the last decades have resulted in fundamental systemic changes. Modern trends in higher education are linked to two main European policies: the Bologna process and the Lisbon strategy (Sursock, et al, 2010). The Bologna reform is mainly associated with higher education policy issues; however, it has affected all levels of many education systems.

The process of creating a common educational area started in 1954 with the European Cultural Convention signed by the members of the Council of Europe. They agreed to promote the development of a common cultural heritage for Europe. and facilitate the movement and exchange of persons as well as of objects of cultural value (Council of Europe, 1954a). It was through this Convention that Europe first established its principles of diversity, equality, and mobility in education.

The European Economic Community treaty was signed in Rome in 1957 after the Cultural Convention and brought together France, Germany and the Benelux countries, whose aim was to achieve integration through economy. The EEC treaty fostered the establishment of a common market, a customs union and common policies (Council of Europe , 1954b).

The next step towards a common European educational system was taken in 1976, when the Action Program Resolution was adopted between European countries. The main idea was to promote study and research in higher educational institutions and facilitate cooperation between these institutions. As a result of this resolution, joint study programs and short study visit schemes appeared in Europe in 1980 (Ertl, 2002).

One of the most important documents on the way to Bologna was The Magna Charta of the European Universities, the outcome of a proposal that the University of Bologna, one of the oldest European Universities, made in 1986. During a meeting in Bologna in June 1987, the delegates of 80 European Universities elected a board of eight members to draft a document aiming to confirm the values of traditional University and to encourage collaboration among European Universities. Four principles of the Bologna process became the basis for the future Bologna principles Magna Charta, 1986). The main achievements of this declaration in research and teaching include:

1. Teaching and research in universities must be inseparable;
2. Freedom in research and training is the fundamental part of university life;
3. A university is trustee of the European Humanists tradition.

The Sorbonne Declaration (1998) became a joint declaration for the harmonization of the architecture of the European higher education system. Its aim was to strengthen and build upon the intellectual, cultural, social and technical dimensions of our continent. The Sorbonne Declaration became the basis for the Bologna Declaration, the main document for European education of the end of the 20th century. The Magna Charta and the Sorbonne Declaration were the main documents of the pre-Bologna period; they created a link for the final document of the Bologna Declaration.

The Bologna Declaration, signed in 1999, launched the process named the Bologna Process, which sought to create convergence and to establish principles of autonomy and diversity. The declaration reflected the search for common solutions for common European problems. Although the European nations had differences in traditions and values, they faced common problems both inside and outside their countries (Bologna Declaration, 1999).

The main principles of the Bologna Declaration could be summarized in the following:

1. Adoption of a system easily readable and comparable
2. Adoption of a system essentially based on two cycles
3. Establishment of a system of credits
4. Promotion of mobility
5. Promotion of European co-operation in quality assurance
6. Promotion of the European dimension in higher education
7. Focus on lifelong learning
8. Inclusion of higher education institutions and students

9. Promotion of the attractiveness of the European Higher Education Area

10. Doctoral studies and synergy among the European Higher Education Research Area.

The Bologna Process changed and renovated the European educational systems and united higher educational institutions of 20th century with the idea of mobility, diversity and cultural pluralism. A university, as the trustee of the European humanist tradition, had to attain universal knowledge; to fulfil its vocation it had to transcend its geographical and political frames; and it had to affirm the need for different cultures to know and influence each other (Magna Carta, 1999, Zgaga, 2006). Furthermore, the Bologna Process sought to modernize the European education system, increasing inter-compatibility between the systems of member countries and promoting student mobility.

As a result of the Bologna process, modern education is often defined now as "transnational" education. The revised term of "transnational education" by the Council of Europe is presented in the Revised Code of Good Practice in the Provision of Transnational Education (UNESCO/Council of Europe, 2007) as "all types and modes of delivery of higher education study programmes, or sets of courses of study, or educational services (including those of distance education) in which the learners are located in a country different from the one where the awarding institution is based." It further explains that "such programmes may belong to the education system of a State different from the State in which it operates, or may operate independently of any national education system" (section I). All over the European Union, organizations and projects were created in order to promote the internationalization of education. Therefore, we can assume that modern European education has been moving from a national idea of education (Humboldtian) to a transnational (Bologna) one.

It is also important to acknowledge the role of the communiqués signed after the Bologna declaration in forming modern educational trends. Two years after the Bologna Declaration and three years after the Sorbonne Declaration, European Ministers in charge of Higher Education, representing 32 signatories, met in Prague in order to review the progress achieved and to set directions and priorities for the coming years of the process. The document signed in 2001 was the Prague Communiqué. The ministers reaffirmed

their commitment to the objective of establishing the European Higher Education Area by 2010. The main outcome of the first Communiqué was the decision to enhance students' influence on educational organization and content and affirmation of the social aspect of higher education (Praque Communiqué, 2001).

In the Berlin Communiqué (2003), the ministers reaffirmed the importance of the social dimension of the Bologna Process. The Communiqué resulted in such outcomes: the combination of European education area and research, monitoring of education quality in national frameworks, and promotion of accessibility and mobility.

The ministers signed the Bergen Communiqué (2005) on European education in 2005. They acknowledged degrees and periods of study for the integration of higher education into a lifelong learning perspective. It must be noted that Ukraine joined the Bologna reform in 2005, as noted in the Bergen Communiqué.

The London Communiqué (2007) stated that the developments happening in previous years represented a significant step toward the realization of the European Higher Education Area. "Building on our rich and diverse European cultural heritage, we are developing an EHEA based on institutional autonomy, academic freedom, equal opportunities and democratic principles that will facilitate mobility, increase employability and strengthen Europe's attractiveness and competitiveness" p.2).

In the Leuven communiqué (2009), in the paragraph concerning Education, Research and Innovation, the ministers of education stated: "Higher education should be based at all levels on state of the art research and development thus fostering innovation and creativity in society.". In addition, the Leuven Communiqué reaffirmed such strategies as mutual acknowledgement of degrees and periods of study; harmonization of education quality; institutional autonomy; mobility of students and scholars and the monitoring of Bologna process itself.

In the Budapest-Vienna communiqué in 2010, which was the last official document of the Bologna Process, the ministers of education took note of the independent assessment and the stakeholders' reports that became a final step of the Bologna process. The convergence of the European higher education area was also discussed.

In the present stage of the post-Bologna process, scientists and other experts working in the field of education discuss European Education Area and its problems: Bologna policy forums are usually held in the framework of the post-Bologna process to discuss how higher education reforms in European education space respond to new societal demands (Bologna, 2010).

The Bologna reform, while being mainly a political process, has changed European education in all the levels, from policy to teaching activities. It has been established that innovation policy should strive to facilitate finding new ways of combining knowledge to solve problems or improve the way things are done, but it covers a much broader domain (Lizuka 2013). Specifically, "most of the components of the student-centred approach have been part of the Bologna Process since its inception, including; a system of transferable credits, an outcomes-based approach to curricular design, the use of qualification frameworks and the greater involvement of students across all the higher education system..." (Attard el al, 2010, p.14). Thus, its political changes brought concrete changes to the university classrooms, by means of curricular changes.

Changes brought by the Bologna process happened in the context of a reconstruction in policies and curriculum in the institutions of all participant countries. However, according to Soltys, "West-European measures intended to empower educational communities operate perversely in the post-socialist region, characterized by low civic and state capacities." (Soltys, 2014, p.179). That can be taken to mean that the Bologna Process has been successful at the political level; but, at the institutional and local level, the response is not so positive, because of the great contextual differences between countries (Ferrer, 2010).

Such is the case, for example, "in the countries of Central Eastern Europe where the transition from post-communism is still not over in terms of social arrangements and both higher education and welfare states should be viewed as 'work in progress': permanently under reform pressures and with unclear future" (Kwiek, 2014, p.48).

Thus all the political and structural changes – consequences of Bologna process – impact education polices, institutions, teaching and teachers, but not all countries have implemented Bologna reforms to an equal extent, and that is why not all the contextual aspects of Bologna correspond to "real changes" in all the countries. Nevertheless, it is

very important to discuss the Bologna education change in the framework of classroom innovation research, because this process established a new system of coordinates for teaching application.

To sum up the analyses of the impact of Bologna on higher education, it is possible to define several assumptions:

- The Bologna process facilitated the creation of a European education area: convergence of objectives and principles of education, search for common European values, common qualification degrees, etcetera.

- The Bologna process facilitated the conversion of higher education institutions from national to transnational: increase of academic mobility.

- Due to the Bologna process, higher education changed at the classroom practice level: outcome-based, flexible curriculum, transferable credits, etcetera.

- Although the role and impact of Bologna reforms on education have been great, the countries of Central and Eastern Europe have not fully implemented them due to political and social reasons.

1.2. 4. Pedagogical context

Following the summary of the different theories of learning and the more general changes brought by the Bologna reform, this section will delve into more specific changes in teaching that have taken place as a consequence of the Bologna process and Constructivist views of education. This subchapter consists of two components: innovative teaching strategies and innovative technologies in teaching. Innovative teaching is examined through the lens of three teaching dimensions: Planning, Application, and Evaluation. Each dimension consists of different innovative teaching strategies. Innovative technologies in teaching are described from the point of view of pedagogical technology knowledge; then different tools are described, both computer-based and those designed for face-to-face lessons; and finally there is an explanation on new modes of teaching delivery: distance teaching and hybrid teaching. At the end of this

part of the thesis, we present the definition of innovative teaching as the main assumption of this chapter.

1.2.4. 1. Innovative Teaching Characteristics

This research derives its logic from innovative teaching attributes. As the level of innovation applied in the classroom is the object of the current research, it is important of define a range of characteristics significant for classroom teaching process.

In related literature, there are lists featuring the characteristics of innovative teaching. For example, the OECD programme on institutional management in higher education created a guide for higher education institutions. According to this source, the new teaching and learning paradigms in higher education currently imply (Henard & Roseveare, 2012):

- New relationships regarding access to teachers, and a wider range of communication and collaborative working through learning platforms
- Re-designing of curricula
- Bridging teaching and research more intensively
- Re-thinking of student workload and teaching load
- Continuous upgrading in pedagogy, use of technologies, assessment models aligned with student-centred learning
- Creating of innovative learning platforms
- Providing guidance and tutoring to students with new means and methods
- Assessing impacts and documenting effectiveness of the teaching delivered

From the attributes mentioned above, we may assume that current innovative teaching tends to give students more academic freedom and autonomy. Teaching can become more flexible, because of the wide variety of available technologies. In addition, creativity is a highly useful attribute for teachers to have in this context, because it fosters the creation of learning platforms, redesigning the curriculum, etcetera.

Additional related literature provides similar descriptions of the attributes of innovative teaching/learning. Taking into account the paradigm shift toward learning-centred teaching, we adopt the point of view of Reigeluth (2012) who summarized a range of

ideas of change in education in the post-industrial society. Thus, the differences between post-industrial and traditional approaches to teaching are the following (Reigeluth, 2012):

- Learning focused – Sorting focused
- Learner centred–Teacher-centred
- Learning by doing - Teacher-presenting
- Attainment based – Time-based
- Customized – Standardized instruction
- Criterion-reference – Non-referenced testing
- Collaborative – Individual
- Enjoyable – Unpleasant

Additionally, Reigeluth delineates the attributes of the teacher in the context of the student-centred shift in teaching. In the framework of this paradigm turn, the teacher plays a new role:

- Designer of student work
- Facilitator of learning process
- Caring mentor

Summing up these aspects of innovative teaching, we can assume that the humanistic and postmodern turn in the view of education as a flexible process resulted in such transversal "principles" of education as generalized in OECD report in 2010 to guide the learning environments for the 21st century (Dumont & Istance , 2010):

- Learners at the centre
- The social nature of the learning
- Recognizing individual differences
- Stretching all students
- Assessment for learning
- Building horizontal connections

Determination of these principles is the outcome of gradual and difficult transitions in teaching from teacher-centred conventional approach to learning-centric one. A new education philosophy, which can be called student-centred paradigm, is the fruit of the formation of a post-industrial society, a society of knowledge and information. However,

Reigeluth (2012, p.77) criticizes the dichotomy view of the industrial age and post-industrial age, saying that "dichotomies are usually false and that post-industrial thinking is characterized more by 'both-and' than 'either-or' ". In other words, the real situation in teaching may not be so rigid and presupposes a combination of traditional and innovative approaches. However, there has to be general tendency towards innovation, because post-industrial society demands student-centric change.

Thus, considering the above-mentioned characteristics, we might assume a tendency towards flexibility in curriculum design: horizontal connections, orientation toward outcomes, attention to the process of learning, etcetera.

The discourse of innovative curriculum started several decades ago and still thrives. According to Fox (1972, p.134): "Innovation in curriculum is a response to the priorities set by the values that have been given priority, and to the purposes for education derived from these values". The main challenges of the traditional curriculum are the issues of flexibility, employability and mobility within a European market (Karseth, 2006).

The learning outcomes perspective, which has become a response to the challenge of employability (Bucharest Communiqué, 2012), may be understood as competence-based approach in curricula design. For instance, Tam (2014) argues that the contemporary trend towards teaching based on intended outcomes has encouraged the definition of outcomes in terms of pre-determined skills or competencies in systems of outcomes-based or competence-based education (cited by Mulder et al., 2007).

Moreover, the issue of learning outcomes, central in the Bologna process, was necessary to modernize the European educational system (Adam, 2006, 2008). This may be interpreted as importance of competence-based approach in frames of Bologna reform. Key competencies are not explicitly mentioned in the official documents on the Bologna process, but they are closely related to reform objectives: enhancing employability of higher education graduates (Schaeper, 2008).

United Kingdom in the 1980s was the birthplace of the idea of a competence-based education. This idea became linked to the philosophy promoted by the National Council for Vocation Qualification (NCVQ) and by the Scottish Vocational Educational Council (Wolf, 2001). The first article about "competence-based approach" was the article of McClellond (1973) – "Testing the Competence Rather than Intelligence".

A competency-based approach was also discussed during the European Council Summit in Lisbon in 2000, which initiated Lisbon strategy "for the reform of the European economy, welfare and education by 2010" (Kwiek, 2006, p.10). The main strategy of the Lisbon Council (2000, p.1) was "to become the most dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion, and respect for the environment". In accordance with the report of High Lvele group in European Council concerning Lisbon strategy, chaired by Kok (2004, p.8), Lisbon reform has been oriented "to secure more flexibility and adaptability in the labour market by raising educational and skill levels, pursuing active labour market policies, and encouraging that Europe's welfare states help the growth of employment and productivity rather than hinder it ".

Competences are considered the main learning results, which may help students in their life. At first, competence was seen as a combination of three elements: knowledge, skills, and attitudes (OECD, 1997). For instance, Sullivan and McIntosh (1996) define "competency" as "a skill performed to a specific standard and under specific conditions" (p. 95). They also define a skill as "task or group of tasks performed to a specific level of competency or proficiency which often use motor functions and typically require the manipulation of instruments and equipment" (p. 95). Communication in mother tongue; communication in foreign language; mathematical literacy and basic competences in science and technology; digital competence; learning to learn; interpersonal and civic competences; and cultural expression became key competencies to be provided through lifelong learning (OECD, 1997).

> Key competences represent a transferable, multifunctional package of knowledge, skills and attitudes that all individuals need for personal fulfilment and development inclusion and employments. These should have been developed by the end of compulsory schooling or training and should act as a foundation for further learning as a part of lifelong learning (Tapio, 2004, p.6).

However, the OCDE (2005, p. 4) later reconceptualised the notion of competence as "more than just knowledge and skills". Fernandez (2014) provides a recent definition of "competence" as "a set of set of socio-affective, sensorial, psychomotor aspects and cognitive abilities that allow people to carry out a role, function, activity or task adequately" (p. 36).

According to the Implementation of Education and training 2010 work program, the term "competence" is preferable to "basic skills" and is understood in three dimensions:

- Personal fulfilment and development throughout life (cultural capital)
- Active citizenship and inclusion (social capital)
- Employability (human capital)

The Recommendation of both the European Parliament and the Council of Europe (2006) on key competences for lifelong learning (2006) also lists other themes that are deemed important for all key competences: critical thinking, creativity, initiative, problem solving, risk assessment, decision taking, and constructive management of feelings. These key competences are considered to be important for the entirety of people's professional and personal lives. Thus, as stated by Fernandez (2014, p. 36), "being competent depends on people's potential to recognize, analyse and solve current daily life situations as well as more innovative and complex ones".

Johnstone and Soares (2014) define the principles of competence-based education programmes that may guide the design of curriculum:

1. The degree reflects robust and valid competences

It may be interpreted to mean that competences should reflect skills and knowledge students would need in subsequent stages of their development.

2. Students are able to learn at a variable pace and are supported in their learning

"CBE programme should allow students to progress through the curriculum at an individualized pace, which means that just-in-time academic assistance and other support must provide and keep them motivated and academically active (p.19)."

3. Effective learning resources are available and are reusable

That may be understood as meaning that materials must be available when needed.

4. The process of mapping competences to course, learning outcomes and assessment is explicit

"Ones the competences are established at the program level, academic teams need to translate them into topics that can be formulated into courses of the appropriate length and complexity." (p.17)

5. Assessment are secure and reliable

"Assessments are built using the expertise of industry and academic subject matter experts, thus ensuring content validity. After the assessments are created, they should go through some pilot testing with a small group of students to reveal any problems that may exist" (p.18). As innovative teaching is related to competence-based approach, below is a list of the most distinctive features of competence-based learning in accordance with Sullivan and Bruce (2014):

1. Meaningful contexts

Teachers create meaningful contexts in which students experience their newly acquired competences.

2. Multidisciplinary approach

The educative approach to competences formation becomes integrative and holistic.

3. Constructive learning

Learners are engaged in a process of knowledge constructing, not just absorbing the knowledge.

4. Cooperative, interactive learning (with peers, teachers.)

Learners develop and construct their own knowledge learns how to use of other people's competence in their learning.

5. Discovery learning

Content is available and accessible for acquiring knowledge.

6. Reflective learning

Learners develop learning competences; they "learn how to learn."

7. Personal learning

Information, knowledge, strategies become an integral part of students' competences.

From Table 4, we may see that traditional curriculum systems are not structured around clearly defined competences expected for all students, but competence-based curricula have a set of means for accomplishing clearly defined learning needs and should be viewed as flexible (Spady, 2006). The traditional curriculum is mainly focused on content, whereas the innovative one concentrates primarily on expected outcomes (competences), at the same time considering that the process of learning is also important.

Table 4

Comparison of traditional and innovative curricula (adapted from Adam, 2008))

Traditional curriculum	**Outcome-based (competence-based) curriculum**
• **Content** • **Teaching methods** • **Assessment** • **Learning outcomes**	• **Learning outcomes** • **Assessment** • **Content** • **Teaching methods**

Thus, competency-based curriculum views teaching not as transmission of information, but as creating an environment suitable for students to develop competences. The innovative curriculum is based on competences that students need for their future development in their professional and personal life. The new curriculum is characterised by its flexibility, reliable criteria for assessment, and attention to the process of learning.

1.2.4.2. Innovative Teaching Strategies

Proceeding from characteristics of the curriculum to concrete strategies of innovative teaching applied in the classroom, we would like to examine the characteristics of learning dimensions such as **planning** of the teaching process, **application** of teaching, and **evaluation** of students' learning. These dimensions provide an opportunity to examine didactic aspects from the very beginning of the teaching process, the planning, to the very end: the evaluation of learning.

The idea of dividing innovative teaching into three dimensions was borrowed for this research from the "Plan de Formación del Profesorado Para la Incorporación del Modelo Formativo de la UD" (i.e. "Teacher Training Plan for the Incorporation of the University of Deusto Teaching Model") by Eléxpuru, Martínez, Villardón and Yániz (2008). This Project became a model for training staff in education and development, integrating orientations and consequences in the process of creation of a common higher education area in Europe (Eléxpuru et al., 2009). The creation of the European Higher Education Area (EHEA) provided an opportunity for innovation and for the improvement of university learning (Yániz, 2004), which may be especially interesting in the Ukrainian context, as the country is currently in the process of modernizing its higher education.

In this project, teaching strategies are based on the requirements of the Bologna process and Constructivism; that is, it will focus on students-centred learning theory. Additionally, the objectives of this project could be suitable for defining the objectives of faculty staff in Ukraine as they strive to implement Bologna changes in their teaching. Thus, the objectives are the following (Eléxpuru et al., 2008, 2009):

- To be aware of the need for pedagogical innovations in higher education institutions;
- To reflect on the training needs to implement this model;
- To experience this model in their own teaching;
- To acquire necessary competencies to apply this model in the classroom;
- Apply the principles of the model in the classroom;
- To reflect personally and as a team on their own teaching activities for improvement;

- To develop a teaching culture through search for common values and collaborative work.

Each dimension consists of a range of aspects used in the current research and corresponding to teaching innovation . The description of each component will be followed by the description of the didactic strategies included in every component.

1.2.4.2.1. Planning

In the phase of planning, teachers decide what outcomes they wish to achieve, what contents will be presented in the classes, how to teach, how to evaluate and how to facilitate students' learning (Prieto, 2007). Thus, in the context of the Bologna reform and Constructivist theory, and considering research by Eléxpuru et al. (2008), the following planning strategies can be distinguished:

- Create and systematically renew teaching profile;
- Coordinate course/programme with other teachers who teach similar disciplines;
- Plan the course or class taking into account objectives of the particular study programme;
- Consider individual characteristics of students in the process of planning;
- Plan in accordance with specific competences established in curriculum;
- Take into account European Credit Transfer and Accumulation System (ECTS);
- Take into account teaching hours devoted for the course;
- Plan face to face classes and autonomous work for the students;
- Plan classes considering academic orientation of the learning;
- Upgrade subject material regularly;
- Reflect on own teaching process;
- Plan variety of methods for lecturing;
- Apply different types of teaching activity with regard to course plan;
- Apply technologies for planning the course/class: expository resources, PowerPoint presentations, information platforms.

Considering these strategies, we may assert that innovative planning has to be performed in accordance with Bologna process aspects.

For instance, all the competences have to be established in teachers' profiles. In accordance with Yániz (2006), competency-based training is learning-centred, has to be planned according to learning needs, and has to be planned with the skills that are included in the previously established profile. Gilis, Clement, Laga, and Pauwels (2008) suggest that competence-based profiles can be used a key element for teachers' educational development.

Another important strategy is ECTS implementation. It is, after all, one of the principal elements of the Bologna Process, as described in its main objectives: establishing a common system of credits for the promotion of mobility. ECTS is a key component of Bologna framework for qualifications: it helps implement education quality assurance, and plays a role in the global dimension for the Bologna process (Bucharest Communiqué, 2012).

Additionally, subject content knowledge is an important component of teaching competence. In order to fulfil students' academic needs, it is necessary to renew subject materials: content, methods, tasks, etcetera, in order to reflect on proper teaching style and strive to improve it. Anders and Richardson (1991) emphasized the necessity of establishing staff development programs for teachers to hone their skills through their reflection on their own teaching, which may improve teaching quality. "Teaching teachers to use effective teaching skills and to reflect in a productive manner on their demonstrated teaching actions must proceed, metaphorically speaking, as two sides of the same coin" (Amobi & Irwin, 2015, p. 33).

Teachers must also consider the individual characteristics of students in the process of planning. Analysing students' characteristics can help in task planning and the choice of teaching methods. It can also facilitate learning. Brown (2003) states that as essential factor for a learner-centred approach.

Communication with colleagues is another essential issue in the context of innovative teaching. Rogers (1995) stated that innovation diffusion is the process dealing with information exchange from one individual to others. Additionally, Westheimer (2008) conceptualizes that communication of teachers with their colleagues is a specific context for and resource to teacher learning. Finally, Uchiyama and Radin (2009) found out in their research that the interaction among participants could promote collaboration and

collegiality that allowed the participants to share knowledge and beliefs about teaching and learning. Consequently, discussing the plan for a class or course with other teachers can improve teaching.

In summary, innovative teaching planning is characterised by variety of different teaching methods and activities for both face-to-face and e-learning modes, considering students individual characteristics, and emphasising interaction and collaboration among teachers and students; learning outcomes have to be established and explained at the beginning of the course.

1.2.4.2.2. Application

In this research, the application is understood as fulfilment of a number of didactic strategies that reflect all the spectrum of foreplaned activities in the classroom. The following innovative teaching application strategies can be defined, as established by Eléxpuru et al. (2008):

- Elaborate course programme in time;
- Explain weak and strong aspects of programme at the beginning of the course;
- Use variety of methods;
- Apply active types of learning;
- Apply collaborative learning;
- Develop tasks for students autonomy work;
- Foster students' responsibility;
- Develop students' interest to knowledge construction;
- Foster students' social ethics;
- Facilitate students comprehension of the subject;
- Connect methods and content of the course with practical application;
- Encourage students to apply communication technologies;
- Apply new communication technologies;
- Foster Students' interpersonal skills.

As we can see from the *innovative application strategies list*, teachers have to explain the program organization at the beginning of the course. All the competences and skills to be developed also have to be explained beforehand.

It is also necessary to plan both face-to-face classes and autonomous work for the students. In the context of the Constructivist view of students as active participants of the learning process and constructor of his/her own knowledge, it is important for teachers to consider classroom tasks and self-learning tasks. According to the Bucharest Communiqué (2012), student-centred learning in higher education is characterized by innovative methods of teaching that involve students as active participants in their own learning.

Fostering such competences and skills as social ethics, interpersonal skills, responsibility, etcetera, emphasizes the dichotomy of self-learning skills and the ability to work in-group. Teachers are required to be active and implement a variety of tasks. They have to foster all the planned competences and foster social ethics and interpersonal skills. For example, Elias (2012) considers the following teaching activities belonging to the humanistic tradition:

- Learning through discovery,
- Problem based learning (PBL),
- Learning based on the student's own practice,
- Co-operative work and role-playing, etcetera.

"In this sense, there is also an expectation of more coordination between subjects and interdisciplinary activity between different knowledge areas." (Elias, 2012 p. 12)

It is important not to forget that innovation is necessary but not all innovations are successful. Some innovations fail, which means that there is a need to search for other innovations (Lane, 2001). These strategies are not the only form to apply innovative teaching, but this list can help delineate the framework for the application of innovations.

In short, in the current study, the process of application of innovative teaching will be the application of active types of work, encouraging students to use computer technologies, using variety of methods, explaining weak and strong aspects of the program, etcetera, in framework of Constructivism.

1.2.4.2.3. Evaluation

In the current research, evaluation entails the evaluation of teaching/learning innovation activities. The evaluation of learning is closely interrelated with the planning of teaching. Therefore, it is very important to know and be aware of what should be improved and how it can be done in reality (Yániz & Villardón, 2008).

The evaluation in this research, also conceived in the light of the Constructivist theory of education, entails a reflection on its implications. The feedback during the process, the possibility of improving, the self-evaluation, and the peer evaluation, as well as reflection, are elements that promote competence development (Villardón, 2006). Thus, we distinguish the following evaluation strategies based on the project (Eléxpuru et al., 2008):

- Have a friendly relationship with students;
- Evaluate learning results in accordance with previously set criteria;
- Evaluate the process of teaching using different methods;
- Evaluate all the competences which are to be fostered during the course;
- Facilitate students' development by means of their results evaluation;
- Apply students evaluation systematically according to the goals and methods of the course;
- Facilitate students self-learning process;
- Evaluate group learning;
- Apply mutual evaluation of learning among students.

Evaluation strategies are therefore also learning centred. This is supported by the study of Fastre, Klink, Amsing, Smit and van Merrienboer (2014), who state that competence-based teaching can only be successful if the assessment is competence-based and the criteria for competence-based evaluation are competences.

Another distinguishing characteristic of innovative assessment is interaction between students and teachers. Flórez and Sammons (2013), McDowell and Sambell (2014) assert that innovative assessment is considered to be "for learning" instead of "of learning", where promoting learning is a key aspect of the initiation of improvement. According to McDowell & Sambell (2014), this assessment may be understood as dialogue, not only because of the possibilities for discussion, but because through "responsible and active participation in teaching, learning and assessment activities by students in collaboration

with teachers" (p.64), students can be involved in task setting and the establishment of evaluation criteria, which is an important outcome of higher education.

Dialogue also presupposes friendly relations with students and an individualised approach that also belongs in the context of the student-centric paradigm. Students apply self-evaluation, evaluation of their colleagues and teaching evaluation, which can later be important in their professional life.

In brief, all three teaching dimensions are interconnected. All strategies have to be properly planned and applied taking into account students' individual characteristics and other aspects. Finally, we may assume that teachers in the context competence-based teaching have to be creative, open-minded (respecting students' autonomy), must reflect on their teaching and improve tasks and methods in accordance with students' needs.

Therefore, taking into consideration all these characteristics and tendencies in teaching, we may conclude that innovative teaching in the context of the present research is understood as a set of planning, application and evaluation didactic strategies, which comprise pedagogical innovation in the framework of the Bologna reform and constructivist pedagogy.

As a conclusion for the subchapter concerning innovative teaching characteristics, the following table (Table 5) provides a comparison of traditional and innovative teaching. It compares the main components of two methodological systems (innovative and traditional) in the framework of student-centred education (Spivakovsky, Petukhova, Spivakovska, Kotkova, & Kravtsov, 2013). However, in this sense, we must bear in mind that not everywhere nor everyone applies an innovative approach in teaching. Nevertheless, it is a tendency and, to some extent, one of the requirements of the Bologna reform.

Table 5

Traditional and Innovative Methodological Systems in Education

(from Spivakovsky et al. 2013)

	Traditional Teaching	**Innovative Teaching**
Learning objectives	Adoption of educational material. Provide students with knowledge, skills and practice.	Provide students with knowledge, skills and practice. Creation of modern information and communication learning environment. Purposeful development of creative self-sufficient person. Formation of professional competence, leadership skills, ability to work in a group.
Principles of learning	The scientific character principle. The principle of systematicity and consistency. The principle of visibility. The principle of studying in accordance with issues of education, training and development.	The principle of the active learning environment. The principle of organic unity between the changing requirements at labour market and conserved features of the educational system. The principle of necessity for continuous self-study.
Contents of training	Classical learning, technocratic.	An integrated approach to fundamental and applied activity aspects of a specialist-to-be.
Study methods	Reproductive, explanatory, illustrative.	Problem-search, research.
Study means	Visual tools. The teacher's word -for knowledge transfer, books, movies, tape, training devices, pictures, maps, Tables, machines, devices, models, collections, tools, charts, etc.	Facilities. Information and communication technologies. Hypertext, multimedia-training materials. Databases for educational purposes. Social working means for videoconferencing and video teacher, etc.

As a summary of all of the above, contemporary innovative teaching is characterized by its flexibility in approaches and methods. The learner-centred paradigm is reflected in

teaching in the form of a competence-based curriculum, with partnership relations of teachers and students, which fosters students' social ethics and interpersonal skills. Evaluation is based on concrete criteria rooted in a competency-based approach, consideration of students' individual characteristics and self-evaluation. All these strategies are implemented to form a new responsible and independent person of the 21st century. Granted, not all the contemporary teachers apply these strategies to their full extent; still, we believe that the general tendency toward innovation in teaching will increase.

1.2.4.3. Innovative Technologies Knowledge

Many of the aforementioned innovative teaching strategies are connected to the application of information technology and the facilitation of its usage among teachers and students. University teachers are increasingly required to consider the elements of social communication, cognition and didactic interaction in order to improve learning in virtual environments (Marcelo, 2013). Nowadays, at the beginning of the 21st century, we can confidently state that virtual learning and teaching are becoming a new didactic paradigm. Researchers predict that e-learning is going to provide the technical foundation on which efficient lifelong learning will be built (Nawaz, 2013).

The creation of new knowledge is the core aspect the European Union needs for an innovative and effective higher education system (Schneckenberg, 2006). Shabaya (2009) states that ICTs offer flexibility; they engage and motivate learners and therefore encourage a learner-centred approach to teaching.

A few years ago, term as "e-competence" started appearing in the pedagogic discourse. In an article by Schneckenberg (2006), the European e-Competence Initiative is presented in order to reduce the complexity of a university-wide e-Strategy, tackling all possible aspects and focusing on the e-Competence topic, which includes two specific change management areas:

- On an individual level: competence of university teachers to use ICT,
- On an organisational level: conceptualise personnel development activities in human resources management and university leadership.

However, in recent times we have been able to see the evolution of computer-based teaching skill training from "e-competence" to "pedagogical technological knowledge". While *technology-oriented* models seek that teachers acquire knowledge and competencies in technology usage, *pedagogy-oriented* ones require teachers to associate their technology-usage knowledge with their pedagogical knowledge during the teaching process (Saban, Asiksan and Kibici, 2014).

In accordance with Koehler, Mishra, Kereliuk, Shin, and Graham, (2014) teachers often lack the knowledge to integrate ICT successfully in their teaching and, consequently, their attempts tend to be limited in scope and depth. Even those who apply technologies mainly tend to use learning tools only for content transmission (Marcelo, 2013), which may be understood to mean that they use ICTs to implement a traditional teaching approach instead of a student-centred approach.

Regardless of the importance of ICTs in teaching (openness, flexibility, etc.) the level of ICT application is not always high in reality. For instance, Marcelo (2013) presented the results of investigation carried out in the Open University of Catalonia that shows that almost one third of the teachers do not use ICTs and other 30% use ICTs less than once a month. He concludes that the level of innovative teaching could be improved in universities

Mishra and Koehler (2006) and Koehler et al. (2014) conceptualize the formulation of technological, pedagogical and content knowledge (TPACK). "They develop this concept on the basis of Schulman's (1986) assumption that a combination of pedagogical knowledge and content knowledge may formulate teaching strategies that facilitate students' knowledge of difficult subject matter" (Koh, Chai, 2013, p.223). Specifically, Mishra and Koehler (2006) added the "technology knowledge" component to this assumption.

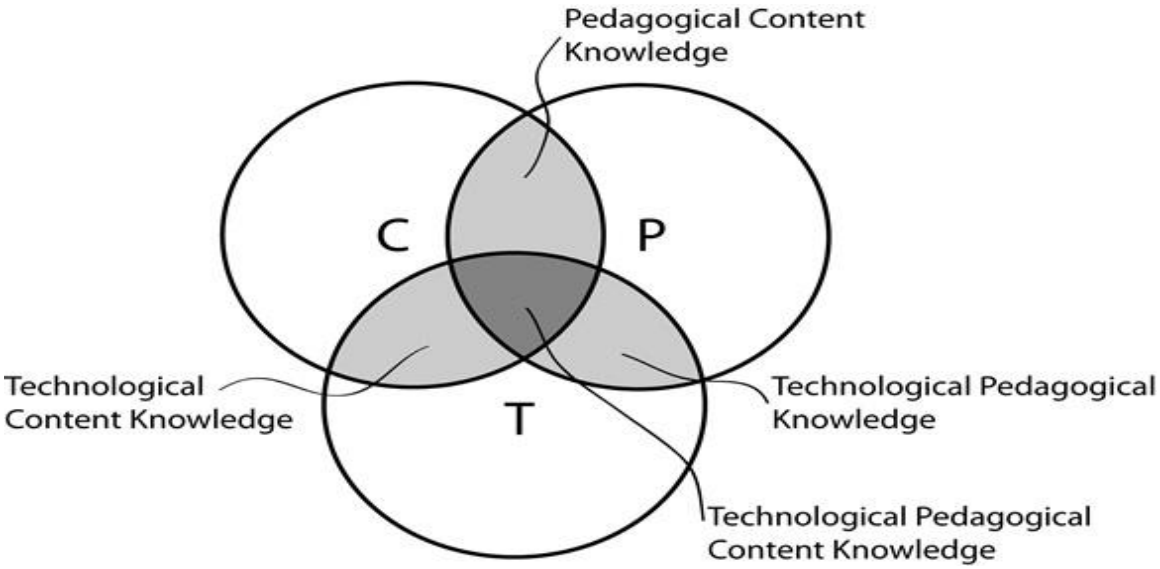

Figure 1: Pedagogical Technological Content Knowledge. The three Circles: Content, Pedagogy and Technology Overlap to Lead to Four More Kinds of Interrelated Knowledge (Mishra and Koehler, 2006)

Thus, according with TPACK conceptualization, there are three components of effective teaching knowledge: technological, pedagogical and content knowledge, as posited by Mishra and Koehler (2006) and Koehler et al. (2014):

- Content Knowledge – any subject material that a teacher has to implement in his/her teaching

- Pedagogical Knowledge – a teacher's knowledge about different approaches, strategies, methods, etcetera.

- Technology Knowledge – a teacher's knowledge about traditional and new technologies that can be applied in the process of teaching.

In accordance with TPACK model (Koehler et al., 2014), the combination of these elements creates other important knowledge areas:

- Technological Content Knowledge - knowledge of relationship between technology and content of teaching.

- Pedagogical Content Knowledge - Shulman's (1986, p.8) notion of "an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction" (Koehler et al., 2014).

- Technological Pedagogical Knowledge - knowledge about interaction among technology, pedagogy, and teaching content.

Consequently, contemporary teachers have to combine all kinds of knowledge in order to manage the application of innovative teaching.

1.2.4.4. New Modes and Tools of Teaching

It is considered important nowadays to discuss new modes of teaching. Pinto et al. (2012) distinguish the following types of e-learning: a general type of e-learning, which is a reflection of the Bologna recommendations and the terms of the 2010 programme, seeking to create a Single European Information Space; blended learning, which combines sets of on-line courses with periods of face-to-face contact; mobile learning, which presupposes the use of mobile devices (as explained by Georgieva); and finally cloud learning, which develops digital delivering services.

E-Learning is a synonym for distance learning, virtual learning, or e-Instruction (Fenton & Watkins, 2010) in its broader meaning. Rosenberg states that, as a general approach (2001), e-Learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. It is based on three fundamental criteria:

- E-learning is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction or information.
- It is delivered to the end user via a computer using standard Internet technology.
- It focuses on the broadest view of learning – learning solutions that go beyond the traditional paradigms of teaching and delivering contents.

As technology continues to advance, there are innumerable ways to design and deliver education at a distance (Fenton & Watkinson, 2010). Pinto (2012) defined the following perspectives for communication technologies research (CTs) (Pinto et al., 2012):

- Specific uses of CTs by students and approaches to teaching;
- Institutional perspective of the current strategies and practices of academic and administrative use of web 2.0 tools.

Batista (2011), having performed a literature review concerning communication technologies, presents the following taxonomy (Bottentuit Junior & Coutinho, 2008):

- Learning management systems;
- Publishing and sharing technologies (blogs, wikis, YouTube, etc.);
- Social Networking (Facebook, Academia.edu);
- Collaboration technologies (Google Docs, Social Bookmarking);
- 3D virtual environments (Second Life, Habbo);

Peterson (2009) states that the global networked environment now includes activities such as virtual team projects, virtual conferences, virtual 'worlds' ('Second Life', for example), blogs, and other emergent forms of communication and collaboration using a range of tools, including mobile technologies. The network redefines itself as a field where the frontiers of creativity can be expanded and where each student takes growing responsibility for his/her learning (Aresta, Moreira, & Pedro, 2011).

In Web-based environments, learning activities range from multiple-choice questionnaires to problem solving techniques. Simulations are indeed virtual learning environments as well (Dillenbourg, Schneider, & Synteta, 2002; Dillenbourg, 2000). When speaking of virtual environments, it is important to consider virtual mobility for students and teachers. Virtual mobility is the way of collaboration of people from different backgrounds and cultures, working and studying together, where crossing borders is not necessary any more (Afonso, 2009).

Hybrid teaching is considered innovative in this moment of education history, representing a link between "face to face" teaching and distance teaching (Jézégou, 2014). This innovative educational model is sometimes also called blended learning (Usova, 2011). Nowadays, in the classroom, teachers´ use of blended teaching is the emergent form of classroom practice (Fenton &Watkins, 2010).

Pombo and Moreira (2010) define "blended learning" as a combination of pedagogical concepts depending on the focus: blend of pedagogical strategies, supporting technologies, and/or delivery modes. The blended teaching approach can also help

teachers enhance the quality and effectiveness of the delivery of their program and be integrated in the conventional face-to-face classroom. (Pellerin & Montes, 2012). ICT mediation learning promotes the construction of complex knowledge structures and supports active learning (Pinheiro & Simões, 2012). In accordance with HY-SUP project typology, hybrid learning strategies include the following (Burton 2011, Peraya et al. 2012):

- In site active participation;
- Distance active participation;
- Learning support tools;
- Management communication and interaction tools;
- Multimedia resources;
- Multimedia works;
- Communication and collaboration synchronous tools;
- Comment and annotate online documents;
- Reflexive and interpersonal goals;
- Methodological support;
- Metacognitive support;
- Support by students;
- Freedom to choose teaching and learning methods;
- Use of external resources and actors.

According to the data of the United States Department of Education (2009), "students who took all or part of their instruction online performed better, on average, than those taking the same course through face-to-face instruction. Further, those who took "blended" courses -- those that combine elements of online learning and face-to-face instruction -- appeared to do best of all". (Fenton & Watkins, 2010 p. xi).

The network is a field where creativity frames can be expanded and where each student is responsible for his/her own learning (Aresta et al., 2011). As to mobile learning, Reis and Escudeiro (2012, p.160) define it as "access to learning through the use of mobile devices with wireless communication in a transparent manner and with high degree of mobility".

In the European region, the use of mobile learning is already a reality. In spite of this, it is still not widely used, even though individuals believe in the potential of its didactic implementation (Bottentuit Junior & Coutinho, 2008). With mobile learning, teachers and students can access the m-learning environment at any time; therefore, the environment is considered a facilitator for the distribution of teaching material (Reis & Escudeiro, 2012).

Cloud Computing offers a way to obtain computing resources on demand, rather than having to acquire unnecessary hardware (Meade et al., 2013). The emergence of Personal Learning environments has greatly facilitated the use of sharing of open and reusable learning resources online. Learners can access, download, remix and republish a wide variety of learning materials through open services provided in the cloud (Mikroyannidis & Connolly, 2012).

Regarding learning management systems, there are different synonymic definitions of computer education applications: e-Learning Systems, Learning Management Systems, Course Management Systems, Content Learning Management Systems or even Virtual Learning Environments, etcetera. Currently there are over ninety different LMS systems, ranging from the most basic text-driven models to systems that offer social learning features (Fenton & Watkins, 2010). For example, MOODLE (Modular Object-Oriented Dynamic Learning Environment), a specific LMS, is an open source solution type system and is the most commonly used in the higher education sphere. It features a set of functionalities: resources that are created and then uploaded to the platform and modules that are created via MOODLE (Costa, Alvelos, & Teixeira, 2012). MOODLE instances include tools that can be used in the teaching and learning process, such as modules from the standard MOODLE platform that provide interaction among students and teachers and external tools that are incorporated in the platform (Costa et al., 2012).
However, according to data of a study presented by Costa et.al (2012), the main purpose of using Moodle is to "Download materials" (98% of participants) and "See News" (84%). This can be taken to mean that MOODLE is mostly used for the transmission of materials. Thus, despite the advantages of MOODLE, such as openness, the possibility to create and share information, etcetera, there are a lot of teachers and students who use learning management systems to reinforce traditional ways of teaching and learning.

The possible drawback of LMS may be that most learning systems are asynchronous and don't permit a high level of real-time interaction, which is why Second Life tools are a

good example of real time learning activities (Loureiro & Gonzales, 2012). Second Life tools offer a range of possibilities for training courses as an extension of the typical learning LMS platform, as it provides its users with immersive experiences allowing opportunities to simulate real life and role-playing activities (Afonso, Pedro, Almeida, Ramos, & Santos, 2009). Loureiro, Santos, and Bettencourt (2012) define Second Life as "a free to use 3D multi-user virtual world, immersive, imagined, designed, built and created by its users (residents or avatars)" (p. 91) and they posit that students feel more confident and more open in 3D virtual world applications .

Thus, innovative technologies in teaching can be divided into two groups: those applicable for blended learning and those more suited for distance learning. This is an important pedagogical instrument and teachers' pedagogical technology knowledge facilitates the application of innovative teaching. Finally, as stated by Ferrari, Cachia and Punie (2009), ICTs could act as a platform to foster creative learning and innovative teaching that offer many opportunities for constructive change. Therefore, we may summarize that teaching innovation in its contemporary understanding is impossible without ICTs.

1.3. INNOVATIVE EDUCATION IN UKRAINE

Ukrainian higher education system is being developed in the context of common European values and principles after signing the Bologna Declaration in 2005 (Bergen Communiqué, 2005) and adopting the Law "About Higher Education" (Zakon Ukrayiny "Pro Vyshchu Osvitu", 2014), which confirmed the orientation toward European standards, academic mobility and university autonomy, among others. The ICTs paradigm of education has its reflection in Ukrainian Law "About Information Society Development in Ukraine 2007-2015", where it is stated that ICTs have to be implemented both in face-to-face education and in distance education.

Considering the general state of Ukrainian higher education, it is impossible to ignore the interconnection of democratic ideas of humanism and postmodern diversity with the dogmatic post-Soviet education attributes. Modern education of Ukraine is experiencing

an era of changes in all the spheres: in philosophy of education, in didactics and in government strategies. However, it is still advancing towards a democratic education.

The transition from the Marxist ideology of education to the humanistic paradigm enabled education change in post-soviet countries. In the first Constitution of independent Ukraine, 1996 (article 53), a humanistic approach to education was defined as freedom of thought, freedom in choosing literature and teaching approaches, and diversity and variety of forms of education. This was new for post-Soviet education and marked the beginning of the humanization process. Humanistic approaches in the post-totalitarian Ukrainian society can be considered a reflection of social innovations: the transition from totalitarian to democratic society. Thus, the humanistic vision of learning and teaching entered Ukraine later than it did European education and has a slightly different meaning, determined politically and socially: the rejection of totalitarian traits in all spheres of life.

Loogma (2013) provides two important reasons for choosing education as the area from which to start social innovation in post-soviet countries. Firstly, the belief that education is a mechanism for improving society and the individual (cit. Ruus, 2011). Secondly, the fact that the Soviet education system was based on anti-humanist and totalitarian values, disrespecting human rights and lack of human freedoms. Therefore, the modern concept of Ukrainian education is being developed on the basis of the humanisation of education (Rozhanska, 2013), which in this context means developing values such as democracy, respect for the individual, pluralism, freedom of speech, etcetera. Kremen (2009, 2013) states that we have to shift from the old information model of education to a new creativity-based, dialogue-based, and discussion-based humanistic model. For all of the above, the humanistic model of education in the Ukrainian context is conceptualized as a student-centred education.

As stated above, the changes that the Bologna process initiated in the European Union predated the signature of the Sorbonne Declaration. The Bologna Declaration principles of mobility, humanism, diplomas recognition, etcetera were the result of a long historical process and the good will of the leaders of European countries after World War II. Great efforts were made in order to fulfil the requirements of the documents they signed. However, according to Kozma (2014), in all post-communist societies existed an additional motive; the Bologna process became part of overall political transformations,

concerning not only education. In the case of Ukrainian education system, it has been a process of constant change since the fall of Soviet Union (Kovtun & Stick, 2009) and this change became more radical in Ukraine than it did in Western European countries.

After joining Bologna Declaration, the Post-Soviet education system needed to be not only harmonized, but also completely reformed, both structurally and in terms of content. Therefore, Ukraine started the Bologna reform in 2005, but there are still professors who do not usually implement new approaches. According to Koshmanova and Ravchyna (2008), Ukrainian teachers tend to resort to traditional methods and approaches; the application of the innovative humanistic approach has not been rapid. Although teachers recognise that the prevalent teacher-centred didactic approaches to instruction may not maximize students' potential to be active, creative, and reflective self-directed learners (Nie et al, 2012), in reality it may be complicated to change teaching strategies.

The Soviet Union was interested in the ideological education (upbringing) and in the development of science and technology. As a result, education combined instruction and moralizing, which shaped students' outlook (Strazhau & Kostukevich, 2007). Consequently, the role of the teacher was very dominant and the attitude towards the student was determined by ideological doctrine.

Koshmanova and Ravchyna (2010) argue that Ukrainian teachers inherited a knowledge-based style of teaching from the Soviet system of education and that this style is not consistent with the ideas of democratic change in society. They also state that teachers have to combine different strategies in order to develop a successful democratic community (Koshmanova & Ravchyna, 2008). According to Shaw (2005), teachers in Ukraine face difficulties when implementing change in teaching.

The implementation of change in the teaching process is hard and teachers play a very important role in it. At the beginning of Bologna Process in Eastern Europe, Polish scientist Kwiek (2004, p 5-6) argued that "…it may be relatively easy to change the laws on higher education… But certainly changing laws is not the sole way to reach the objectives of the Bologna process although it may be understood in this way by many officials, especially on the governmental level". In post-Soviet countries, the teacher factor is often neglected and the most important changes are managed top-to-down by government authorities. For instance, the implementation of Bologna in Russia (as in the

case of Kalliningrad University) is generated by institutional path-dependency (personnel, institutional resistance). Only a partial adaptation of Bologna reform is evident, because only the younger segment of the faculty implements change (Ganzle, 2009). Thus lecturers, as participants of the reform process, may accept, tolerate, embrace or resist innovation, which in turn influences the outcomes of the innovation itself. Polyzoi & Cerná (2003) refer to Kasova (1997) and state that the successful introduction of new course content or teaching methods promoting a new liberal anthropocentric philosophy in Czech Republic happened thanks to teachers with innovative ways of thinking.

According to the revision of higher education in Ukraine in 2010, significant progress has been made in three strategic areas of the Bologna process: the implementation of the 2nd cycle system (the 3rd cycle is currently being adapted); the implementation of quality assurance in the field of higher education; and the recognition of diplomas and previous periods of study. Highly increased mobility of teachers and students also belongs to the advantages of Bologna reform (Kovtun & Stick, 2009). More than 120 universities took part in TEMPUS since 1994 (Review of Higher Education in Ukraine, 2010). Therefore, at the institutional level, the Ukrainian education system has succeeded in the adaptation of its system of higher education to the norms and standards of the European Higher Education Area (EHEA).

However, despite the fact that the main goal of the application of the Bologna process in Ukraine was the transformation of teacher-centred teaching into student-centred learning and the promotion of academic mobility (Nikolayenko, 2007), many university lecturers in Ukraine do not believe in the Bologna reform and resist the application of innovative methods (Kovtun & Stick, 2009). Shaw, Chapman and Rumyantseva (2012) suggest that the "discourse of change may be moving faster than reality, although its real cost is measured by the fiscal and psychological strain placed on faculty" (p.78).

Additionally, overloaded with teaching hours that are double the teaching load in the European Union, lecturers do not exhibit positive thinking regarding innovation at either the educational system or at the classroom level. However, the adoption of a new education law this year decreasing their classroom teaching hours from 900-950 hours/year to 600 hours/year, will possibly increase the research capacity and production of academic staff (Knutson & Kushnarenko, 2015). Non-systemic approaches to the

education reform by the government made teaching staff frustrated rather than satisfied with reforms.

Additionally, inside the universities, the changes driven by the Bologna process often remain exterior and formal (Vitrukh, 2014). Higher education in Ukraine did not transit completely from teacher-centred to student-centred; it retains many Soviet traits. Teachers, as agents of change, should be able to transform the teaching approach to make it student centred. However, in reality, educators tend to maintain the role of instructors, which does not include a personal aspect. They are also concerned that students may get out of control (Koshmanova & Ravchyna, 2008). It is clearly a challenge for teachers to implement innovative instructional practices in classrooms as they experience a shift in their role in this learning environment.

According to Dobko (2013), Ukraine and its higher education struggles with the harmonisation of two conflicting interpretations of the modern Ukrainian identities: European and post-Soviet. To our mind, this definition is the best metaphor for the post-soviet teacher who is in between two philosophies of education and two personal identifications. In this context, the changes in the Ukrainian system of teachers' professional development, combined with changes in the approaches to teacher training and continuous education, could facilitate the process of identity transition for teachers, which would in turn facilitate the creation of a new generation of teachers.

Student-centred teaching was a result of a paradigm shift from teacher-based education. Therefore, teachers had to change their approaches and attitudes. However, this is a very difficult endeavour in a country with long history of authoritarian philosophies of education. “The importance of teachers’ roles and their training is felt even more acutely in the countries of Central and Eastern Europe, where reforms have been undertaken with the aim of introducing radically new practices”(Leclercq, 1996, p.73).

It can be stated that there is a controversy between the education paradigm shift to new teaching implementation and the real level of change that has taken place in higher education classrooms. According to Cameron (2009), the main challenge for the future of learning design is to continue to seek a compromise between rich, descriptive models and technologies, and the everyday practice and understanding of teachers. In other words, the

application of changes in the classrooms is slower and complicated. In higher education, system-level changes are applied more successfully than classroom-level changes.

Thus, it was decided to investigate the level of innovative teaching in the classroom in the context of the Ukrainian teachers' factor, which impacts the level of applied innovations. Currently there is an additional, pressing problem. The creation and application of technological resources for the implementation of innovation requires the training of skilled experts in the sphere of university teaching. However, because developing countries are trying to face this challenge by traditional means, this may not be the most effective or efficient method to innovate education and respond to the challenges of globalization (Abdon, Ninomiya, & Raab, 2007). The conceptualization teaching as a whole needs to be innovated, including teacher training and classroom practices.

Regarding blended and distance modes of teaching, it is hard to determine the extent to which they are applied in Ukraine. We could not find any empirical research investigating blending learning application in Ukraine. However, there are some theoretical works, such as those published by Kuharenko, Pybalko, Syrotenko (2002), Morze (2011) and Lisetskyy (2013), which investigate blended learning theory. Ishchenko and Ishchenko (2012) state that Ukrainian education science lacks local and global distance education monitoring, which, if present, could help resolve some existing problems:

- Undeveloped juridical basis of distance education;
- Lack of technological support;
- Lack of central monitoring at the level of the Ministry of Education.

To summarize the state of innovative education in Ukraine: Ukrainian higher education is on a phase of paradigm change that involves philosophical, political and pedagogical aspects. Innovations in education mainly focus on the implementation of the Bologna process. Poor governmental and institutional support, lack of ICT equipment, a totalitarian past and an unclear present make teachers feel upset about reforms and provoke their reluctance towards change.

1.4. SUMMARY

Innovation in education has different conceptualizations, dimensions and contexts. It is a complex multilevel notion that can be researched from a variety of perspectives.

In order to summarize the theoretical dimensions of the problem of innovation in education, the concluding Table 6 is presented below. The theoretical basis for the current research may be divided into the following areas: innovation in the context of paradigm change; Bologna process implementation; theories of education; new technologies and modes of teaching delivery. I believe that the aforementioned areas for innovation research can enable broad analyses of education change, showing that education change happens on different levels and in different contexts.

Table 6

Main Areas of Education Change Research

Area	Authors	Context
Paradigm shift in education	Hargreaves and Fullan (2000), Kremen' (2009, 2013), Polyzoi, E., & Cerná, M. (2003, Silver (2007).	Innovation as Paradigm shift in education to non-dogmatic and student-centred direction
Bologna process and Lisbon strategy	Gornitzka (2007), Sursock et al. (2010)	Mobility, Lifelong learning and competence based approach in education
Theories of learning	Piaget (1985), M O'loughlin (1982), Siemens (2004, 2014)	Constructivism, Connectivism become theories of contemporary education
Teaching strategies	Matney (2001), McCrink, (1999),	Innovative teaching strategies: Collaborative learning, project based learning, problem based teaching, etc.
Technologies in education.	Iskandar, Gilbert & Wills (2011), Shear, Novais and Moorthy (2010), Mioduser & Betzer (2008).	e-learning, b-learning and m-learning as a permanent part of education

Paradigm shift in education happens from a teacher-centric view (mainly knowledge transmitting) to a student-centric one. The learner is seen as striving for autonomy, active

participation, deep approach to learning, responsibility for learning etc. and the teacher is visualised like facilitator of the learning process.

Regarding the context of innovation in theory of learning, we acknowledged knowledge construct building, the creation of learning communities, and information sharing as the outcomes of Constructivism. Particularly concerning innovative curriculum and teaching strategies, we acknowledge competence based approach, which comes out of constructivist ideas of teaching. We examined teaching strategies in the framework of three teaching dimensions: planning, application and evaluation. All the dimensions are based on concrete competences to be developed and the criteria for their evaluation. ICT are also an important aspect of teaching. Nowadays it is necessary for teachers to have pedagogical knowledge concerning ICT.

However, the teaching approach in the context of the new student-centred paradigm has a range of controversial aspects in Ukraine. Officially, Ukraine joined the Bologna process; but in reality, teachers face difficulties and in some way resist changes. In general, Ukrainian teachers feel scepticism concerning student-centred innovations. The scepticism may be explained by the hard transition period from post-Soviet model of education to the European model, brought by Bologna reform.

Subsequently, it is necessary to study the perception of the innovative teaching process and the reasons to resist such innovations. It is also important, in this context, to define teachers' characteristics, which make a difference in the level of innovative teaching. Such a study may be interesting for understanding the problem with the implementation of innovation and the possible ways in which innovative teaching can be increasingly implemented in Ukrainian universities.

CHAPTER TWO

TEACHERS' FACTOR IN THE PROCESS OF INNOVATIVE TEACHING

This chapter researches the process of the perception of innovative teaching. The teacher is depicted as an agent of change and the teacher's personal and psychological characteristics are presented as the characteristics enabling the implementation of innovation. This chapter finishes with the research model that is core element for the current thesis.

As assumed from the previous chapter, teachers in higher education institutions in Ukraine face difficulties when facing the Bologna reform that brought such changes as a student-centred approach, a competence-based curriculum, the use of ICT, etcetera. Moreover, in the Ukrainian academic discourse the "teacher factor" is not deeply researched in the context of the implementation level of innovative teaching in the classroom. Therefore, there is a need to research the "teacher factor" as an influential aspect of the level of innovative teaching in Ukraine. Knowing the perception teachers have of the process of innovation can provide us with a better understanding of the nature of innovative teaching, its components, the reasons to adopt it and their motives to resist innovation, among other things. Defining cognitive characteristics of teachers that facilitate the shift to a learner-centred paradigm may help improve teaching quality in the context of Bologna requirements.

2.1. INNOVATION PERCEPTIONS

The common image of the teacher "standing in front of class providing information to students sitting passively at their desk is simply archaic referring to contemporary views of learning processes" (Theisens, Benavides, & Dumont 2008, p. 6). Higher education teachers are now required to have effective pedagogical skills and need to co-operate with students, colleagues from other departments, and other members of a dynamic learning community (Henard & Roseveare, 2012). New social circumstances require new behaviour and new understanding of teaching from the teachers.

According to Fullan (1991), innovations imply changes in different contexts, including conceptions and role behaviour. In other words, innovative teaching is not only an issue

of innovative teaching strategies but also an issue of how teachers perceive innovation. More specifically, the concept of perception is a principle dimension in understanding of the diffusion of ideas (Clinton, 1970).

There is a lot of information about innovation adoption. On an organizational level, it involves a series of sequential stages. Fundamental steps of innovation adoption, according to Levine (1980) are the following:

- Recognizing the need for change – it is realized that some organizational need is not being satisfied;
- Planning and formulating a means of satisfying the need – a concept plan is developed initiation and implementing the plan – the plan is put into operation on the trial basis;
- Initializing or terminating the new operating plan – either the operating plan becomes routine and integrated into the organization or it is ended.

Similar models of organizational innovation were created by Havelock (1971) and Gilbert (1996) among others.

Rogers (1995) presented the first individual innovation diffusion (adoption) model and introduced the term of "innovativeness" - the degree to which an individual is relatively earlier in adopting an innovation when compared to other members of his social system. Rogers introduced the following stages of adoption:

- Awareness - the individual is exposed to the innovation but lacks complete information about it;
- Interest - the individual becomes interested in the new idea and seeks additional information about it;
- Evaluation – the individual mentally applies the innovation to his present and anticipated future situation, and then decides whether to try it or not;
- Trial - the individual makes full use of the innovation.

The individual level of adoption of innovation is an internal process and presupposes the evaluation of innovation by the individual. The teacher's level of innovation, according to Rogers (1975, p.26), may be defined in terms of teachers' knowledge, attitude, and decision to adopt. Therefore, the decision to adopt is based on knowledge and attitudes.

Furthermore, Fullan (2001) defined three aspects of educational change: new curriculum, new teaching approaches, and alteration of beliefs or assumptions. Obviously, the process of implementing innovation is connected with some inner psychological change, and not only with teaching strategies; however, teaching practices innovation is also important.

Elias (2011) refers to the problem of educational change as a "re-contextualization of reforms" (p. 63). According to with the aforementioned research, the policy implementation process must take into account all different transformations, which may occur at different levels in the organization: university, middle managers, teachers and students who have their own interests, rules, or aims. Middle managers interpret the policy in accordance to traditions, culture and needs, while teachers and students perceive change in the light of the re-contextualization that has been carried out in their context. According to Skelton (2012), people who take up a post in higher education already have educational values and commitments based on previous experiences. "Once we begin to teach in higher education, however, we confront a social reality that precedes us, where our values meet those operating at micro, meso and macro levels of the system" (Skelton, 2012 p. 258). We may assume that teachers perceive re-contextualized innovation in the context of the experience they have.

Thus, the evaluation of innovation, which happens before the decision to implement it, is based on different perceptual aspects, such as attitudes formed with experience, the knowledge teachers have about innovation and the context of innovation provided by university managers.

Additionally, issues of teacher change are central to any discussion of ICT integration both in the individual level and in the system or institution level. In general, when teachers are requested to use technology to facilitate learning, some degree of change is required in any of the following dimensions: beliefs, attitudes or pedagogical ideologies; content knowledge; pedagogical knowledge of instructional practices, strategies, methods or approaches; or novel or altered instructional recourses, technology or materials

(Ertmer, Ottenbreit-Leftwich, 2010). Additionally, Kauffman and Kumar (2005) offer three stages of diffusion of ICT at the state level. The stages are the following: the ICT readiness stage, the ICT intensity stage, and the ICT impact stage. In the first stage of ICT readiness, the Kauffman and Kumar posit that when the technology is new to a country or a region, the readiness of its people to adopt it is a crucial issue. This assumption may be applicable for the Ukrainian context, as innovation entails radical system-wide changes.

It is now necessary to acknowledge the reasons for innovation. Wilson (2003) states that motivation is the key to a faculty member's decision to learn and implement ICT into their teaching. According to Hannan and Silver (1999), possible reasons to innovate include the following: the need to improve students' learning; the need to respond to changes in student intake; the need to address the demands of external agencies; and the need to adapt their methods of teaching and learning to cope with curriculum change and internal reorganization.

Other reasons for innovation can be divided into the following categories (Hannan & Silver, 1999):

- Institutional reasons that imply top-down authority, innovation directives, student demand;
- Technology reasons meaning pedagogical, communicative, administrative aspects that need to be changed;
- Influence of college network;
- Influence by research;
- Personal reasons implying personal satisfaction or strategic for one's career.

In the context of the Ukrainian teaching staff, it is important to stress the role that teachers play in long-period reform. that the ability of teachers to play an active role in the process of implementing changes is very important for the implementation of radical and long-lasting reforms. As previously stated, the education reform in Ukraine presupposes radical a change from one model to another and teachers are, in some sense, "responsible" for internal transitions, whereas authorities can perform macro changes. In

the sense of re-contextualization of education changes, the ways in which teachers perceive reform will influence the extent to which it will be implemented.

That is why it is necessary to know the enabling and disabling factors of influence on the level of innovations from the teachers' perspective in order to establish the personal and professional profile of the teacher-innovator. It is possible to assume that the process of adoption of innovation requires teachers to present particular characteristics, which may be personality characteristics, epistemic attributes, etcetera in order to go through all the stages of the implementation of innovation, feel motivated and be confident. The "teacher factor" becomes essential when we see innovation as a process that is happening in the university classroom.

Thus, personality characteristics can play an important role in the perception of change. "Some teachers, depending on their personality, and influenced by their experiences on this course, are more self-actualised and have a greater sense of efficacy, which leads them to take action and persist in the effort required to bring about successful implementation of change" (Donnelly, 2009, p. 55). Moreover, teachers' characteristics (individual education level, age, gender, educational experience with ICT for educational purposes, and financial position) can influence the level of ICT usage (Afshari et al., 2009).

According to Walker (2008), there are 12 clear personal and professional characteristics of an effective teacher: prepared, positive, has high expectations, creative, fair, has personal touch, develops a sense of belonging, admits mistakes, has a sense of humour, gives respect to students, forgiving, and compassionate.

Nisbet and Collins (1978) acknowledge the following personality factors for resistance against innovation, in accordance with Watson (1969, p. 488-496):

- Homeostasis (built in regulatory functions);
- Habit (a satisfying response which will continue in operation while it gives gratification);
- Primacy (a persistent pattern of behaviour deriving from the way an organism first copes successfully with a situation);

- Selective Perception and Retention (once an attitude had been set up, a person responds to other suggestions within the framework of his established outlook);

- Dependence (a continuation of dependence of values, attitudes and beliefs accepted by the teacher as a child, from parents, teachers and significant others).

- Superego (unreal moral standards acquired from adults through development in Freudian terms);

- Insecurity and regression (the tendency to seek security by clinging to the familiar, or returning to past practices).

Additionally, Rogers (1962, 1983, 2003) developed a typology of individuals regarding the innovation process (Figure 2). According to his Model of Innovation Adoption, the following types of individuals exist, as classified by their innovation adoption rate (the speed rate of innovation adoption): innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%) and late adopters (16%).

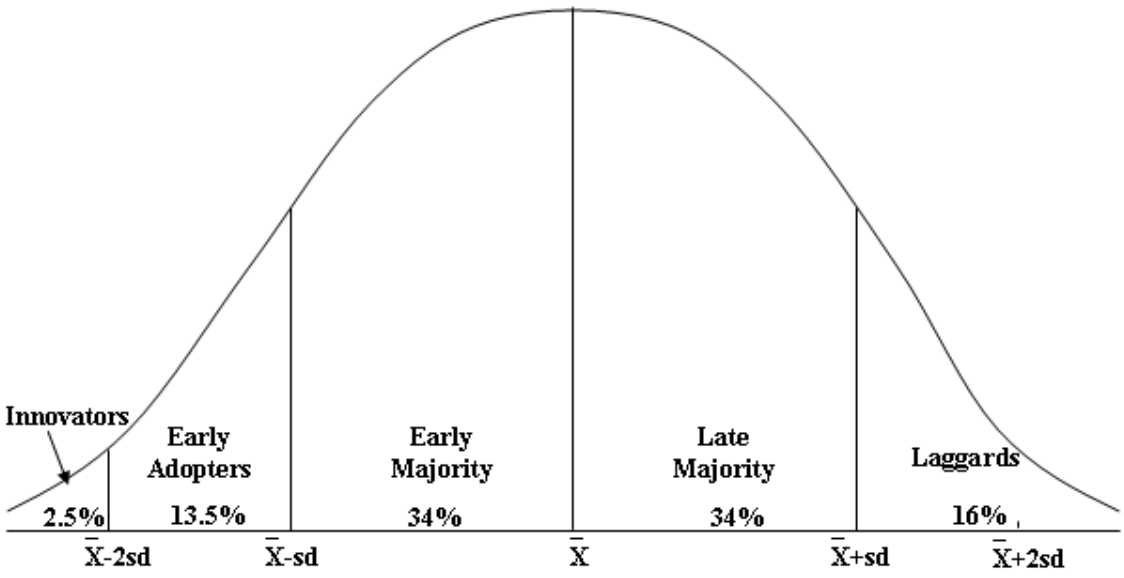

Figure 2: represents Rogers' (2003, p. 267-297) Model of Innovation Adoption.

Rogers (1962) stated that it is useful to refer to the individual as being one of the five categories of adopters regarding diffusion. His research shows that members of each adopter category have some common traits. The late majority category tends to have

lower social status, does not use mass media often and obtains new ideas trough interpersonal contact. On the other hand, innovators usually travel a lot and enjoy trying new ideas, have better education and a higher economical level. He stated that, without some kind of support, only innovators could adopt changes successfully. Niederhauser and Sarah (2011) cite Watson (2001) and point out that working with many different types of teachers requires individualization and on-going support. "We need to be cognizant of individual differences, particularly different attitudes to change" (Watson, 2011, p.188) and help teachers in the process of innovation application.

A number of generalizations have emerged from diffusions studies to differentiate between earlier and later adopters (Hargadon,1999). Having analysed the literature concerning innovation adoption (Rogers (1962, 1983, 2003), De Lano et. al (1994) and others, it is possible to define some personal characteristics of early adopters and late adopters of innovations (Table 7).

Table 7

Individual Characteristics, Which Enable or Disable Innovation Application

Early adopters	Late adopters
– **Ability to deal with abstraction**	- Low ability to assume risk
– **Rationality**	- Perception insecurity
– **Empathy**	- Dogmatism
– **Active information seeking**	- Uncertainty and inability to reform
– **Open mind**	- Fear of risk-taking
– **Good social inteaction**	
– **Good social mobility**	
– **Tolerance to ambiguity**	
– **Sensible risk taking**	

Thus, teachers' perception of innovation is an influential factor in the process of adoption of innovative teaching. Teachers' personality characteristics like non-dogmatic thinking, tolerance, openness, sensible risk taking, etcetera may facilitate the implementation of

innovation. These characteristics tend to be very important in the Ukrainian context. The transition in mentality, which has already happened, implies openness and flexibility of the mind, entailing a new democratic identity.

2.2. TEACHERS' COGNITIVE CHARACTERISTICS THAT MAKE A DIFFERENCE IN INNOVATIVE TEACHING

The idea of teachers as agents of change has its roots in Dewey's progressive education. The teacher who is an agent of change believes that schools must not simply follow the present social order, but must seek the ways to change (Cobb, 2001). Ertmer and Ottenbreit-Leftwich (2010) also advocates Fisher's idea of looking at change through the lens of the individual who is an agent of change. Change represents a great challenge for all teaching staff (Tippelt 2003). In this research we see teachers as change agents (Fullan, 1993a) and innovation itself as the means for an anthropocentric paradigm shift.

Embracing the problem of teachers as agents of educational change, we would like to quote Bandura (2006, p. 164), who writes:

> To be an agent is to influence intentionally one's functioning and life circumstances. In this view, personal influence is part of the causal structure. People are self-organizing, proactive, self-regulating, and self-reflecting. They are not simply onlookers of their behaviour. They are contributors to their life circumstances, not just products of them…

Although the current research design does not examine causal relationships and only focuses on mean difference in innovative teaching depending on the teachers' factors, it is important to discuss the epistemological characteristics that may impact teachers "innovativeness". This discourse may provide a better understanding of the teachers' perception of the innovation process.

According to different resources, teachers´ cognitive characteristics can impact innovative teaching and lessen resistance to change. Bandura (1994, 2006) found a relationship between teacher's self-efficacy and innovativeness: highly efficacious individuals have higher innovativeness, see more clearly new opportunities, and better motivate themselves to overcome difficulties. Guskey (1988) also stated that there is a relation between professors' self-efficacy level and their attitudes towards innovations. Moreover, Clarke (1996) states that some teachers are more receptive to innovations than others are.

Fullan (1993a) also admits that the professional teacher must become a career learner and be able to form and reform productive collaborations with colleagues, parents, community, agencies, businesses and others. The transformation of conventional (traditional) methodology training into innovative focuses on actions and presupposes trainer's change, who becomes a moderator, adviser, or assistant (Tippelt, 2003).

De Lano, Riley & Crookes (1994) states that one of the factors of innovation diffusion is the promotion of innovation by pedagogues as agents of change. Donnelly (2008) also follows Fullan's citation of Bennett et al (1992, p.112), stating that "any change can be examined with regard to difficulty, skill required, and extent of alterations in beliefs, teaching strategies, and use of materials". The teacher is, on the one hand, an element of innovative activity, a transmitter of some education strategy on macro level; and on the other hand, being individual and having personal characteristics, the teacher can support, embrace or resist changes. Therefore, teachers, as change agents, have to be able to cope with the psychological challenges concerning the implementation of innovation, must have particular skills and must be able to change personal beliefs and teaching strategies.

However, considering teachers' cognitive characteristics as important factors of innovative teaching, we do not speak about predominance of "bottom up" approaches in innovations implementation. This research integrates top-down strategies (systemic changes) with bottom-up strategies in which teachers are considered key players in the implementation of innovation in the classroom; they are agents who implement new strategies (consequences of reforms) in real practice. "Only simultaneous top-down/bottom-up strategies must co-exist and reinforce each other" (Fullan, 1994, p.99).

Thus, in order to conclude this subchapter, we can come to the following assumptions:

- Teachers play an important role in the application of change in classroom teaching and can be considered a change agent;
- Teachers' culture, epistemic beliefs, cognitive characteristics, and previous teaching experience may influence the level of innovative teaching and either facilitate innovative teaching or provoke a resistance to change.

2.2.1. Self-Efficacy Beliefs

The studies conducted based on teachers' beliefs are important in determining the way teachers perceive and organize instruction (Yilmaz, 2011). If the innovator does not establish a mental configuration using the new ideas, he/she will reject or not accept it; however, only the acceptance of the new idea allows the acceptor to adopt it (Clinton, 1970).

According to O'Loughlin (1990), beliefs are defined as ideological systems that influence teachers' ways of knowing and acting, and not just their explicit philosophies of teaching, leaning and knowing. Ideological systems include:

- Epistemological orientation (ways of knowing);
- Authority orientation (sense of agency, empowerment);
- Implicit and explicit beliefs about pedagogy.

Teachers´ epistemic beliefs can correspond to teaching approaches (O'Loughlin, 1989, 1988). Moreover, O'Loughlin (1990) also suggests, and quotes Bitzman (1986) in saying, that the beliefs prospective teachers have developed about teaching as a result of their long experience as students in the culture of schooling appear to have a profound influence on the way they teach and the way they think about teaching. Their formal socialization is, however, the least influential factor in beliefs formation. O'Loughlin states that the "major obstacle we face in advancing a progressive or reformist agenda in teacher education may be teachers beliefs about knowing, teaching and learning" (p.3). Additionally, the beliefs, change knowledge, organizational knowledge, and emotions of teachers can affect how they perceive, experience, and react to changes, which is why there could be considerable conflicts in their perceptions of changes (Karakhanyan, Veen & Berger, 2013). Thus, teachers´ beliefs may influence the level of innovative teaching in Ukraine in particular.

One of the most important components of innovator psychological characteristics is professor's self-efficacy. Gibson and Dembo (1984), Dembo and Gibson (1985), Swars (2005), and Bandura (1997, 1995, 2007) investigate the problem of teachers' self-efficacy. Bandura (1977) based the theoretical background of self-efficacy in his social

cognitive theory. Self-efficacy, according to Bandura (1994, p. 81), is defined as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives". Moreover, A. Bandura argues in his works that self-efficacy beliefs determine how people feel, think, motivate themselves and behave. He names four major processes through which beliefs affect behaviour: cognitive, motivational, affective, and selection.

Bandura (1995, p.6) also states that self-beliefs of efficacy play a key role in the self-regulation of motivation. Most human motivation is cognitively generated. People motivate themselves and guide their actions anticipatorily by the exercise of forethought. "They form beliefs about what they can do. They anticipate likely outcomes of prospective actions. They set goals for themselves and plan courses of action designed to realize valued futures".

He names different forms of cognitive motivators with which a variety theories have been created. "They include causal attributions, outcome expectancies, and recognized goals. The corresponding theories are attribution theory, expectancy-value theory and goal theory" (Bandura, 1993, p. 128).

Bandura (1995, 2012) states that like self-efficacy, teacher self-efficacy is developed in four ways:

- Mastery experiences (implies learning how to manage failure in such a way that is informative rather than demoralizing);
- Social modelling (implies seen successful people similar to oneself which inspire beliefs in own capabilities);
- Social persuasion (the people are persuaded in to believe in themselves, the more perseverant they are in the face if difficulties);
- Choice process (by their choices of actions and environments people set the direction of their life path).

For instance, Bandura's (1997) opinion is that teachers with a high sense of teacher self-efficacy believe that unmotivated students can be taught with more efforts, whereas teachers with a low sense of teacher self-efficacy believe that the teachers' influence is limited by different factors and little can be done to teach less motivated students. Moreover, in accordance with Bandura, people who consider themselves highly

efficacious think that their failures happen due to insufficient effort, whereas those who regard themselves as inefficacious consider that their failures happen due to low ability. Thus, causal attributions affect motivation, performance and affective reactions, mainly through beliefs of self-efficacy (Bandura, 1995). In addition, teachers with high self-efficacy beliefs tend to adopt more student-centred approaches than teacher-centred approaches in educational settings such as classrooms (Swars, 2005).

While Bandura researches self-efficacy in different domains, Tschannen-Moran, Woolfolk, and Hoy focus their research on teachers' self-efficacy. Tschannen-Moran, Woolfolk, and Hoy (2001, p. 783) gave the following definition for "teacher self-efficacy", based on research by Armor et al. (1976) and Bandura (1977): "judgment about his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated". Woolfolk and Hoy (2000) state that the development of teacher efficacy beliefs among prospective teachers has generated a great deal of research interest because, once efficacy beliefs are established, they appear to be somewhat resistant to change. It means that teachers' beliefs may be an obstacle to change and it is therefore important to form higher self-efficacy (meaning positive beliefs) in order to increase innovativeness among teaching staff.

Stein and Wang (1988) argue that teachers with high efficacy have been found to be more flexible and willing to explore new methods that may prove more efficacious for their students. These behaviours may influence positively the engagement achievement of the students in their classes. Penny (2007) defines self-efficacy as the most effective proposal for professional development, because it relates to choices of teaching strategies and actions performed in the classrooms. Penny's findings demonstrate that the efficacy beliefs of teachers are reflected in their instructional methods and outcomes.

Evers, Brouwers and Tomic (2004) argue that since self- efficacy beliefs are always linked to a certain domain of activity, it is always put forward as a general concept. In their article concerning burnout and self-efficacy, teachers' self- efficacy beliefs are determined as belonging to three domains of activities or competencies required for the successful adoption and implementation of the innovative practices. The first domain of self- efficacy beliefs of teachers grouped "working with tasks", the second domain of self- efficacy beliefs encompassed "guiding groups of students in a differentiating way",

and the third domain of self- efficacy beliefs in the study were related to coping with stress concerning the implementation of innovative educational practices.

Skalaavik and Skalaavik (2010, 2011, and 2014) found out that teacher self-efficacy is positively related with job satisfaction and negatively correlated with emotional exhaustion. This may be important in the context of our research, because success of innovation depends of positive emotions (Simola, 2012).

Research conducted by Nie et al. (2012) supports the idea that teacher efficacy does influence the implementation of innovative instruction. In accordance with their research, teachers with a higher sense of efficacy would tend to adopt constructivist instruction more often. In other words, their results show a stronger positive correlation between teacher efficacy and constructivist instruction than between teacher efficacy and didactic instruction. The study suggests that education leaders should improve teacher's efficacy beliefs so that teachers can effectively implement innovative methods of instruction.

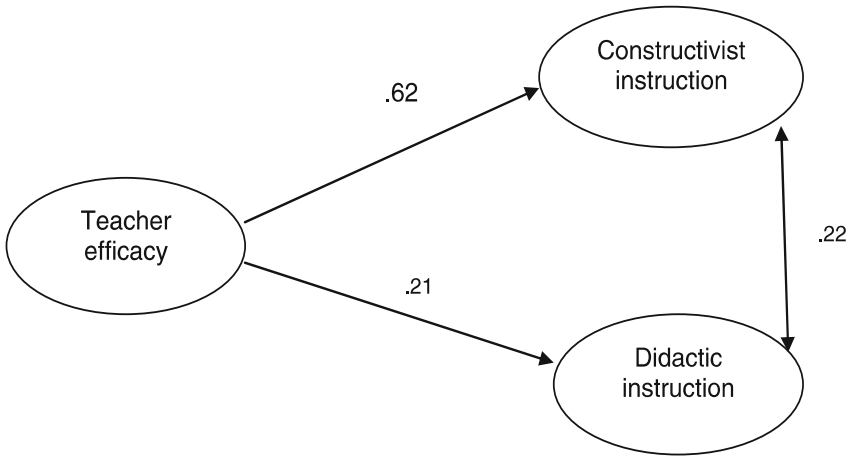

Figure 3: Representation of how teacher efficacy predicted constructivist and didactic instruction (Nie at.al, 2012, p.73)

In brief, it is possible to summarize the sense of self-efficacy as an epistemic characteristic, which is highly related to teachers' classroom activity, job satisfaction, burn out, emotional exhaustion, etcetera, and specifically with the application of

innovation. Concerning the Ukrainian context, it could be advisable for teachers and university authorities to apply self-efficacy trainings in the process of teaching staff training.

2.2.2. Creativity

The notion of creativity is closely connected to the adoption of innovation and has affects our lives even when we are unaware of it. Great creative thinkers such as Albert Einstein, Martin Luther King and Ben Franklin have created ideas and technology that have shaped our lives today (Robinson, 2010). It is obvious that creativity plays an important role in the application of innovative teaching.

Creativity presupposes an ability to create new methods and techniques, to choose among existing methods and to apply them in interesting way. However, we advocate the idea that innovation essentially concerns the implementation of ideas but not the generation of novel ideas. Creators generate new ideas and innovators implement them in practice (Shavinina, 2013). Thus, the notion of innovation is different from that of creativity. Moreover, most of the authors now agree that the process of idea generation is 'creativity' and that, although creativity is an important catalyser of innovation, the two terms are not synonymous (Cumming, 1998).

Kirton (1976, 1987) described two different styles of creativity; namely, adaption and innovation. Kwang (2005) researches Kirton theory of creativity styles and acknowledges one main difference between adaptors and creators: adaptors prefer to deal with a problem by doing things better, which is why they make changes to an existing work process. Innovators, in turn, prefer to deal with a problem by doing things differently. That is why they change the total work process.

According to Kirton (1987), the adaption-innovation style is formed early in childhood. However, the research of Ferrari et al. (2009) acknowledges the relevance of previous knowledge, both in terms of knowing how to be creative and in terms of domain knowledge, meaning that it is possible to learn how to be creative. "Creativity, in the educational context, should be conceptualized as a transversal and cross-curricular skill, which everyone can develop. Therefore, according to Cachia and Ferrari (2010, p. 9), "creativity can be fostered and also inhibited". It is thus possible to develop creativity, which is, as explained above, very useful in teacher development.

The European Commission launched the Lifelong Learning Programme "Creativity and Innovation" in 2009. Odile Quintin, Director General for Education and Culture in the European Commission, in the introduction to brochure of this program "Creativity and Innovation. European Success Stories" argues that creativity and innovation are two mutually related concepts; he explains that creativity is about imaginative thinking and behaviour that produces original and valuable outcomes, whereas innovation seeks to put these creative ideas into practice for the benefit of our society.

According to Report on the EUA Creativity project 2006-2007, creativity in the context of innovative higher education has the following core characteristics:

Originality: creativity is not about reproduction, but entails new developments and requires certain disrespect for established ideas and concepts as well as personal courage.

Appropriateness: not every novelty is creative, but creativity manifests itself in new approaches that are appropriate to the problem at hand.

Future orientation: that is, not looking backwards, but being concerned with what may happen in the future and dealing with the resulting insecurity and uncertainty.

Problem-solving ability: the capability to identify new solutions to problems; this requires "thinking outside the box", looking at things from a new angle, venturing off the beaten path and risking failure.

Additionally, the literature review carried out for the European Commission report (Ferrari, Cachia, Punie, 2009) considers creativity to be more strongly linked to learning and innovation more linked to teaching, propounding the notions of "creative learning" and "innovative teaching". The authors of this report develop several notions related to creativity and teaching and establish clear differences between creativity and innovation (p.19):

- Creativity – they consider "creativity" a product or process that shows a balance of originality and value. "It is a skill, an ability to make unforeseen connections and to generate new and appropriate ideas".

- Creative learning – researchers understand "creative learning" as any learning (understanding and new awareness) which allows the learner "to go beyond notional acquisition, and focuses on thinking skills, is based on learner empowerment and centeredness".

- Innovation – “the application of such a process or product in order to benefit a domain or field (in this case, teaching)”.

- Innovative teaching – “the process leading to creative learning, the implementation of new methods, tools and contents, which could benefit learners and their creative potential”.

In the final report of European commission concerning creativity in education, Cachia and Ferrari (2010, p.9) define major areas for improvement if we are to foster more creative learning and innovative teaching:

- Improvement in the curriculum – according to the aforementioned research, there is a need in education for the revision of curricula, for curricula change, and for better guidance on how teachers should develop creativity and innovation in practice while encouraging the development of cross-curricular competences.

- Improvement in pedagogies and assessment - their research shows that teachers need more skills and confidence in creative practices. Other factors that explain lack of creativity in teaching are tight timetables, overloaded curricula, and lack of support in the classroom, with too many learners per teacher and an institutional culture that does not support new methods.

- Improvement in teacher training – researchers argue that it is important to prepare new teachers to become reflective practitioners who will be able to develop creative learning approaches.

- ICT and digital media - technologies play a very important role in learners’ lives and can act as a platform to foster creative learning and innovative teaching.

- Educational culture and leadership – they assume that we need to implement change towards more creative learning and teaching, considering curricula, assessment, teacher training, and funding, with joint dialogue between all participants.

Two of the previous resources relate creativity with learning and innovation with teaching; however, the attribute of creativity is important for students’ creative learning and teachers’ innovative teaching. Creativity is one of the most important components of innovative teaching activity. It helps integrate new techniques into the teaching process, be flexible in achieving expected results and have problem-solving skills. The adoption of innovation is impossible without creativity and creativity cannot exist without innovativeness. Consequently, an important objective of career-long teacher education is encouraging imagination and creativity in experienced teachers (Griffiths, 2014).

2.2.3. Receptivity and Resistance to Change

One more epistemic factor is the so-called **"**receptivity to change", which in scientific literature is also called "propensity to innovative behaviour", "change readiness", etcetera. In the current research, the term "receptivity" will be used, as it seems to be the most widespread.

The problem of receptivity to innovation concerns the individual's attitude towards innovation, which may be reflected in different ways, ranging from acceptance to resistance. The problem of resistance to change (as a negative attitude towards innovation), albeit researched by different authors such as Zaltman and Dunkan, (1977), Fullan (1992), Rogers (1983, 2003) for decades, has not been resolved. Poole (1995) cites Eisner (1990) and Dalin (1978) when stating that resistance is a negative phenomenon and has to be overcome. Rogers (1983, 2003) holds the opposite point of view. He states that resistance is not always a problem and the adopter is not always the reason for failure.

> Resistance is commonly considered to be a standard or even natural reaction to organizational change. It is described as an almost inevitable psychological and organizational response that seems to apply to any kind of change, ranging from rather modest improvements to far-reaching change and organization transformation (Gravenhorst, 2003, p.3).

Daghfous, Petrof and Pons (1999) state that there are dimensions of the propensity (receptivity) for innovation adoption. These dimensions reflect the cognitive, affective and conative aspects of consumption behaviour:

- Cognitive - the exposure to information related to the new product and the capacity to communicate useful information about the product;
- Affective - interest in the product and in information about it;
- Conative - the estimated rapidity for the continuous use of the new product as well as the possession of articles directly or indirectly related to the product.

Nisbet and Collins (1978) cite Watson (1969), who also defined social system factors of innovation resistance, and offer some suggestions concerning how to overcome resistance to change:

- Conformity to norms (agreeing with norms);
- Systemic and cultural coherence (following traditions);
- Vested interest (having personal advantage in preserving traditional behaviour);
- The sacrosanct (remaining without changes, sacred);
- Rejection of outsiders (meaning opposition to people with non-traditional approaches).

Clarke (1996) researches receptivity as an internal or cognitive orientation toward change, whereas resistance is an external or behavioural orientation towards change. He defined receptivity to change "as a full range of internal orientation along a continuum from strong positive receptivity to negative receptivity" (p. 37). Moroz and Waugh (2000) argue that teachers' receptivity to change is related to their beliefs and is connected to teaching processes such as cohesiveness, collaboration and teacher learning opportunities. The notions of teachers' perceptions of curriculum change, together with their receptivity to change, are often neglected due to top-down education policies (Kasapoglu, 2010). However, it is crucial in micro-level processes, because negative attitude to change provoke resistance, and resistance, in turn, may lead to reform failure.

> Conflicts, contradictions and resistance to reforms at the grassroots in a university might arise as a result of the mismatch between new and old forms of formal and/or informal governance, as well as between the governing structures and the existing academic and organizational culture, beliefs, values and practices (Simola, 2012, p. 121).

In order to clarify the process of change, Bennis (1973, cited in Coghlan, 1993, pp.10-11) presented a six-stage innovation model: opposition, resistance, toleration, acceptance, support and embrace. This model is used in many works. Coghlan (2000, p.277-278), for instance, investigates the process of change and defines three elements of it:

- Perception: "the meaning the change has to individuals, the degree to which they have control over the change and the degree of trust in those promoting the change;"

- Assessment of the impact: "will the change be positively enhancing, uncertain, uncertain positively, uncertain negatively, threatening or destructive?"

- Response: "the individual may deny, dodge, oppose, resist, tolerate, accept, support or embrace change."

Moreover, Coghlan (2000, p.278) presented the model of the process of change and its key components (Figure 4). The researcher based his assumptions on Bennis' (1973) model of Innovation adoption.

Perception

Meaning - Information - Trust

Evaluation of impact

Enhancing -	Uncertain -	Uncertain - (probably positive)	Uncertain - (probably negative)	Threatening -	Distracting

Response

(this component is adapted by Coghlan (2000) from Bennis' (1973) model)

Deny -	Dodge -	Oppose -	Resist -	Tolerate -	Accept -	Embrace

Figure 4: Process of Response to Change (Coghlan, 2000, p.278)

From this model, we may assume that resistance to change or change embracing depends on an evaluation of change followed by a response, which may be positive (embracing) or negative (denying).

Resistance to change, according to Clarke (1996), is the behaviour of individuals that show an evident negative response to innovation. That is why it is important to foster receptivity towards innovations and to decrease resistance to changes. It is also necessary to admit that receptivity encompasses teachers' positive and negative attitudes to change, but resistance presupposes definite negative response towards innovations.

Being receptive to change is considered a positive response. Introducing and implementing pedagogical changes involves great difficulties, particularly in cases where one person induces changes and another person is expected to implement them fully in reality (Maskit, 2010). Although experts may see a new idea as advantageous, an actor may not perceive it in the same way (Rogers 1962). That is why the components of trust and positive emotions are very important in innovation through the creation of positive receptivity to change.

In order to summarize this subchapter we can assume the following:

- Receptivity to innovation is an epistemic characteristic of teachers that can be understood as positive orientation toward new teaching approaches.
- Negative receptivity to change (resistance) is natural and not always bad, but it is an obstacle for innovation.

- Fostering teachers' receptivity to changes facilitates the application of innovative strategies in the classroom

To conclude this subchapter, we must state that in the current research, we analyse teachers' cognitive characteristics such as high teaching self-efficacy beliefs, high receptivity to changes, and creativity as enabling factors for the application of innovative teaching, whereas a low level of the characteristics mentioned above tends to become a disabling factor for innovation. Fostering the development of these cognitive characteristics could specifically increase the level of innovative teaching, but it could also improve the general quality of teaching, which is one of the aims of innovative education.

2.3 RESEARCH MODEL

The model for the current research is based on several theoretical assumptions. The research is based on the Bologna reform, which is currently relevant because Ukrainian higher education has been in the process of reformation in accordance with Bologna declaration. It is also based on Constructivist pedagogy, which is considered a student-centred learning theory. In related literature, constructivist ideas have been conceptualized as innovative teaching tendencies (Nie et al., 2012; Baeten, Struyven, & Dochy, 2012). In a broad context, these tendencies are the result of a paradigmatic shift that has happened in the Knowledge society, which is evolving towards student-centric strategies of education such as increased academic mobility, openness, widespread use of computer technologies, etcetera. In the context of our study, these tendencies encompass pedagogic aspects including competence-based teaching, active methods of teaching/learning, the connection of teaching and practice, and an emphasis on self-learning. The role of the teacher is portrayed more as facilitator than a knowledge transmitter. This shifts the relations between teachers and students from object-subject to object- object.

Thus, in the current research we investigate innovation implemented in university classrooms and define the notion of **innovative teaching** as a set of didactic strategies for planning, application and evaluation that encompass pedagogical innovation in the framework of the Bologna reform and Constructivist pedagogy (see chapter I, p. 49).

This project concentrates primarily on findings associated with issues such as the frequency with which teachers use innovative didactic strategies (planning, application, evaluation) in university classrooms in Ukraine. Knowing how frequently teachers implement innovative practices may enable us to examine the extent to which Bologna requirements and Constructivist ideas have been implemented in real teaching practice in Ukraine. This can be important for the Ukrainian pedagogic discourse.

Thus, *innovative teaching level* is conceptualized as the teachers' self-perception of how often they apply innovative teaching strategies in the classroom and is therefore the object of the study. Although the level of perceived innovative teaching is not necessary the same as real level of innovative teaching, it enables us to observe teachers' perspective of the level of innovative teaching in university classrooms.

As assumed in the second chapter, teachers' characteristics such as self-efficacy, creativity and receptivity to change tend to make a difference in their level of innovative teaching.

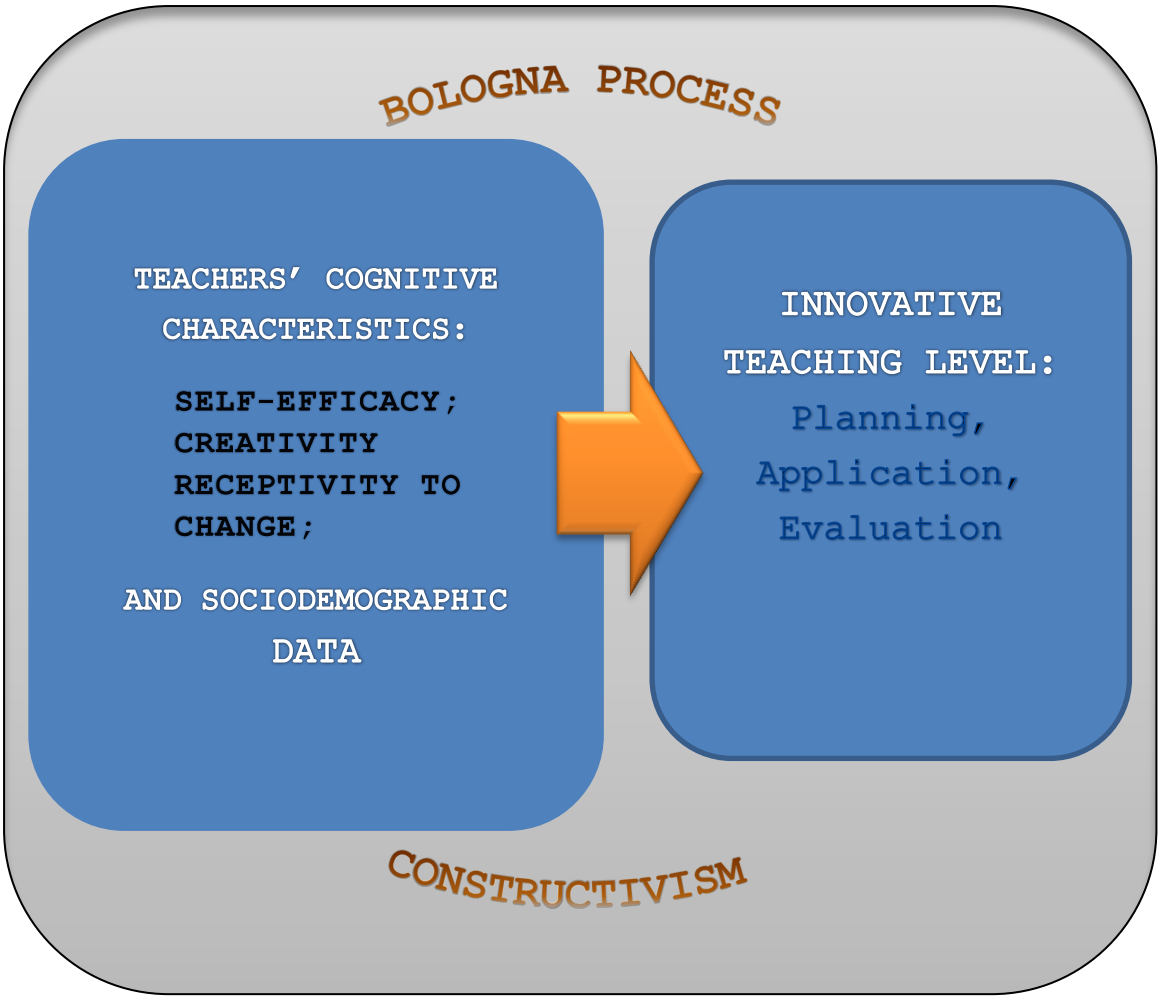

Figure 5: Research Model (reproduced from introduction of the thesis (Figure 0.1, p.13)

Taken as a whole, this descriptive model (Figure 5) defines two constituents. The first component is teachers' cognitive characteristics (self-efficacy, creativity, receptivity to change) and sociodemographic characteristics (teachers' gender, age, education degree, position, and university type) – these are independent variables.

Another component is the level of innovative teaching, which is a dependent variable. Additionally, we investigate three dimensions of innovative teaching: planning,

application, and evaluation. Each dimension encompasses a range of teaching strategies that distinguish "innovativeness" in a particular dimension. Thus, the teachers' characteristics that are chosen for analysis can make a difference in the level of innovative teaching carried out by teachers. A high level of cognitive components presupposes a higher level of innovative teaching implementation.

This model helps conceptualize the notion of innovative teaching and puts the teachers' personality in the centre of the innovation process, together with innovation itself. To our mind, this is especially important for post-totalitarian societies, where individual factors have been excluded from the reformation process and education changes have been implemented in a top-down manner. The vision of innovative teaching presented here may facilitate the implementation of new ideas in the Ukrainian classrooms and emphasize the importance of the lecturer's personality in the process of education innovation.

2.4. SUMMARY

In this chapter, we provide a description of the "teacher factor" in the context of application of innovation. Teachers' perception of change is examined context of the process of implementing innovation. Teachers has been examined as change agents, key players in the field of innovation implementation. Their perception of innovation may impact the process of innovation, making them embrace or resist a new idea. As previously established, cognitive attributes such as self-efficacy beliefs, creativity, and receptivity to change are considered to make a difference in the level of innovative teaching embraced in the classroom. These characteristics tend to be either an obstacle or a catalyser for the implementation of innovations. The development of the aforementioned cognitive characteristics could improve innovative teaching quality in the classroom. Additionally, this chapter presents the research model that is the core element for this study and conforms the basis for the empirical part of the thesis.

EMPIRICAL PART

CHAPTER THREE

METHODOLOGY OF THE RESEARCH

This chapter presents research hypotheses and variables description. Then the research sample is presented and described. After that, an adequate instrument for the survey is elaborated. Data collection and analysis procedure used to obtain results conform the final parts of the chapter.

3.1. RESEARCH HYPOTHESIS

As argued in the theoretical part, the empirical investigation for this research is carried out in two conjoined frameworks. The first framework is the context of the educational innovation that has been happening in in Ukraine in its adaptation to the requirements of the Bologna process, which affected not only structural and political aspects, but also the classroom environment. The second framework is Constructivist pedagogy, which is considered a student-centred learning theory.

The current project focuses on the extent to which innovations are being brought to the university classroom. Thus, it aims to gauge the level of innovative teaching and to examine the differences in its implementation depending on an array of cognitive and demographic characteristics of teachers.

In accordance with theoretical revision, there are three main hypotheses for the study:

I. The level of innovative teaching in classrooms is different depending on the teachers' sociodemographic characteristics. These specific hypotheses were tested during the study:

— Female teachers tend to show a higher level of innovative teaching than male teachers;

— Younger teachers tend to show a higher level of innovative teaching than older teachers;

— Teachers with less experience tend to show a higher level of innovative teaching than teachers with longer teaching experience;

— Teachers with lower positions tend to show a higher level of innovative teaching than teachers with higher positions;

— Doctoral degree holders show a higher level of innovative teaching than master degree holders;

— Teachers from NAUKMA University show a higher level of innovative teaching when compared to the two other universities examined in the study.

II. Cognitive variables make a difference in the level of innovative teaching. The following specific hypotheses were tested during the study:

— Teachers with high self-efficacy level show a higher level of innovative teaching than teachers with low self-efficacy;

— Teachers with high creativity level show a higher level of innovative teaching than teachers with low creativity;

— Teachers with high receptivity to changes show a higher level of innovative teaching than teachers with low receptivity.

III. There is a significant difference in level of innovative teaching between teachers and students.

3.2 RESEARCH VARIABLES

Before considering the subject of variables, it is important to emphasize that the application of innovation is an issue that depends on a number of different factors: institutional factors, government policies, teachers' characteristics, and students' motivation, among others. However, the empirical part of this research, as established in the theoretical part, focuses mainly on the level of implementation of innovative teaching according to teachers' cognitive and socio-demographic characteristics.

The lack of widely applicable instruments to measure innovation can be explained by the abundance of conceptual and methodological challenges that can be encountered in such an endeavour. Goldsmith (2011), when describing the validity of the Global Innovativeness

Scale elaborated by Hurt and Cook (1977), defines the main difficulties of an innovation measuring scale:

- Difficulties in the agreement of what constitutes an "innovation"; in other words, there is a difference in the content of innovations (cited Onkvisit & Shaw, 1989).
- Difficulties when identifying innovators in social systems. This is the question of who is to be considered an innovator (cited Midgley & Dowling, 1978).

Table 8

Research Variables

Independent variable	Dependent variables
- Teachers' sociodemographic characteristics: gender, age, teaching experience duration, position, university - Teachers' cognitive characteristics: self-efficacy, creativity and receptivity to change	- Innovative teaching level: planning, application, evaluation

That is why variables for this research were selected in accordance with the research model, befitting the concept of innovation delineated in the present research (Table 8). Thus, the dependent variable is *innovative teaching level in university classrooms* and independent variables are *teachers' cognitive and socio-demographic characteristics*.

3.2.1 Dependent Variable: Innovative Teaching Level in University Classroom

In framework of this study, innovative teaching level is conceptualised as teachers' perception of how often they apply innovative teaching strategies in the classroom (see chapter II, p.95). It is to be measured in the context of three perspectives: 1) how often teachers apply new planning strategies – planning; 2) how often teachers implement application strategies – application; and 3) how often teachers evaluate students work by means of innovative assessment strategies – evaluation.

Additionally, in order to test the research hypotheses, we examine the difference in the level of innovative teaching, depending on the teachers' cognitive characteristics, such as their self-efficacy concerning innovative teaching, creativity, and receptivity to change. In addition, we pay attention to the difference that sociodemographic characteristics make in the level of innovation.

Regarding innovative teaching measuring, we have to acknowledge this issue has attracted considerable interest in the modern social science literature. This started with the development of Rogers's theory of innovation adoption model (Rogers, 1983, 1995, 2003). Rogers's theory defines the rate of adoption of innovation, which is generally measured as the number of individuals who adopt a new idea in a specified period, which can be "one year", for example. In contrast with Rogers's theory, which gauges the time for the adoption of an innovation by the individual, Midgley and Dowling (1978) measured innovativeness by the number of innovations adopted by an individual. There is a variety of other researches on the measurement of innovation. Hurt et al. (1977), for instance, devised the Scale of Individual Innovativeness as a change in willingness. Meanwhile, West (1987) measured innovation by counting how many changes an individual has initiated in his job.

Unfortunately, very few scales could be found that measured innovative teaching level in the classroom. Many scales were elaborated for the measurement of the level of innovation and then were applied in the field of education science. One of them is the Stages of Concerns–Based Adoption Model scale was elaborated by Hall, Walles and Dosset (1973) and modified by Hall and Hord (1987). The Stages of Concern Questionnaire assesses the constructs of "stages of concern about the innovation" in accordance with George, Hall, Stiegelbauer (2006) and Hall (2013). The Concerns-Based

Questionnaire has been extensively applied in the research into many types of educational innovations (Wang, 2013).

One of the popular tools for the measurement of teaching approaches is the Approaches to Teaching Inventory by Trigwell, Prosser and Ginns (2005). It consists of two main scales, reflecting a teacher-centred approach (information-transmission) and a student-centred approach (conceptual-change); each scale is subdivided into intention and strategy subscales (Meyer, 2006).

Most of the inventories deal with the level of innovations in teaching: teachers, concerns, beliefs, attitudes etc. As a possible drawback of these instruments may be that level of innovation is not the same as the real level of innovative teaching. However, it facilitates the examination of teachers' perspective of the level of innovative teaching.

3.2.2. Independent Variables: Sociodemographic Characteristics, Self-efficacy, Creativity and Receptivity to Change

As hypothesized before, teachers' sociodemographic characteristics and cognitive characteristics can make a difference in innovative teaching in university classrooms.

Sociodemographic characteristics in this study are age, gender, teaching experience, rank and type of university. Sociodemographic characteristics can demonstrate a significant relationship with the application of ICTs in teaching (Van Braak, 2001).
Dyck and Smither (1996) found no gender differences for computer anxiety. Liaw (2002) found that men show more positive attitudes towards innovative technologies. However, Walters et al. (2014) state that female teachers (72,7%) apply more student-centric approaches than male teachers.

In accordance with Dyck and Smither (1996), older adults tend to be less computer anxious and have more positive attitudes toward computers; however, they have less computer experience than younger adults. Additionally, older teachers consider themselves to feel less confident when using computer technologies than younger subjects. Furthermore, Harrison and Raine (1992) state that older teachers have negative attitude to computer innovations.

Russell, Bebell, O'Dwyer, and O'Connor. (2003) state that in-service teachers do not have higher pedagogical knowledge of ICT in education than pre-service teachers. Gurye (n.d.) posits that, according to a study carried out in Moscow State University, young professionals show more positive attitudes towards innovations applied in the university classroom.

Although existing literature yields controversial results, we may assume that teachers' sociodemographic data is closely related to their level of innovative practices.

Cognitive characteristics in this study are self-efficacy, creativity and receptivity to changes.

The concept of teachers' *self-efficacy* is a characteristic connected to teachers' beliefs regarding their own work strategies. According to Bandura (1993), teachers' beliefs in their personal efficacy influence the types of learning environments they foster and the academic progress of their students. The variable for teachers' self-efficacy**,** according to the definition provided by Tschannen – Moran, Woolfolk Hoy &Hoy (1998, p.233) is the "teacher's belief in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context".

For instance, a low level of preparation for educational innovations is probably related to lower levels of self-efficacy, which may figure in the onset of burnout (Evers at al. 2002). Negative beliefs about teaching or a low level of self-efficacy are disabling factors for innovative teaching. According to Bandura, (1977, p.194), the higher the efficacy, the more active is a person. "Those who persist in subjectively threatening circumstances will gain experience; those who cease their coping efforts will retain self-debilitating expectations and fears for long time". Thus, we can assume that a high level of self-efficacy in teachers can be an enabling factor for innovation implementation.

> Efficacy beliefs influence whether people think self-enhancingly or self-debilitatingly, optimistically or pessimistically; what courses of action they choose to pursue; the goals they set for themselves and their commitment to them; how much effort they put forth in given endeavours; the outcomes they expect their efforts to produce; how long they persevere in the face of obstacles; their resilience to adversity; how much stress and depression they experience in coping with taxing environmental demands; and the accomplishments they realize. (Bandura 2001, p. 270)

Considering the above, the variable of self-efficacy was chosen as a factor that makes a difference in the level of innovative teaching.

Henson (2001) states that the construct of teacher efficacy has undergone serious developments and there are number of theoretical models for teaching self-efficacy. Several promising instruments have been developed and it has become possible to measure both general teaching efficacy and personal teaching efficacy (Prieto, 2007).

The construction of self-efficacy scales relies on a good conceptual analysis of the relevant domain of functioning (Bandura, 2006). Moreover, the construct of teacher efficacy has been conceptualized in a number of ways, but the most popular is derived from two RAND Corporation evaluations of innovative educational programs (Woolfolk Hoy, 2000). The RAND Corporation Measure of Self-Efficacy (Armour et al, 1976) consists of two items on a 5–point Likert scale ranging from "strongly disagree" to "strongly agree". RAND researchers based their ideas on Rotter's theory of casual beliefs about the relationship between actions and outcomes (Bandura, 1997, p. 20). This research introduced the definition of the term "teacher efficacy" (Tschannen – Moran, Woolfolk Hoy, & Hoy, 1998 p. 202).

Rose and Medway elaborated an inventory of teacher's locus of control in 1981. Then Guskey (1981) introduced the scale for Responsibility Teachers Assume for Academic Successes and Failures in the Classroom, which included 30 items and consisted of two subscales. Later, a great number of scales measuring self-efficacy emerged, such as the Teacher Self-efficacy Scale (Gibson & Dembo, 1984), with 30 items on a 6-point Likert scale ranging from "strongly disagree" to "strongly agree". The scale devised by Gibson and Dembo (1984), in measure led to the creation of a number of new teacher self-efficacy measurement tools, the most wide-spread of which is the Teachers' Sense of Efficacy Scale (TSES) created by Tschannen-Moran et al. (1998).

Teacher's Sense of Efficacy Scale (in both its short and its long form) was introduced by Tschannen - Moran & Wolfolk Hoy in 2001 as a list of 12 items on an 8-point scale ranging from "nothing" to "a great deal". Another popular scale is the Collective Teacher Efficacy Scale (Goddard, Hoy & Hoy, 2000), which consists of 21 items on a 6-point Likert scale ranging from "strongly disagree to strongly agree".

This variety of self-efficacy scales gives the possibility to measure self-reported beliefs in teaching strategies. Knowing teachers' self-efficacy level might help to know better their

inner psychological concerns and lack of confidence in their implementation of teaching approaches, including innovative teaching.

The next independent variable is *creativity*. Creativity theorists have argued that the individual's creativity is an important antecedent and precondition for innovation (Nawaz, 2011). According to Beghetto and Kaufman (2007), creativity can be linked to the domain of the construction of personal knowledge and understanding. Kirton (1999) emphasized the property of creativity as the capacity for initiating change.

Consequently, this variable was selected as the independent factor that can make a difference in innovative teaching.

There are a number of creativity inventories. Gough & Heibrun (1979) designed the Adjective Checklist for Measuring Creative Personality Characteristics. Kirton (1976) developed a dimensional inventory of creativity style called the Kirton Adaption-Innovation Inventory (KAI). The KAI is a continuum, the left end of which is labelled "Adaption" and the right end "Innovation". People are considered "adaptors" or "innovators" depending on the score attained by their responses (Kirton, 1987). Kelly (2004) developed a measure of creativity – the Scale of Creative Attributes and Behaviour (SCAB), designed to be an easily administered, reliable, and valid self-report measure of creativity as a complicated multidimensional notion. The scale was devised to measure self-creativity and the creative personality. Kaufman Domains of Creativity Scale (2012) consists of five domains of creativity for students: self/everyday, scholarly, performance (encompassing writing and music), mechanical/scientific, and artistic. A strong correlation was found between creativity domains and personality factors.

The main concern about self-reported creativity is that most of the scales relate to creative metacognition. Creative metacognition is based more strongly on personality than on performance; however, we ask participants to report their specific self-perceptions (Pretz, McCollum, 2014). The research by Reiter-Palmon, Robinson, Kaufman, & Santo (2012) found that self-perceptions of creativity had strong to moderate relationships with personality and creative self-efficacy.

Although creativity is not definitely creative performance, measuring self-reported creativity may enable to define personal beliefs about creativity that, in the context of this work, may become a factor that makes a difference in innovative teaching.

The following dependent variable is *receptivity to change*. Similar to self-efficacy, receptivity is also a characteristic. Receptivity is an internal or cognitive orientation toward change (Clarke, 1996) and is thus an individual attitude. Receptivity to change includes the full range of internal orientation along a continuum, from strong positive receptivity to strong negative receptivity (Clarke, 1996). Negative receptivity is thereby understood as resistance to change. At the individual level, receptivity denotes a person's willingness to consider change (Huy, 1999).

Concerning the issue of measuring receptivity to change, it can be measured with a number of scales. Trumbo (1961) developed 9-item Change Scale to measure employee attitude toward change. As for Schulze, R. H. (1962), Rokeach elaborated the Dogmatism Scale, which made it possible to measure the level of dogmatic or non-dogmatic style of thinking. This scale was modified by researches Schulze (1962), Troldahl and Powell (1965). Hennigar (1980), in turn, developed the Receptivity to Change Inventory (RCI), measuring the correlation between administrative style and openness to change, which was subsequently modified by Chauvin (1992, 1993), who applied it for measuring teacher receptivity to change. Afterwards Loup (1992) adapted and improved Chauvin's Measurements of Teachers' Receptivity in examining the relationship between teacher receptivity, teacher self-efficacy and multiple indices of school effectiveness.

Considering everything mentioned above, this epistemic characteristic was chosen for this project. Examining the difference in innovative teaching depending on teachers' receptivity to change may provide insight into the reasons why teachers embrace or resist innovations, which could be a subject worthy of further research.

3.3. STUDENTS PERCEPTIONS OF INNOVATIVE TEACHING

Evaluation of higher education teaching is a contentious topic. There may be a significant relationship between previous experience and the development of ideas about teaching and learning for both students and teachers (Brown, 2009). On the one hand, some researchers question the ability of students to evaluate teaching quality (Gravestock, Greenleaf and Boggs, 2009). On the other hand, research carried out by Deschryver & Lebrun (2014) found significant correlation between the perceptions of students with deep motivation for

learning and teachers who apply hybrid learning, which presupposes a very open and student-centric approach to teaching and learning.

Although the validity of student evaluations of teaching is often a questionable issue, for this study the decision was made to ask students the same questions that were asked to teachers regarding innovations applied in the university classroom. This could provide the opportunity to gain insight into another perspective of the problem.

3.4 RESEARCH DESIGN

As can be seen from the conceptual model of this study, the current research proposes an empirical setting to investigate the object through phenomena description and hypotheses testing. Thus, this approach is descriptive (describes the dependent variable level from general to particular) and explanatory (involves quantitative tools and techniques to find the difference in dependent according to independent variables).

The research was conducted utilizing a survey design. This was accomplished using a descriptive rating Likert-type survey provided by the Teaching Inventory, which was used to collect quantitative data from teachers in three Ukrainian universities.

The research instrument has been a survey through self–reported questionnaires. This instrument was chosen because self-reported questionnaires are not only a method of measurement that collects information from respondents, but also a source of information to obtain a useful and informative answer (Schwarz, 1999). In this sense, Paulhus (1984, p.608) cites Hogan (1983) when stating: "Responses in self-report inventories are guided by underlying self-images that are unconscious and not situationally contingent."

Concerning Likert-type scales, they have been widely used in the behavioural sciences and social sciences. Their popularity may be explained by the various advantages they provide; namely, they are simple to construct, likely to produce a highly reliable scale, easy to read, and complete for participants (von Bertram, 2012). In addition, Likert scales are tend to be easier in application, both for researchers and for participants (Hasson & Arnetz, 2005). Furthermore, it is undoubtedly a less time-consuming and less expensive type of survey. Finally, Likert scale type questionnaires allow for statistical analyses of the data.

The problem of social desirability as possible limitation of the scale in the construction of a Likert scale has been a topic of research in different articles. Garlands' study (1991) provides some evidence that a social desirability bias, arising from respondents' desires to please the interviewer, appear helpful, or not be seen to give what they perceive to be a socially unacceptable answer, can be minimized by eliminating the mid-point ('neither... nor', uncertain, etcetera) category from the Likert scale. In the current study, in order to show different perspectives of one phenomenon, we compare teachers' and students' results of their perceptions of the implementation of innovative practices in the classroom.

3.5 QUESTIONNAIRE

Teachers filled in the questionnaire concerning planning, application and evaluation of didactic strategies, whereas their students filled in the questionnaire concerning application and evaluation strategies applied in their institutions by teachers. Additionally, teachers had to report on a set of their own cognitive characteristics that, as established in the theoretical part of this thesis, have been shown to foster or inhibit innovativeness. Furthermore, the questionnaire was translated into English and Ukrainian, which is the teachers' native language.

3.5.1 Questionnaire for Teachers

The first section of the overall questionnaire that university teachers were asked to answer consists of questions regarding their personal information, such as gender, age, university name, years of teaching experience and position in the faculty.

The second part of the questionnaire for teachers was adapted from a scale of University Teachers Training Interests and Needs designed at the University of Deusto (Eléxpuru, Martínez, Villardón, & Yániz, 2008). The scale consists of 44 items belonging to three dimensions: Planning, Application and Evaluation, with a total of 17, 14 and 13 statements, respectively. The aim of this instrument is to obtain information about the educational interests and needs of faculty staff, which can facilitate the design of training activities in accordance with teachers' needs and professional interests.

This scale was chosen for application in the current research because it fits the main concept of the research, and because items are based on Bologna process, European convergence (Eléxpuru et al, 2008), and Constructivist theory. The answers of Ukrainian teachers enable us to see the level of paradigm shift from the Ukrainian post-Soviet education philosophy to a European (democratic) one.

The questionnaire was slightly modified to better suit the purposes of the present research. In the original variant of the questionnaire, teachers had to answer three scales: importance, performance and training interest from 1 (nothing) to 5 (much). In present research, however, we only used the performance scale. Teachers were asked to choose among the following indicators: 1 – never; 2 – seldom; 3 – occasionally; 4 – often; and 5 – always. This scale was tested for reliability and the alpha Cronbach coefficient was calculated for the whole scale. Nunnaly (1967) has determined 0.7 to be an acceptable coefficient of reliability. In this work, the scale demonstrates $\alpha = .97$, which proves a rather high level of reliability. From this data, it is possible to assume that the scale is reliable for measuring innovative teaching.

The third part of the survey consists of three scales measuring self-reported cognitive characteristics: self-efficacy, creativity and receptivity to change.

In this work, the College Teaching Self-Efficacy Scale (Prieto, 2006, 2007) was used, with 6 Likert-type responses used to measure professors' self-reported capability to implement teaching activities. This scale consists of items based on a constructivist approach that is applicable for the present study.

This scale consists of 44 items divided into 4 dimensions of university teaching: 1) self-efficacy in planning; 2) self-efficacy in implication; 3) self-efficacy in interaction; and 4) self-efficacy in evaluation. 13 questions measured self-efficacy in planning (questions 1, 5, 9, 14, 18, 22, 25, 27, 35, 38, 40, 43, 44 from the "Self-efficacy" block in the questionnaire); 10 other questions measured self-efficacy in implication (questions 2, 7, 10, 15, 23, 28, 32, 36, 39, 42); 8 questions measured self-efficacy in interaction (questions 3, 11, 19, 24, 29, 33, 37, 41); and, finally, 13 questions measured self-efficacy in evaluation (questions 4, 6, 8, 12, 13, 16, 17, 20, 21, 26, 30, 31, 34).

By means of this scale, professors grade their beliefs regarding their own capability or, in other words, how confident they feel in planning and conducting their classes, with scores

ranging from 1 (no confidence al all) to 6 (complete confidence). The scale originally consisted of frequency column, but it was excluded. Additionally, the original scale has shown good internal consistency in the dimensions, with alpha coefficients ranging from .83 to .87 and an overall reliability of α = .95, with a sample of 362 university teachers (Prieto 2007). In the present work, the Alpha Cronbach coefficient (α = .97) also shows a rather high overall reliability for this research.

Teachers' Self-Reported Creativity Scale is an adaptation of the Self-Assessment of Creative design Questionnaire by Kreitler and Casakin (2009). It aims to examine the level of teachers' ability to change their style of teaching and to create new ways of conducting their classes. Originally, it was devised for the students of the design faculty. This scale was chosen because it includes self-reported items concerning creativity indicators; namely originality, ability to generate ideas, problem-solving skills etcetera. These indicators became the basis for creativity scale being used in the present research.

The scale used in this research is adapted for teachers and is composed of 20 Likert - type statements. Participants were asked to assess their teaching practice from 1 – "do not agree" to 4 – "completely agree". In the current research the alpha Cronbach coefficient is α = .91 and may be considered as high. Thus, this scale is reliable for measuring the *creativity* variable in the present research.

The Teachers' Receptivity to Change Scale was devised to assess professors' self-reported level of change receptivity. The scale, Faculty Staff Readiness to Innovations Scale (rus. шкала готовности к творческо-инновационной деятельности) found in the research of (Rastyannikov, Stepanov, Ushakov, 2002, pp. 236-241). This scale, elaborated by Stepanov, was applied in the current research. It was designed for testing teachers' readiness to institutional changes, as well as changes in teaching activity. The scale includes items concerning changes at the individual level and attitudes towards macro-level changes that are relevant for the context of this study.

The scale is composed of 20 Likert-type confirmations. Teachers were asked to assess the statements grading them with 1 to 10 points, 1 standing for "completely disagree" and 10 for "completely agree". The scale consists of two dimensions: teachers' positive attitudes towards innovations and teachers' negative attitudinal statements regarding innovation. It allows to distinguish the level of receptivity towards innovation among educators. The

Alpha Cronbach coefficient was calculated for this scale and is α = .94, which may be considered as high. Thus, this scale is consistent for measuring the *receptivity to change* variable.

3.5.2 Questionnaire for Students

The questionnaire for students was adapted from the scale of University Teachers Training Interests and Needs elaborated at the University of Deusto (Eléxpuru et al, 2008). In order to facilitate later comparative analyses between the results of teachers and students in their perception of innovative teaching, students were asked the same questions as teachers, albeit from two teaching dimensions: application and evaluation. The aspect of planning was excluded because it is difficult for students to evaluate this dimension, as they do not observe the process of planning.

The first part of the questionnaire consisted of student demographic data including age, year of study, gender and institution name. In the second part, the students' perception scale consists of 28 Likert-type questions with possible answers ranging from 1 to 5 points. Students were asked to assess on the scale how often their teachers apply particular activities, where 1 is never; 2 – seldom; 3 – occasionally; 4 – often; and 5 – always. The Alpha Cronbach test was calculated (α = .76) and the result is higher than 0.7; therefore, this scale may be considered reliable for the present research. In consequence, it is possible to assume that these scales may be considered adequate instruments for the present research.

3.6. RESEARCH SAMPLE

3.6.1. Teachers' Sample Description

The population of the study includes teachers from three selected universities from different areas of teaching. It was expected that obtaining a minimum of 75-80 people would result in a cross section of subjects in terms of gender, age, experience and position in the faculty. In total, 80 questionnaires were completed. In addition, the normal variations in innovative teaching scores among 80 people enabled statistical comparisons for the hypotheses of the study, which provided new information about the process of innovation implementation.

Table 9

Teachers' Sociodemographic Data

Category	**Counts, %**			**Total**
UNIVERSITY	**NAUKMA** N=26 32,5%	**NULES** N=30 37,5%	**KNU** N=24 30%	N=80 100%
GENDER	**MALE** N=34 42,5%	**FEMALE** N=46 57,5%		N=80
AGE	**23-41** N=41 51%	**42-62** N=39 49%		N=80 100%
WORKING YEARS	**1-15** N=45 56.2%	**1637** N=35 43.8%		N=80 100%
POSITION	**Assistant** N=15 18,8%	**Senior lecturer** N=37 46,2%	**Docent/Prof** N=28 40%	N=80 100%
EDUCATION	**Master's/ Specialist** N=49 61,3%	**PhD/Doctor of sciences** N=31 38,8%		N=80 100%

As can be seen from the Table 9, the total number of teachers-participants is 80; namely, 26 participants from the National University of Kyiv Mohyla Academy (short name

NAUKMA), 30 participants from the National University named after Taras Shevchenko (short name KNU), and 24 participants from the National University of Life and Environmental sciences (short name NULES). Concerning their areas of teaching, they are the following: 24 teachers are from liberal arts, 26 belong to the social sciences and 30 participants teach sciences.

Choosing three settings provided for a heterogeneous sample. In addition, survey participants belong to different social and demographic groups (years of study/teaching, age, gender, education degree, position, etcetera), which enables quantitative analyses of innovative teaching perception by teachers.

The gender distribution of the sample is the following: 34 male respondents and 46 female participants.

The age of the professors and lecturers ranges from 23 to 62 years old. Average age is 37 years. Age was measured as a continuous variable that asked respondents to record their age in years. Then we divided all the respondents into two age categories (according to median = 41): 1) 23-41 years old (41 respondents), and 2) 42-62 years old (39 respondents).

Average teaching experience is 14 years. Teachers responded to the question about the duration of their teaching experience and the answers were grouped by number of years of teaching experience in the following groups (according to median = 15): 1-15 years (45 respondents), and 16 – 40 years (35 respondents).

The following sociodemographic characteristic that is important for the research is the educators' own level of education. It must be stated that, according to Ukraine system of education, master's degree holders and specialists (the former higher education degree) have the right to be university teachers. In addition, there are such postgraduate degrees as "candidate of sciences" or PhD, which follows the master's degree; and "doctor of sciences", which is the highest academic degree. In order to form representative groups it was decided to group teachers in two categories: Master's/specialist (49 respondents) and PhD/doctor of science (31 respondents).

Next, the teachers' employment position was described. Hypothetically, the position the teacher holds in the university influences his or her level of innovative activity. In Ukraine,

the naming system for university teaching positions varies depending on the university. As usual, “teacher” or “faculty assistant” composes the lowest rank of teachers’ employment in the university. Then comes “senior teacher”, which is higher and requires particular teaching experience. The position of “assistant professor” or “docent” requires teaching experience, a number of publications and a PhD degree, whereas “professor” is a position that can only be held by those who have a Doctor of Sciences degree. We tried to use the most common classification of the professors’ job positions, where “assistant” is the lowest rank and “professor” is the highest. In consequence, 15 teaching assistants, 37 senior teachers, and 28 docents and professors participated in the survey.

3.6.2 Students’ Sample Description

Results were expected from the students’ population of three chosen universities where teachers-respondents of the survey work. The requirements for the sample were the following: different years of study, and different universities. The normal variations in the scores of innovative teaching dimensions of application and evaluation required 280-300 students for a valid statistical comparison needed to test the hypotheses of the study in order to gauge students’ perceptions of the innovations implemented by teachers and to test the differences between the results of teachers and students.

As shown in Table 10, the total number of students participating in the survey was 296: 109 respondents were from NAUKMA, 85 respondents belonged to NULES and 102 participants were from KNU.

Students from different years of study participated in the survey: 102 students are freshmen or in their second year of study, 139 students are in years 3-4 of study, and 54 students are in years 5-6.

Most students (201) are female, whereas 95 students were male. This may be interpreted to mean that female students prevail in some faculties like liberal arts and social sciences.

Table 10

Students' Sociodemographic Data

Category	Counts, %			Total
UNIVERSITY	**NAUKMA** N=109 **36,82%**	**NULES** N=102 **34,45%**	**KNU** N=85 **28,71**	N=296 100%
GENDER	**MALE** N=95 32,1%	**FEMALE** N=201 67,9%		N=296 100%
YEAR OF STUDY	**1-2** N=102 **34,45%**	**3-4** N=139 **46,95%**	**5-6** N=54 **18,24%**	N=296 100%

The sociodemographic characteristics of the students are described only for purposes of sample heterogeneity description. The current research does not have the objective to find differences in perception of innovative teaching depending on students' demographic data.

3.6. DATA COLLECTION

The survey was administered in autumn 2013. An intentional sampling was drawn in all the selected institutions.

- Teachers sample. More than 100 teachers-respondents were invited to participate in the survey via e-mail or by telephone and were offered to fill in a paper questionnaire if preferred. Eighty participants agreed voluntarily to participate in the survey. All respondents were informed of research methodology, objectives and confidentiality. The survey took approximately 60 minutes to be completed.

- Students sample. All teachers participating in the survey were asked to hand out the questionnaire to their students. The students who voluntarily agreed to participate in the survey (296 people) filled in the questionnaire in the classroom after the classes. Students were informed about the aims of the survey, methodology and confidentiality. It took the students 20 minutes to fill in the questionnaire.

3.7. DATA ANALYSES

Author took the collected data and fed it into the SPSS statistical software tool in order to analyse the information. Descriptive statistics were applied for the frequency distributions for each sociodemographic characteristic. Next, descriptive statistics were generated with teachers' and students' questionnaires in order to calculate the respective means for their innovative teaching level in total and in three dimensions (see Annexes).

Independent variables – except sociodemographic characteristics – were recoded and grouped into two levels, "low" and "high", with respect to the median value of each variable. Subsequently, T-test and One-way ANOVA test analyses enabled us to determine the mean difference in innovative teaching level depending on the independent variables. Finally, T-test was applied to compare the results of teachers and students.

3.9 SUMMARY

Table 11 summarizes the instrument design for the current research.

This chapter described the methods and procedures employed to measure the level of innovative teaching. Innovative teaching is described as dependent variable, whereas teachers' cognitive characteristics and sociodemographic data are independent variables in the present research. The hypotheses and objectives are set in accordance with the research questions described at the beginning of the study. An adequate instrument is selected and analysed regarding possible advantages and limitations of the study.

Table 11

Research Methodology Design

Research questions	Objectives	Hypothesis	Variables	Instrument	Analyses
Which is the level of innovative teaching applied in university classroom?	To know teachers level of innovative teaching applied in the classroom		Total innovative teaching; Evaluation, Planning, Application	Adapted Questionnaire of Training Interests and Needs (Eléxpuru et al, 2008)	Descriptive statistics
Do teachers' sociodemographic characteristics make a difference in the level of innovative teaching implemented in university classrooms?	To examine the difference in the level of innovative teaching according to teachers sociodemographic characteristics	Sociodemographic variables make a difference in the level of innovative teaching	(VI) Sociodemographic (age, gender, position, teaching experience…) (VD) Application, evaluation, planning		T-Test ANOVA
Do teachers' cognitive characteristics make a difference in in the level of innovative teaching implemented in university classrooms?	To examine the difference in the level of innovative teaching according to teachers' cognitive characteristics	Cognitive variables make difference in the level of innovative teaching applied in the classroom	(VI) Self-efficacy, creativity, receptivity (VD) Application, evaluation, planning	College Teachers Self-Efficacy Scale (Prieto, 2006) Adapted from Self-reported Creativity Assessment (Casakin, 2009) Teachers Readiness to Change Scale (Rastynnikiv, Stepanov, Ushakov, 2002)	T-Test
Which is the students' perception of the level of innovative teaching implemented by teachers in university classrooms?	To gauge students' perception of the level of innovative teaching applied in the classroom by teachers		Application Evaluation	Adapted Questionnaire of Training Interests and Needs (Eléxpuru et al, 2008) (Application and Evaluation dimensions)	Descriptive Statistics
What is the difference in teacher-student perception of the level of innovative teaching?	To determine whether there is any difference between the perceptions of teachers and students regarding the level of innovation applied in the classroom	There is significant difference in innovative teaching level perception between teachers and students	(VI) Teacher/Students (VD) Application, evaluation (Student)		T-test

CHAPTER FOUR

RESEARCH FINDINGS

This chapter aims to answer the main research questions. It focuses on measuring the level of innovative teaching applied in the classrooms in three universities in Ukraine. Specifically, this study measures the differences in the level of innovative teaching according to the teachers' sociodemographic and cognitive characteristics. Additionally, the present study endeavours to examine the difference in the perceptions of teachers and students of the innovations applied in class.

4.1 FIRST RESEARCH QUESTION: WHICH IS THE LEVEL OF INNOVATIVE TEACHING IN UNIVERSITY CLASSROOMS?

In the present research, the level of innovative teaching is examined both in total and in three teaching dimensions. This can help examine the extent to which innovative teaching is applied in the classroom; identify some problematic issues in the implementation of innovations in the classroom in Ukrainian universities; and become the basis for further research.

4.1.1 Level of Total Innovative Teaching by Teachers

Table 12 shows the descriptive analysis of the *average level of innovative teaching* is 3.79 and SD = .703, where the minimum score is 1.09 and maximum score is 4.89 points.

Table 12

Total Innovative Teaching Applied in the Classrooms

	N	Minimum	Maximum	Mean	Std. Deviation
INNOVATIVE TEACHING	80	1.09	4.89	3.7901	.70349

The possible range for the scale is 1 to 5, where 1 and 2 correspond to a low level of innovative teaching (never or seldom conducting innovative teaching); 3 corresponds to a medium level of innovative teaching (occasionally conducting innovative teaching); and finally, 4 and 5 correspond to a high level of innovative teaching (often or always conducting innovative teaching). Thus, teachers-respondents in the current research tend to show an upper-medium level of innovative teaching.

Concerning innovative teaching dimensions, we can admit a similar tendency for the upper-medium level in all three dimensions on the possible range from 1 to 5. Table 13 shows the descriptive results for innovative teaching dimensions.

Table 13

Innovative Teaching Dimensions

	N	Minimum	Maximum	Mean	Std. Deviation
TOTAL PLANNING	80	1.18	5.00	3.8908	.73523
TOTAL APPLICATION	80	1.14	5.00	3.9576	.77461
TOTAL EVALUATION	80	1.00	5.00	3.7066	.84505

The average innovative planning level is 3.89. SD = .7352 with a minimum score of 1.18 and a maximum score of 5. Innovative application level is 3.95. SD = .774 on the range from a minimum of 1.14 to a maximum of 5. Finally, the innovative evaluation level is 3.7, SD = .845 on a scale ranging from a minimum score of 1 to maximum score of 5.

It is important to acknowledge that the highest level of innovative teaching applied by teachers belongs to the sphere of application. The innovation level in evaluation is lower than the innovation level in planning. Although the difference is not considerable, we could assume that the level of innovation is higher in application than it is in the others. It may be easier to fulfil, probably because it is more spontaneous and presupposes fewer limitations and formal requirements. The level of innovative evaluation is lower because it might be more challengeable for teachers.

It is necessary to determine which strategies teachers apply quite often and which are implemented less often in order to analyse in depth the level of innovations applied in the selected universities.

4.1.2. Planning

The first dimension of innovative teaching concerns the planning that teachers perform in the process preparing the course, class, lecture, etcetera. Table 14 shows the results for the set of items in *planning* scale. The minimum value is 2.9 and the maximum value is 4.22 on a possible range from 1 to 5.

Table 14

Teachers' Level of Innovative Planning Items

N	Items	M	SD
	How often do I …		
3	Plan the process of training in accordance with the aims and tasks of the course.	4.22	1.094
12	Reflect on my teaching in order to improve it.	4.22	1.001
13	Apply different teaching methods.	4.14	1.060
8	Plan the training process according to the number of teaching hours devoted to the course.	4.10	1.161
9	Plan group sessions, I plan tasks for the whole group, for small groups and for the individual.	4.10	1.033
11	Renew the course content systematically.	4.10	1.128
1	Use teaching profile.	4.09	1.102
7	prepare tasks for students according to credit-based modular learning.	4.08	1.090
14	Choose different kinds of teaching activities according to the goals of the course.	4.05	1.104
10	Plan introductory classes in order to tell the students about course aim and tasks.	4.04	1.019
6	Explain what competences are to be developed during the course.	3.94	1.097
2	discuss my course curriculum with my colleagues.	3.76	1.231
4	Think of the contribution of my course in the process of students professional training.	3.67	1.258
16	Use PowerPoint (or similar)	3.62	1.469
17	Use Information platform	3.32	1.481
5	Consider students' personal characteristics in the process of curriculum development.	3.26	1.353
15	Use expository recourses, expository text	2.90	1.456

Regarding innovative planning strategies, some general tendencies emerge where teachers apply some specific practices more often than other practices.

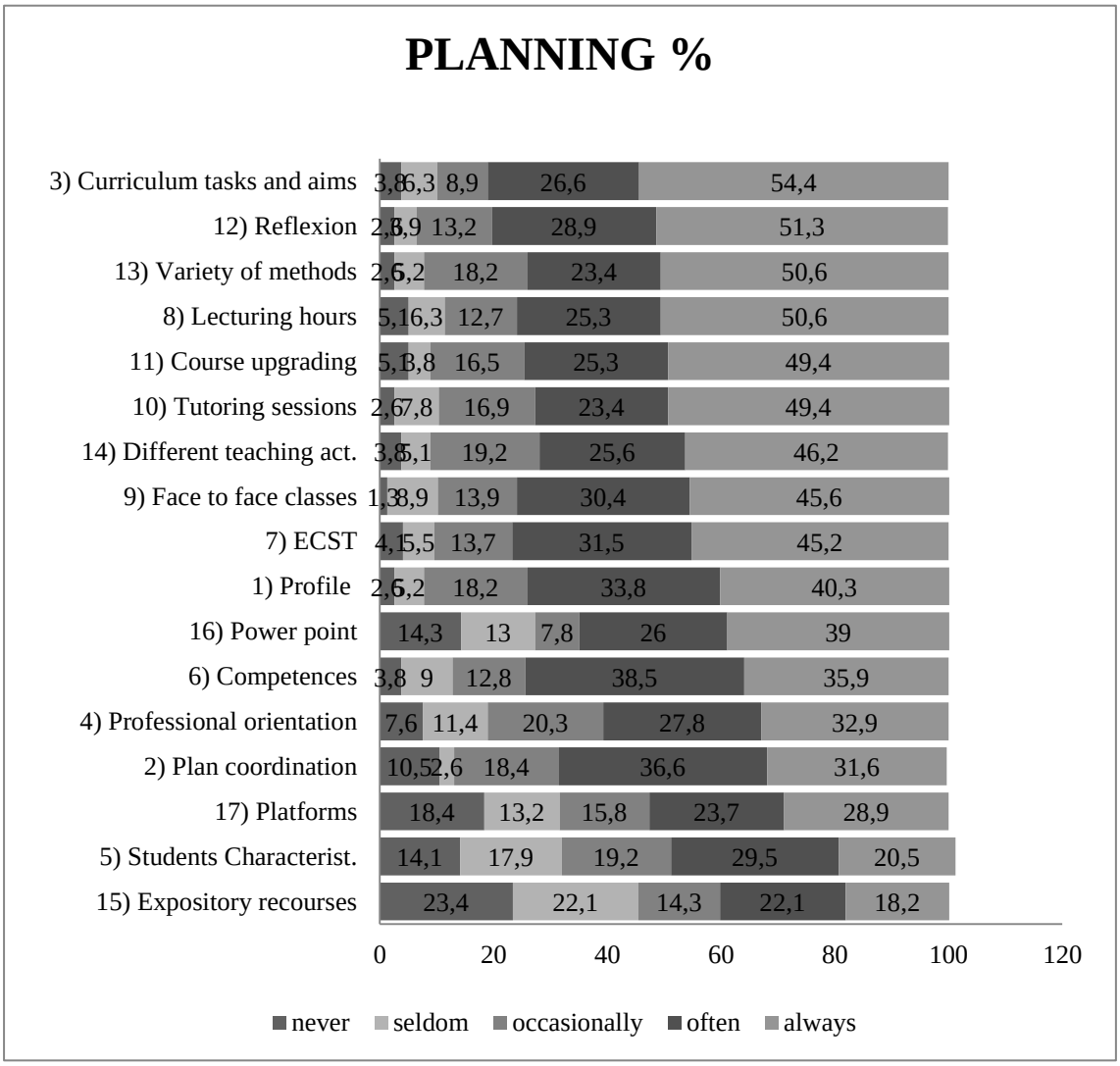

Figure 6: Frequency of Innovative Planning Practices

Table 14 and Figure 6 show that results are higher in the sphere of planning curricular tasks, the variety of methods implemented, the reflection of teaching practice, etcetera. The lowest values for the level of innovative planning are connected to ICT use in the process of lesson planning, the consideration given to the students' characteristics, and academic orientation. The level of ICT use in planning is much lower than other items.

Moreover, regarding the items with a high score, in the planning dimension, 50% of the respondents always tend to use a variety of methods in their lessons. More than 50% of the participants do it often and 10% never do it. The rest of the respondents do it often. This can be interpreted to mean that most of the teachers tend to consider different ways of teaching.

Regarding the process of reflection on teaching, respondents report a high level of reflection. A big part of the teachers (51%) often analyse their teaching practice for improving. However, there are teachers (about 20%) who state that they seldom or occasionally reflect of their teaching activity, which can be interpreted as a lack of interest regarding the implementation of innovations and a tendency towards familiar and more traditional approaches.

Also regarding the *planning* section, teachers tend to pay a lot of attention to tutorial sessions for the organization of the learning process, which entails guiding the course. Only 5% of the teachers state that they do not do it and 4% of the participants do it from time to time. The majority of the teachers tend to apply this strategy often.

About half of the respondents (49%) pay a lot of attention to ECTS in the process of teaching planning and more than third of the respondents (35%) often consider ECST in the process of planning the course, which may be understood to mean that teachers tend to adapt their course programs to ECST requirements, which is one of the Bologna outcomes.

Concerning the items with smaller values, we can determine that ICTs are among the least scored items: 40% of the respondents use expository recourses (expository text etc.) occasionally, but only 18% of the respondents state that they use expository recourses always, whereas more than 23% of the respondents do not use this technology at all. In general, we can assume that 44% of the respondents evaluated their usage of expository resources as done “never” or “occasionally”, which can be interpreted to mean that they do not consider this item very important or they lack ICT competency”.

Undoubtedly, PowerPoint is a very important tool for teaching. However, the level of its application in these institutions is not very high. Thirty nine per cent of the respondents always apply PowerPoint, which may mean that they use PowerPoint many times per academic year in the preparation of their teaching practice. It is also important to acknowledge that there is a group of professors (14%) who state that they never use

PowerPoint, along with 13% who state that they seldom use PowerPoint. This can be understood to mean that the level of PowerPoint usage needs to be increased and popularized among teachers.

Regarding competence-based planning, only 39% of the participants always plan the course with respect to the competences students need to develop. About 40% often plan the course with according to a competence-based approach. More than 20% of the teachers-respondents never, seldom or occasionally consider a competence-based approach.

Teachers also evaluated the level of information platform usage. Twenty-eight per cent state they often use information platforms, 15% of the respondents state that they apply information platforms from time to time, and 18% of the respondents never use information platforms in their teaching preparation. Considering the importance of information platforms for contemporary teaching, the received result is low; it could and should be improved.

Only 20.5% of the participants state they always pay attention to the issue of students' individual characteristics. One third of the teachers' often considers students characteristics, 14**%** never do it and about 40% do it rarely or from time to time. This can be understood to mean that there is dogmatism in the planning of their teaching approach or that teachers do not consider the individual approach to be important for the process of teaching.

Thus, it is advisable that teachers improve ICT usage in order to modernize the learning process. They should also implement a more individualized approach to students in the process of learning, which is considered important both for a constructivist approach and for the implementation of the Bologna process.

4.1.3 Application

The next teaching dimension is the level of application of innovative didactic strategies. As shown in Table 15, the minimum value is 3.39 and the maximum value is 4.22 on a possible range from 1 to 5.

Table 15

Teachers' Level of Innovative Application Items

N	Items	M	SD
	How often do I...		
28	Connect the methods and content of the course with their practical applications.	4.22	.941
18	Develop the course curriculum in accordance with time limits.	4.18	1.097
29	Facilitate the use of ICT during the course.	4.18	1.097
27	Facilitate course content acquisition when teaching.	4.13	1.140
26	Foster students' social ethics.	4.08	1.082
25	Encourage students to have an interest in knowledge.	4.05	1.092
19	Inform students about their strengths and weaknesses in the process of teaching and during the exams.	3.96	1.074
20	Use different teaching methods in order to achieve course goals.	3.96	1.122
30	Use different computer-based methods of teaching.	3.96	1.074
31	Foster the development of interpersonal communication skills.	3.96	1.122
23	Develop tasks for students' self-learning.	3.92	1.225
21	Facilitate the learning process with active teaching methods (ask about problems, offer practical tasks).	3.84	1.193
24	Foster students' responsibility for their knowledge.	3.65	1.061
22	Use the cooperative method of teaching.	3.39	1.226

Similar to the planning dimension, the most frequently used strategies and the most seldom used didactic strategies are listed below.

Among the least scored items there are such strategies as collaboration learning, responsibility fostering, application of active methods, and students' autonomy. The most valued items are the following: connection of learning to practice, program elaboration according to the requirements, encouragement of students to use ICT, and comprehension facilitation. (Figure 7).

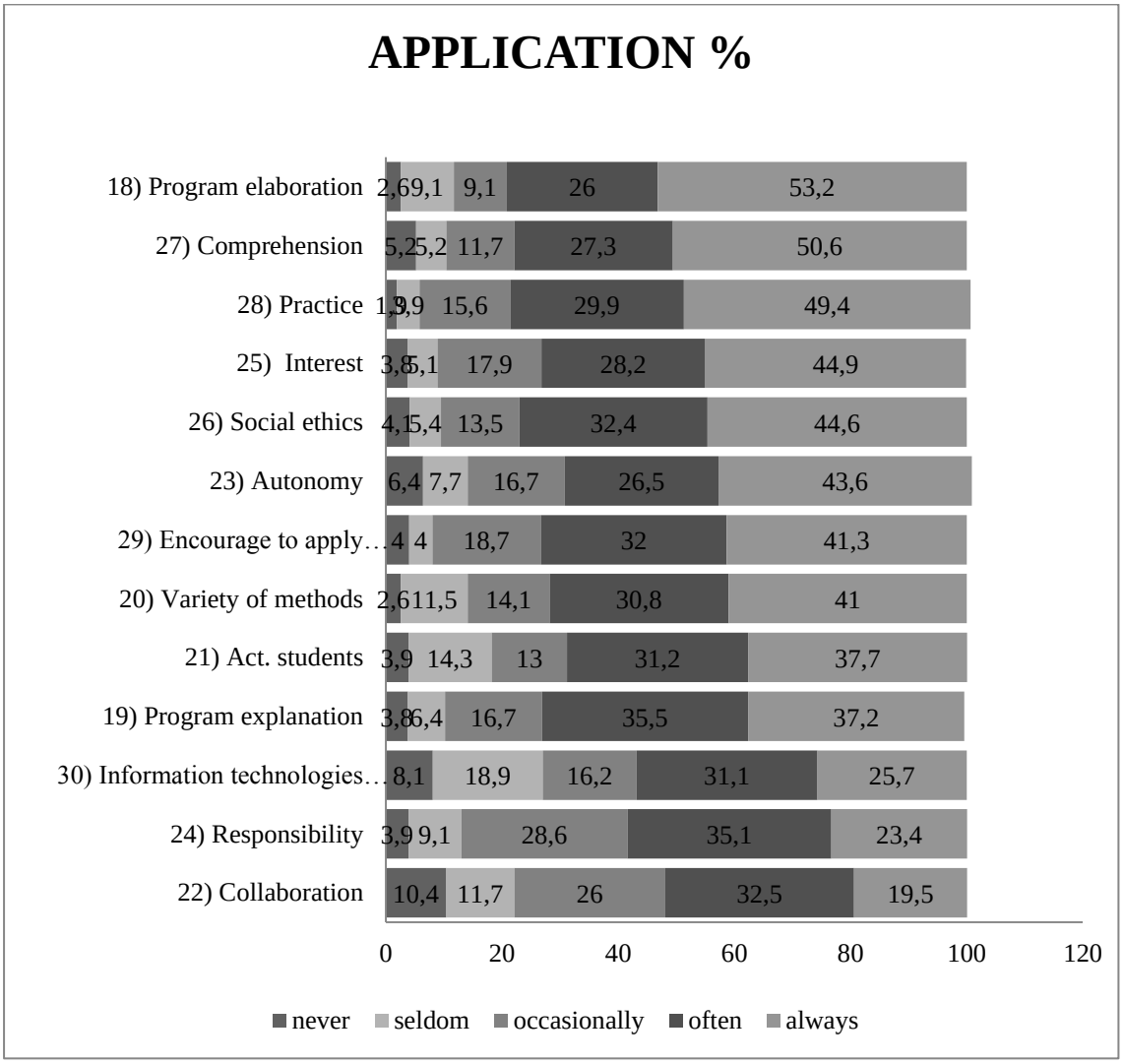

Figure 7: Frequency of Innovative Application Practices

The item connected to "developing the program in time" has the highest value. More than half of the respondents (53%) state that they complete the program within the required timeframe. Additionally, many of the respondents do it often.

Concerning comprehension facilitation, more than 50% of the participants facilitate students´ comprehension of the learning material and almost one third of the respondents (27%) perform this activity often. However, some respondents (about 20%) never or seldom apply methods to facilitate students' comprehension.

Forty nine per cent of the teachers strive to connect teaching with practice and 29% evaluated their frequency of usage of this strategy as "often". About 10% of the respondents seldom or never do it.

Forty five per cent of the respondents state that they develop students' interest to knowledge. More than 40% of the teachers often or occasionally conduct practices fostering students' interest for knowledge, whereas more than 28% of the teachers state they often foster students' interest for knowledge.

One of the strategies most often implemented is the development of social ethics. Many of the teachers state that they always develop students' social ethics (44%) and nearly a third of the participants (32%) often foster students' social ethics.

The majority of respondents participating in the empirical investigation state that they use ICTs, but only 26% of the teachers state they always use computer technologies. One third of the participants (35%) often apply innovative technologies like information platforms, etcetera. However, eight per cent, never – and more than 18%, seldom – use ICTs in the classroom.

Many of the respondents (41%) state that they encourage their students to use innovative technologies of learning. In contrast, 18,7% of the participants very seldom encourage their students to use innovative technologies, whereas 8% of the respondents never do.

It is interesting to highlight that one of the items with a lowest grade is the usage of collaborative learning methods. Only 20% of the respondents always implement this kind of practices. More than half of the respondents often or occasionally apply collaborative learning methods, but 10% of the teachers stated they never do, whereas 11% and 26% state that they apply collaborative learning methods seldom or occasionally.

Also only 23% of the participants foster students' responsibility. More half of the respondents apply this strategy often or always, but 28% only do it occasionally.

Regarding the explanation of the weak and strong aspects of the course programme, more than one third of the respondents (37%) always explain the aspects of the course programme, whereas 10% of the respondents never or seldom explain the peculiarities of the program to their students. Sixteen per cent of the respondents explain the programme aspects occasionally.

Thus, it would be advisable for teachers to augment the implementation frequency of teaching strategies such as responsibility fostering and collaborative learning. Teachers should also use ICT more often, and they should also encourage students to use them.

4.1.4. Evaluation

The following dimension is the level of innovative evaluation. The most and least frequent strategies are shown in the table below (Table 16, Figure 8). As can be seen in Table 16, this set of items ranges from 3.10 to 4.22 on a possible range from 1 to 5 points.

Table 16

Teachers' Level of Innovative Evaluation Items

N	Items	M	SD
	How often do I …		
33	Evaluate learning results in accordance with previously set criteria.	4.22	1.053
34	Evaluate the process of teaching using different methods.	4.17	.971
37	Apply students evaluation systematically, according to the goals and methods of the course.	4.13	1.050
36	Facilitate students' development by means of their evaluation results.	4.03	1.124
39	Evaluate group learning.	3.97	1.038
35	Evaluate all the competences which are to be developed during the course.	3.96	1.160
32	Have a friendly relationship with my students.	3.79	1.192
44	Systematically evaluate my course curriculum.	3.79	1.128
38	Facilitate students' self-learning process.	3.64	1.157
43	Always evaluate my teaching methods.	3.58	1.146
41	Implement an individualized approach in the process of teaching.	3.55	1.241
42	Involve students in the process of the evaluation of learning results.	3.29	1.366
40	I implement mutual evaluation of learning among students.	3.10	1.401

Regarding the evaluation process for student activity, teachers' results are the following: The smallest scores belong to the items concerning students' participation in their evaluation, individual-oriented evaluation, friendly relations with students, program evaluation, and co-evaluation. The highest score is achieved by evaluation criteria, evaluation of the process of learning, and coherence of evaluation process.

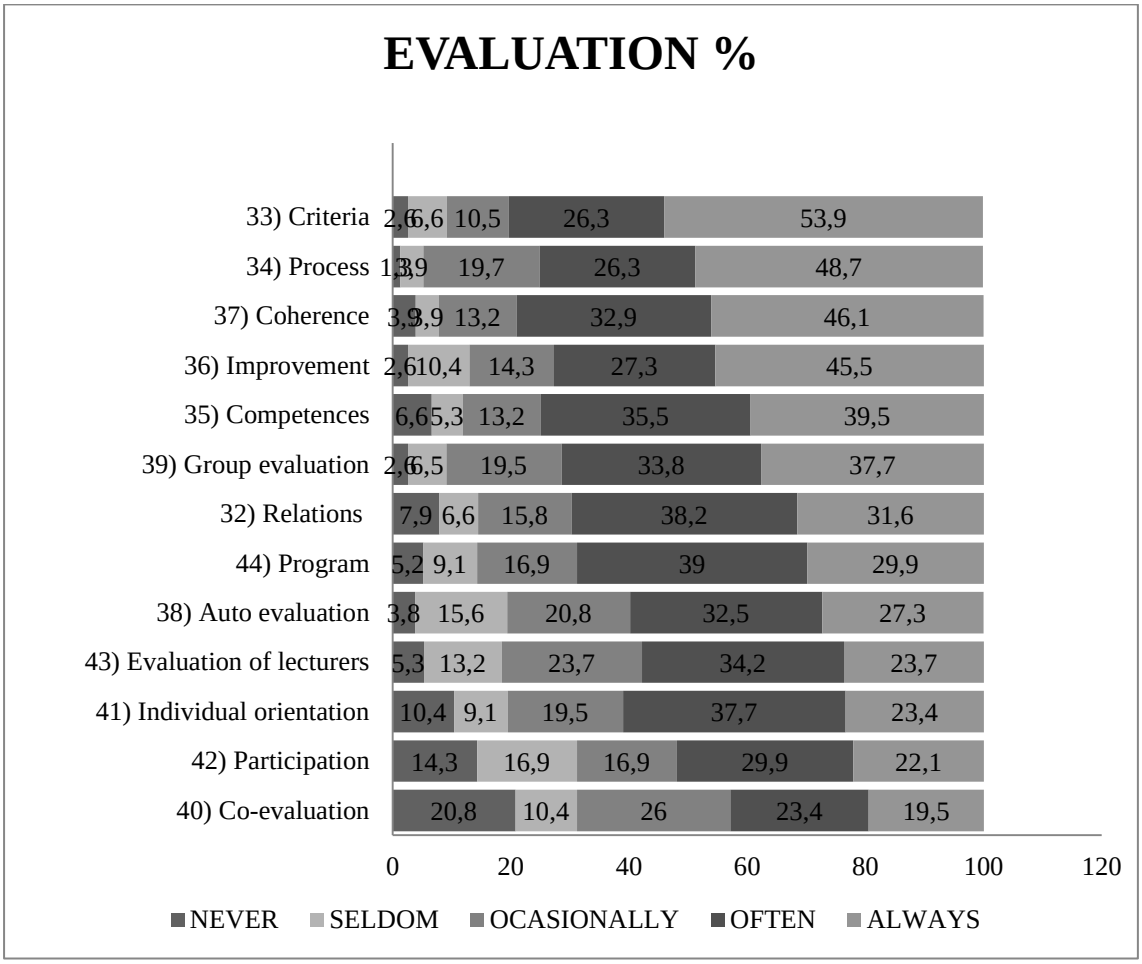

Figure 8: Frequency of Innovative Evaluation Practices

Seventy five per cent of the respondents state that they always or often evaluate students' learning according to established criteria. Only 2.5% state that they never perform this activity.

Similar situation can be found regarding the evaluation of the learning process. The majority of the respondents always evaluate the process of learning, whereas 1.3% who

state that they seldom perform this activity. About 4% of the respondents never or seldom evaluate the learning process.

Moreover, a high score has been achieved in the frequency of coherent evaluation. Almost 80% of the respondents often or always use a coherent approach to the evaluation process.

Most of the teachers (about 73%) state that their evaluation always or often helps students improve their learning results.

The item of individualized approach to students shows how often teachers consider students personality while evaluating his or her results. Many respondents use student-centred activities from time to time; only 23% of the teachers evaluate their student-centred activities as "always"; and 37% state they often pay attention to students' characteristics. About 20% of the respondents never or seldom implement an individualized approach in the evaluation of students learning.

Only 8% of teachers state that they never have friendly relationships with their students, and majority of teachers (38.2%) tend to be always friendly to their students. Twenty-four participants (31.6%) present themselves as often being friendly to their students.

It is interesting to highlight the implementation of students' self-evaluation. Twenty seven per cent of the participants always facilitate students' self-evaluation, and 32% often apply this strategy; however, almost 19% conduct this activity seldom or never

University professors were asked to evaluate their competence-based education. Both items 6 and 35 in the dimension of teaching planning "At the beginning of the course I explain all the competences that are going to be fostered during the course" and in the evaluation dimension "I evaluate all the competences according to the curriculum" should be analysed together. Many participants state that they explain to their students all the competences they are expected to develop (35%). On the other hand, 39% state that they always evaluate students' activity in accordance with the competences stated at the beginning of the course, whereas 6% state that they never do it.

Thus, it is recommendable for teachers to apply more frequently evaluation strategies such as auto evaluation, co-evaluation, and competence-based approach. It is also advisable for them to establish positive and friendly relations with students.

In brief, the level of innovative teaching can be considered as upper medium. Teachers often apply innovative didactic strategies. However, it would be advisable for teachers to pay more attention to aspects of teaching such as:

- Planning: apply more information technologies, consider students individual characteristics;
- Application: implement more active methods of teaching, collaborative learning practices, etcetera;
- Evaluation: student-centred assessment strategies.

4.2. SECOND RESEARCH QUESTION: DO TEACHERS' SOCIODEMOGRAPHIC CHARACTERISTICS MAKE A DIFFERENCE IN THE LEVEL OF INNOVATIVE TEACHING?

This subchapter of the thesis concerns the difference in innovative teaching implemented in the university classroom depending on teachers' sociodemographic characteristics. The sociodemographic variables chosen for description are teachers' gender and age, teaching experience, faculty position, education degree, and university where they work. An independent-samples T-test and one-way variance ANOVA are applied to compare means in innovative teaching depending on teachers' sociodemographic characteristics.

4.2.1. Gender Differences in Innovative Teaching Level

It aims to examine gender differences in the perception of the level of innovative teaching, including planning of the teaching, application of the teaching and evaluation. It is hypothesized that gender makes a difference in self-reported total innovative teaching level and its dimensions. Participants: 34 male respondents and 46 female respondents took part in the survey.

An independent-samples T-test was applied to test the difference in the level of innovative teaching between male and female respondents. *Total level of innovative teaching* is the dependent continuous variable, whereas *gender category* is the independent nominal dichotomy variable.

Table 17

Innovative Teaching Level of Male and Female Teachers

	Gender	N	Mean	Std. Deviation	Std. Error Mean
TOTAL INNOVATIVE TEACHING	Male	34	3.3037	.74164	.12719
	Female	46	4.1495	.39332	.05799

The results (t = - 6.591; p = 0.00) indicate that there is a significant difference in the level of innovative teaching between male (M =3.3037, SD = .74164) and female (M =4.1495,

SD =. 39332) respondents (Table 17), it being significantly higher for female teachers. The effect size (d = 1.42) may be considered as large, according to Cohen (1988).

However, taking into consideration the small sample size and the fact that these are based on data from only three universities, this result cannot be representative for all higher education in Ukraine. Nevertheless, this can become a hint for further research.

After examining the total level of innovative teaching, the level of innovation was tested in each teaching dimension according to the teachers' gender. At first, an independent-samples T-test was applied in order to see the difference in the level of innovative planning according to the teachers' gender. The dependent variable for the test is the level of innovative planning, whereas gender category is an independent variable.

Table 18

Innovative Planning Level of Male and Female Teachers

	Gender	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE PLANNING	Male	34	3.4207	.79448	.13625
	Female	46	4.2382	.44243	.06523

Results (t = - 6.268 and p = 0.00) indicate that there is a significant difference in the level of innovative planning between male (M = 3.4207, SD = .79448) and female (M = 4.2382, SD = .44243) respondents (Table 18), where female respondents show a higher level of perceived innovative planning. The effect size (d = 1.49) may be considered as large.

The next teaching dimension is *level of application of innovative didactic strategies*.

Table 19

Innovative Application Level of Male and Female Teachers

		N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE APPLICATION	Male	34	3.4030	.83758	.14364
	Female	46	4.3674	.36720	.05414

In order to examine whether there is significant difference in the *level of application of innovative teaching* depending on *gender*, an independent-samples T-test was also conducted.

Results (t = -6.967 and p = .000) indicate that there is a significant difference in the level of self-reported innovative application between male (M = 3.4030, SD = .83758) and female (M = 4.3674, SD = .36720) teachers (Table 19). As was the case with planning, female teachers achieve higher scores in the perceived level of application of innovative teaching. The effect size (d = 1.27) may be considered as large.

Then, an independent-sample T-test was applied for evaluation dimension. The results (t = 7.579 and p = 0.000) show that there is a significant difference between male (M = 3.2125; SD = .8443) and female (M = 4.24; SD = .51780) respondents in the level of innovative evaluation (Table 20), where female teachers achieve significantly higher scores than male teachers. The effect size (d = 1.47) may be considered as large.

Table 20

Innovative Evaluation Level of Male and Female Teachers

		N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE EVALUATION	Male	34	3.2125	.84343	.14465
	Female	46	4.2458	.51780	.07635

To summarize the results of gender differences in innovative teaching level, we can state that teachers' gender characteristic make a difference in the level of innovative teaching in general, and in all the teaching dimensions in particular. Female respondents tend to show a higher level of innovative teaching in the classroom when compared to male respondents. Thus, these results support the sub-hypothesis of female teachers showing a higher level of innovative planning than male teachers, in both total and particular teaching dimensions.

4.2.2. Difference in Level of Innovative Teaching Depending on Teachers' Age

The following sociodemographic characteristic that was hypothesized to be a variable that makes a difference in the level of innovative teaching is *age*. Two age groups were tested in the present research: 23-41 years old (N=41), and 42-63 years old (N=39). It is hypothesized in the current study that age makes a difference in the level of innovative teaching reported by teachers.

An independent-samples T-test was applied in order to compare the difference in level of innovative teaching according to teachers' age characteristic. The results of the t-test ($t = -117$ and $p = .907$) indicate that there is no significant difference in innovative teaching depending on teachers' age.

Next, in order to examine the level of innovative planning in accordance with the *age* category, an independent-samples T-test was also applied. In the planning dimension, the results ($t = 1.840$; $p = .070$) indicate that there is no significant difference in innovative planning level between teachers 41 years old or younger and those who are 42 or older.

Finally, an independent-samples T-test was conducted to test the difference in the level of innovative application in accordance with teachers' age. As encountered in planning, the results of the test ($t = -1.873$ and $p = .065$) showed no significant difference in the level of application of innovative teaching according to teachers' age. Thus, we can assume that teachers' age category does not make a difference in their level of innovative teaching application.

Table 21

Innovative Evaluation Level Depending on Teachers Age

	AGE groups	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE EVALUATION	23-41 y. o.	41	3.5904	1.02308	.16819
	42 -63 y. o.	39	4.0352	.66809	.11293

However, the results (t = -2.166 and p = .033) show that there is a significant difference in the level of innovative evaluation depending on teachers' age. As can be seen in Table 21, teachers who are 42 or older have a significantly higher level of innovative evaluation (M = 4,035; SD = .668) than those who are 41 or younger (M = 3,599; SD = 1.023). The effect size values (d = .51) may be considered as medium in accordance with (Cohen, 1988). Thus, age makes a difference in the level of innovative evaluation.

To sum up, it is important to admit that age does not make a difference in the level of innovative teaching level, either in total or in the dimensions of planning and application. However, there is a significant difference in the level of self-reported innovative evaluation depending on the teachers' age, where teachers older than 42 years old show a higher level of innovative evaluation strategies. Thus, the sub-hypothesis that younger teachers have higher level of innovative teaching is rejected in light of the present results.

4.2.3. Difference in Innovative Teaching Level Depending on Teachers' Pedagogical Experience

Participating teachers have been classified into two different groups, according to their years of teaching experience (up to 15 years = 45 respondents; 16+ 38 years = 35 respondents). It is hypothesized that teachers' experience makes a difference in their level of innovative teaching.

An independent samples T-test was applied to examine the difference in the total innovative teaching level according to the teachers' experience. The *level of innovative teaching level* is the dependent variable whereas *experience* is the independent variable.

The T-test results (t=-.117; p = .907) indicate that there is no significant difference in innovative teaching level depending on the teachers' work experience.

Additionally, an independent-samples T-test was applied for all teaching dimensions. The results of the T-test in innovative planning level (t = - .143 and p = .886) do not indicate any significant difference in the level of innovative planning according to teachers' experience.

Furthermore, T-test results for the level of innovative application (t = -.538 and p = .592) also indicate no significant difference according to teachers' experience.

Likewise, a T-test was applied for the level of innovative evaluation. The T-test results (t = - .828 and p = .410) do not indicate any significant difference in self-innovative evaluation level according to teachers' experience.

To sum up, we may conclude that teachers' experience does not make any difference in the level of innovative teaching applied by teachers in the classroom in the three selected universities. Thus, these results reject the sub-hypothesis that teachers with less teaching experience show a higher level of innovative teaching.

4.2.4. Difference in Innovative Teaching Level According to University Positions

Teachers with different faculty positions participated in the research. Specifically, there are assistants (N = 15), senior teachers or professor assistants (N = 37) and docents and full professors (N = 28). As specified in the methodology section for this study, it is hypothesized in that position makes a difference in innovation application. The total level of innovative teaching is a dependent variable and the category of university positions is the independent variable.

Table 22

Innovative Teaching Level Depending Teachers´ University Position

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Teaching Assistant	15	3.4031	1.11575	.28809	2.7852	4.0210
Senior Teacher	37	3.7728	.50138	.08243	3.6057	3.9400
Docent/Full Professor	28	4.0201	.57349	.10838	3.7978	4.2425
Total	80	3.7901	.70349	.07865	3.6335	3.9466

A one-way ANOVA analysis was conducted to compare innovative teaching level in the context of teachers' university positions. The results (F= 4.071; p = .021) indicate that there is a significant difference in the level of innovative teaching according to teachers' position. The effect size (partial *eta* squared .096) may be considered as medium in accordance with Cohen et al. (2003) and Miles & Shevlin (2001).

Additionally, post-hoc test results show a significant difference in total innovative teaching level between teaching assistants (M = 3.403; SD =1.1157) and docents/professors (M = 4.0201; SD = .5734), where docents and full professors show a significantly higher level of innovative teaching (Table 22). In addition, post hoc comparisons indicate no significant difference between teaching assistants and senior teachers, and between senior teachers and docents/professors.

We can assume that there is a significant difference in innovative teaching between teachers with the lowest and the highest university position. Docents and full professors show a significantly higher level of innovative teaching than assistants.

This result can be interpreted from the perspective of teachers' level of academic activity. The positions of docent or professor require at least a PhD degree, whereas teaching assistant and senior teacher positions presuppose only a higher education diploma (master-specialist degree).

Teaching planning in the context of faculty position was also examined. *Total innovative planning level* is the dependent variable and the *university positions* category is the independent variable.

The one-way ANOVA test was conducted to test the difference in innovative teaching planning in accordance with teachers' positions in the faculty. The results indicate a significant difference at the < 0.05 level (F= 4.768; p=0.11) in teaching planning among teachers with different university positions. The effect size (partial *eta* squared .110) is considered to be large.

Table 23

Innovative Planning Level Depending on Teachers´ University Position

					95% Confidence Interval for Mean	
	N	Mean	Std. Deviation	Std. Error	Lower Bound	Upper Bound
Teaching Assistant	15	3.4762	1.19118	.30756	2.8165	4.1358
Senior Teacher/Assistant Professor	37	3.8528	.51830	.08521	3.6800	4.0256
Docent/Full Professor	28	4.1630	.55987	.10581	3.9459	4.3801
Total	80	3.8908	.73523	.08220	3.7271	4.0544

Post hoc test comparisons indicated significant difference in innovative planning between teaching assistants (M = 3.4762; SD = 1.19118) and docents/professors (M = 4.16; SD = .55897), where docents and full professors have significantly higher level of innovative planning (Table 23). However, there is no significant difference in innovative planning level between teacher assistants and docents/professors, and senior teacher and docents/professors. Therefore, it is possible to conclude that docents and full professors apply innovation in the process of course planning more often than teaching assistants.

As in the previous dimensions, the application level was measured with regard to faculty staff position. *Total application level* is the dependent variable and *position category* is the independent variable.

Table 24

Innovative Application Level Depending on Teachers' University Position

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound
Teaching Assistant	15	3.5153	1.15371	.29789	2.8764	4.1542
Teacher/Assistant Professor	37	3.9186	.59219	.09735	3.7212	4.1161
Docent/Full professor	28	4.2459	.63315	.11965	4.0004	4.4914
Total	80	3.9576	.77461	.08660	3.7852	4.1299

The results of one-way ANOVA analyses (F = 4.865 and p=0.010) indicate significant differences in level of innovative application among teachers' with different university positions. It is possible to conclude from post hoc comparisons that there is a significant difference in self-reported application level between teaching assistants (M = 3.51; SD = 1.153) and docents/professors (M = 4.24; SD = .63315), where docents and professors report a significantly higher level of innovative application (Table 24). The effect size (partial *eta* squared .112) is considered to be large. However, as encountered in planning, there is not any significant difference between the results of teaching assistants and senior teachers, and between senior teacher and docents/professors regarding their level of innovative application.

The next teaching dimension is *evaluation of teaching/learning practices*. *Total level of evaluation* is the dependent variable and *positions category* is the independent variable.

Table 2**5**

Innovative Evaluation Depending on Teachers´ University Position

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean Lower Bound	95% Confidence Interval for Mean Upper Bound
Teaching Assistant	15	3.3229	1.2854	.33190	2.6111	4.0348
Senior Teacher	37	3.8315	.66106	.10868	3.6111	4.0519
Docent/Full professor	28	4.0329	.68267	.12901	3.7682	4.2976
Total	80	3.8066	.84505	.09448	3.6186	3.9947

The one-way ANOVA test was applied to compare the level of innovative evaluation depending on teachers' position (Table 25). The results indicate significant difference in the level of innovative evaluation in accordance with teachers position (F=3.716 and p=.29). The effect size (partial *eta* squared .088) is considered to be medium.

However, post-hoc comparisons show significant difference only between teaching assistants (M = 3.322; SD = 1,285) and docents/professors (M = 4.03; SD = .6826), it being significantly higher for docents and professors. Senior teachers and teaching assistants do not have any significant difference in their innovative evaluation levels. Likewise, senior teachers and docents do not differ significantly in their evaluation level. Therefore, in the context of innovative evaluation level, results show that docents and professors apply innovations more often than assistants.

To sum up, a significant difference was found in innovative teaching in total and in planning, application and evaluation depending on teachers' position. Assistant professors tend to be "less innovative" when compared to docents and professors. At the same time, all three dimensions have shown no significant difference in level of innovative teaching between teacher-assistants and senior teachers, and between senior teachers and docents/professors. Thus, the results of the study do not support the hypothesis that teachers holding lower faculty positions show a higher level of innovative teaching.

4.2.5. Difference in Innovative Teaching Level According to Education Level

The next sociodemographic characteristic is the teachers' level of education. All participating teachers had to define their education level in accordance with the three levels of degrees existing in Ukraine (MA/Specialist, PhD/candidate of science and Doctor of science) beyond bachelor degrees, because only those holding degrees higher than bachelor degrees can be hired to teach in universities. It is hypothesized that teachers' level of education makes a difference in their level of innovative teaching.

In total, 49 master's degree holders and 31 doctoral degree holders participated in the present survey. The decision was made to unite PhDs and Doctors of Sciences in the same

category because only 4 respondents out of 80 identified themselves as Doctors of Science. Thus, the dependent variable is *total innovative teaching level*, whereas *education degrees* category is the independent variable.

Table 26

Innovative Teaching Level Depending on Education Degree

	Degree	N	Mean	Std. Deviation	Std. Error Mean
TOTAL INNOVATIVE TEACHING	MA	49	3.6438	.75601	.10800
	PhD	31	4.0213	.54640	.09814

Independent-samples T-test was applied to examine the difference in innovative teaching level according to teachers' education level. The results of the test (t = -3.365; p = .002) indicate a statistically significant difference in innovative teaching between master's degree holders (M = 3.643; SD = .75601) and doctoral degree holders (M = .54640; SD = .09814), it being significantly higher for the respondents with doctoral degree (Table 27). Effect size values (d = 0.57) may be considered as medium according to Cohen (1988).

The same logic of analyses was applied to all the three teaching dimensions. An independent-samples T-test was conducted to examine the level of innovative planning in accordance with teachers' education degree. *Total planning level* is the dependent variable and the *education* category is the independent variable. The results of the T-test (t = -2.070; p = .068) indicate no significant difference in the level of innovative planning according to the teachers' education degree. This may be interpreted to mean that the level of higher education completed by teachers does not make any difference in their level of innovative planning.

Then, an independent sample test was performed to examine the level of innovative application implemented by master's degree holders and PhD holders.

Table 27

Innovative Application Level Depending on Education Degree

	Degree	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE APPLICATION	MA	49	3.8179	.83197	.11885
	PhD	31	4.1784	.62475	.11221

As shown in Table 27, T-test results (t = -2.070; p = 0.042) indicate a significant difference between master degree holders (M = 3.8179; SD = .83197) and doctoral degree holders (M = 4.1784; SD = .62475) in the level of innovative application, where teachers with higher level of academic education tend to have higher level of innovative application (Table 30). Sample effect size values (d = .79) may be considered as large. Thus, we may conclude that the level of higher education completed by teachers makes a difference in the level of innovative teaching application.

The following dimension is evaluation of learning.

Table 28

Innovative Evaluation Level Depending on Education Degree

	Degree	N	Mean	Std. Deviation	Std. Error Mean
TOTAL EVALUATION	MA	49	3.5799	.87458	.12494
	PhD	31	4.1650	.66331	.11913

Independent samples test result (t = -3.187 and p = .002) indicate a significant difference in the level of innovative evaluation between master's degree holders (M= 3.5799; SD = .87545) and doctoral degree holders (M = 4.1655; SD = .66331), where masters tend to report a lower level of innovative evaluation (Table 28). Sample effect size valued (d = .75) may be considered as large.

Therefore, it is possible to assume that the holders of doctoral degree report a higher level of innovative practices in the dimensions of application and evaluation, as well as their total level of innovative teaching. However, there is no significant difference in planning of innovative teaching activities as related to teachers' highest achieved diploma of higher education. Therefore, the sub-hypothesis that the level of achieved higher education diploma makes a difference in the level of innovative teaching may be supported by the present results in all dimensions except for the one concerned with planning.

4.2.6 Difference in Innovative Teaching Level Depending on University

The last sociodemographic characteristic that makes different in innovative teaching level is the type of university. As stated in the methodology chapter, NAUKMA (32 respondents), KNU (28 respondents) and NULES (46 participants) were chosen for this research. *Total innovative teaching level* is the dependent continuous variable and the category of *university* is the independent variable.

One-way ANOVA was applied to examine the difference in innovative teaching with respect to the *university* category. The results (F = .887 and p = .416) indicate no significant difference between the groups of teachers from different universities. Summing up, we can conclude that the type of university does not make difference in total level of innovations applied in the university classroom. However, it could be interesting to highlight that teachers from NAUKMA have the highest mean score (M = 3.94 and SD = .55229) in comparison to the other universities, KNU (M = 3.72; SD = .77198); and NULES (M = 3.71 and SD = .76304).

Then, the ANOVA test was applied to test the difference in self-reported level of planning innovation according to the *university* category. The results (F = .887 and p = .416) do not show any significant difference in level of innovative planning according to university category.

In the *application* dimension, ANOVA test results (F = 1,066 and p = .349) do not indicate any statistically significant difference either regarding level of innovative application with respect to the university where teachers work.

Concerning evaluation dimension, the ANOVA test results ($F = .835$ and $p = .438$) did not show any significant difference in the level of innovative evaluation among teachers from different universities.

Thus, we may conclude that the university where teachers work does not make any statistically significant difference in innovative teaching, either in total or in the three dimensions of teaching. Therefore, the sub-hypothesis that teachers from NAUKMA University show a higher innovative teaching level is refuted. However, NAUKMA University has achieved a statistically higher score in total innovative teaching, which may be a hint for further research.

Summing up, the categories of gender, position, and highest achieved diploma of higher education make a significant difference in the level of innovative teaching, whereas the variables of duration of teaching work experience, age, and university do not make a difference in the level of innovative teaching. Thus, the hypothesis that sociodemographic characteristics make a difference in the level of innovative teaching can be partially supported.

As a summary of the above, the comparative Table 29 of the difference in innovative teaching level depending on teachers' sociodemographic characteristics was created.

Table 29

Significant Difference in Innovative Teaching Depending on Sociodemographic Variables

Socio-demographic Data	Dependent Variable	Significance
Gender	Total Innovative Teaching	+
	Planning	+
	Application	+
	Evaluation	+
Position	Total Innovative Teaching	+
	Planning	+
	Application	+
	Evaluation	+
Degree	Total Innovative Teaching	+
	Planning	-
	Application	+
	Evaluation	+
Experience	Planning	-
	Application	-
	Evaluation	-
Age	Total Innovative Teaching	-
	Planning	-
	Application	-
	Evaluation	+
University	Total Innovative Teaching	-
	Planning	-
	Application	-
	Evaluation	-

Note. "+" means there is a significant difference in dependent variables by sociodemographic characteristics whereas **"-"** means that there are no significant differences.

4.3 THIRD RESEARCH QUESTION: DO TEACHERS' COGNITIVE CHARACTERISTICS MAKE A DIFFERENCE IN THE LEVEL OF INNOVATIVE TEACHING IN UNIVERSITY CLASSROOMS?

In this part of the thesis, the difference in innovative teaching according to teachers' cognitive characteristics (self-efficacy, creativity and receptivity to change) is examined. At first, the level of cognitive characteristics was established by means of descriptive statistics (means and standard deviations); subsequently, an independent samples test was applied in order to compare the mean difference in innovative teaching depending on teachers' cognitive characteristics. Then, a Pearson correlation is run to test the correlation between dependent and independent variables.

4.3.1. Total Self-efficacy

The total level of self-efficacy was computed as a mean of efficacy (M = 4.73, SD = .874), where the minimum score is 1.93 and maximum score is 5.91 (Table 30). The possible score of the self-efficacy level ranges from 1 to 6.

For this study, 1 and 2 represents a low level of self-efficacy; 3 and 4 represent a medium level, whereas 5 and 6 represent a high level of self-efficacy in teachers. Thus, as shown in Table 30, there is an upper-medium level of self-efficacy beliefs among teaching staff in selected universities.

Table 30

Total Teachers' Self-efficacy Level

	N	Minimum	Maximum	Mean	Std. Deviation
SELF-EFFICACY	80	1.93	5.91	4.7391	.87481

The same situation has been encountered in all the self-efficacy dimensions. As shown in Table 31 and, the average level of self-efficacy beliefs concerning teaching planning is M = 4.87, SD = .96; for self-efficacy in implication, the mean is 4.52, SD = .999; for self-efficacy in interaction, M = 4.77, SD = .996; and, finally, for self-efficacy in assessment, M = 4.47, SD = 1,13. The descriptive data obtained shows that teachers report an upper medium level of self-efficacy in teaching in all the dimensions of self-efficacy.

Table 31

Descriptive Statistics for Four Dimensions of Teachers Self-Efficacy

	N	Minimum	Maximum	Mean	Std. Deviation
SELF-EFFICACY IN PLANNING	80	2.15	6.00	4.8797	.96120
SELF-EFFICACY IN IMPLICATION	80	1.10	6.00	4.5221	,. 9970
SELF-EFFICACY IN INTERACTION	80	1.63	6.00	4.7724	,. 9618
SELF-EFFICACY IN ASSESSMENT	80	1.23	6.00	4.4734	1.13305

As we can see in, the lowest level of self-efficacy belongs to the dimensions of evaluation and implication, whereas the highest level is achieved in the planning dimension. It can be interpreted to mean that teachers do not feel very confident in involving students to active participation in the class and applying innovative strategies of assessment, although they feel more confident in planning innovative strategies.

In order to research the level of self-efficacy more profoundly, the descriptive analyses of each self-efficacy dimension are presented below.

4.3.2. Self-Efficacy in Planning

Generally speaking, teachers' self-efficacy in planning ranges from 4.14 to 5.44, in a scale where the highest and lowest possible score ranges from 1 to 6 points (Table 32).

Table 32

Teachers' Level of Self-efficacy in Planning by Items

N	Items	M	SD
	How confident do I…		
40	Master the material that I cover in class?	5.44	.930
44	Select the appropriate materials for each class?	5.19	1.126
25	Update my knowledge of the subject I am teaching?	5.15	1.213
1	Specify the learning goals that I expect my students to attain?	5.08	1.100
18	Clearly identify my course objectives?	5.03	1.242
43	Spend the time necessary to plan my classes?	4.95	1.340
9	Prepare the teaching materials I will use?	4.94	1.344
22	Adapt to the needs of my students (motivation, interest, prior knowledge, etc.) when planning my courses?	4.73	1.533
38	Be flexible in my teaching even if I must alter my plans?	4.62	1.488
	Decide on the most appropriate evaluation method for a particular course?	4.58	1.307
35	Design the structure and content of each class?	4.58	1.456
27	Modify and adapt my syllabus if my students' needs require it?	4.27	1.715
5	Develop different assessment methods depending on the learning goals I want to check in my students?	4.14	1.499

Taking into consideration the mean level of teachers' self-efficacy in planning in each particular strategy, we can state that teachers consider themselves efficacious the following strategies: adapting materials to student's needs, being flexible in changing teaching methods, modifying and adapting syllabus, and developing different assessment methods. Similar to the results of the innovative teaching questionnaire, the aforementioned strategies also presuppose a student-centred approach and teachers' confidence in their ability to change their style of teaching.

Respondents consider themselves efficacious in the following strategies: mastering the material, selecting material, updating knowledge, identifying course objective, and preparing material for the course. This can be interpreted to mean that teachers are confident in course preparation and efficacious in the fulfilment of teaching objectives.

4.3.3. Self-Efficacy in Implication

Self-efficacy in implication of teaching presupposes active participation of students in the process of learning. It ranges from 2.97 to 5.13, in a scale with a possible range of 1 to 6 points (Table 33).

Table 33

Teachers' Level of Self-Efficacy in Implication by Items

N	Items	M	SD
	How confident do I…		
7	Promote student participation in my classes?	5.13	1.216
42	Make my students feel that their academic success is due to their own efforts?	5.04	1.295
32	Encourage my students to ask questions during class?	4.94	1.497
2	Actively engage my students in the learning activities that I include in my teaching plan/syllabus?	4.78	1.396
15	Ensure that my students consider themselves capable of learning the material in my class?	4.68	1.320
36	Let students take initiative for their own learning?	4.56	1.439
39	Make students aware of the relevance of what they are learning?	4.30	1.564
23	Think of my students as active learners, which is to say knowledge constructors rather than information receivers?	4.24	1.545
10	Ensure that my students resolve the difficulties they encounter while learning?	4.21	1.303
28	Permit my students to prepare and/or develop some of the course units?	2.97	1.625

The lowest mean score belongs to the following items: permitting students to prepare some course units, ensuring that students resolve difficulties with learning, and considering students to be active learners. The highest mean score belongs to the following items: promoting student participation in classes, encouraging them to ask questions, engaging them into learning activities, and allowing students to be proactive.

On the one hand, the items with the higher results indicate that teachers tend to be more confident in involving students in active work and encouraging their academic success. Teachers' self-efficacy in promoting student participation in class has scored the highest (5.13). On the other hand, the lowest score belongs to the item "permitting students to develop some course elements", which may be interpreted to mean that teachers are not

confident in accepting students as active participants of their learning process and tend to have vertical relations with students, instead of horizontal. For example, the item "Think of my students as active learners, which is to say, knowledge constructors rather than information receivers" has achieved a mean score of 4.21; and "permit my students develop some course unit" as a score of 2.97. This can be understood to mean that, in some cases, students may be treated more as information receivers than active constructors of their own learning.

4.3.4. Self-efficacy in Interaction

The same situation is found in the section regarding interaction. The average level of self-efficacy in interaction ranges from 3.57 to 5.26 points in a scale with a possible range of 1 to 6 points (Table 34).

Table 34

Teachers' Level of Self-Efficacy in Interaction by Items

N	Items	M	SD
	How confident do I…		
37	Show my students respect through my actions?	5.26	1.230
3	Create a positive classroom climate for learning?	5.11	1.253
11	Promote a positive attitude towards learning in my students?	5.05	1.311
29	Calmly handle any problems that may arise in the classroom?	4.88	1.247
41	Promote my students' self-confidence?	4.78	1.542
19	Maintain high academic expectations?	4.62	1.312
24	Provide support and encouragement to students who are having difficulty learning?	4.52	1.600
33	Make students aware that I have a personal investment in them and in their learning?	3.57	1.692

Teachers report feeling less confident regarding the following items: making personal investment in students' learning, helping struggling students cope with difficulties, and maintaining high academic expectations. In light of these results, we see the same tendency as in previous dimensions: lack of individual orientation. In other words, teachers demonstrate less confidence in student-centred approaches. For instance, the lowest mean

scores (3.57 and 4.52) belong to the item on making a personal investment in students' learning, and helping struggling students.

Besides, teachers feel more confident in strategies such as showing respect to students, creating a positive class climate, promoting positive attitudes towards learning, and handling problems in the classroom. The highest score, 5.26, was achieved by the item on creating a positive atmosphere, and showing respect to students. This can be understood to mean that teachers are confident in creating a calm and positive climate in the classroom, although they do not feel confident in facilitating learning.

4.3.5. Self-efficacy in Evaluation

The next dimension is evaluation. As shown in Table 37, the average level of self-efficacy in evaluation ranges from 3.92 till 4.96, while the possible minimum value is 1 and possible maximum value is 6 (Table 35).

Table 35

Teachers' Level of Self-Efficacy in Evaluation by Items

	Items	M	SD
	How confident do I…		
4	Reflect on my teaching practice with the aim of making appropriate improvements?	4,96	1,364
21	Adequately grade my students' exams and assignments?	4,96	1,192
30	Develop my teaching skills using various means (attending conferences, reading about pedagogy, talking to other professionals…)?	4,89	1,441
26	Provide my students with detailed feedback about their academic progress?	4,77	1,519
17	Give my students feedback about their progress?	4,54	1,448
13	Evaluate accurately my students' academic capabilities?	4,53	1,292
31	Use formative assessment to gather information about my students' academic progress?	4,39	1,428
20	Use information derived from my own self-reflection to improve my teaching?	4,36	1,443
12	Adapt my teaching practices in response to my students' evaluations of my teaching?	4,33	1,708
8	Use different evaluation methods?	4,30	1,529
16	Employ systematic methods that permit me to assess my own teaching?	4,24	1,563
6	Evaluate the effectiveness of my own teaching in light of my students' feedback to me?	3,92	1,615

Participants have less self-efficacy in evaluation strategies such as evaluating the effectiveness of the teaching style according to students' feedback, using different evaluation methods, and adapting teaching practices with respect to students' results. Teachers report feeling less confident when they need to adapt their evaluation method to students' needs or to change teaching methods with according to students' results.

Teachers achieve a higher score in evaluation strategies such as reflecting on teaching practices, grading students' work adequately, providing students with feedback about their academic progress, and developing their teaching skills. This result can be understood to

mean that teachers feel more confident regarding the self-evaluation and reflection on their teaching and students results assessment.

To sum up the description of the dimensions of self-efficacy, we can state that teachers are less efficacious in evaluation than in other dimensions, which can be interpreted to mean that an innovative evaluation presupposes a more student-centred approach and reflection. In general, teachers reported upper medium level of teaching efficacy. They are efficacious in problems handling, course preparation and engaging students in active work. However, teachers should strive to develop their self-efficacy in strategies that presuppose considering students' needs and characteristics and thinking about students like active participators.

4.3.6. Difference in Innovative Teaching Level Depending on Self-efficacy

An independent-samples T-test was conducted in order to examine the difference in innovative teaching level according to the teachers level of self-efficacy. *Innovative teaching level* is the dependent variable and *self-efficacy* is the independent variable. The variable of self-efficacy was recoded with respect to median value (M = 4.9). Teachers who show a level of self-efficacy below 4.9 belong to the low-level group, whereas teachers who report a level of self-efficacy of 5 points or higher belong to the high-level group.

Table 36

Total Innovative teaching Level Depending on Teachers' Self-efficacy

	SELF-EFFICACY	N	Mean	Std. Deviation	Std. Error Mean
TOTAL INNOVATIVE TEACHING	LOW LEVEL	40	3,3889	,71007	,11227
	HIGH LEVEL	40	4,1913	,41002	,06483

T-test results (t = -6,189; p = .000) indicate a significant difference in innovative teaching level between the groups of teachers with low (M = 3.3889; SD = .71007) and high (M = 4.1913; SD = .41002) levels of self-efficacy, it being significantly higher for the high self-efficacy group (Table 36). The effect size values (d = 1.38) may be considered as large. Thus, we may assume that self-efficacy makes a difference in innovative teaching level.

The three teaching dimensions of planning, application and evaluation were tested to find the mean difference in different self-efficacy level groups.

An independent-samples T-test was applied to examine the difference in innovative planning depending on teachers' self-efficacy level. *Total level of innovative planning* was the dependent variable and *self-efficacy* was the independent variable.

Table 37

Innovative Planning Level Depending on Self-efficacy

	SELF-EFFICACY	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE PLANNING	LOW LEVEL	40	3.4815	.75383	.11919
	HIGH LEVEL	40	4.3000	.42801	.06767

Results indicate a significant difference (t = 5.972, p = .000) in innovative planning between teachers from low-level self-efficacy group (M = 3.48; SD = .7583) and high-level self-efficacy group (M = 4.3; SD = .42801), as shown in Table 37. The effect size values (d = 1.33) may be considered as large. Therefore, we can assume that the level of self-efficacy makes a difference in the level of innovative planning, and teachers with higher self-efficacy have higher level of innovative planning.

Then, an independent-samples T-test was also applied to examine the mean difference in the level of innovative application depending on the level of self-efficacy. *Innovative application level* is the dependent variable and *self-efficacy level* is the independent variable.

Table 38

Innovative Application level Depending on Teachers Self-efficacy

	SELF-EFFICACY	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE APPLICATION	LOW LEVEL	40	3,5311	,81132	,12828
	HIGH LEVEL	40	4,3840	,42916	,06786

T-test results indicate a significant difference (t = 5.877 and p = .000) in level of innovative application between the low self-efficacy group (M = 3.53; SD = .81132) and the high-level self-efficacy group (M = 4.38; SD = .42916), it being significantly higher for teachers with higher self-efficacy level (Table 38). Effect size values (d = 1.31) may be considered

as large. Thus, we may conclude that the level of self-efficacy makes a difference in the level of innovative application.

The next innovative teaching level to be examined in accordance with self-efficacy is evaluation. *Total innovative evaluation level* is the dependent variable and *self-efficacy* is the independent variable.

Table 39

Innovative Evaluation Level Depending on Self-efficacy

	Self-efficacy	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE EVALUATION	LOW LEVEL	40	3,2951	,81994	,12964
	HIGH LEVEL	40	4,3181	,48735	,07706

There are significant differences (t = 6.783; p = .000) in innovative evaluation levels between teachers with a low level of self-efficacy (M = 3.29; SD = .81994), and teachers with a higher level of self-efficacy (M = 4.3181; SD = .48735), as shown in Table 39. The effect size (d = 1.5) is large. Thus, we can summarize that the level of self-efficacy makes a difference in innovative evaluation conduction.

Additionally, a Pearson correlation coefficient was computed to assess the relationship between the dimensions of innovative teaching and self-efficacy dimensions (Table 40). Significant correlation was found between teachers' self-efficacy dimensions and innovative teaching dimensions (p= 0.00).

Table 40

Pearson Correlation between Innovative Teaching Dimensions and Self-Efficacy Dimensions

		INNOVATIVE PLANNING	INNOVATIVE APPLICATION	INNOVATIVE EVALUATION
SELF-EFFICACY IN PLANNING	Pearson Correlation	.685**	.659**	.575**
	Sig. (2-tailed)	,000	,000	,000
	N	80	80	80
SELF-EFFICACY IN IMPLICATION	Pearson Correlation	.728**	.711**	.628**
	Sig. (2-tailed)	,000	,000	,000
	N	80	80	80
SELF-EFFICACY IN INTERACTION	Pearson Correlation	.678**	.671**	.574**
	Sig. (2-tailed)	,000	,000	,000
	N	80	80	80
SELF-EFFICAY IN EVALUATION	Pearson Correlation	.691**	.616**	.570**
	Sig. (2-tailed)	,000	,000	,000
	N	80	80	80

**. Correlation is significant at the 0.01 level (2-tailed).

The highest Pearson correlation is found between *self-efficacy in implication* and *innovative planning level* (r=.728). The lowest correlation, in turn, is found between *innovative evaluation level* and *self-efficacy in planning* (r=.575), and *innovative evaluation level* and *self-efficacy in evaluation* (r=.570).

Thus, we can assume that high level of self-efficacy shows a high correlation with the level of innovative teaching applied in the university classroom.

To conclude the subchapter about self-efficacy, the following assumptions can be made:

- Teachers report to have an upper-medium level of *self-efficacy* in teaching. The lowest level of self-efficacy has been found in the *evaluation* dimension, whereas the highest level has been found in the *planning* dimension.

- A significant difference was found in innovative teaching level with respect to self-efficacy level groups. Respondents with higher self-efficacy report a higher level of innovative teaching. Therefore, the hypothesis that teachers with higher self-efficacy show a higher level of innovation is accepted by the results.

Thus, the present results support the sub-hypothesis that teachers with a higher level of self-efficacy have a higher level of innovative teaching.

4.3.7. Teachers' Creativity

After summing the grades for each respondent, the score for the total self-reported creativity level is 3.14, ranging from a minimum value of 1.10 to maximum of 3.95 (Table 41).

Table 4**1**

Total Teachers Creativity Level

	N	Minimum	Maximum	Mean	Std. Deviation
CREATIVITY	80	1.10	3.95	3.1373	.49980

The possible range for total creativity is from 1 to 4, where 1 and 2 may be considered low levels, 3 – a medium level, and 4 – a high level of creativity. Thus, as detected in *self-efficacy,* the level of *creativity* reported by teachers-participants is an upper-medium level.

In the table 42, the items with the lowest and the highest scores are presented, which can help analyse the level of teachers' creativity. This facilitates in-depth research concerning teachers' ability to create new methods, generate ideas, and design tasks, among others.

Table 42

Teachers Creativity Level Based on Questionnaire Items

	Items	Mean	SD
19	I think creativity is a fundamental characteristic of professors	3.49	.752
2	I make efforts to understand teaching activities in depth	3.46	.859
20	I think there are a lot of different forms to do things	3.43	,796
11	I find it interesting to try different ways of teaching	3.40	.843
8	I search for different alternative ways to solve problems	3.34	.830
12	I use different didactic techniques to foster students´ creativity	3.33	.930
7	I think a good professor has to be "inventor" of teaching techniques	3.31	.977
5	I integrate my personal experience in the teaching methods	3.30	,837
4	I try to consider all the details in order to decide how to teach.	3.30	.853
10	I use many different approaches to interpret and understand a situation.	3.29	.865
15	I am interested in helping people learn and it helps me to be creative.	3.26	.797
3	I try to be original in my activities.	3.21	.795
13	I always have a lot of ideas in order to develop the activities I implement.	3.18	.797
18	I like to do different kinds of activity in the classroom.	3.13	.939
6	Difficulties drive me to find untraditional activities to implement.	2.85	1.014
14	I feel it disturbing if work conditions don't allow me to act my own way.	2.80	1.030
16	I do not fit into the typical professor's profile.	2.60	1.036
9	I imagine what would do another professor in order to get new ideas.	2.42	.942
1	I do everything my own way	2.34	.918
17	**People are surprised to listen to my ideas because of their originality**	**2.32**	**.955**

The items the items graded lowest by teachers are the following: people being surprised to hear the teachers' ideas, imagining what other professor would perform on their place, feeling disturbed when there is not any possibly to act in their own way, and trying to find untraditional ways of solving problems. Lower results in these items can be interpreted to mean that teachers tend to maintain a traditional image rather than an image of being an "innovator". Not being allowed to act in an unconventional way is not disturbing for them.

Participants showed higher results in items about considering creativity as a fundamental characteristic of a teacher, integrating personal experience in teaching, and trying different methods and didactic techniques. These results can be interpreted to mean that teachers have positive attitudes towards creativity and tend to use different means and forms of teaching.

Thus, it can be assumed that teachers have lower results in the aspect related with teachers' image and they do not tend to be different from other teachers or to express innovative ideas.

The items connected to their attitude towards creativity are graded higher. It is possible to conclude that, despite the general positive attitude towards the application and invention of new methods, teachers demonstrate a certain tendency towards maintaining the conventional image of teachers.

4.3.8. Difference in Innovative Teaching Level Depending on Creativity

Innovative teaching is the dependent variable and *creativity* is the independent variable. The *creativity* variable was recoded with regard to the median value (M=3.3) and consist of two clusters: low level of creativity (up to 3.3 points) and high level of creativity (3.4 and more).

An independent-samples T-test was conducted to test whether there is a significant difference in the level of innovative teaching in relation to teachers' creativity level.

Table 4**3**

Total Innovative Teaching Level Depending on Creativity

	Creativity	N	Mean	Std. Deviation	Std. Error Mean
TOTAL INNOVATIVE TEACHING	LOW LEVEL	40	3.4354	.72763	.11505
	HIGH LEVEL	38	4.1512	.47222	.07660

The results indicate a significant difference in the level of innovative teaching (t = 4.759, p = .002) between teachers with low creativity level (M = 144.69, SD = 183.39) and teachers with high creativity level (M = 183.39, SD = 31.97), it being significantly higher for those who have high creativity (Table 43). The effect size (d = 0.91) may be considered as large. Therefore, the *creativity* variable makes a difference in total innovative teaching level.

Then, an independent-sample T-test was applied to test the level of planning depending on teachers' creativity. T-test results (t = 4.734; p = .000) indicate that there is a significant difference in innovative planning between respondents with a lower level of creativity (M= 3.54; SD = .77657) and respondents with a high level of creativity (M = 4.24; SD = .50396), where those who have high level of creativity have significantly higher level of innovative planning (Table 44). The effect size (d = 1.07) may be considered as large. Thus, we may assume that creativity makes a difference in innovative planning level.

Table 44

Innovative Planning Level Depending on Creativity

	Creativity	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE PLANNING	LOW LEVEL	40	3.5433	.77657	.12279
	HIGH LEVEL	38	4.2490	.50396	.08175

The logic of measuring the *application level* dimension in the context of creativity is similar to that of the previous dimensions. *Total innovative application* is the dependent variable and *creativity* is the independent variable.

Table 45

Innovative Application Level Depending on Creativity

	Creativity	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE APPLICATION	LOW LEVEL	40	3.5854	.81802	.12934
	HIGH LEVEL	38	4.3358	.52077	.08448

As shown in Table 45, t-test indicates significant difference (t = 4.804; p = .000) in the level of innovative application between teachers with a low level of creativity (M = 3.5854; SD = .81802) and teachers with a high level of creativity (M = 4.3358; SD = .5207), it being significantly higher for teachers with higher creativity. The effect size (d = 0.89) may be interpreted as large. Thus, we can summarize the results stating that the cognitive characteristic of creativity makes a difference in the level of innovative application in the classroom.

An independent-samples test was conducted in order to find the mean difference in their level of innovative evaluation according to teachers' creativity level. T-test results (t = -5.577 and p = .000) indicate a significant difference in innovative evaluation depending

on teachers' creativity level. As shown in the table 46, teachers with a lower level of creativity show a lower level of innovative evaluation of students' learning (M = 3.3518; SD = .85464). Teachers with a higher level of creativity report a higher level of innovative evaluation (M = 4.2651; SD = .55080).

Table 46

Innovative Teaching Evaluation Level Depending on Creativity

	Creativity	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE EVALUATION	LOW LEVEL	40	3.3518	.85464	.13513
	HIGH LEVEL	38	4.2651	.55080	.08935

After that, a Pearson correlation was computed to show the correlation between all the dimensions of innovative teaching and creativity (Table 47). There was positive significant correlation with all the values of p = 0.000. The highest Pearson correlation is found between *innovative planning level* and *creativity level* (r = .728), and between *total innovative teaching* and *creativity* (r = .741). This may be interpreted to mean that planning requires more creativity skills in order to design tasks, choose methods, etcetera.

Table 47

Pearson Correlation between Innovative Teaching Dimensions and Creativity Characteristic

Correlations

		SELF-REPORTED CREATIVITY
SELF-REPOTED CREATIVITY	Pearson Correlation	1
	Sig. (2-tailed)	
	N	80
INNOVATIVE PLANNING	Pearson Correlation	.728**
	Sig. (2-tailed)	.000
	N	80
INNOVATIVE APPLICATION	Pearson Correlation	.655**
	Sig. (2-tailed)	.000
	N	80
INNOVATIVE EVALUATION	Pearson Correlation	.587**
	Sig. (2-tailed)	.000
	N	80
TOTAL INNOVATIVE TEACHING	Pearson Correlation	.741**
	Sig. (2-tailed)	.000
	N	80

**. Correlation is significant at the 0.01 level (2-tailed).

To conclude, the following assumptions can be made:

- Although the creativity level is reported to be upper-medium, through a more profound analysis it is possible to notice a certain tendency of the respondents to maintain a traditional image of teacher. However, they implement many different approaches, which shows a rather high level of originality; for instance, teachers tend to look for untraditional methods to solve a problem, consider different options for doing things, and use different methods to foster students' creativity.

- Creativity characteristic can make a difference in teachers' level of innovative teaching. The higher the creativity component of teaching, the more innovations teachers apply in all dimensions of teaching.

Thus, the present results support the sub-hypothesis that teachers with a higher level of creativity show a higher level of innovative teaching.

4.3.9. Receptivity to Change

The total level of receptivity to innovations was computed as a value with a possible range from 1 to 10. As seen in the descriptive statistics (Table 48), the level of receptivity is M=7.42 with a minimum value of 3.20 and a maximum value of 10.

Taking into account said possible range from 1 to 10, we may assume that 1-4 is a low level of receptivity, 5-7 may be considered as a medium level of receptivity and 8-10 is a high level of receptivity to change. Thus, as in previous characteristics, the level of receptivity to change is reported to be upper medium.

Table 48

Total Receptivity to Change Level

	N	Minimum	Maximum	Mean	Std. Deviation
RECEPTIVITY TO CHANGE	80	3.20	10.00	7.4209	1.52528

As in the previous subchapters, the main tendencies of receptivity to change are defined below.

This subchapter analyses the average score in teachers' receptivity to innovations. The lowest and the highest scored items are described here (Table 49). This analysis will provide insight on how teachers accept changes happening in their institutions and what their attitude to change is in general.

Table 49

Receptivity to Change Level based on Questionnaire Items

	Items	Mean	SD
1	I believe that education is a reflection of all changes in society	8.41	**2.468**
19	I always share new ideas in teaching and learning.	8.20	**2.467**
2	I accept pluralism among my colleagues and my students	8.08	**2.772**
16	I participate in conferences, workshops, seminars and contests organized for teachers	7.94	**2.544**
20	When I can, I include new material in the course content	7.76	**2.451**
13	I subscribe to scientific journals in the sphere of higher education and teaching.	7.67	**2.659**
15	I can change my methods to adapt them to my students' needs.	7.64	**2.618**
14	I attend the classes of my colleagues and learn from their experience.	7.54	**2.448**
10	I discuss new methods of teaching with my colleagues.	7.19	**2.586**
7	I believe I understand the goals and values of educational changes in our institution	7.05	**2.577**
9	I think I can continue applying new methods even if not all my colleagues support the idea of change.	7.00	**2.541**
18	I participate in scientific research teams in my institution researching educational issues.	6.78	**2.537**
11	I practice self-learning to know more about new trends and ideas in education.	6.75	**2.431**
17	I learn rapidly how to use new ICTs and gadgets	6.71	**2.865**
10	I discuss new methods of teaching with my colleagues.	6.59	**2.670**
3	I think reforms are more positive than negative for education.	6.58	**2.599**
8	I support professors - innovators in our institution	6.44	**2.863**
12	I have attended qualification-upgrading courses since I graduated from university	6.41	**2.668**
6	I always try to predict the results of my new teaching activities.	6.13	**2.567**
5	I believe I can change my teaching methods according to the students' needs.	5.85	**2.776**
4	**I believe in the success of changes in my institution;**	**5.65**	**2.527**

Items scoring lowest in receptivity to innovations include belief in the success of changes applied in their institution, belief in changing teaching methods, predicting results of teaching activity, upgrading courses, the belief that reforms are more positive than negative, discussing methods with other teachers, and self-learning practice. The items scoring highest are those regarding the belief that education reflects changes in society,

showing flexibility towards pluralism, carrying out scientific investigation, subscription to scientific journals, and attending classes of other colleagues.

On the one hand, we can assume that teachers are not very optimistic regarding ideas connected to institutional changes, course upgrades and reforms. On the other hand, they show a high receptivity to new ideas, scientific events such as conferences, the sharing new ideas and changing methods of teaching. This could be interpreted to mean that teachers are more receptive to changing their personal teaching style than they are to institutional changes, probably because they do not feel supported by their institutions.

4.3.6 Difference in Innovative Teaching Level Depending on Receptivity to Change

An independent sample test was applied to compare means of innovative teaching level depending on the level of receptivity to change. *Total level of innovative teaching* is dependent variable and *receptivity to change* is independent variable that was created with respect to the median value (M = 7.85). Respondents who have a level of receptivity to change below 7.85 belong to the *low-level of receptivity* group, whereas those who have 7.85 or more belong to the *high-level of receptivity* group.

Table 50

Total Innovative Teaching Level Depending on Receptivity to Change

	RECEPTIVITY TO CHANGE	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE TEACHING	LOW LEVEL	29	3.3895	.88114	.16362
	HIGH LEVEL	30	4.1773	.53198	.09713

T-test results (t = 4.17 and p = .000) indicate a difference in innovative teaching level between teachers with a low level of receptivity to change (M = 3.3895; SD= .88114) and teachers with a high level of receptivity (M = 4.17; SD = .53198) (Table 50), it being significantly higher for teachers with a high receptivity to change. The effect size (d = 1) may be considered as large.

Thus, we can assume that receptivity to change makes a difference in the level of innovative teaching applied in the university classroom. That is why it could be important to consider this characteristic in the process of implementing change in teaching, both on macro and micro levels.

A similar logic was applied to the planning dimension in the context of receptivity to change. *Innovative planning* was the dependent variable and *receptivity to changes* is the independent variable.

Table 51

Innovative Planning Level Depending on Receptivity to Change

	RECEPTIVITY	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE PLANNING	LOW LEVEL	40	3.5697	.82539	.13051
	HIGH LEVEL	40	4.2118	.44984	.07113

Independent samples test results (t = 4.320 and p = .000) indicate that there is a significant difference in the level of innovative planning between teachers with a low level of receptivity to changes (M = 3.56; SD = .82539) and teachers with a high receptivity to changes (M = 4.21.18; SD = .44984), it being significantly higher for teachers with a high level of receptivity to changes (Table 51). The effect size (d = .96) is large. Thus, we can assume that *receptivity to changes* makes a difference in the level of innovative teaching planning.

An independent-samples T-test was conducted in order to compare *innovative teaching application level* with respect to teachers' *receptivity to change.*

Table 52

Innovative Application Level Depending on Receptivity to Change

	RECEPTIVITY	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE APPLICATION	LOW LEVEL	40	3,6558	.84824	.13412
	HIGH LEVEL	40	4.2593	.55598	.08791

T-test results (t = 3.764 and p = .000) indicate a significant difference in the level of innovative application between teachers with a low level of receptivity (M = 3.65; SD = 848) and teachers with a high receptivity level (M = 4.259; SD = .555), where those who have a high level of perceive receptivity show a high level of innovative planning (Table 52). The effect size (d = .89) is large.

An independent-samples test was also applied for the *evaluation* dimension.

Table 53

Innovative Evaluation Level Depending on Receptivity to Change

	RECEPTIVITY TO CHANGE	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE EVALUATION	LOW LEVEL	40	3.5047	.91499	.14467
	HIGH LEVEL	40	4.1086	.64983	.10275

Total level of application is the dependent variable and *receptivity to change* is the independent variable. T-test results (t = 3.403 and p = .001) indicate a significant difference in the innovative evaluation level between teachers with a low level of receptivity (M = 3.594; SD = .914) and teachers with a high level of receptivity (M = 4.10; SD = .649), it being significantly higher for teachers with a high receptivity to

change (Table 53). The effect size (d = 0.76) may be considered large. Thus, we can summarize that receptivity to change makes a difference in the level of innovative evaluation.

Table 54

Pearson Correlation of Innovative Teaching Dimensions and Receptivity to Change

		RECEPTIVITY TO CHANGE
INNOVATIVE PLANNING	Pearson Correlation	.567**
	Sig. (2-tailed)	.000
	N	80
INNOVATIVE APPLICATION	Pearson Correlation	.494**
	Sig. (2-tailed)	.000
	N	80
INNOVATIVE EVALUATION	Pearson Correlation	.471**
	Sig. (2-tailed)	.000
	N	80
TOTAL INNOVATIVE TEACHING	Pearson Correlation	.578**
	Sig. (2-tailed)	.000
	N	80

**. Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation test (Table 54) was computed to strengthen the results (Table 58) and there was a significant correlation between the *innovative teaching application* dimension and *receptivity to change* (p = .000). The highest Pearson correlation is found between *innovative planning level* and *receptivity to change* (r = .567), whereas the lowest correlation is found between *innovative evaluation level* and *receptivity to change* (r = .471). This may be interpreted to mean that teachers are more "ready" for changes in planning than in the evaluation dimension, which may be more challenging for teachers.

The results support the sub-hypothesis that teachers with a higher receptivity to change show a higher level of innovative teaching.

Thus, the level of teachers' cognitive characteristics such as *sense of self-efficacy*, *creativity* and *receptivity to change* tend to show an upper-medium level. It is possible to conclude that teachers' cognitive characteristics make a difference in the total innovative teaching level and in all three dimensions.

We must therefore accept the hypothesis that teachers with a high score in these cognitive characteristics tend to show a significantly higher level of innovative teaching.

4.4 RESEARCH QUESTION FOUR: WHAT IS STUDENTS' PERCEPTION OF THE INNOVATIVE TEACHING LEVEL APPLIED BY TEACHERS IN UNIVERSITY CLASSROOMS?

This subchapter aims to examine students' level of innovative teaching applied in their universities by teachers. In class, they observe the *application* of innovative practices and the *evaluation* of their learning as conducted by teachers. Therefore, the *planning* dimension is excluded from the following analyses. To the author's mind, analyses of students results provides additional insight into the level of innovative teaching currently applied in university classrooms in Ukraine.

4.4.1. Total Innovative Teaching Level by Students

In the following paragraphs, we will describe the results as computed from students' questionnaires.

Table 55

Innovative Application Level Perceived by Students

	N	Minimum	Maximum	Mean	Std. Deviation
INNOVATIVE APPLICATION	296	1	5.00	3.4276	.60817

The average level of innovative teaching reported by students (Table 55) is M = 3.42; SD = .608 with a scale ranging from a possible minimum of 1 to a possible maximum value of 5 points.

Taking into consideration that 1 and 2 belong to a low level of application, 3 to a medium level and 4-5 to a high level of innovative application, we may assume that students perceive the level of innovative application level as medium.

Table 56

Total Innovative Evaluation Level Perceived by Students

	N	Minimum	Maximum	Mean	Std. Deviation
INNOVATIVE EVALUATION	296	1	4.92	3.1310	.65293

Regarding the evaluation dimension (Table 56), we can also state that the level of this dimension as reported by students is also medium (M = 3.13; SD = .6529) on an average range from 1 to 4.92 where the minimum possible score is 1 and the maximum possible score is 5. In addition, we can determine from students' perception that teachers tend to apply innovative strategies more often in application than in evaluation.

4.4.2. Innovative Application Practices in accordance with Students

Analysing the average level of innovative teaching application reported by students and teachers, we can identify the least frequent and the most frequent practices. In general, the mean score of level of application ranges from 3.01 to 3.96 points (Table 57).

Table 57

Students Perception of Innovative Application Items

	Items	M	SD
	Teachers in my university…		
6	Develop tasks for students' self-learning	3.96	1.016
5	Use cooperative method of teaching	3.74	1.070
1	Develop course curricular in accordance with time limits	3.67	.826
7	Foster students' responsibility for their knowledge	3.60	1.030
3	Use different teaching methods in order to achieve course goals.	3.50	.974
14	Develop interpersonal communication skills	3.50	1.133
12	Facilitate innovative technologies application during the course	3.49	1.141
11	Connect methods and content of the course with practical application	3.45	1.079
13	Use different computer based methods of teaching	3.36	1.586
4	Facilitate learning process with active teaching methods (ask about problems, offer practical tasks)	3.33	1.098
9	Foster students' social ethics	3.30	1.015
10	Facilitate course content acquisition during the teachers	3.25	1.051
8	Encourage students knowledge interest	3.23	1.100
2	Inform students about their strong and weak characteristics in the process of teaching and during the exams	3.01	1.083

Among the least frequent innovative practices are providing information to the students about strong and weak aspects of their learning, developing students' interest for the knowledge acquisition, facilitating their comprehension, developing social ethics, fostering active learning, using ICT.

The majority of the students state that teachers often apply a collaborative form of learning. In addition, we have to acknowledge students' autonomy: according to the majority of the respondents, their teachers often apply practices for autonomous learning. Developing their responsibility and encouraging the use of ICT have also achieved a high score.

Thus, it is advisable for teachers to pay attention to approaches such as social ethics, interest for knowledge, active learning, etcetera. These approaches are not new in pedagogy, but they are seldom implemented due to some historically determined factors.

4.4.3. Innovative Evaluation Practices in accordance with Students

The next section of students' results is evaluation. The most and least frequent assessment practices applied by professors are described in the following subchapter. The mean score in this dimension ranges from a minimum value of 2.74 to a maximum value of 3.50, where the possible range goes from 1 to 5 points (Table 58).

Table 58

Students Perception of Innovative Evaluation Items

N	Items	M	SD
	Teachers in my university …		
16	Evaluate learning results in accordance with previously set criteria	3.52	1.098
15	Have friendly relationship with their students	3.50	1.061
20	Apply students evaluation systematically according to the goals and methods of the course	3.47	1.028
17	Evaluate the process of learning using different methods	3.42	.991
18	Evaluate all the competences which are to be fostered during the course	3.38	1.012
22	Evaluate group learning	3.31	1.088
19	Facilitate students' development by means of their results evaluation.	3.28	1.050
21	Facilitate students self-learning process	2.92	1.107
24	Apply individual approach in the process of teaching	2.90	1.154
23	Apply mutual evaluation of learning among students	2.76	1.147
27	systematically evaluate the course curricular	2.74	1.499
25	Involve students to the process of evaluation of learning results	2.59	1.184
26	**Always evaluate my teaching methods**	**2.30**	**1.487**

According to the students' responses, the least frequently implemented innovative evaluation strategies are the ones regarding participation, the programme itself (course

evaluation), auto-evaluation, co-evaluation, the individualized approach to evaluation, and self-evaluation.

The most frequently implemented evaluation strategies are those regarding their relation with teachers, the coherence of evaluation process, evaluation of competences, and the criteria for the evaluation process.

Thus, teachers are advised to pay more attention to approaches such as course evaluation and students' self-evaluation. They are also encouraged to facilitate students' participation in their own evaluation.

Summary

First, we can assume that the perception of the level of innovative evaluation is lower according to students than it is according to teachers. This may be interpreted to mean that the *evaluation* dimension is more "personal" for students and they therefore perceive it more subjectively than the *application* dimension, which is more general.

Virtually all students reported a low level of strategies such as social ethics, facilitating comprehension, co-evaluation, etcetera, which belong to the student-centred paradigm. However, they also report that strategies presupposing a variety of pedagogical approaches are often implemented; these include items such as program fulfilment, fostering responsibility, and the development of interpersonal skills, which are also new for the Ukrainian teaching discourse.

4.5. RESEARCH QUESTION FIVE: IS THERE ANY DIFFERENCE BETWEEN TEACHERS' AND STUDENTS' PERCEPTION OF INNOVATIVE TEACHING?

Comparative analysis of teachers' and students' perception of the level of innovation implemented in the classroom makes it possible to compare the group of teachers and the group of students in the context of *innovative application of didactic strategies* and *evaluation of the learning process*.

4.5.1. Difference in Total Innovative Application Level between Teachers and Students Perceptions

As expected, students' results of their perception regarding innovative teaching differ from those of teachers. Moreover, students' results are lower than teachers' results.

Table 59

Teachers' and Students' Perceived Innovative Application Level

	Groups	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE APPLICATION	STUDENTS	296	3.4276	.60817	.03535
	TEACHERS	80	3.9576	.77461	.08660

An independent-samples T-test was conducted to compare mean values of teachers' and students' results. *Total application level* is the dependent variable and the independent variable is the respondents' category (the group of teachers and the group of students).

The T-test results indicate a significant difference (t = 6.501 and p = .000) in perception of the level of innovative teaching between students (M = 3.4276, SD = .60817) and teachers (M = 3.9576; SD = 77461), it being significantly higher for teachers (Table 59). Thus, we may assume that teachers and students have different perceptions of the level of innovative teaching implemented in the classroom.

To sum up the comparison regarding the *application* dimension, we can state that it is important to consider the students' point of view concerning the issue of innovative teaching, because it significantly differs from the teachers' opinion.

4.5.2. Difference in Total Innovative Evaluation Level between Teachers' and Students' Perceptions

The next dimension for comparative analysis is evaluation. As in previous dimension, students' results are lower than those of teachers'.

Table 6**0**

Teachers' and Students' Perceived Innovative Evaluation Level

	Groups	N	Mean	Std. Deviation	Std. Error Mean
INNOVATIVE EVALUATION	STUDENTS	296	3.1310	.65293	.03795
	TEACHERS	80	3.8066	.84505	.09448

An independent-sample test was also conducted for the *evaluation* dimension in order to compare the average level of innovative evaluation as perceived by teachers and students. We can conclude from Table 62 that results (t= 7.683 and p = .000) show a significant difference in the perceived level of innovative evaluation between students and teachers (Students – M = 3.1310, SD = .6529; Teachers – M = 3.80, SD = .84505), it being significantly higher for teachers (Table 60). Thus, we may conclude that there is a difference between teachers' and students' perception of innovative evaluation level.

These findings can be interpreted to mean that students do not have a clear idea of all the activities performed by the teacher. It is also possible to conclude that teachers, in many cases, implement traditional approaches to teaching. It would be advisable for them to reflect more on the practices they apply in classroom and improve them.

4.5.3 Difference in Level of Innovative Teaching between Teachers and Students Based on Questionnaire Items

In the Figure 9 we can see the comparison of the level of application according to the teachers' and the students' perception. As mentioned above, the level of innovations perceived by students is lower than the level perceived by teachers. It is interesting to identify the strategies in which the difference in estimation is biggest and smallest.

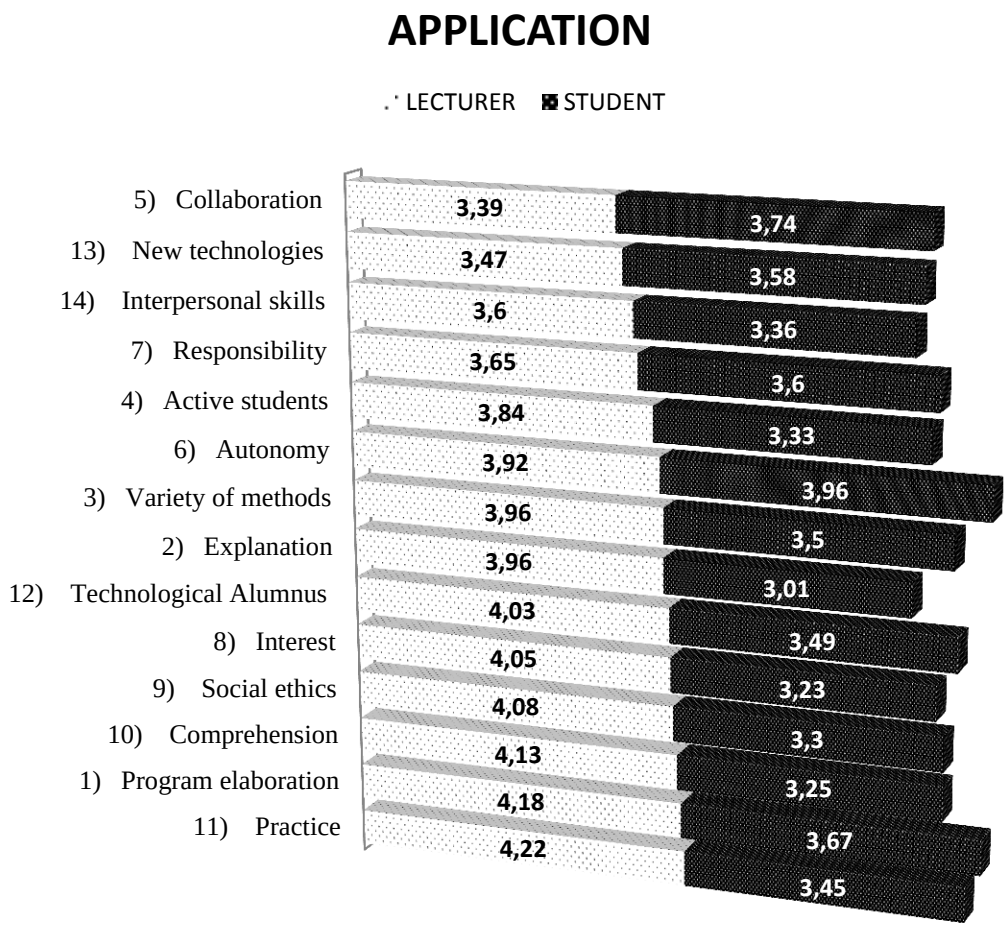

Figure 9**:** Teacher-Student Comparison of Perception of Innovative Teaching Application

In the *application* section the biggest differences between teachers' and students' perceptions are found in the following items: fulfilment of the program during the period of the course (18); informing students about weak and strong sides of their learning (19); applying different methodologies (20); facilitating interest of students for learning (25);

social ethics (26); facilitating comprehension (27); and encouraging students to use new technological resources (29).

On the other end of the scale, items like collaborative methods (1); fostering interpersonal skills (14); developing responsibility (7); and fostering students' autonomy (6) have the smallest mean difference and are more or less similar between teachers and students. Thus, we can assume that teachers and students perceive differently the level of innovative strategies in *application*, albeit some perceptions are quite similar.

In the *evaluation* section (Figure 10) the biggest difference is found in items such as criteria of evaluation (2); process of evaluation (3); coherence in evaluation (6); program evaluation (13); evaluation of teachers (12); individual approach (10); students' participation in evaluation (11); and self-evaluation (7).

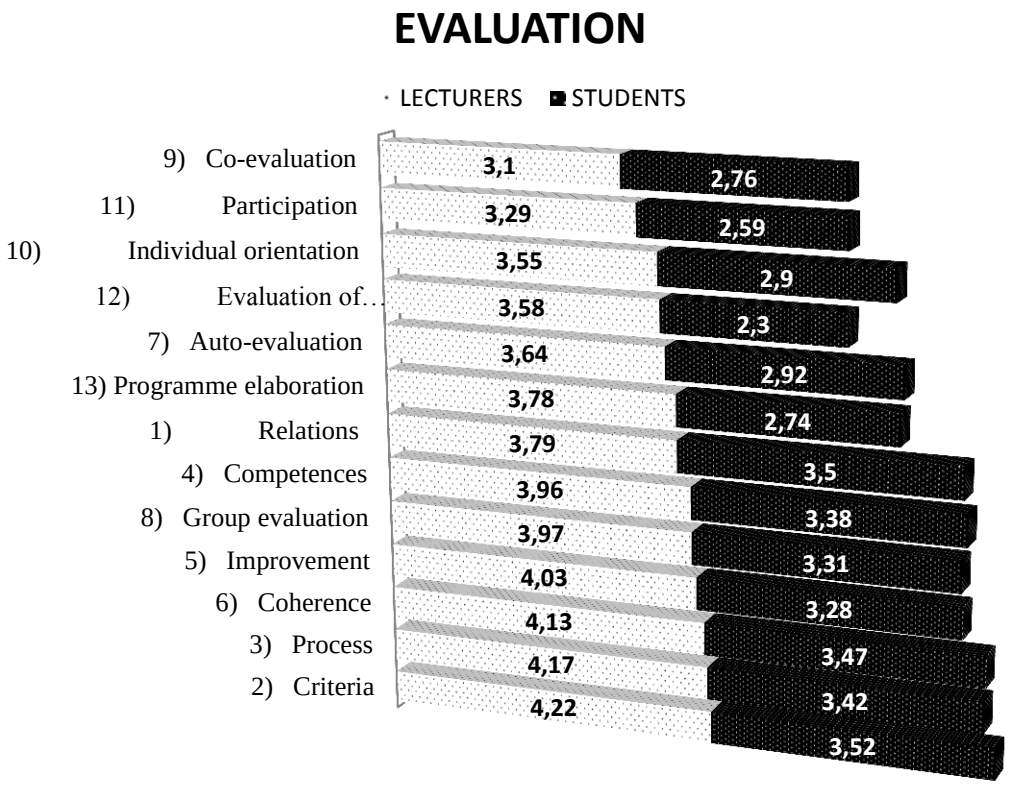

Figure 10**:** Teacher-Student Comparison of Innovative Evaluation Perception

Strategies such as friendly relations with the students (1); competences evaluation (4); and group evaluation (8) show a smaller mean difference, but the difference is still bigger than in the *application* dimension.

4.6. SUMMARY

To sum up, it is possible to assume that in the *evaluation* dimension the difference is much bigger than in the *application* dimension. Most of the evaluation strategies that exhibit a big mean difference concern the individual approach. Therefore, it is possible to conclude that the individual approach is more challenging for teachers to apply, which may influence the level of total innovative evaluation.

Table 61

Teachers-Students Comparison of Lower-Levelled Items

	Teachers	Students
PLANNING	- Course curriculum coordination - To realize the contribution of my course to the students' professional training - PowerPoint tool - Information Platforms - Students characteristics Expository resources	
APPLICATION	− To explain program aspects − Different methods of teaching − New computer technologies − Interpersonal skills − Students' autonomy − Active methods − Responsibility − Collaboration	− Computer technologies − Active methods − Social ethics − Facilitating comprehension − Interest in learning − Explaining the programme
EVALUATION	− Friendly relations with students − To evaluate course curriculum − Self-evaluation − To evaluate teaching methods − Individual approach − To involve students in the process of evaluation − To apply mutual evaluation among students	- Evaluate all the competences - Group evaluation methods - Facilitate students development by means of evaluation - Self-evaluation - Individual approach - Develop tasks for mutual evaluation - Involve students in evaluation process

In order to summarize the results obtained, we created a comparative table (Table 63) showing strategies scoring the lowest among teachers and students.

These results can be useful for teachers, for reflexion and teaching improvement. Both teachers and students perceive the level of innovative teaching – in total and in three dimensions – as upper medium and medium, which may be understood to be representative of the tendency of Ukrainian university teaching to transition towards Bologna standards and the Constructivist view of pedagogy. However, some problematic areas have been detected in the level of innovative teaching.

Comparing teachers' and students' perceptions of the level of innovative teaching currently applied in the university classroom, we can assume that the higher results reported by teachers can be interpreted as an overestimation of their application of innovations, or that students and teachers have different perspectives regarding the nature of the implementation of innovation. Both teachers and students report a lower level of ICT usage, individualized approaches, and active methods of teaching, explanation of the programme aspects, self-evaluation, and co-evaluation. Students also report lower levels of approaches such as the development of social ethics, fostering their interest in learning, and facilitating comprehension. This may be interpreted to mean that teachers tend to behave more as knowledge transmitters than they do as facilitators.

Thus, the results support the third hypothesis of the present study: there is a significant difference in perceived level of innovative teaching in the perceptions of teachers and students.

To conclude, Ukrainian teachers should pay more attention to active methods of teaching, individualized approaches to teaching, and ICT usage. It would also be advisable for them to strive to foster the development of social ethics and the interest in knowledge among students.

CHAPTER FIVE

RESEARCH DISCUSSION AND CONCLUSIONS

The discussion will link the results and findings to the general literature and will show the greater context and its implications. Research hypotheses will be discussed and alternative explanations will be considered for the results of the study.

5.1. DISCUSSION OF DESCRIPTIVE STATISTICS

All three domains of innovative teaching investigated in this research (planning, application, and evaluation) are valuable and have given the author a much clearer idea of the frequency with which Ukrainian university teachers apply innovations in the classroom.

Firstly, according to the examination was carried out of the total level of innovative teaching applied in the classroom, that level is upper-medium. Additionally, the level of all three teaching dimensions have also shown to be upper-medium. However, there was some difference in the level of each dimension: *evaluation* scored the lowest, whereas *application* scored the highest. In the survey conducted in the University of Deusto (Eléxpuru et al., 2008) the results were similar, scores being significantly higher in the *application* dimension. This may be understood to mean that the *application* dimension presupposes more "teaching freedom" and is not as challenging as *evaluation* or *planning*.

Although the level of innovative teaching has shown to be upper-medium, there are some controversial issues. For instance, among activities often used in *planning* there are didactic strategies of teaching that correspond to structural and organizational issues: planning the course with respect to program objectives, using a variety of methods, different types of work in face-to-face classes, considering ECST, etcetera. In contrast, one of the strategies of teaching *planning* applied with the lowest frequency is connected to the discussion of the curriculum with colleagues. This may highlight a certain lack of collaboration among teachers. However, communication is important in the process of innovative teaching. Rogers (2003) defined communication as one of the channels of innovation diffusion. Ketelaar et al. (2012) investigates innovation ownership and sees communication as an indicator of it. He also quotes Sanino (2010) when stating that collaboration with colleagues could help teachers overcome resistance to innovation, referring to how talking

about conflicts they experience may help finding similarities; he then cites the idea of Peirce et al. (2012) that collaboration may lead to better knowledge about innovation. "And a school in an innovation process therefore needs a school leader who stimulates collaboration and at the same time respects the different identities of individual teachers" (Katelaar et al, 2012, p.278). This ownership of innovation may be facilitated among teacher by means of their communication with colleagues.

Concerning the low level of ICT usage, it can be a result of an insufficient supply of computer technologies in universities in Ukraine, or it may signify that teachers are not competent in using these teaching tools. In many cases, in-service teachers have pedagogical content knowledge but lack specific knowledge about the technology and how they can combine technology with other teaching tools to support students' content learning (Ertmer & Ottenbreit-Leftwich, 2010).

Lutsenko (2012) uses statistics research concerning the development of e-learning in Ukraine. The survey was carried out in 2007 in Ukrainian universities. On the one hand, the majority of universities (77,7%) have online academic service offices. Taking into consideration the data mentioned above, we can assume that universities increasingly develop education technologies for administrative purposes. On the other hand, there were only 2507 experts in distance learning who implemented online courses and other types of activities in 2007 (Lutsenko, 2012).

Ishchenko and Ishchenko (2012) use data to rate the efficiency of ICT and state that Ukraine takes the 82nd place among 104 countries. They also state that only 9% of Ukrainian universities use their own information platforms, 35% use MOODLE, 6% use PROMETEY and the remaining Universities use 20 other LMS. Thus, a reason for the low level of ICT application use may be the fact that it is still new, or it could be evidence that teachers are insufficiently prepared to embrace technology (Muir-Herzig, 2004), referring to a low level of e-competence among teaching staff.

On the contrary, European students and teachers have much broader access to new technologies of learning. Pinto et al. (2012) presents the OECD report data on Millennium Learners (Ananiadou & Claro, 2009), which identifies that 82.3% of students in European Union use virtual learning environments several times per week. Every university in the OECD area is expected to use learning management platforms. In other words, the IT

equipment of Ukrainian universities is much poorer than in European universities, which can also be an obstacle for the implementation of innovations. Moreover, it is not surprisingly that teachers evaluate their own level of ICT usage as low. If universities are not fully supplied with IT equipment and teachers do not often use ICT, it is difficult for teachers to implement ICT in the classroom.

In the analysis of the *application* level, strategies such as the connection of learning to practice, encouragement to use ICT, fostering social ethics, and facilitating comprehension all show a high level of implementation. This can be interpreted to mean that teachers are aware of the contemporary teaching requirements and try to modernize their teaching. However, collaboration methods, active methods or activities fostering students' autonomy are among the lowest scoring items, which leads to the conclusion that teachers are more eager to apply innovations that depend on them than those that depend on students' activity.

For instance, the lower mean score in the item *students' autonomy* can signify a lack of student-centred approaches and academic freedom because the teacher tries to control the learning process. In accordance with (Pundak & Rozner, 2008), traditional teachers have great difficulty when required to give up the control they would normally have during a conventional class session; furthermore, if they have problems with innovative methods, they immediately return to traditional ones.

To sum up, in the section regarding *application* it has been observed a tendency in teachers to conduct more "formal" practices, focusing on structural aspects of teaching more often than in student-oriented ones (interpersonal skills, social ethics, student autonomy, collaboration methods, communication technologies), which also may be an result of past experiences. In Soviet education, teaching was based solely on teachers, using, for the most part, textbooks written by the same professor doing the teaching. There were no private or international sources of textbooks (Heyneman, 2010, p.78). Thus, teachers were mainly knowledge transmitters and may nowadays exhibit a tendency to return to this way of teaching.

Magno and Sembrano (2007) state that the student-centred approach is a highly effective approach. They report on significant differences in teaching performance in accordance with a learner-centred approach. They also argue that teaching performance, effective

teaching and teaching efficacy are all impacted by teachers' personal characteristics. Thus, it could be advisable to include training for the cognitive characteristics that facilitate student-centred teaching in teachers' professional training programmes.

Regarding evaluation level, teachers self-reported level of friendly relations with their students might be important in the context of the democratization of education. Teachers report a low level of implementation of individualized approaches, students' participation in assessment, and evaluation of teaching. This may also be interpreted to mean that teachers in Ukraine tend to fulfil formal requirements to new approaches and remain traditional in their approaches in the sphere of teacher-student relations, which may be authoritative. This may be rooted in the times of the Soviet education paradigm, which was filled with formalism, and ruled by the achievement of results regardless of the individual characteristics of both students and teachers (Kryvchyk, 2008).

Moving the discussion forward, teachers' cognitive characteristics as reported by teachers have also shown to be upper-medium. For instance, the teachers' self-efficacy level is upper-medium in total and in its dimensions (self-efficacy in planning, self-efficacy in implication, self-efficacy in interaction, self-efficacy in evaluation). The level of teachers' self-efficacy has shown to be higher in *planning* and *application* strategies and lower in *interaction* and *evaluation*. Prieto (2007) and Achurra and Villardón (2012) also found a higher level of self-efficacy in *planning* and a lower level in *assessment*; in the current research, however, the score of *interaction* is also lower. This lower level of efficacy in *interaction* may be explained as teachers having lower self-efficacy in the teaching strategies dealing with teacher-student relations, because items such as considering students' characteristics, or having friendly relations with students scored among the lowest in *application*.

Additionally, a lower level of self-efficacy in *evaluation* may be related to the lower level of *innovative evaluation* reported by teachers. It is possible that teachers have a lower level of *innovative evaluation* because they do not have a high sense of efficacy concerning *evaluation*. "In general, researchers have established that self-efficacy beliefs are correlated with other self-beliefs and with academic changes and outcomes and that self-efficacy is a strong predictor of related academic outcomes" (Pajares, 1995 p.5). It is highly probable that teachers with a higher level of self-efficacy cope better with class interaction and assessment.

Regarding teachers' creativity level, we can highlight one very interesting assumption. As already mentioned, the lowest ranking items were those connected to originality, untraditional ways of thinking, and behavioural aspects that do not coincide with conventional teaching. Teachers, for instance, do not perceive themselves as having untraditional ideas, and they do not feel disturbed if cannot work on their own way. These issues may be related to risk taking, which is a component of creativity and innovativeness. Sternberg (2006), for example, assumes from previous research (Sternberg & Lubart, 1991) that personality attributes for creative functioning are: willingness to overcome obstacles, to take sensible risks, to tolerate ambiguity, and a sense of self-efficacy. High risk-takers show higher levels of flexibility and originality (Glover, 1977). Thus, despite the fact that the general level of creativity is upper medium, the items connected with risk show a lower level.

Concerning the characteristic of *receptivity to change*, the results are similar to those of *creativity*. They do not show a very positive orientation toward reforms and do not believe in success of reforms in their institutions. It may be interpreted to mean that teachers in Ukraine have already experienced some negative consequences of reforms and do not believe in the success of innovations. It is probably due to that fact that, in Ukraine, Bologna was introduced by the state in a strictly top-down manner and passed down with a lack of contextual adaptation possibilities (Shaw, Chapman & Rumyantseva, 2013). Furthermore, the problem of corruption in universities is one of the negative consequences of reforms (Osipian, 2009) and may be a factor that decreases teachers' trust in institutional innovation. However, trust is an important factor in overcoming the resistance to change. In the research carried out by Culmer (2012), trust was related negatively to resistance to change and positively to innovation motivational characteristics.

Analysing the levels of teachers' cognitive characteristics, we may conclude that they show positive attitudes to a change in teaching style. Despite the fact that a teacher-centred approach may still prevail in Ukraine, these results prove that many innovative strategies are also being applied. The general upper-medium level of innovative teaching may be a proof that global and radical changes that started more than 20 years ago in Ukraine are now being progressively implemented. Even if not all the approaches are often implemented, evidence can be found of the implementation of new approaches.

Similar results were achieved in the work of Vitrukh (2014, p. 14): "Although the boundaries between the approaches are not rigid, two out of nine participants clearly exhibited attitudes and made emphases that gave reason to categorize them as teachers who value *subject-centered* teaching '' instead of teacher-centred.

5.2. DISCUSSION OF HYPOTHESIS I

- Sociodemographic variables make a difference in teachers' perception of innovation level

According to research results, the hypothesis that sociodemographic characteristics make a difference in the level of innovative teaching is partially accepted.

The results of the teachers' survey showed that there was a significant difference in the teachers' self-reported level of innovative teaching depending on their age, gender, position, level of education and university type. Female respondents tend to be more innovative than male respondents. Docents implement a higher level of innovations than other teachers. Additionally, doctoral degree holders tend to be more innovative than master's degree holders. Finally, older teachers tend to show a higher level of innovative evaluation than younger teachers. However, there were no significant differences in innovative teaching depending on years of teaching experience and type of university.

In related literature there are some controversial results concerning sociodemographic data and innovation that may confirm or contradict to the present research.

Although the effect of gender on teachers' innovative educational use of ICT has not been found in this research, some researches confirm the difference in innovativeness depending on gender. For instance, the investigation of Youssef, Youssef & Dahman (2013) confirmed significant gender differences in innovative educational ICT usage between females and males. The results of the research held by Zhu & Engels (2014) show that female teachers were more responsive to change compared with males, meaning they apply innovative methods (for instance, collaborative learning) more often than male teachers.

In the present research, no significant difference was found between teachers' age or length of teaching experience in innovative teaching level. This agrees with the results achieved by Rogers (2003), indicating no significant difference between the ages of early adopters and late adopters. Less (2003) also reported that faculty does not differ in age, gender, race/ethnicity in Rogers' five categories of innovation adaptors, but they differ in their years of teaching experience and the highest degree they attained. In the research carried out by Hermas et al. (2008) it was found no significant relationship between age and the application of new technologies in the classroom.

However, the aforementioned results contradict Cox, Preston and Cox (1999), who found that mid-aged teachers use innovative technologies more frequently than young teachers. Bradley and Russel (1997) found significant correlation between ICT implementation in the classroom and teachers' age. According to Blankenship (1998), variables such as attitude toward computers, support for copmuter use, access and age are statistically significant predictors of computer use in the classroom.

The literature review did not provide information the difference in the level of innovative teaching depending on university type. In the current research, no significant difference was detected in innovative teaching according to university category. However, NAUKMA statistically has a higher score for total innovative teaching. Taking into consideration the historical perspective, it is possible to assume that the higher level of NAUKMA can be explained by the fact that it is the youngest university among all three universities and was created after Ukraine obtained independence. The other two universities are considered to be classical and have very long history of teaching that can entail some predominance of traditional approaches to teaching.

5.3. DISCUSSION OF HYPOTHESIS II

- Cognitive variables make a difference in teachers level of innovations applied in the classroom

The hypothesis that cognitive characteristics make a difference in the level of innovative teaching has been partially accepted in light of the current results.

Teachers' *self-efficacy* is confirmed to make a difference in the level of innovative teaching. This result is amply supported by existing literature. Bandura (1997, 2012) stated that self-efficacy is people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Guskey (1988), for instance, confirmed the relationship between teachers' sense of efficacy and their attitude towards innovations. Berman, McLaughlin and Bus (1977) and Hoy (2001) found a relationship between a high level of teachers' sense of efficacy and an openness towards change. Kamaruddin (2010) argues that, as teachers are agents of change, their traits and beliefs should be considered for the successful implementation of educational innovation. In addition, Prieto (2005) states that self-efficacy is influential in the quality of teaching.

Likewise, the variable of *creativity* makes a difference in the level of innovative teaching. Claphan (2003) advocates the idea that creativity training can improve ideational innovation. In addition, Ferrari (2009) argues that creativity and innovation are strongly interrelated.

Concerning the notion of receptivity to change, a significant difference was also found in the level of innovative teaching depending on teachers' receptivity to change. This result agrees with the work of Clarke (1996), who found significant inter-correlation between faculty receptivity to change and resistance to innovations. Thus, an absence of resistance to innovations might positively influence innovative activity. Kuen (2010) cites the study of Ngan (2003) where an interaction was found between teacher receptivity to change and humanistic-oriented school culture. However, Woolfolk and Hoy (2000) argue that there is a correlation between the teachers' efficacy beliefs and resistance to change. In this sense, resistance is defined as negative beliefs about innovation, which may be an obstacle for innovation. However, not all resistance is negative, and it is generally a natural process (Rogers, 2003).

Thus, fostering cognitive characteristics like self-efficacy beliefs, creativity and receptivity to change may facilitate the implementation of innovations in the university classrooms and very probably enhance the quality of teaching.

5.4. DISCUSSION OF HYPOTHESIS III

- There is a significant difference in the level of teachers' and students' perception of innovations.

The hypothesis that there is a difference in teachers' and students' perceptions of innovative teaching is accepted in this study. It is confirmed that there is a significant difference in the level of innovative teaching perceived by teachers and students, it being significantly higher in teachers.

The strategies that are scored the lowest by students and teachers presuppose an open-minded personality in teachers and more democratic approaches to teaching – individual approach in planning and evaluation, active methods in application, and more self-learning tasks. According to Jaskyte (2009), the instructor's personality is a very important component of innovative teaching, and it is presupposed to be open-minded, enthusiastic, thinking outside the box, being challenging, and being flexible. It may explain to some extent the difference in perceptions of innovative teaching, as students judge not so much an approach but a personality (Magno and Sembrano, 2007). However, personal characteristics may also impact the teaching approach. For instance, Rogers (2003) also stated that individuals' self-perception of innovation can be impacted by personal characteristics.

In addition, it was found that students' evaluations can be influenced by factors such as students' characteristics and physical environment (Shevlin et al., 2000). Moreover, Chen and Hoshower (2003) found a positive significant correlation between students overall impression of a professor and students' impression of the course evaluation system.

In conclusion: The difference between teachers' and students self-perceptions of innovative teaching can depend on different factors. However, comparing these two perceptions can provide additional perspectives of reality, based as said perceptions might be on personal perception and expectation.

The discussion of the results was performed in order to relate the findings with already existing empirical data in available literature. Supporting and contradicting empirical researches were found regarding the difference in innovative teaching level depending on teachers' characteristics and sociodemographic data. In addition, we endeavoured to

explain the significant difference between students and teachers perceptions of innovative teaching level.

To conclude the discussion, we may state that the results achieved in this study may become the basis for further research concerning innovative teaching in Ukraine. For instance, it would be important to conduct a mixed method research in order to examine the level of innovative teaching more profoundly.

5.5. GENERAL CONCLUSIONS

The aim of is study was to examine the level of innovative teaching in university classrooms in Ukraine by investigating five specific research questions through a quantitative approach. In this section, we answer these research questions through summaries of the findings, and present the limitations of the study. We then propose recommendations for actions and further research.

Based on the findings, the following conclusions have been reached for the research questions:

- Regarding the first research question – *What is the level of innovative teaching applied in university classroom*? – we may conclude that teachers mainly perceive the level of innovative teaching as upper-medium. The *level of application* dimension scores the highest, whereas *planning level* and *evaluation level* score lower. After analysing each dimension, it is concluded that teachers conduct more often formal strategies that correspond to curriculum requirements, and in turn pay less attention to students' characteristics, the application of active methods and use of ICT in the classroom.

- Concerning the second research question – *Do teachers' sociodemographic characteristics make a difference in the level of innovative teaching in university classroom*? – several conclusions can be reached. Firstly, significant differences were found in the total level of innovative teaching and in its dimensions (planning, application, evaluation) depending on teachers' sociodemographic characteristics of gender, faculty position and level of education. Female respondents tend to perceive their level of innovative teaching as higher than the level perceived by male respondents. Teachers older than 41 have a higher innovative evaluation level. Besides, docents and professors tend to show higher levels of innovative teaching than the levels shown by teachers-assistants. Finally, doctoral degree holders tend to exhibit higher level of self-reported innovative teaching. Remarkably, research results did not show any significant difference in dependent variables of length of teaching work experience or university type.

- Concerning the third research question – "*Do teachers' cognitive characteristics make a difference in the level of innovative teaching in university classrooms*?" – we can assume that all three cognitive characteristics chosen for this study (self-efficacy, creativity, receptivity to changes) make a significant difference in the teachers' level of innovative teaching in the classroom, both in general and considering the teaching dimensions of *planning*, *application* and *evaluation*. The higher the level of these cognitive characteristics, the higher the level of innovative teaching.

- Regarding research question number four – *"What is students' perception of the level of innovative teaching in university classrooms?*" – it can be concluded that the level of innovative teaching reported by students is medium. Remarkably, it scores considerably lower than the level reported by teachers. As seen in teachers' results, students' perception of the innovative *application* dimension is higher, whereas the dimension of innovative *evaluation* remains lower. In general, students report as infrequent strategies that concern teacher-student relations, social competences, and technologies, whereas methodological aspects of teaching are rated as rather frequent from the students' perspective.

- And concerning the fifth and final research question – "*What is the difference between teachers and students' perception of the level of innovative teaching*?" – we may assume that there are issues that exhibit a considerable mean difference between teachers' and students' perceptions, in which students report much lower levels of perceived implementation. In addition, there is a bigger difference in the level of innovative *evaluation* as perceived by teachers and students than there is in the level of *application*.

In brief, the results obtained in this study show that innovative teaching exists in the university classrooms in Ukraine and that its level is upper-medium, albeit there is still a certain lack of student-centred strategies in classroom practices.

The main difficulties in implementing student-centric strategies may be interpreted through the lens of socially-determined factors such as top-down approaches to reforms that do not

consider contextual peculiarities and teachers' individuality. Besides, there is also a problem regarding teachers' professional training, which often does not include any "cognitive change". To our mind, the *teacher factor* is very important. However, is an issue that has been little researched in pedagogical literature in Ukraine.

The present work is one of the first attempts to research the level of innovative teaching in university classrooms in the Ukrainian academic discourse and to examine how it changes depending on teachers' characteristics. Thus, teachers' perceptions of innovation, together with teachers' personality characteristics that facilitate innovative teaching need to be carefully considered in the process of educational innovation. The contributions of this study may be helpful for other researchers investigating educational innovation in Ukraine.

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5.6. RESEARCH LIMITATIONS

Some subjective and objective limitations can be observed in the present study:

- The small sample size and the resources available to the author limit the present study;
- The sample selection procedure is not random; this does not allow to generalize the results. It could be necessary to conduct complementary studies in order to expand knowledge of this population;
- The results from the research conducted in three particular settings might not be representative for the whole of the Ukrainian higher education; additionally, small the sample size only allowed to divide respondents into only two groups, which could lead to losing data results;
- One more limitation for this research is that respondents' report on their perceptions of reality and their real level of innovations can deviate from the results obtained in the present work;
- Cognitive variables and dependent variables were measured at the same time. It could be advisable to create a more longitudinal design and to examine causal relations, not only significant differences;
- The overall upper-medium level of innovative teaching may be interpreted as an overestimation and lack of self-criticism and be explained by the limitations inherent to Likert scales. Additionally, social desirability in some answers can also become a limitation for the present study;
- A mixed method research would be advisable in order to examine the level of innovative teaching. Only conducting a quantitative research is a limitation of the study.

Taking into account the limitations mentioned above, it was decided to implement the same questionnaire with students, in order to measure students' view of their teachers' level of innovative practice application in the classroom. It provides insight on the subject of the research from another perspective and minimizes some of the limits of the investigation.

5.7 RECOMMENDATION FOR FUTURE RESEARCH

The current research represents only a first authors' attempt to investigate the problem of the implementation of innovative teaching in Ukrainian university classroom. The results of this study revealed the problems of innovative education in Ukraine that could warrant more in-depth research in the future.

Regarding the context of the innovation that may be presented from different perspectives, future studies should consider performing a qualitative survey – via interviews – as an approach to achieve a better understanding of the teachers' points of view and reflect on innovations in more detail. Additionally, it could be necessary to research study programs, tasks performed during the courses, etcetera.

Another study could analyse official documents, education policy laws, and guides for teaching, in order to research innovation from one additional perspective. Another interesting option would be to apply mixed-methods research with a bigger sample size that could enable researchers to collect more information, both with quantitative and qualitative instruments.

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Annex I. **TEACHERS' INVENTORY**

Dear Teacher!

Thank you for volunteering to complete the questionnaire below, which was designed to collect the data pertaining to examine your innovative teaching level and the level of your cognitive characteristics like self-efficacy, creativity and receptivity to change. Again, thank very much you for your time and participation. It is very important for us.

Fill this demographic data sheet and please be assured that your responses will remain completely confidential

Institution:_____

Position: _____

Gender: male female

Age: _____

Years or teaching experience: _____

Teaching area: _____

Education: _____

I. Innovative Teaching Questionnaire

Please indicate how often you perform the stated activities

KEY:

1= **Never**, 2=**Seldom**, 3=**Sometimes/Occasionally**, 4=**Often**, 5= Always

Planning

1)	**I use teaching profile.**	**1 2 3 4 5**
2)	**I discuss my course curriculum with my colleagues.**	**1 2 3 4 5**
3)	**I plan the process of training in accordance with the aims and tasks of the course.**	**1 2 3 4 5**
4)	**I think of the contribution of my course in the process of students professional training.**	**1 2 3 4 5**
5)	**I consider students' personal characteristics in the process of curriculum development.**	**1 2 3 4 5**
6)	**I explain what competences are to be developed during the course.**	**1 2 3 4 5**
7)	**I prepare tasks for students according to credit-based modular learning.**	**1 2 3 4 5**
8)	**I plan the training process according to the number of teaching hours devoted to the course.**	**1 2 3 4 5**
9)	**When I plan group sessions, I plan tasks for the whole group, for small groups and for the individual.**	**1 2 3 4 5**
10)	**I plan introductory classes in order to tell the students about course aim and tasks.**	**1 2 3 4 5**
11)	**I renew the course content systematically.**	**1 2 3 4 5**
12)	**I reflect on my teaching in order to improve it.**	**1 2 3 4 5**
13)	**I am familiar with different teaching methods.**	**1 2 3 4 5**
14)	**I choose different kinds of teaching activities according to the goals of the course.**	**1 2 3 4 5**
1.	**I use ICT tools:**	

15) expository recourses, expository text	**1 2 3 4 5**
16) PowerPoint (or similar)	**1 2 3 4 5**
17) Information platform	**1 2 3 4 5**
Application	
18) I develop the course curriculum in accordance with time limits.	**1 2 3 4 5**
19) I inform students about their strengths and weaknesses in the process of teaching and during the exams.	**1 2 3 4 5**
20) I use different teaching methods in order to achieve course goals.	**1 2 3 4 5**
21) I facilitate the learning process with active teaching methods (ask about problems, offer practical tasks).	**1 2 3 4 5**
22) I use the cooperative method of teaching.	**1 2 3 4 5**
23) I develop tasks for students' self-learning.	**1 2 3 4 5**
24) I foster students' responsibility for their knowledge.	**1 2 3 4 5**
25) I encourage students to have an interest in knowledge.	**1 2 3 4 5**
26) I foster students' social ethics.	**1 2 3 4 5**
27) Facilitate course content acquisition when teaching.	**1 2 3 4 5**
28) I connect the methods and content of the course with their practical applications.	**1 2 3 4 5**
29) I facilitate the use of ICT during the course.	**1 2 3 4 5**
30) I use different computer-based methods of teaching.	**1 2 3 4 5**
31) I foster the development of interpersonal communication skills.	**1 2 3 4 5**
Evaluation	
32) I have a friendly relationship with my students.	**1 2 3 4 5**
33) I evaluate learning results in accordance with previously set criteria.	**1 2 3 4 5**
34) I evaluate the process of teaching using different methods.	**1 2 3 4 5**

35) I evaluate all the competences which are to be developed during the course.	**1 2 3 4 5**
36) I facilitate students' development by means of their evaluation results.	**1 2 3 4 5**
37) I apply students evaluation systematically, according to the goals and methods of the course.	**1 2 3 4 5**
38) I facilitate students' self-learning process.	**1 2 3 4 5**
39) I evaluate group learning.	**1 2 3 4 5**
40) I implement mutual evaluation of learning among students.	**1 2 3 4 5**
41) I implement an individualized approach in the process of teaching.	**1 2 3 4 5**
42) I involve students in the process of the evaluation of learning results.	**1 2 3 4 5**
43) I always evaluate my teaching methods.	**1 2 3 4 5**
44) I systematically evaluate my course curriculum.	**1 2 3 4 5**

II. Teachers' Sense of Efficacy scale

Answer the following questions concerning your confidence in particular innovative strategies.

KEY:

1= **No confidence at all to** 6= **Complete confidence**

How confident am I in my ability to…

2. Specify the learning goals that I expect my students to attain?	**1 2 3 4 5 6**
3. Actively engage my students in the learning activities that I include in my teaching plan/syllabus?	**1 2 3 4 5 6**
4. Create a positive classroom climate for learning?	**1 2 3 4 5 6**
5. Reflect on my teaching practice with the aim of making appropriate improvements?	**1 2 3 4 5 6**
6. Develop different assessment methods depending on the learning goals I want to check in my students?	**1 2 3 4 5 6**
7. Evaluate the effectiveness of my own teaching in light of my students' feedback to me?	**1 2 3 4 5 6**
8. Promote student participation in my classes?	**1 2 3 4 5 6**
9. Use different evaluation methods?	**1 2 3 4 5 6**
10. Prepare the teaching materials I will use?	**1 2 3 4 5 6**
11. Ensure that my students resolve the difficulties they encounter while learning?	**1 2 3 4 5 6**
12. Promote a positive attitude towards learning in my students?	**1 2 3 4 5 6**
13. Adapt my teaching practices in response to my students' evaluations of my teaching?	**1 2 3 4 5 6**
14. Evaluate accurately my students' academic capabilities?	**1 2 3 4 5 6**
15. Decide on the most appropriate evaluation method for a particular course?	**1 2 3 4 5 6**
16. Ensure that my students consider themselves capable of learning the material in my class?	**1 2 3 4 5 6**
17. Employ systematic methods that permit me to assess my own teaching?	**1 2 3 4 5 6**

18. Give my students feedback about their progress?	**1 2 3 4 5 6**
19. Clearly identify my course objectives?	**1 2 3 4 5 6**
20. Maintain high academic expectations?	**1 2 3 4 5 6**
21. Use information derived from my own self-reflection to improve my teaching?	**1 2 3 4 5 6**
22. Adequately grade my students' exams and assignments?	**1 2 3 4 5 6**
23. Adapt to the needs of my students (motivation, interest, prior knowledge, etc.) when planning my courses?	**1 2 3 4 5 6**
24. Think of my students as active learners, which is to say knowledge constructors rather than information receivers?	**1 2 3 4 5 6**
25. Provide support and encouragement to students who are having difficulty learning?	**1 2 3 4 5 6**
26. Update my knowledge of the subject I am teaching?	**1 2 3 4 5 6**
27. Provide my students with detailed feedback about their academic progress?	**1 2 3 4 5 6**
28. Modify and adapt my syllabus if my students' needs require it?	**1 2 3 4 5 6**
29. Permit my students to prepare and/or develop some of the course units?	**1 2 3 4 5 6**
30. Calmly handle any problems that may arise in the classroom?	**1 2 3 4 5 6**
31. Develop my teaching skills using various means (attending conferences, reading about pedagogy, talking to other professionals…)?	**1 2 3 4 5 6**
32. Use formative assessment to gather information about my students' academic progress?	**1 2 3 4 5 6**
	1 2 3 4 5 6
33. Encourage my students to ask questions during class?	**1 2 3 4 5 6**
34. Make students aware that I have a personal investment in them and in their learning?	**1 2 3 4 5 6**
35. Evaluate the degree to which my course objectives have been met?	**1 2 3 4 5 6**
36. Design the structure and content of each class?	**1 2 3 4 5 6**
37. Let students take initiative for their own learning?	**1 2 3 4 5 6**

38. Show my students respect through my actions?	**1 2 3 4 5 6**
39. Be flexible in my teaching even if I must alter my plans?	**1 2 3 4 5 6**
40. Make students aware of the relevance of what they are learning?	**1 2 3 4 5 6**
41. Master the material that I cover in class?	**1 2 3 4 5 6**
42. Promote my students' confidence in themselves?	**1 2 3 4 5 6**
43. Make my students feel that their academic success is due to their own efforts?	**1 2 3 4 5 6**
44. Spend the time necessary to plan my classes?	**1 2 3 4 5 6**
45. Select the appropriate materials for each class?	**1 2 3 4 5 6**

III. Professors' creativity scale

Think about your teaching activity and evaluate each of these affirmations

Key: 1. **completely disagree**. 2. **Disagree**, 3. **Agree** 4. **Completely agree**

1. I do everything my own way.	1	2	3	4
2. I make efforts to understand teaching activities in depth.	1	2	3	4
3. I try to be original in my activities.	1	2	3	4
4. I try to consider all the details in order to decide how to teach.	1	2	3	4
5. I integrate my personal experience in the teaching methods	1	2	3	4
6. Difficulties drive me to find untraditional activities to implement.	1	2	3	4
7. I think a good professor has to be "inventor" of teaching techniques.	1	2	3	4
8. I search for different alternative ways to solve problems.	1	2	3	4
9. I imagine what would do another professor in order to get new ideas.	1	2	3	4
10. I use many different approaches to interpret and understand a situation.	1	2	3	4
11. I find it interesting to try different ways of teaching.	1	2	3	4
12. I use different didactic techniques to foster students´ creativity.	1	2	3	4
13. I always have a lot of ideas in order to develop the activities I implement.	1	2	3	4
14. I feel it disturbing if work conditions don't allow me to act my own way.	1	2	3	4
15. I am interested in helping people learn and it helps me to be creative.	1	2	3	4
16. I do not fit into the typical professor's	1	2	3	4

profile.	
7. People are surprised when they listen to my ideas because of their originality.	1 2 3 4
18. I like to do different kinds of activity in the classroom.	1 2 3 4
19. I think creativity is a fundamental characteristic of professors.	1 2 3 4
20. I think there are a lot of different forms to do things.	1 2 3 4

IV. Professors' receptivity to change scale

Look at the following statements and evaluate them from 1 till 10 reporting your attitude toward these affirmations

Key: 1 - **completely disagree** 10– **completely agree**

1.	**I believe that education is a reflection of all changes in society.**	1 2 3 4 5 6 7 8 9 10
2.	**I accept pluralism among my colleagues and my students.**	1 2 3 4 5 6 7 8 9 10
3.	**I think reforms are more positive than negative for education.**	1 2 3 4 5 6 7 8 9 10
4.	**I believe in the success of the changes implemented in my institution.**	1 2 3 4 5 6 7 8 9 10
5.	**I believe I can change my teaching methods according to the students' needs.**	1 2 3 4 5 6 7 8 9 10
6.	**I always try to predict the results of my new teaching activities.**	1 2 3 4 5 6 7 8 9 10
7.	**I believe I understand the goals and values of educational changes in our institution.**	1 2 3 4 5 6 7 8 9 10
8.	**I support professors - innovators in our institution.**	1 2 3 4 5 6 7 8 9 10
9.	**I think I can continue applying new methods even if not all my colleagues support the idea of change.**	1 2 3 4 5 6 7 8 9 10
10.	**I discuss new methods of teaching with my colleagues.**	1 2 3 4 5 6 7 8 9 10
11.	**I practice self-learning to know more about new trends and ideas in education.**	1 2 3 4 5 6 7 8 9 10
12.	**I have attended qualification-upgrading courses since I graduated from university.**	1 2 3 4 5 6 7 8 9 10

13. I subscribe to scientific journals in the sphere of higher education and teaching.	1 2 3 4 5 6 7 8 9 10
14. I attend the classes of my colleagues and learn from their experience.	1 2 3 4 5 6 7 8 9 10
15. I can change my methods to adapt them to my students' needs.	1 2 3 4 5 6 7 8 9 10
16. I participate in conferences, workshops, seminars and contests organized for teachers.	1 2 3 4 5 6 7 8 9 10
17. I learn rapidly how to use new ICTs and gadgets	1 2 3 4 5 6 7 8 9 10
18. I participate in scientific research teams in my institution researching educational issues.	1 2 3 4 5 6 7 8 9 10
19. I always share new ideas in teaching and learning.	1 2 3 4 5 6 7 8 9 10
20. When I can, I include new material in the course content.	1 2 3 4 5 6 7 8 9 10

ANNEX II. STUDENTS INVENTORY

Dear student!

Thank you for volunteering to complete the questionnaire below, which was designed to collect the data pertaining to define the level of innovative teaching applied by teachers in your university. Again, thank very much you for your time and participation. It is very important for us.

Fill this demographic data sheet and please be assured that your responses will remain completely confidential

Gender: male female

Institution: _____

Year of Study: _____

Read the statements bellow and indicate how often teachers apply the following strategies in your university.

KEY:

1= **Never**, 2=**Seldom**, 3=**Sometimes/Occasionally**, 4=**Often**, 5= **Always**

The Teachers in my institution…

1)	**Develop course curricular in accordance with time limits**	**1 2 3 4 5**
2)	**Inform students about their strong and weak characteristics in the process of teaching and during the exams.**	**1 2 3 4 5**
3)	**Use different teaching methods in order to achieve course goals.**	**1 2 3 4 5**
4)	**Facilitate learning process with active teaching methods (ask about problems, offer practical tasks)**	**1 2 3 4 5**

5) Use cooperative method of teaching	**1 2 3 4 5**
6) Develop tasks for students' self-learning	**1 2 3 4 5**
7) Foster students' responsibility for their knowledge	**1 2 3 4 5**
8) Encourage students knowledge interest	**1 2 3 4 5**
9) Foster students' social ethics	**1 2 3 4 5**
10) Facilitate course content acquisition during the teachers	**1 2 3 4 5**
11) Connect methods and content of the course with practical application	**1 2 3 4 5**
12) Facilitate innovative technologies application during the course	**1 2 3 4 5**
13) Use different computer based methods of teaching	**1 2 3 4 5**
14) Develop interpersonal communication skills	**1 2 3 4 5**
15) Have friendly relationship with their students	**1 2 3 4 5**
16) Evaluate learning results in accordance with previously set criteria	**1 2 3 4 5**
17) Evaluate the process of learning using different methods	**1 2 3 4 5**
18) Evaluate all the competences which are to be fostered during the course	**1 2 3 4 5**
19) Facilitate students' development by means of their results evaluation.	**1 2 3 4 5**
20) Apply students evaluation systematically according to the goals and methods of the course	**1 2 3 4 5**
21) Facilitate students self-learning process	**1 2 3 4 5**
22) Evaluate group learning	**1 2 3 4 5**
23) Apply mutual evaluation of learning among students	**1 2 3 4 5**
24) Apply individual approach in the process of teaching	**1 2 3 4 5**
25) Involve students to the process of evaluation of learning results	**1 2 3 4 5**
26) Always evaluate my teaching methods	**1 2 3 4 5**
27) systematically evaluate the course curricular	**1 2 3 4 5**