INNOVATIVE STUDY METHODS ADAPTATION: THE POWER OF AN EFFECTIVE TEACHER

Lina Gaižiūnienė[a]*

[a] Kaunas University of Technology, Donelaičio Str.73, Kaunas LT-44029, Lithuania

Abstract

Teachers in modern higher education are facing a significant challenge – to adapt themselves and to adapt educational process to a constantly changing student demographic. Innovative study methods (hereinafter - ISMs) have been developed to meet the learning needs of modern students, making their use necessary and desirable in every teacher's activities. ISMs are accepted more quickly by students in such cases when these methods align with their cultural, social and value basis. Thus, teachers need to adapt the ISMs to their own and their students' personality traits, needs and aspirations. It is important to determine in this context how the adaptation of ISMs take place in the context of teachers' activities. The teacher is the main actor in the adaptation process of educational innovations because s/he will decide how to adapt the ISMs. Hence, it is important to identify the key teacher characteristics that influence this process. The theory of adaptation, which is customized to the university context, is used to construct a theoretical model. This paper presents the conceptual framework, based on literature analysis and theoretical modeling, and reveals the innovation process and innovation decision process through teacher and student interaction in higher education. The paper demonstrates that the teacher's competence, personality traits, attitudes, and the past experience of ISMs adaptation play a pivotal role in an ISM adaptation process. Key activities of ISM adaptation include identification of the elements, their modification, and consultations with ISMs developers about adapted elements, testing and analysis of adapted elements.

Keywords: Adaptation, innovative study method, teacher activities, teacher characteristics

*Corresponding author.
E-mail address: lina.gaiziuniene@ktu.lt

1. Introduction

For any organization seeking to survive in the modern, changing society and successfully function, it is necessary to study the ways how members of an organization could quickly and simply adapt innovations and employ them in organizing daily activities (Zolait, 2014). It has been frequently observed and stressed that some teachers use the same teaching methods and treat them as innovative, while others say that they are routine and not innovative. Thus, what determines the fact that the same study method for some may be innovative and for others – not?

Mintrop (2016) maintains that innovativeness is characterized by including new ideas into existing processes to make them more effective, sensitive to and suitable for its users; in other words, more beneficial. Frankland (2007) supports this by defining an innovative way as new and previously not tested by its user. Novelty, as pertaining to innovation, can be both absolute and relative (Wall & Ryan, 2010). Lumpkin and Olsten (cited in Rutkienė, 2004) distinguish the following, based on the level of novelty: revolutionary innovations and architectural innovations. This division can be used to analyse ISM. Absolute novelty is established when no analogue ISM has been developed. This level of novelty corresponds to revolutionary innovations, when absolutely new innovations or ISM are created. Architectural innovations, on the other hand, are similar to relatively new ISM, when certain elements are reconfigured, where they may be slightly changed, adapted or customized to a new context.

Thus, ISMs share a key feature that they have to be new and previously not used by a teacher, a group of teachers, university or region that are implementing these, i.e. new to an individual, group, organization or country.

Biggs and Tang (2011) emphasize that innovative methods help solving complex modern problems. Corradi, Evans, and Valk (2006) maintain the same – it is crucially important that a study method is related to a present situation, its problems and taught students to solve challenges through their experience. D'Angelo, Kasperiūnienė, and Rutkauskienė (2010) emphasize that ISMs have to be characterized by modern technologies and involve into virtual learning.

Hence, the discussed notions of researchers allow the claim that *innovative study methods are a system of student activities, that is new and previously not tested by their implementers (teachers, their groups or university).* It is often based on teacher and student interaction that integrates modern technologies, and on this basis, complex abilities are developed and contemporary and topical problems are solved.

Hochgerner (2011) emphasizes that innovations can cause a lot of instability to those accepting them, and push them out of their comfort zone (Serdyukov, 2017), making them

change an established order. Innovations often make one change not only behaviour, but also thinking, values, and cultural aspects; thus adaptation of educational innovations provides more security to their users. Educational innovations that are customized, modified and transformed for cultural, moral and social aspects of their users are more acceptable, suitable and easier adopted.

Baier, Rammer, and Schubert (2015) emphasized that the adaptation of educational innovations is the most significant part of the adoption process. Teachers, by implementing ISMs, have to adapt them to make the new methods acceptable to and thus beneficial for the students. Hutcheon (2013) also adds that we retain in our memory, elements that are repeated to us in a new, different form. Therefore, adaptation of new methods improves the process of content memorization.

2. Problem statement

Most often in research related to educational innovations (innovative study methods as well), innovations are created or developed, and then practically tested to see if they can be used ie. if the process of adopting is successful (Khatri et al., 2013; Orr & Mrazek, 2009; Pernaa & Aksela, 2013). However, there is little focus on how these educational innovations are modified and adapted to the users. There is a lack of research on replacement and adaptation of ISMs and their encouragement or empowerment from the point of view of teachers. Therefore, the problem involves the lack of information on teachers' activities in ISMs adaptation in order for this process to be effective.

3. Research questions

1) What are the fundamental teachers' characteristics that play a pivotal role in the adaptation process of ISMs?

2) What activities should teachers' engage in for ISMs adaptation to be effective?

4. Purpose of the study

The purpose of this study is to detail the ISMs adaptation process at the university, revealing the main teachers' activities and the most significant teachers' characteristics that affect it.

5. Research methods

What is presented here is a conceptual framework, based on the scientific literature analysis and theoretical modeling. The theory of adaptation, which is customized to the

university context, is used to construct a theoretical model. Hutcheon (2013) when describing the theory of adaptation compares adaptation to art. In her opinion, our world comprises several billions of different people, who live, imagine, understand, interpret and act differently. All systems, activities and products have to meet their needs. They have to be customized and adapted. The author defines adaptation primitively, as transfer of the same content into another shape, when a new interpretation, additional value and/or benefit is obtained. However, this "transfer" is very complicated and complex; it is based on (re) interpretation and (re)creation. Adaptation of ISMs is one stage of innovative decision process.

This paper reveals the innovation process and innovation decision-making process through teacher and student interaction in higher education. It is based on the concept of a modern curriculum, which states that curriculum must be constantly revamped to apply to a specific, changing context.

6. Findings

With the change of the educational paradigm from teaching to learning, the goal is that students would learn more often rather than being taught. Jucevičienė et al. (2010) state that the ability for students in general to analyze and assess their ways of learning, critically examine their learning and to perceive themselves as learners is a rather complicated process for students, which therefore necessitates help. In regard to this, students need an understanding person by their side; a facilitator or a mentor, who understands their needs and aspirations, and will be able to direct them in information collecting, learning, staying interested in and studying in a certain direction, by using particular and individually most efficient means. Valuckienė (2009) states, that the interaction between the teacher and students changes essentially: the teacher seeks to realize pedagogical partnership together with the student, to create a favourable educational environment, to help students organize their own learning, to take responsibility for outcomes and be the most important actors of the process.

Thus, all this unique educational interaction in higher education presents a certain challenge to teachers, as they have to become not only students' "peers", mentors and fellow-travellers on the study journey, but also to have expertise in possible learning and teaching environments, methods and tools, i.e. have to be continually informed about educational innovations and to adapt them to learners' needs. Teachers always have to be more advanced than students in all areas in order to be able to help and give advice when needed. Therefore, in the analysis of ISMs adaptation process, it is important to elaborate on key characteristics

of teachers, that have influence on and to distinguish the key teacher activities related to the adaptation process.

6.1. Teacher's features

Blömeke (2008) and Miller-Day et al. (2013) expressed an opinion that any educational adaptation depends on the competence of the teacher. The teacher who adapts and uses educational innovations also increases his/her competence – in a way, getting added value to his/her actions (Moser, 2007).

Jucevičienė et al. (2010) claim that the teacher's competence is professional, pedagogical, psychological, managerial and includes all other preparations to organize the process of studies in such a way, so that the self-realization of each student in the study process is ensured.

Zhu et al. (2013) found out that educational, technological and social competences are mostly related to innovative teaching. Blömeke (2008) maintains that in order to make informed pedagogical decisions, teachers have to be able to analyze and assess specific learning episodes together with contextual and situational factors, and to be able to relate this information with specific knowledge of the teaching and learning process to be able to organize further teaching and learning actions.

Therefore, adaptation of ISMs is related to educational, technological and social competence, as the teacher has to be able to interact with students, to foresee what methods would be most suitable for them, to design the method within the framework of the subject taught, to implement it, then to analyse and think how it would be possible to improve it.

Warford (2005), Hariri (2014), Lapina and Slaidins (2014) emphasized that while analysing the adaptation of educational innovations at an individual level, the personality and its features of every user of innovation (in this case – the teacher) becomes inseparably important. Every individual has a different reaction to innovations; everyone has a different attitude towards them and is differently prepared to accept them, because we have specific personal experience and features, that are either favourable or unfavourable to the process of innovations adaptation. One such feature is susceptibility to innovations.

Roger (1995) explains innovativeness as an intention o adopt new products. This decision is motivated by inner willingness to change and try novelties. Lin (2004) and Serdyukov (2017) claim that adoption and adaptation are based on an internal wish and pursuit for novelties. Thus, without innovativeness and susceptibility to innovations, it is not possible to adapt ISMs. Jazerskytė and Janiūnaitė (2010) emphasize that susceptibility is part of the teacher's innovative activity. The teacher has to have a disposition to be constantly interested

in changes and innovations and based on that, to renew the methods, contents, activities, etc. of the subject taught. However, it is not just susceptibility to innovations that is important. The teacher has to be understanding and skilful, and above all, empathic in order to realize the pedagogical partnership. Empathy in the teaching and learning process has been researched in terms of psychology (Boyer, 2010; Demetriou & Wilson, 2008; Feshbach & Feshbach, 2009). In their view, empathy is part of the pedagogical system. The teacher, when organizing the educational process and selecting a form suitable for the student, has to be able to think over educational methods and tools in terms of the student. In an attempt to adapt ISM to the student, it is necessary first to understand what students are like, what they need and what they are seeking.

While analysing the specifics of the process of educational innovations at an individual level, one could mention an important element from the Motivated Behaviour Theory – a personal view (Hariri, 2014). Every educator has his/her own personal view on innovations which is determined by personal beliefs and assessment of the situation. A personal view is constantly shaped and changes in time, being affected by social environment, experience and beliefs.

A personal view can be affected by previous experience when the innovation was adopted (or rejected) (Hariri, 2014). With a successful experience, when the adopted innovation becomes functional and used daily, other innovations will be viewed more favourably as compared to those with the experience of failure.

Thus, the teacher in the process of adaptation of ISMs is the most significant actor in the process, as s/he is the one who will consider how to adopt and adapt ISMs. Hence, the success of the adaptation process depends on the competence, personal features (such as innovativeness and empathy), attitude and previous experience in educational innovations adaptation of the teacher.

6.2. Teacher activities during the process of adaptation

Innovation in terms of social innovations comprises a *4-i-process: idea, intervention, implementation* and *impact* (Hochgerner, 2013). During this process, people think of ideas for a solution of how to deal with a challenge, crisis or problem which emerges. Then, they search for the most advanced solution and/or a suggestion on how to intervene and solve the problem. The implementation stage includes the use, dissemination and adoption/rejection of innovation. In order to ensure the adoption of the social innovation, different modifications, improvements, studies and practices are regularly made. During the final stage - impact - when

innovations affect all their users, they are adopted, become customary and routine in individual activities.

The adoption or rejection of a new social product is a process in many ways similar to the innovation-decision. The adoption of innovations is faster and better when innovations are close to the cultural, social and values base, i.e. when they are adapted. In order for educational institutions to be able to adapt to the changing society and successful adaptation of innovations, it is mandatory not only to understand the benefit of educational innovations, but also to achieve optimal percentage of innovations adoption when adapting them.

The key innovative study method adaptation stages include the establishment of adaptable elements, modification of adaptable elements, testing of the adapted ISM and analysis of adapted elements. Activities take place in a continuous cycle. During the ISM adaptation, the teacher carries out certain specific activities that will be further discussed (see Figure 1).
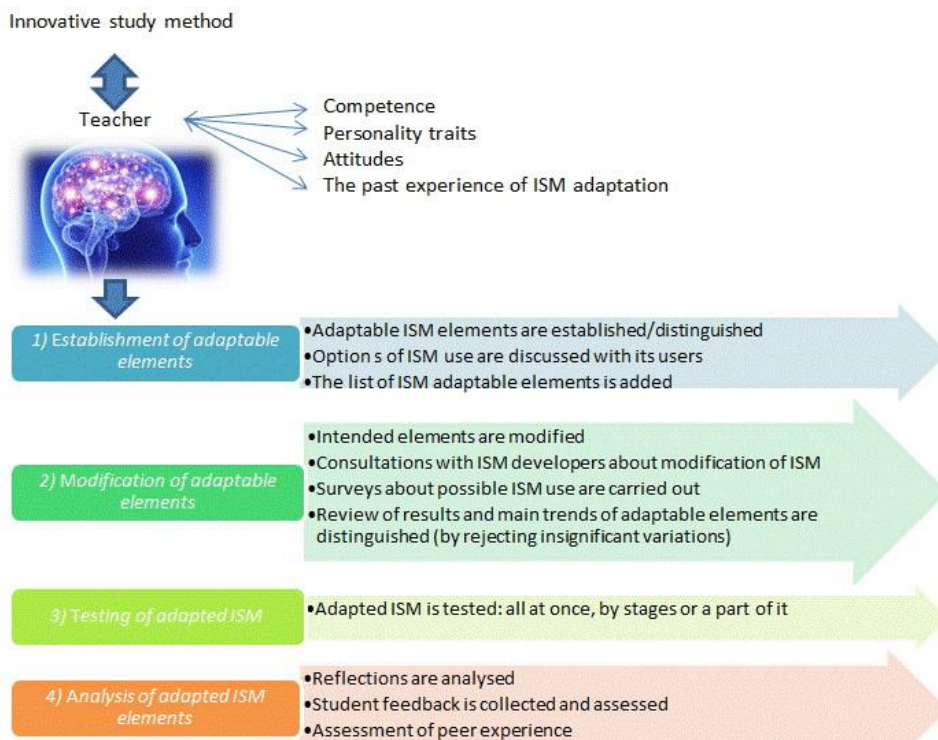

Figure 1. Teacher activities during the process of adaptation

6.2.1. Establishment of adaptable ISM elements

Hord et al. (2008) maintain that the adaptation of educational innovations begins with the establishment and choice of adapted elements. Further, it is shaped into what an educational innovation should look like in its practical application. In order to produce a detailed picture, it is important to study as many as possible sources of analysis of the ISM and to discuss the main adaptable components. After the first step, the list of the ISM adaptable components, dimensions and variations of use is compiled, i.e. the list of elements that have to be modified. In Laurillard's (2012) view, adaptable elements may include study outcomes, the choice of teaching/learning duration and group size, sequence of tasks, roles, assessment types, sources and means. Next, a small number of users representing as diverse a representation of the user population as possible is selected, and they help to establish maximum diverse ways of using the innovations. The ways of using innovations that differ from the aims of the ISM developers should be more thoroughly analysed, as they are extremely important. Thus, at the end of the second step, the list of adaptable elements is corrected and added.

Law et al. (2010) maintain that in order to determine which elements of the ISM are necessary to adapt help mental modelling, what the method is and what it would look like in a relevant lecture. Then, it will be possible to distinguish the necessary means, tasks, examples and assessment in order to achieve specific aims pursued by this method

6.2.2. Modification of adaptable elements

Udvari-Solner (1995) distinguished in detail the core actions that have to be taken to adapt any teaching/learning content, activity, method or way. Those steps are relevant also in terms of adapting ISMs as educational innovations. According to the author, it is necessary (1) to identify individual aims and goals of students. Then, to plan (2) a topic(s) and (3) activities, (4) teaching/learning method(s) and to choose and implement other (5) elements of lecture design: presentation of learning material, lecture format, student-oriented strategies, aims of the method suitable for the lecture, modified material and other related actions. Then, the author claims that the accuracy of one's actions has to be checked and actions "validated".

In this case, Hord et al. (2008) maintains, that after the identification of adaptable elements it is necessary to plan how they will be implemented. Implementation includes both external ISM components (systems of actions, means, process of object change and results) and internal components (level of motivation, perception, memory and thinking, expression of imagination, emotions and will). Then consultations with the ISM developers are held about modification of the ISM. Step four already employs a working version of adapted elements list to conduct surveys and to find out a real use of educational innovations. Surveys often help to

discover new adaptable elements, variations and dimensions of adaptation. With the compilation of this list, the implementation of educational innovations begins when the distinguished adopted elements are tested in practice (Hord et al., 2008).

Sabine and Beate (2005) highlighted the importance of the possibility of applying educational content and examples to the method. Every delivered subject (module) has its core content that is filled into the ISM, ensuring that the method helps to deliver the content. Each ISM has specific activities, tasks and actions that have to be flexible in terms of study subjects, i.e. they have to be applicable. Modification of tasks, activities and tests is mandatory with regard to study results. The authors also emphasize that suitable examples are especially important to those students who are able to empathize and imagine. Examples should be adapted by selected tasks and student groups. Blonder et al. (2008) also add that most often the content of teaching material is adapted to the aims and activities of the method. More precisely, the content of the delivered subject is linked to the ISM in such a way that the ISM properly "serves" in achieving core aims and outcomes of a study subject.   By adapting the content of lectures to the method, activities, tasks and practices are adapted as well. In parallel to adapted tasks, activities and practices, the system of assessment is also adapted. Jugo, Kovačic and Slavuj (2016) add that it is crucial to adapt the subject content to the activities of the method and adapt the process of assessment. Educational systems of every country include certain features in the teaching content to which ISMs should be adapted when implementing them in lectures. It is also important to adjust and transform core activities in such a way that they would correspond to study outcomes. The system of assessment should also be adapted in accordance with which activities were organized, what content was delivered, and what the aims were .

Thus, themes, activities (sequence), methods and assessment are discussed by the authors previously mentioned; however, this method includes the completion time to the adaptation of tasks depending on the learning deadline and learning intervals, while Sabine and Beate (2005) adds the importance of adapted suitable examples.

Wright (2005), on the basis of the research of Ebeling, Deschenes and Sprague (1994), presents nine types of adaptation: 1) To adapt the way of task presentation to students (online task, or oral, or printed, and so on); 2) To adapt ways how students can carry out the task; 3) To adapt the time interval needed to complete a task, to learn or to do a test; 4) To adapt the level of skills, problem type or rules, so that students could complete tasks; 5) To foresee and think over the level of assistance needed for special needs students; 6) To adapt the number of elements to be learned by students; 7) To adapt teaching/learning content; 8) To adapt aims and outcomes; 9) To plan different instructions and means in order so students could achieve

their learning aims. These types of adaptation defined by the author are relevant in the case of ISMs adaptation as they are a sort of key actions enabling application of ISMs to our and students' needs.

6.2.3. Testing of Adapted ISM

The testing of the adapted ISM may be different in relation to two aspects: (1) if the adapted ISM is to be tested all at once, or gradually, also (2) if it is to be adapted and tested all, or a part of it (external or internal structures, e.g. the system of actions or means). AbuJarad and Yusof (2010) describe radical and gradual innovations in their research. In terms of radical innovations, a totally new product, an activity, a method of working or process emerges that replaces the previous one. In this way, action is taken fast, the customary behaviour is altered cardinally; simultaneously, great risk is taken because radical changes are taking place. While analysing the adaptation process, testing may also be radical – all at once: the whole method is taken and implemented by cardinally replacing previous activities, processes, methods, and other aspects. As AbuJarad and Yusof (2010) contend, this method is acceptable to advanced organizations or/and to highly competent persons, as it requires an ability to adapt instantaneously and to change one's ways of performing activities, styles, behaviour and so on. In this respect, the teacher must be highly competent and flexible, and quickly adapting in new undefined situations to be able to adapt and test ISMs in this way.

In terms of gradual innovations, the user gets access to some part or aspect of the innovation that is either accepted or rejected. Later, another part of the innovation emerges, followed by another one. In the respect, the adaptation and testing of educational innovations may also take place in stages in a gradual way. First, students get access to one adapted ISM element, next - to another, and then - the third one amd so on. This way, the entire ISM is adapted and tested. However, a certain risk exists - that innovations at some stages may be successfully accepted, or in some cases - rejected, depending on the situation (AbuJarad & Yusof, 2010). For example, some stage of problem solution may fail, or the teacher may fail in selecting a problem to meet the aims of the lecture. However, gradual innovations are not so risky as there is a higher degree of possibility that the ISM will not be rejected by students, thus its gradual modification and testing is a safer version of adapting the ISM.

ISMs may also be adapted and tested with regard to the level of novelty in terms of students: either the whole method is adapted or - only some elements. Adaptation and testing may involve not all elements of the ISM. In such cases, when a certain ISM element is adopted, modified and tested, this can be called partial. For example, by partially adapting and testing

an educational innovation – distance studies, only some lectures of a certain subject (module) are reorganized in the distance format, but not all.

6.2.4. Assessment of adapted ISMs

Udvari-Solner (1995) emphasized that it is crucial to assess how adaptation succeeds. In this respect, taking into consideration the observations from students and colleagues, feedback about expedience and accuracy is received. Lourillard (2012) maintains that feedback includes reflection, student comments and the opinions of colleagues.

Bubnys (2012) emphasizes that reflection helps to relive the experience and make it meaningful. No action makes sense if it is done automatically, without thinking over past experience and without its interpretation; therefore, reflection is mandatory while planning a higher quality and/or new activity. As Jucevičienė et al. (2013) maintains, reflection allows consideration about why the activity was of a particular kind, and it provides information on how efficient the activity was. Reflection helps to understand events and to apply new understanding, to find out gaps, what was done wrong and what could be done better next time. Reflection of experience provides an opportunity to amend an erroneous understanding and to fill in gaps in knowledge. Serdyukov claims (2017) that teachers, by implementing an innovation, often ponder and assess how they succeeded in doing it. They reflect on their activities. Reflection of experience helps to assess one's actions, and also to foresee what else could be altered and improved.

It is highly effective to learn from the experiences of others. MacKenzie et al. (2010) claims that through the reflections of colleagues or events of experience sharing, it is possible to empower teachers both for the adaptation of educational innovations and for better and higher quality activities in future.

Thus, sharing one's and peer reflections and experience provides feedback on accuracy, relevance and effectiveness of ISMs adaptation. Personal and peer insights and sharing experience may motivate, help find solutions, modify and better customize ISMs for students, and also foresee further actions.

As the process of teaching and learning is based on constant interaction between the teacher and students, student comments on the adapted version are highly valuable in assessing if the ISM was adapted properly and if other alterations are needed. Students may present their opinions, remarks, suggestions from their point of view and to assess the teacher's efforts (Jefferies & Hyde, 2009). Dabbagh & English (2015) maintain that all assessment of curriculum has to be based on student opinions and comments. The aim of adapting ISMs is to facilitate and improve the learning process for students which in regard to their assessment,

is inseparable. It is important to find out if the adapted ISM helped them to better learn the subject matter; to understand, assess, analyze, create and act.

Thus, teachers are the most significant participants in the system of ISMs adaptation as they decide how to adapt ISMs. Adaptation of ISMs depends on personal features, views and previous adaptation experience of teachers. Teachers firstly distinguish ISMs elements that have to be adapted. Testing of adapted ISMs may differ with regard to two aspects: 1) if the adapted ISM is to be tested all at once or gradually, or (2) if it is to be adapted and tested in its entirety, or only some part of it. For the assessment of the success of the process, reflections are most often analyzed, including peer experience and student comments are used.

7. Conclusions

Teachers' competence, personality traits, attitudes, and the past experience of ISMs adaptation play a pivotal role in an ISMs adaptation process.

The key activities of ISMs adaptation include identification of the elements (during which adaptable ISMs elements are established/distinguished, options of ISMs use are discussed with its users and the list of ISMs adaptable elements is added), their modification (intended elements are modified, suveys about possible ISMs use are carried out and consultations with ISMs developers are held), testing (all at once vs. in stages or in its entirety vs. a part of it) and analysis (reflections, student feedback, peer experience) of adapted elements.

These theoretical constructs that have been highlighted may be further used to carry out empirical research to analyze ISMs adaptation in practice.

Acknowledgements

References

AbuJarad, I. Y., & Yusof, N. (2010). Innovation creation and innovation adoption: A proposed matrix towards a better understanding. *The International Journal of Organizational Innovation, 3*(1), 303-325.

Baier, E., Rammer, C., Schubert, T. (2015). The Impact of Captive Innovation Offshoring on the Effectiveness of Organizational Adaptation. *Journal of International Management, 21*(2), 150-165. https://doi.org/10.1016/j.intman.2015.03.002

Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university* (4th edition ed.). New York, NY: Open University Press.

Blömeke, S., Paine, L., Houang, R. T., Hsieh, F. J., Schmidt, W. H., Tatto, M. T., & Schwille, J. (2008). Future teachers' competence to plan a lesson: First results of a six-country

study on the efficiency of teacher education. *ZDM - International Journal on Mathematics Education, 40*(5), 749-762. https://doi.org/10.1007/s11858-008-0123-y

Blonder, R., Kipnis, M., Mamlok-Naaman, R., & Hofstein, A. (2008). Increasing science teachers' ownership through the adaptation of the PARSEL modules: A "bottom-up" approach. *Science Education International, 19*(3), 285-301.

Boyer, W. (2010). Empathy development in teacher candidates. *Early Childhood Education Journal, 38*(4), 313-321. https://doi.org/10.1007/s10643-010-0419-8

Bubnys, R. (2012). *Reflektyvaus mokymo(si) metodų diegimo aukštojoje mokykloje metodika: Refleksija kaip besimokančiųjų asmeninės ir profesinės raidos didaktinis metodas* Šiaulių valstybinė kolegija.

Corradi, C., Evans, N., & Valk, A. (Eds.). (2006). *Recognising experiential learning: Practices in European universities*. Estonia: Tartu university press.

Dabbagh, N., & English, M. (2015). Using student self-ratings to assess the alignment of instructional design competencies and courses in a graduate program. *TechTrends: Linking Research & Practice to Improve Learning, 59*(4), 22-31. https://doi.org/10.1007/s11528-015-0868-4

D'Angelo, G., Kasperiūnienė, J., & Rutkauskienė, D. (Eds.). (2010). *Nuo didaktikos e.didaktikos link. E.mokymosi paradigmos, modeliai ir metodai*. Kaunas: Technologija.

Demetriou, H., & Wilson, E. (2008). The psychology of teaching: A return to the use of emotion and reflection in the classroom. *The Psychologist, 21*(11), 938–940.

Feshbach, N. D., & Feshbach, S. (2009). Empathy and education. In J. Decety, & W. Ickes (Eds.), *Social neuroscience. The social neuroscience of empathy* (pp. 85-97). Cambridge, MA: MIT Press. https://doi.org/10.7551/mitpress/9780262012973.003.0008

Frankland, E. (2007). *Enhancing Teaching and Learning through Assessment*. Netherlands: Springer. https://doi.org/10.1007/978-1-4020-6226-1

Hariri, A. A. (2014). *Adoption of learning innovations within UK universities: Validating an extended and modified UTAUT model.* Daktaro Disertacija, Voriko Uiversitetas, 2014.

Hochgerner, J. (2013). Social innovation and the advancement of the general concept of innovation. In C. R. Viňals, & C. P. Rodríguez (Eds.). *Social innovation. New forms of organisation in knowledge-based societies* (pp. 12-28). London, New York: Routledge.

Hord, S., Stiegelbauer, S., Hall, G., & George, A. (2008). *Measuring implementation in schools: Innovation configurations*. Austin: SEDL.

Hutcheon, L. (2013). *A Theory of Adaptation.* New York, NY: Routledge. https://doi.org/10.4324/9780203095010

Jazerskytė, E., & Janiūnaitė, B. (2010). Universiteto dėstytojo inovacinės veiklos turinys: Teorinės ir empirinės įžvalgos. *Jaunųjų Mokslininkų Darbai, 1*(26), 69-76.

Jefferies, A., & Hyde, R. (2009). Listening to the learners' voices in HE: How do students reflect on their use of technology for learning? *Electronic Journal of e-Learning, 7*(2), 119-126.

Jucevičienė, P., Gudaitytė, D., Karenauskaitė, V., Lipinskienė, D., Stanikūnienė, B., & Tautkevičienė, G. (2010). Universiteto edukacinė galia. Atsakas 21-ojo amžiaus iššūkiams. Kaunas: Technologija.

Jugo, I., Kovacic, B., & Slavuj, V. (2016). Increasing the adaptivity of an intelligent tutoring system with educational data mining: A system overview. *International Journal of*

Emerging Technologies in Learning, 11(3), 67-70. https://doi.org/10.3991/ijet.v11i03.5103

Khatri, R., Henderson, C., Cole, R., & Froyd, J. (2013). Successful propagation of educational innovations: Viewpoints from principal investigators and program. *AIP Conference Proceedings, 1513*(1), 218-221. https://doi.org/10.1063/1.4789691

Lapina, G., & Slaidins, I. (2014). Teaching open innovation at the universities in Latvia. *Journal of Business Management, 8*, 198-207.

Laurillard, D. (2008). Technology enhanced learning as a tool for pedagogical innovation. *Journal of Philosophy of Education, 42*(3-4), 521-533. https://doi.org/10.1111/j.1467-9752.2008.00658.x

Lin, C. A. (2004). Webcasting adoption: Technology fluidity, user innovativeness and media substitution. *Journal of Broadcasting & Electronic Media, 48*(3), 446-465. https://doi.org/10.1207/s15506878jobem4803_6

MacKenzie, J., Bell, S., Bohan, J., Brown, A., Burke, J., Cogdell, B., & Tierney, A. (2010). From anxiety to empowerment: A learning community of university teachers. *Teaching in Higher Education, 15*(3), 273-284. https://doi.org/10.1080/13562511003740825

Miller-Day, M., Pettigrew, J., Hecht, M. L., Shin, Y., Graham, J., & Krieger, J. (2013). How prevention curricula are taught under real-world conditions: Types of and reasons for teacher curriculum adaptations. *Health Education, 113*(4), 324-344. https://doi.org/10.1108/09654281311329259

Mintrop, R. (2016). *Design-Based School Improvement. A Practical Guide for Education Leaders.* Cambridge, MA: Harvard Educational Press.

Moser, F. Z. (2007). Faculty adoption of educational technology. *Educause Quarterly, 1*, 66-69.

Orr, D., & Mrazek, R. (2009). Developing the level of adoption survey to inform collaborative discussion regarding educational innovation. *Canadian Journal of Learning and Technology, 35*(2). https://doi.org/10.21432/T2588B

Pernaa, J., & Aksela, M. (2013). Model-based design research: A practical method for educational innovations. *Advances in Business-Related Scientific Research Journal, 4*(1), 71-83.

Rogers, E. M. (1995). *Diffusion of innovations*. New York, NY: The Free Press

Rutkienė, A. (2004). Švietimo tyrimų vieta besikeičiančioje visuomenėje. *Mokytojų Ugdymas, 3*, 158-165.

Sabine, G., & Beate, L. (2005). An Evaluation of Open Source E-Learning Platforms Stressing Adaptation Issues. Proceedings of the International Conference on Advanced Learning Technologies, ICALT 2005. Retrieved from https://www.researchgate.net/publication/251713075_An_adaptive_and_personalized_open_source_e-learning_platform

Serdyukov, P. (2017). Innovation in education: what works, what doesn't, and what to do about it? *Journal of Research in Innovative Teaching & Learning*, *10*(1), 4-33. https://doi.org/10.1108/JRIT-10-2016-0007

Udvari-Solner, A. (1995). A process for adapting curriculum in inclusive classrooms. In R. Villa & J. Thousand (Eds.), *Creating an inclusive school* (pp. 110-124). Alexandria, VA: Association for Supervision and Curriculum Development.

Valuckienė, J. (2009). Mokymosi paradigma grįstos studijos kaip atsakas į besikeičiančios visuomenės lūkesčius universitetinėms studijoms. *Ekonomika ir vadyba: aktualijos ir perspektyvos, 2*(15), 311–317.

Zolait, A. H. S. (2014). Innovation acceptance research: A review of theories, contexts, and approaches. *Journal of Internet Banking and Commerce, 19*(3), 2-18.

Wall, J., & Ryan, S. (2010). *Resourcing for curriculum innovation*. Camberwell, Vic: ACER.

Warford, M. K. (2005). Testing a diffusion of innovations in education model (DIEM). *The Public Sector Innovation Journal, 10*(3), 1-41.

Wright, D. B. (2005). Nine types of curriculum adaptations. *Teaching and Learning.* Retrieved from http://www.snipsf.org./wp-content/uploads/2011/08/NineTypes.pdf