PROJECT MODELLING TOOLBOX IN HIGHER EDUCATION: HEXAGONAL CANVAS IN PROJECT BASED LEARNING

Alvis Sokolovs
Vidzeme University of Applied Sciences, Latvia

Ilze Grīnfelde
Vidzeme University of Applied Sciences, Latvia

Abstract. *Inclusion of project modelling tools into higher education is based on expectations of industry about young professionals with applicable, rich skillset. Business or project model canvas is one of the most widely used frameworks in contrary to traditional planning tools. Pedagogically - project model canvas is a teaching goal and method simultaneously. Those aspects widen possibilities to integrate the tool in various study courses and levels. The aim of the research is to explore and evaluate functional and cognitive impacts of Hex-canvas use in project-based learning in higher education. This tool is represented in a form of template of 11 fundamental elements which describe a specific aspect of a project. The research is based on experiences gathered in Vidzeme University of Applied Sciences, Latvia. Data used in this research has been comprised of structured interviews of doctoral level students (n=8) who used Hex-canvas in summer school and from bachelor and master level students (n=16) of "I Living Labs" study course (year 2022). Results reveal high applicability in structuring of the projects, defining aims and activities for implementation, it gives overall perspective of project, however there must be clear instructions by teachers, as well the consistency of usage is recommended.*
Keywords: *hex-canvas, higher education pedagogy, project-based learning, project modelling tools.*

Introduction

Contemporary conditions in nearly any field request knowledge, skills, competencies and mindset towards problem solving. As a response, continuous practice of experimentation with iterations of methods and tools used in university level management study courses over years has become an essential part from pedagogic point of view. One of the widely used approaches in this context is project-based learning which is student-centric pedagogic approach that provides learners with subject related knowledge, meanwhile enhancing generic competencies. This pedagogic approach forms the pillars of facilitation of applied future skills such as critical thinking, complex problem-solving in any emerging context, skills in self-efficacy enhancement such as active learning, resilience,

stress forbearance, openness, short- and long-term planning (Hsieh & Tsai, 2017; World Economic Forum, 2020).

Project-based learning as a form of pedagogy includes specific set of elements, such as high initiative from students, including the setting of the solution for problem, resultative teamwork with credible evidence (plan, prototype, report etc.), specific timing and advising (Helle, Tinjala, & Olkinoura, 2006). It is important to note, that this pedagogic approach produces a different type of relationship which results in a new learning environment which can be characterized by coaching and mentoring rather than traditional professor centric teaching. Although academic coaching is historically embedded method in higher education, but it varies in project-based learning and requests different approach, set of skills and competencies, such as leadership which academic leaders often are lacking (Cruz & Rosemond, 2017; Haage, Voss, Nguyen, & Eggert, 2021).

According to Kuzle (2015) higher education institutions should approach problem solving and project-based learning by using the relevant toolbox from both perspectives - as an instructional goal and instructional method. The tools, typically used in project-based learning, represent various types of business or project models or known as canvas, that have been acknowledged by higher education institutions. Despite the immensely normative nature of the concept, business and project model thinking creates synergetic chain of decisions about how to design, deliver and apprehend value (Bidmon & Holm, 2021)

There are various iterations of canvas, for instance of research projects, data analytics projects, urban planning, innovation projects, artificial intelligence projects etc. (Fatima, 2022; Hohmann & Truffer, 2022; Kühn et al. 2018, Silva & Cardoso, 2019). The diverse versions of canvas have been developed due to the core differences between business and public sector (Ranerup, Henriksen, & Hedman, 2016). Kline et al. (2013) indicates that is important to test every new iteration of canvas as they are adapted for specific purposes frequently.

The aim of the research is to explore and evaluate functional and cognitive impacts of Hex-canvas use in project-based learning in higher education. The research is based on experiences in study year 2022 /2023 gathered in Vidzeme University of Applied sciences, Latvia. Data used in this research has been comprised of structured interviews of doctoral level students (n=8) who used Hex-canvas in summer school and bachelor and master level students who applied Hex-canvas in study course "I Living Labs" (n=16). "I Living Labs" " is a project-based course with the aim to train problem solving and project management skills by creating response in a form of prototype to realistic problem identified by external stakeholder. In this study course students work in teams and are facilitated by mentors from university.

As research limitation is the fact that only students of Vidzeme University of Applied Sciences were interviewed and students from other universities might have expressed other opinion due to different study background and experiences.

Business and project model canvas in the context of pedagogy

The Business Model canvas originally was designed to describe the logical basis for actions and beliefs which organizations use to create, deliver and capture value (Osterwalder & Pigneur, 2010). Canvas serves as a tool for planning new product ideas or wider processes, and document existing ones. It has been generally accepted as a helptool used in business teaching and training for more than fifteen years (Babič & Gole, 2022). The main advantages of canvas are that tool is universal, allows clear representation and ensures holistic view, however it might be too static and simplified which might result in missing of some details, such as wider environmental analysis is absent (Becker & Bröcker, 2021).

The Project Model Canvas has been developed as an iteration of Business model canvas. Project Model Canvas is explained as visual tool to abet elaboration of complex issues such as diverse projects, characterizing canvas as a mental design model of concepts, such as resources, stakeholders, deliverables, risks and inter-concept relationships (Habermann, 2015). Kühn et al. (2018) defines canvas as semi-formal specification technique for the early planning and specification of project. Compared to other frameworks used (e. g. Kanban, Scrum etc.), project model canvas covers full project cycle related activities (Silva & Cardoso, 2019).

The pedagogical aim of a canvas is not to concentrate on a particular product, but rather to enhance students' ability to learn the necessary competencies for formation and execution of their own value propositions. Several research studies prove, that irrelevant teaching of specific business or project modelling tools could lead to failures in the study results, such as usage of limited personal and professional experiences, trivial idea generation, non-significant improvements, thematically irrelevant proposals or solutions that exceed student's expertise (Hinton, 2022; Lee, Blackwell, Drake, & Moran, 2014; Vasiliene-Vasiliauskiene, Vasiliauskas-Vasilis, Meidute-Kavaliauskiene, & Sabaityte, 2020). A considerable factor of pedagogic failures relates to deeper comprehension of business or project management aspects. The lack of networking between academia and industries which has an impact on business related environment management skills development among faculty members is one of the causes (Giones, 2019; Williamsson, Schaad, & Sandoff, 2022).

Other student related factors that have considerable impact on integration of project modelling tools in study process are linked with team work as typical format used in project-based studies. For instance, differences in team dynamics related to number and diversity of students, challenges in decision making etc. Lima & Baudier (2017) in their research have concluded that study background and level can have moderate influence on students' perceptions about functional and cognitive use of canvas. Proper instruction even in the format of short manuals would be useful (Holdford, Pontinha, & Wagner, 2021).

Stenkjær, Brøndum, Sort, & Lund (2021) suggest providing additional training of creativity competencies to invigorate the flow of ideas. Lima & Baudier (2017) stress that facilitation conditions are an important factor to ensure beneficial usage of business or project model canvas. As well, problem-solving process within a study process should be based on encouragement of experimentation with suggested project modelling tools and practiced continuously (Jackson, Scott, & Schwagler, 2015).

Hex-canvas as project modelling tool – concept and application

Hex-canvas was created by one of the authors of this article Alvis Sokolovs. Primary intention was to develop helping tool for students to start new projects, such as study and innovation projects, thesis works. The tool is meant to be intuitive and easy to understand for use in learning, project planning, creating awareness of different aspects of the project at the early stages of project development and during later stages. Even though there are many different types of canvas available for different purposes, most of them are based on business model canvas, which usually have fixed vertical and horizontal structure, and their cell names are also predefined. Hex-canvas was designed for more flexible and general applications.

The Hex-canvas contains several blocks – for simplicity called "space" – each used to describe a specific aspect of a project. In general case spaces can be managed and manipulated as required for each individual project and can be filled in at different stages of project planning as new information arrives (see Figure 1). Further in this section main blocks will be formulated and explained. It has empty spaces that can be used and adapted according to users' needs and project requirements.
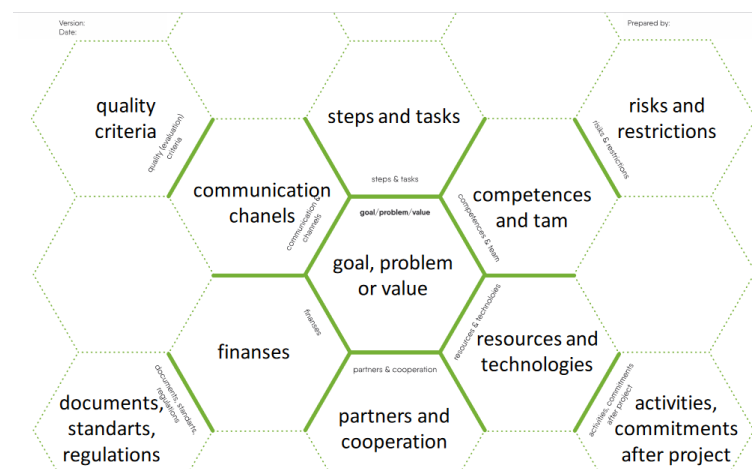

Figure 1 **Hex canvas template** *(source: authors)*

For learning and self-discipline purposes students are asked to start by checking and defining documenting version, date particular version of the document was created; and team members who participated. It is recommended to keep track of any changes by fixing document version and dates.

Goal, problem, value. The central element of the Hex-canvas is the goal of the project, challenge or the value, it is the target of the project and hence is placed in the centre. Here the main objectives of the project must be formulated. In most cases each study project will have one main goal that solves a problem, deals with a challenge or creates value for a user or a customer. It is recommended to add information about the user of the solution, product or service to whom the project is targeted at.

Steps and tasks. Here focus is on main activities and tasks that must be done to achieve the goal – being specific about actions that will lead the project to the goal and to get from abstract idea to tangible results.

Competences and team. This space represents the main competences and skills required to implement activities to achieve the goal. First a list of competences and skills should be made and then team members can be added. Typically, there are more competences required than there are people on the team, in that case some of the missing competences can be linked to partner space as an outsource later.

Resources and technologies. Resources and technologies are identified as physical and non-physical materials and tools that are required for production of prototypes. An observation made by authors is that students often confuse finances for a resource. Money and cash flow will be assigned separately since money is not considered as a resource, however here one should think about resources that request financial input – materials, machines, electricity.

Partners and cooperation. If the project team doesn't have the needed competences or the right skills, tools or technologies, they can be outsourced or rented from partners as that may be more effective. A list of suppliers who provide necessary resources and materials should be made here.

Finances. The main income sources and cost structure are stated here. A clear understanding of cash-flow gives students a chance to better understand how much project activities, competences, resources and services cost and how they will be financed. It is advised to use information form spaces "competences and teams", "resources and technologies" and "partners and cooperation" to identify expenses.

Communication and channels. A clear communication plan or strategy is defined here to minimize miscommunication during the project implementation. Both internal and external communication should be defined at the beginning of the project. Internally the team must agree on communication platforms, communication frequency, document storage and other aspects to internal

information management. Also, external communication strategies can be defined here: audience, message content, channels, schedule and responsible.

Risks and restrictions. Risk analysis should be done in a simplified probability and impact/influence structure. It is also advised to identify preventive actions to minimize those risks and actions that will be taken if they must face the situation. As different restrictions also can influence the project development - related to external as well as internal factors like time, space, legal regulations, cultural and other aspects, the analysis (e.g. PESTEL) is recommended.

Quality criteria. Generally, the quality of the any deliverable should be discussed by both parties – deliverer and receiver. Quality criteria and means of measure must be defined. At this point students learn to define what quality is and how it will be achieved, identified and measured, should it be tangible deliverable on time or some other result – means of customer satisfaction should be identified.

Documents, standards, regulations. Documents that usually govern day-to-day activities are different kinds of agreements - in most cases time, financing and deliverables. However, in some cases external documents like national or international standards, laws or legal regulations regard some or all areas of the project. Students are asked to identify them here.

Activities and commitments after the project. Students should identify if this is a one-time project that has no continuation or if there will be another project like this. Commitment identification is relevant here - like sustaining project results for a certain period after the project, providing client with the service or providing any information to stakeholders. When this is defined, it is recommended to link this space with team, resource and finance spaces since future actions and commitments may require additional effort.

Methods and materials

The research data was obtained in the year 2022 by using qualitative method of research - structured interviews of two student segments. Firstly, the doctoral level students (n=8) who used Hex-canvas in summer school and, secondly, bachelor and master level students of Vidzeme University of Applied Sciences (n=16) of project-based study course "I Living Labs". Each of the segments applied Hex-canvas tool in different settings, however with similar aim. Process-wise - students received information and instruction about the aim and usage of hex-canvas tool, then performed given assignments by using hex-canvas and provided feedback by answering certain set of questions assessing both - functional and cognitive impacts use of the Hex-canvas which according to Lima & Baudier (2017) belong to so called claimed benefits. In the first questions students had to rate the functional and cognitive usability of canvas and provide extended explanation of their experience in this context. In the third question informants were asked about the potential improvements to Hex-canvas tool, but

in the fourth question we explored the general intention to use the tool repeatedly and in the last questions informants provided pro and contra arguments of reiterative usage of tool.

In regards of doctoral students Hex-canvas tool was offered to improve and structure the conceptual scope of the doctoral thesis. Doctoral summer school is an annual event where doctoral students can meet and share their research achievements, hear feedback from mentors and other students. Students from different study fields and study years were introduced to Hex-canvas. During 45-minute lecture the main principles were explained, questions answered, and some examples shown. After that students were asked to state the aim and details of their research in such a way that people not familiar with the research topic would have a general idea and could relate to the topic and research project. After 30-minute session students presented their work. The aim of this event was to test Hex-canvas usability in non-business applications such as applied short- and long-term research.

Another researched segment was problem-based study course "I Living Labs" participants - bachelor and master level students from Vidzeme University of Applied Sciences and partner universities abroad. This was intensive study course, that took two weeks. During the first week online workshops devoted to training of specific skills and tools were organized for preparation. In the second week students worked in a present mode, developing solutions for specific problems defined by external stakeholders. Hex-canvas was used as compulsory tool for structuring of the project idea for initial development and later for pitches. The students of "I Living Labs" were introduced to the tool during preparation week. Students had a workshop session (90 min.) and then during the next week question and answer session about some of the aspects of canvas. There were 96 participants (12 teams) during "I Living Labs" in autumn 2022. A few weeks later after the course, student team representatives were invited to interviews.

Qualitative content analysis was performed on gained data. This is a research technique for making credible and replicable conclusions from data in the form of texts to the contexts of their use. It requests some degree of creativity in organizing the information via breaking it down to manageable sections and ensures detailed analysis (Krippendorf, 2013). The gathered information in a form of texts was studied several times to identify thematic break down categories relevant to impact evaluation criteria adapted from Lima & Baudier (2017) which represent **functional use** or aspects related to desired result (e.g. performance, innovation, communication) and **cognitive use** related to thinking process (e.g. decision making, creative thinking, visualization, teamwork etc.). The purpose of data breakdown was to identify the role of each element and later – to make decisions on improvements of Hex-canvas as tool and application of it in a study process.

Research results

In regards of the first question where students had to rate generally the functional and cognitive usability of canvas, most informants assessed the application of this tool as somewhat useful or extremely useful. Just a few indicated the neutrality of their opinion, mainly based on their project specifics or knowledge and habits to use other tools.

The informants shared their experience and conclusions about the functional and cognitive use of the Hex-canvas reporting about both aspects in a positive context. The most mentioned functional use elements relate to structure and output of that is highly useful in communication of the project idea. Informants refer that canvas was helpful due to the compact provision of overview of the project and for pitch presentation. Almost all informants stressed the role of the tool in context of clear structure of project idea which serves as perfect basis of action plan. From resource perspective, informants highlighted time management aspect: *"In reality, this tool saves the most important thing - time. It allows you to understand when and how there is a risk of reaching of a "dead end" and, based on this, to look for new directions to achieve the goal or to adjust it, if it turns out that the goal is utopic".* Some informants emphasized that Hex-canvas are adaptable for other purposes, such as business idea development, however the majority reported flexibility as existing, although improvable feature.

As cognitive use elements informants referred that application of Hex-canvas influence on decision making process valuing that tool supports flexible modelling and review opportunities instead of "one direction plan". Related aspects were goal setting, break-down to sub-elements that serves as a basis of idea. The tool is good to enhance teamwork and produce result by involving all members. Some informants stress, that hex canvas can help not to avoid or forget important aspects of project: *"The tool was useful when it was necessary to clarify things that were important in the project, but were forgotten."*

Although most informants gave minimal remarks about specific changes to Hex-canvas, some proposed areas or aspects could be improved. From the technical perspective of users, some informants suggested that tools should be digitalized, even in the format of web applications to ensure better user experience especially in teamwork context. A considerable factor is simple design, comprehensive and user friendliness. The role of instruction provision and facilitation of process has been emphasized as aspect of improvements. The informants indicate that more detailed instruction in written format on how from the perspective of content fill in the spaces would be needed. One of informants has described this situation as: *"On one hand the tool is intuitive, however, for students without knowledge about the topic some misunderstanding could happen. Occasionally, thinking that everything in canvas is self-explanatory can be misleading assumption."*

Even though flexibility has been identified as a strength of tool, informants suggested new perspectives on structure. For instance, that spaces in Hex-canvas could be structured in primary level, which is non-changeable and secondary level spaces which project team or student could freely define and add or delete adjusting canvas to project specifics. Thus, Hex-canvas would become a dynamic tool with personalization opportunities. Some informants suggested to add as a new space information about timeline or duration of implementation to add credibility to idea: "*A gauge of time of activities to implement is needed. Because if you don't set a deadline for achieving the goal, one can change or lose its meaning. Yes, it must be time-bounded.*" Other suggested to add some evaluation tool, such as SWOT etc.

Repeated practice of use of the Hex-canvas would strengthen users' competencies and ensure positive effect of project planning: *"More using of the tool "I think that it is simply necessary to start using such a tool more, to practice its use, then it will also be more useful and easy to use on a daily basis."* In the context of future use, all informants except of one confirmed that they would use Hex-canvas repeatedly and showed intention to try the tool for both - study related and non-study related (e.g. business) environments.

Conclusive discussion

The results of the research allow us to conclude that Hex-canvas can be used as a tool and a method simultaneously in project-based learning settings, as well in specific context of research projects. Data prove aspects benefits discussed in another research (Babič & Gole, 2022; Bidmon & Hall, 2021; Lima & Baudier, 2017) of using visual project modelling tools such as the Hex-canvas in terms of improving the implementation of the ideation processes, decreasing the complexity involved in development of projects and innovations a models and improve conditions that facilitate exchange of best practices. Data reveals that usage of Hex-canvas can ensure both - functional and cognitive benefits for users along with high level support in communication of project models. To some extent we can say, that Hex-canvas improve disadvantages mentioned by Becker & Bröcker (2021) as the components of flexibility and evironmental analysis has been implemented, nevertheless, retaining universality, ensures holistic perspective and compact view.

From the pedagogic perspective facilitation of students during application of Hex-canvas and other project or business modelling tools is crucial, as well including proper instruction in various formats. Accurately considered instruction tools could improve efficiency as well without facilitation in person. Typical student experience of learning and application of various tools offered by their tutors are usually short duration, one-time practice, however deeper comprehension and amplification of students' competences is possible in case that

practicing of the application of the same tool or methods happens consistently on regular basis throughout the learning journey in university.

Further development of new iterations of project modelling canvas as well is obvious, to fit in with the expectations of users and thematic boundaries as the nature of tool is dynamic. Future research in regards of Hex-canvas application could be related to wider user experience exploration regarding different student segments and study settings.

Acknowledgements

References

Babič, K., & Gole, P. A. (2022). Importance of critical literacy for teachers and students when using business model canvas tools. *Media and Communication Review, 1*(1). Retrieved from: https://respublica.edu.mk/wp-content/uploads/2022/06/importance-of-critical-literacy-for-teachers-and-students-when-using-business-model-canvas-tools_kairos-vol1-no1_en.pdf

Becker, M., & Bröcker, J-O., (2021). Business Model Canvas - Overview of the main advantages and disadvantages. IUCF Working Paper, No. 6/2021, Leibniz Information Centre for Economics, Kiel, Hamburg. Retrieved from: http://hdl.handle.net/10419/234963

Bidmon, C.M., & Holm, A.B. (2021). Teaching Business Models: Approaches and Success Criteria. *Journal of Business Models, 9*(3), 1-7. Retrieved from: https://journalofbusinessmodels.com/media/pq3fbngx/v9n3-1-7.pdf

Cruz, L., & Rosemond, L. (2017). Coaching academia: The integration of coaching, educational development and the culture of higher education. *Journal on Excellence in College Teaching, 28*(4), 83-108. Retrieved from: https://eric.ed.gov/?id=EJ1173744

Fatima, S., Desouza, K.C., Buck, C., & Fielt, E. (2022). Public AI canvas for AI-enabled public value: A design science approach. *Government Information Quarterly, 39*(4). DOI: https://doi.org/10.1016/j.giq.2022.101722

Giones, F. (2019). University–industry collaborations: an industry perspective. *Management Decision*, 57(12), 3258-3279. DOI: 10.1108/MD-11-2018-1182

Haage, V., Voss., L., Nguyen, D., & Eggert, F. (2021). The need for sustainable leadership in academia. A survey of German researchers reveals a widespread lack of training for leadership skills. *EMBO reports, 22*(12). DOI: 10.15252/embr.202153592

Habermann, F. (2015). Der Project Canvas – wirksames Werkzeug zur Projektdefinition. [The Project Canvas – an effective tool for project definition]. *Projektmagazin.* Retrieved from: https://www.projektmagazin.de/artikel/der-project-canvas-wirksames-werkzeug-zur-projektdefinition_1100145

Helle, L. Tinjala, P., & Olkinoura, E. (2006). Project based learning in post-secondary education - theory, practice and robber sling shots. *Higher education. 51*, 25–56. DOI: 10.1007/s10734-004-6386-5

Hinton, J. (2022). Project-Based Learning Challenges. Culturally responsive pedagogy. *Jeffrey A. Hinton Consulting. Innovative ideas in Education.* Retrieved from: https://www.jeffreyahinton.com/post/project-based-learning-challenges

Hohmann, C., & Truffer, B. (2022). The infrastructure transition canvas: A tool for strategic urban infrastructure planning. *Nature-Based Solutions, 2.* DOI: 10.1016/j.nbsj.2022.100039

Holdford, D., & Pontinha, V., Wagner, T.D. (2021). Using the Business Model Canvas to Guide Students in Building Business Plans. *American Journal of Pharmaceutical Education, 86* (3). Retrieved from: https://www.ajpe.org/content/ajpe/early/2021/08/06/ajpe8719.full.pdf

Hsieh, W. M., & Tsai, C. C. (2017). Taiwanese high school teachers' conceptions of mobile learning. *Computer Education*, *115*, 82-95. DOI: 10.1016/j.compedu.2017.07.013

Jackson, W. T., Scott, D. J., & Schwagler, N. (2015). Using the business model canvas as a methods approach to teaching entrepreneurial finance. *Journal of Entrepreneurship Education*, *18*(2), 99–112. Retrieved from: https://www.semanticscholar.org/paper/Using-the-Business-Model-Canvas-as-a-Methods-to-Jackson-Scott/e71580017ad318e459eabf73b24d2519b8628ef0

Kline, W., Hixson, C., Mason, T., Brackin, P., Bunch, R., Dee, K., & Livesay, G., (2013). The Innovation Canvas - A Tool to Develop Integrated Product Designs and Business Models. *in: Proceedings of the 120th ASEE Annual Conference & Exposition.* Retrieved from: https://www.researchgate.net/publication/276204257_The_Innovation_Canvas--a_tool_to_develop_integrated_product_designs_and_business_models

Krippendorf, K. (2013). *Content Analysis. An Introduction to Its Methodology*. Thousand Oaks, CA: Sage

Kuzle, A. (2015). Problem solving as an instructional method: The use of open problems in technology problem solving instruction. *International Journal of Science and Mathematics Education, 3*(1). DOI: https://doi.org/10.31129/lumat.v3i1.1052

Kühn, A., Joppen, R., Reinhart, F., Röltgen, D., von Enzberg, S., & Dumitrescu, R. (2018). Analytics Canvas – A Framework for the Design and Specification of Data Analytics Projects, *Procedia CIRP*, *70, 162-167*. DOI: 10.1016/j.procir.2018.02.031

Lee, J. S., Blackwell, S., Drake, J., & Moran, K. A. (2014). Taking a Leap of Faith: Redefining Teaching and Learning in Higher Education Through Project-Based Learning, *Interdisciplinary Journal of Problem-Based Learning*, *8*(2). DOI: 10.7771/1541-5015.1426

Lima, M., & Baudier, P. (2017). Business Model Canvas Acceptance among French Entrepreneurship Students: Principles for Enhancing Innovation Artefacts in Business Education. *Journal of Innovation Economics & Management, 23*(2)*, 159 – 183. DOI: 10.3917/jie.pr1.0008

Osterwalder, A., & Pigneur, Y. (2010). *Business model generation*. John Wiley & Sons.

Ranerup, A., Henriksen, K.Z., & Hedman, J. (2016). An analysis of business models in public service platforms. *Government Information Quarterly, 33*(1), 6-14, DOI: 10.1016/j.giq.2016.01.010

Silva, H., & Cardoso, A. (2019). Research Project Model Canvas. *Computer Science and Information Technology, 7*(3)*, 55-64. DOI: 10.13189/csit.2019.070301

Stenkjær, K., Brøndum, K., Sort, J. C., & Lund, M. (2021). Developing impactful entrepreneurial teaching using a business model framework. *Journal of Business Models,*

Journal of Business Models, *9*(3)*,* 60-69. Retrieved from: https://journals.aau.dk/index.php/JOBM/article/view/2581

Vasiliene-Vasiliauskiene, V., Vasiliauskas-Vasilis, A., Meidute-Kavaliauskiene, I., & Sabaityte, J. (2020). Peculiarities of educational challenges implementing project-based learning. *World Journal on Educational Technology: Current Issues*, *12*(2), 136-149. DOI: 10.18844/wjet.v12i2.4816

Williamsson, J., Schaad, G., & Sandoff, A. (2022). Building legitimacy for sustainable business schools: Using the business model concept when teaching corporate sustainability. *Journal of Cleaner Production, 367*. DOI: 10.1016/j.jclepro.2022.133116

World Economic Forum. (2020). *Future jobs report.* Retrieved from: https://www.weforum.org/reports/the-future-of-jobs-report-2020/in-full