



Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 174 (2015) 3738 – 3742

Procedia
Social and Behavioral Sciences

INTE 2014

New possibilities of knowledge transfer by playing manager games

Michaela Ottova*, Jiri Kudrna, Peter Poor, Milan Edl

*Department of Industrial Engineering and Management, Faculty of Mechanical Engineering, University of West Bohemia,
Univerzitni 22, Pilsen 30614, Czech Republic*

Abstract

The aim of this article is to describe the current view on concept of education for sustainable development. The role of universities nowadays became more complex and one of the essentials is to create and enhance partnership between universities and practice. Specifically, it is the transfer of theoretical research knowledge base to practice. One of the ways how to realize this transfer by simple and comfort way is using manager games.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of the Sakarya University

Keywords: Manager Games; University; Knowledge; Transfer

1. Introduction

Sustainable development is one of the key issues in manufacturing these days. Traditional view of business was trying to maximize profit for stakeholders, while new model of business recognizes the impact of business on society and environment. Based on EU debate, sustainable development encompasses three dimensions: economical, environmental and social. Our goal is to explain, that in order to be able to follow the trend of ensuring the “triple bottom line” on a high level, it is necessary to transfer all new know-how and innovations from research to practice. To be able to do so, it is essential to start at the base of research – at universities and education.

* Corresponding author. Tel.: +420-606-738854; fax: +420-377-638430.
E-mail address: ottovam@kpv.zcu.cz

2. Roles of Universities

What is the role of university today? All successful universities have educational, research and application roles. The main idea of modern universities is to wipe away the borders of these three pillars and bring the research and development innovation into education in order to easily innovate the industrial practices.

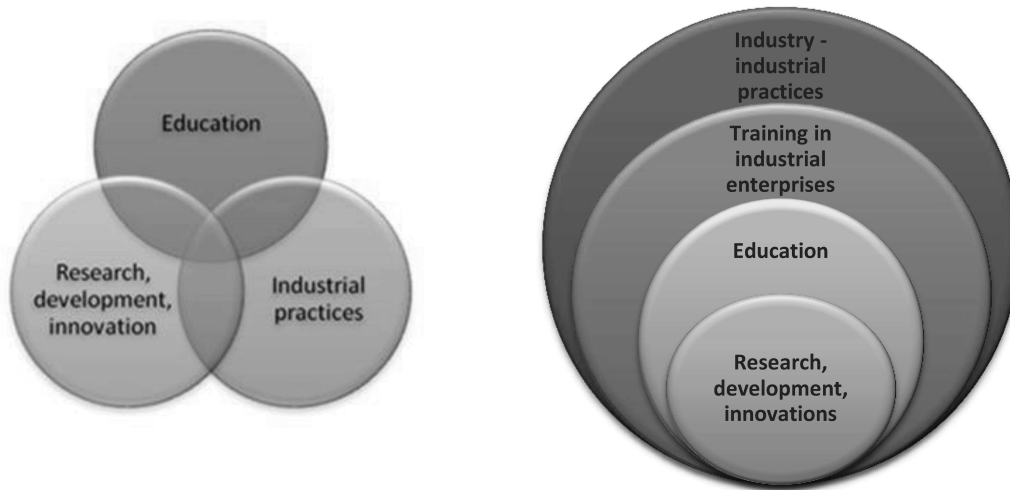


Fig. 1. Role of universities; transfer of knowhow into practice

This principle is illustrated on Figure 1. All research outputs, development and innovations, should not be separated from practical world. Students should not only study classic scholar materials, but also should be led into studying new approaches, ideas, principles and innovations based on research and development activities. It is precisely this background, that has been used to create and improve the educational framework for students at all stages of their education at Department of Industrial engineering at University of West Bohemia. It is important to add research, development and innovation activities and outputs into modern educational framework that would take profit from scientific workplaces. In case of setting easy transfer of research, development and innovation outputs into education, the society will take profit from it by getting educated graduates with the knowledge of the down-to-date approaches, methods, theories and processes. New ideas, knowledge and methods must fade from the inner area (research) into education, then into training in industrial enterprises which is useful for the enterprise, because of the possibility of its the use in the industrial practices.

As mentioned, modern, progressive education should not ignore outputs of state of art research. But what are the possibilities of influencing students and practitioners from industry to continue lifelong learning of new? We have to find the shortest connection between two points – universities (having knowledge) and enterprises. New and innovative methods used in education are necessities. Despite many obstacles, our verified and successful method how to teach specialists working in real enterprises knowledge base from universities is schooling in real enterprises. The innovative idea of this method is the fact of using manager games for teaching and bringing the theory into practice.

3. Methodology

Games are tools that can create "real environment". The use of games is very good in coaching staff. Their main task is to develop the capacity for strategic thinking and decision making in tense situations, promote teamwork and

communication between individuals. Management games can be called by different terms. For example business simulators, business games, interactive learning environmental, management flight simulators, microworld or serious games. (Kudrna, Ottova, Sramkova, Edl, 2014)

The aim is to test manager games players behavior during the game. When playing, you can try system thinking instead of reactive behavior. The basis of management games are like in other games rules, the more complex they are, the harder playing is. Even with complex rules can be free space to search for new results in the game, which enhances the attractiveness and gaming experience and creative approach develops players. (Kudrna, Edl, 2013)

In University of West Bohemia in Pilsen manager games were developed, which are used for training with employees from real companies. Within this, there is interactivity and direct involvement of all participants, and thus to a better understanding of the issue. Equally important is feedback from the participants, which helps to enhance and improve games themselves.



Fig. 2. Gaming

4. Lean games

Although one cannot learn about Lean manufacturing exclusively from playing games, they do allow quick experiential learning more than reading about Lean, or listening to a lecture. Games allow players not only to learn about the interaction of particular Lean tools, but also develop richness of discussion, participation, and decisions making that are essential requirements for successful Lean implementation.

There exist many games helping to learn and practice lean methods and principles and some of them became an inspiration for creating simulation games at the Department of industrial engineering and management in Pilsen.

Within lessons at the University of West Bohemia in Pilsen students of Faculty of Mechanical Engineering created for example new manager game to explain Kanban principle.

Lego Kanban is the original simulation game created in order to explain the Kanban method. The game is intended for those interested in practical testing of difference in production management pull and push principle. Players have the opportunity to put themselves in role of supervisor or production planner, buyer or operator in the manufacture and find out what their role in the company is, which has not implemented Kanban. Afterwards players will try how to implement Kanban and how the implementation changes their job. (Kudrna, Ottová, Šrámková, Edl, 2014)

The goal of the game is a practical demonstration of planning and process management while using Kanban method. A practical application of system design (stores and supplies) is ready for players. The participants will learn the pull principle and they will recognize the main differences compared to push principle. The main purpose of deployment of simulation games in teaching and training Kanban method is the active involvement of participants, the need of teamwork and thereby establishing conditions close to practice. (Kudrna, Ottová, Šrámková, Edl, 2014)

The game simulates a manufacturing company with its customers and suppliers. The company is engaged in assembling plastic components. All production materials are purchased from one vendor and finished products are sold directly from warehouse. Players take role of workers in various positions - assembly worker, buyers, production planner, worker in input or dispatch warehouse, an economist and more. All jobs are tested before and after the introduction of Kanban.(Kudrna, Ottová, Šrámková, Edl, 2014)

Another manager game teaching principles of lean manufacturing is SMED game. This game was developed as an interactive instrument for explanation of extended SMED method. The game is designed for comprehensive usage in all branches. It can be used in wide range from specialized production enterprises up to universities. The game is as SMED method itself very variable in terms of range of usage and in terms of comprehensiveness and level of players. (Kudrna, Ottová, Šrámková, Edl, 2014).

Department of Industrial Engineering and Management at University of West Bohemia developed many other games dealing with new principles in industrial engineering. Although one cannot learn about Lean manufacturing exclusively from playing games, games do allow quick experiential learning more than reading about Lean, or listening to a lecture. Games allow players not only to learn about the interaction of particular Lean tools, but also develop the richness of discussion, participation, and decisions making that are essential requirements for successful Lean implementation.

5. Results

This paper presented popular ways of knowledge transfer from universities into industrial practice. Despite many obstacles it is definitely a good way how to persuade and motivate industrial workers and experts to study new methods, principles and processes.

Acknowledgements

This paper was prepared with support of the Internal Science Foundation of the University of West Bohemia SGS–2012-063 “Integrated design of manufacturing system as meta-product with a multidisciplinary approach and with using elements of virtual reality“ and project NEXLIZ – CZ.1.07/2.3.00/30.0038, which is co-financed by the European Social Fund and the state budget of the Czech Republic..

References

- Bárdy, M., Kudrna, J., Šrámková, B., Edl, M. (2014): Interactive Game Supporting SMED Method, Applied Mechanics and Materials, vol. 474, ISSN 1660-9336
- Kudrna, J., Edl, M..(2013): Simple lean games, Technische Universität, Chemnitz, 2013, ISSN 0947-2495
- Kudrna, J., Ottova, M., Sramkova, B., Edl, M. (2014): Creation of Lean Games, Vision 2020 Sustainable Growth, Economic Development, and Global Competitiveness, The 23rd International Business Information Management Association Conference, May 13-14, Valencia, Spain, ISBN: 978-0-9860419-2-1
- Trebuna, P., Kliment, M., Filo, M., Markovic, J., Halcinova, J.(2013): PLM systems, their history and application today in business process modeling / Peter Trebuňa ... [et al.] - 2013. In: Mechanics : Scientific researches and methodical development. No. 7, p. 129-133.
- Tucek, D., & Basl, J. (2011). Using BPM principles to increase the efficiency of processes in higher education in the CR. In International Conference in Engineering Education and International Conference on Education and Educational Technologie - Proceedings (WORLD-EDU'11). (pp. 47-50). Corfu Islands.Šrámková, B., Fiedler, L., Januška, M., Kudrna, J., Štátná, L.(2013): Kanban Principle Training Game „Kanban Bar“. Advances in Sustainable and Competitive Manufacturing Systems, Porto, ISSN 2195-4364