

TECHNOLOGY FOR IMPROVING HUMAN POTENTIAL: GAMIFICATION IN EDUCATION AND TRAINING

The economy of the 21st century is the economy of knowledge. In modern conditions, the success of the development of a particular enterprise, industry and the country as a whole depends not so much on the quantitative indicators of the labor force as on its quality. The quality of the country's labor potential is such an important characteristic that in 2004 the World Bank, within the framework of the program Knowledge for Development [1], developed a comprehensive indicator KEI (The Knowledge Economy Index). This indicator allows you to assess the country's ability to create, accept and disseminate knowledge. So, Ukraine in 2012 (the year of the last indexation) took 55th place among 144 countries. Knowledge economy index for Ukraine was 5.73, while for Sweden, which ranked first, this index was 9.43 [1].

The development of human capital is one of the main tasks of the country, which aims to build a strong competitive economy. Approaches to solving this problem must be sought both at the level of the state as a whole, and at the level of each enterprise and each person. In this regard, education reform is currently underway in Ukraine. The main trend of the modern education system is the competency-based approach. The competency-based approach provides that the content of education does not come down only to a knowledge-oriented component, but involves the acquisition of holistic experience in solving professional problems, performing key functions, and fulfilling a social role [2]. Such a vector of transformations in the field of education is consistent with Ukraine's general course towards European integration [3].

The implementation of the competency-based approach requires a change in the content of education, as well as the use of new technologies for the formation of not only knowledge and skills, but also the acquisition of social experience. One such educational technology is gamification [4]. This technology consists in applying game-based mechanics and game thinking to non-game areas for greater involvement of participants in the learning process. In this case the game can be seen as some fictional reality in which player engage in an abstract challenge, defined by his role, interactivity, and feedback from other players. As a rule it leads to quantifiable outcome, often through an emotional reaction (the thrill of victory). The scope of the implementation of gamification is permanently expanding. Currently, game mechanics are used to educate students, train production personnel and managers. Business games challenge participants to reach goals and outcomes which cannot be

considered simple or straightforward [5]. Often they facilitate to the generation of new ideas and new solutions to problems, drive innovation.

We will consider the use of gamification mechanics to enhance the human potential of staff. Moreover, we will focus mainly on building soft skills. At the same time, we will take into account the specifics of using business games to form professional competencies of senior students and to improve the skills of professional managers.

The educational process is often presented in the form of a pyramid, thereby emphasizing its hierarchical structure. However, in the modern world these are rather not separate steps, but the unity and mutual penetration of the three components. A generalization of ideas about the structure of education is presented in Fig. 1.

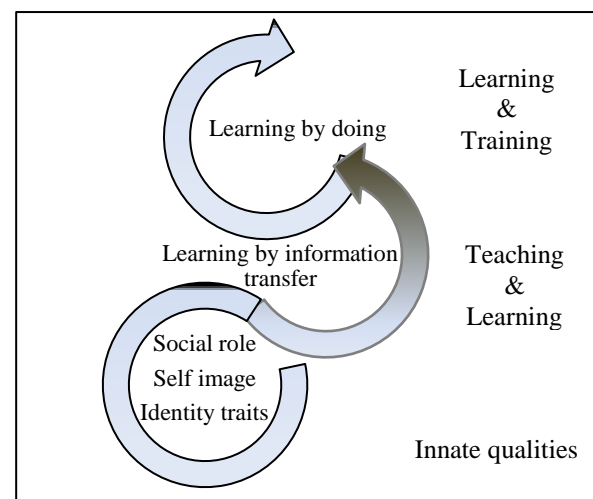


Fig. 1. A conceptual learning model

One of the components is personal natural qualities. They determine how and why we behave in a particular situation, how we identify ourselves. It is believed that these qualities are hard to change. But it is precisely using these qualities that we learn, gain professional knowledge and skills. This is the second component of the learning process. Its completion until recently was considered the completion of education. The third component is continuous improvement, learning through doing. This component meets the modern paradigm of Lifelong Learning. Gamification of the learning process due to its emotional coloring can be used both to increase the effectiveness of each of the components of this process, and the entire learning process as a whole.

In Simon Kuznets Kharkiv National University of Economics various interactive techniques are used throughout the entire learning period [6]. These techniques require a dialogue during which the lecturer and student interact. Game techniques imply a dialogue not only with the lecturer, but also with other students. For 1st and 2nd year students, game mechanics can be used to study specific disciplines. For bachelors and masters, it is advisable to conduct business games that implement an interdisciplinary approach. Elements of business games can also be effectively applied in the process of postgraduate retraining of specialists.

If as an example we consider the teaching of mathematical disciplines for future economists and managers, then in the first year students can make their own presentations in front of an audience. In the process of studying Higher Mathematics, the topics of such a presentation may be the use of functions in economics or the use of matrices for operations with large databases. And when studying Probability Theory and Mathematical Statistics, the topics of presentations can be any statistical research. In the study of Further Mathematics, i.e. courses of Econometrics, Operations Research or Decision Science, etc., studied in addition to standard mathematics courses, individual topics can be posed as topics for brainstorming. It should be emphasized that in the process of discussing the problem, the manager is not a lecturer, but a group of experts chosen by students from themselves. Such discussions are built on the basis of interdisciplinary relations, since the actual economic problem is considered, for the solution of which methods of mathematical modeling are used.

Full-fledged business games are held as trainings for bachelors and masters. The plot of the game is elements of the professional activities of future specialists. Imitation of a real situation allows future specialists to get not only their knowledge and skills in the professional field, but also gain experience in finding solutions in situations of conflict or information uncertainty. During the game, the student improves the skills of searching and processing information using modern software, his analytical thinking, the ability to speak and convince. In addition, the student can try to apply a type of behavior that is not peculiar to him in life. A wow effect arises, positive or negative. That is, within the framework of the competency-based approach, a business game contributes to the improvement of not only knowledge and skills that are easy to change, but also natural qualities that are hard to change (see Fig. 1). Such a business game, including preparation for it (this background is also part of the game's plot), can continue 3-5 days.

As an example, let's take a look at the author's training [7] "Development of BSC as an Instrument for Strategic Enterprise Management" for masters, which are majored in Management. Balanced scorecard (BSC) is a strategic performance management tool that allows managers to evaluate employee capacity realization. Along with financial indicators, one of the elements of

the BSC is the key performance indicators (KPI) of the use of human capital. It is the study of the principals of these indicators formation based on the mission of the company that is the goal of the business game.

The success of a company depends on its ability to use human potential as much as possible, so KPI should be understood not only by managers, but also by employees. In accordance with the plot of the business game, students united in two groups of experts, each of which offered its own KPI:

$$KPI = \sum_{i=1}^k w_i \cdot PI_i, \quad (1)$$

where PI_i is the i th particular indicator that characterizes the process ($i = \overline{1, k}$); k is the number of processes related to the competence of this specialist; w_i is a weighting coefficient which determines the relative value of the i th particular indicator.

$$\sum_{i=1}^k w_i = 1, \quad w_i > 0. \quad (2)$$

Each group of experts carried out the selection of particular indicators and the contribution of their weight coefficients using the analytic hierarchy process.

It should be noted that gamification as a technology of training can be used by enterprises belonging to everyone industry or service sector. The use of gamification in the process of training employees increases their involvement and motivation, contributes to a better understanding of organizational values and goals. Analyze, assess, evaluate, and develop your human potential! The goal of the game can be both an increase in professional qualities, and personal growth. The latter is largely related to the creation of a managerial reserve.

References

- [1] Индекс экономики знаний [Online]. Available: <https://gtmarket.ru/ratings/knowledge-economy-index/knowledge-economy-index-info> Accessed on: February 1, 2020.
- [2] W. Huttmacher. "Key Competencies for Europe" [Online]. Available: <https://files.eric.ed.gov/fulltext/ED407717.pdf>. Accessed on: February 2, 2020.
- [3] О.В. Овчарук. Компетентнісний підхід у сучасній освіті: світовий досвід та українські перспективи. Київ: К.І.С., 2004.
- [4] К.М. Кapp, The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education. San Francisco: Pfeiffer, 2012.
- [5] D. Ęrgle, and I. Ludviga, "Use of gamification in human resource management: impact on engagement and satisfaction". [Online]. Available: https://www.researchgate.net/publication/327738322_use_of_gamification_in_human_resource_management_impact_on_engagement_and_satisfaction. Accessed on: February 1, 2020.
- [6] Тренінгове навчання в закладі вищої освіти. / За заг. ред. М.В. Афанасьєва. Харків: ХНЕУ ім. С. Кузнеця, 2018.
- [7] С.С. Лебедев і В.С. Хвостенко "Тренінг: Збалансована система показників в оцінюванні капіталізації людського капіталу", Свідоцтво про реєстрацію авторського права на твір № 85760 від 13.02.2019. Авторське право і суміжні права. Офіційний бюлетень, № 52, с. 701, 2019.