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A BIBLIOMETRIC ANALYSIS OF PUBLICATION ON EXPERIENTIAL LEARNING IN BUSINESS MANAGEMENT FIELD

SILVIU MIHAIL TIȚĂ
Alexandru Ioan Cuza University of Iaşi,
Iasi, Romania
silviu.tita@uaic.ro

CARMEN TIȚĂ
Gheorghe Asachi Technical Univesity,
Iasi, Romania
carmen.tita@academic.tuiasi.ro

Abstract
The research is related to identifying strategies for developing new methods for working with students using experiential learning. We try to discover if this type of learning by using role playing, gamification, simulation games generated in the mind of people who want to develop skills more interest rather than classical teaching methods. Another objective is to search and identify other experiential learning methods or models applied in the education process. The methodological approach is based on used of the bibliometric software R-Stata Bibliometrix, Science Mapping Workflow and the results on authors search about experiential learning in the international databased SCOPUS and we select articles in the field of business management and accounting.
Keywords: experiential learning, gamification, teaching methods, management, simulation
JEL Classification: M53

1. INTRODUCTION

According to Armstrong, experiential learning refers to learning which uses the learner's experience as base (Armstrong, 1977), an old form or the fist form of learning, as the apprentice, under the supervision of a craftsman, would learn the trade by doing tasks and asking for advice when they felt they had no solution to the problems that arose during the creation of the product. Nowadays, the shift from the industrial era, when simulations were used to optimize various processes, to the information era, where computers allow us to develop applications that simulate the functioning of competitive markets, has enabled the development of an innovative form of experiential learning supported by technology. This differs from the traditional approach, where an experienced

person would present relevant aspects of the respective field. Experiential learning or learning by doing in management field, is well-documented approach that enhances student learning business processes through opportunities to combine theoretical knowledge and practical experiences into a specific context generated by game with the scope to improve engagement and develop collaboration, decision-making, problem-solving and critical thinking (Heyworth-Thomas, 2023), (Faisal et. al, 2022). Other perspectives of experiential learning start from the theory develop by Kolb and in this situation, experiential learning is a process of constructing knowledge that involves a creative tension among the four learning modes that is responsive to contextual demands (Kolb, Kolb, 2012). This form of unconscious learning (learning through experience) involves people reflecting on their own experiences in order to explain them and understand various aspects (concepts, theories, principles) that can later be applied in practice. According to Kolb, the process of experiential learning consists of four successive stages that can be repeated at a higher level, giving this type of learning a cyclical nature with four stages: i) *concrete experience* (planned or accidental), ii) *observation* of the lived experience and reflection (thinking) on it, iii) *development of abstract concepts* and generalizations based on the lived and reflectively observed experience, iv) *testing* the implications of these concepts in new situations (Kolb, 1984).

To use this form of education in student training allows them to develop specific skills such as: strategic leadership, overall business acumen, competence in financial, awareness of cross-functional alignment, communication in the language of business (Hussin et. al. 2022). Business games are, in most cases, software programs designed based on economic models that simulate the behavior of systems through experiments conducted on: i) the whole system - integral games, which require participants to make decisions regarding the core activities of the company (marketing, sales, production/operations, human resources, finance, etc.); ii) a specific function - functional games that allow the experimentation of decisions in only one functional area (marketing, sales, etc.).

2. METHODOLOGY

The research presented in this paper is based on search about *experiential learning* in Scopus databased and identified 234 documents (articles, conferences proceeding, etc.) who was analyzed with R-State Bibliometrix software. Uploaded the information obtained into the software based on the concept of social network analysis, offer us the opportunity to observe the evolution of experiential learning between 1978-2024 through: i) *thematic evolution* – an cluster analysis based on two notions: centrality and density (Callon et al., 1991), ii) *co-occurrence network*, an approach to facilitate the understanding and visualization of the structure of different text items and their

content (Puerta et al., 2020). iii) *thematic maps* are a spatial representation of relationships between disciplines, fields and documents or authors.

3. RESULTS

The thematic evolution of the concept of experiential learning is shown in Figure 1, and for a clear representation of the phenomenon, we decided to use 4 cutting points. It can be observed that in the first period, 1978-2002, the main research directions were "learning", "game," and "education". In the following period, 2003-2013, we can identify a long list of specific concepts related to 'experiential learning,' such as: learning, management, teaching, education, simulation, games, etc. Then, the research directions shift to skills, virtual, and game-based, with researchers seeking to identify ways to transfer knowledge and skills (in the period 2014-2017). The period 2018-2021 is characterized by an evolution towards simulation, engagement, management, design, and training simulation. Another explanation is related to the fact that the COVID-19 pandemic affected traditional learning methods, shifting from classical education to online learning, which allows for a better application of this form of teaching, based on simulations, games, and business games. In the most recent period, 2022-2024, research is oriented towards improving the modalities of learning and teaching.

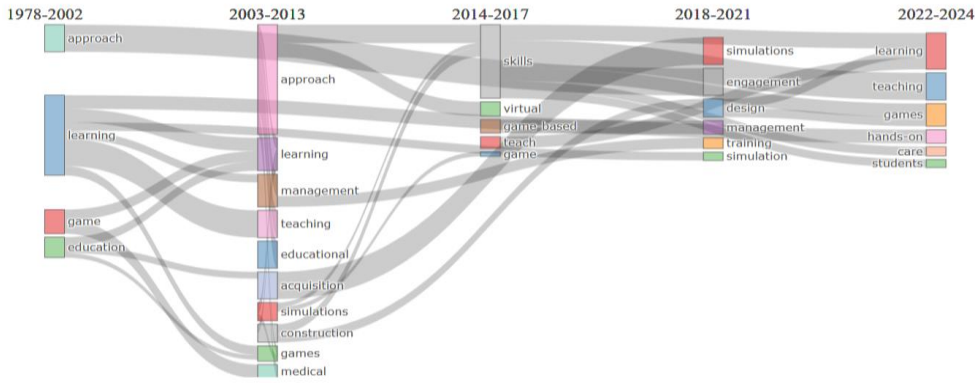

Figure 1. Thematic evolution, unigram titles
Source authors' own processing in R-Stata Bibliometrix

In Figure 2, we analyzed the co-occurrence of the words from the title of the articles included in our research (234, scientific article, conference proceeding, etc), and could show that the concepts related with experiential learning are grouped into different clusters and the main clusters are: learning, simulation, and experiential, with nodes that have large dimensions

(betweenness, which signifies according to Wasserman and Faust that these factors depend on the 'other factors' in the set of factors, especially the factors that lie on the paths between the two and could potentially have power and some control over the interactions between the two nonadjacent factors, where the value for “learning” is 296.91 (Table 1), meaning that this node is connected to another 296.91 words (Figure 2). The closeness, how close a node is to all other nodes in the set of cluster (Wasserman and Faust, 1994) in the case of learning is 0,016 indicating that information circulates rapidly within the network. This value suggests a central and important position in the network.

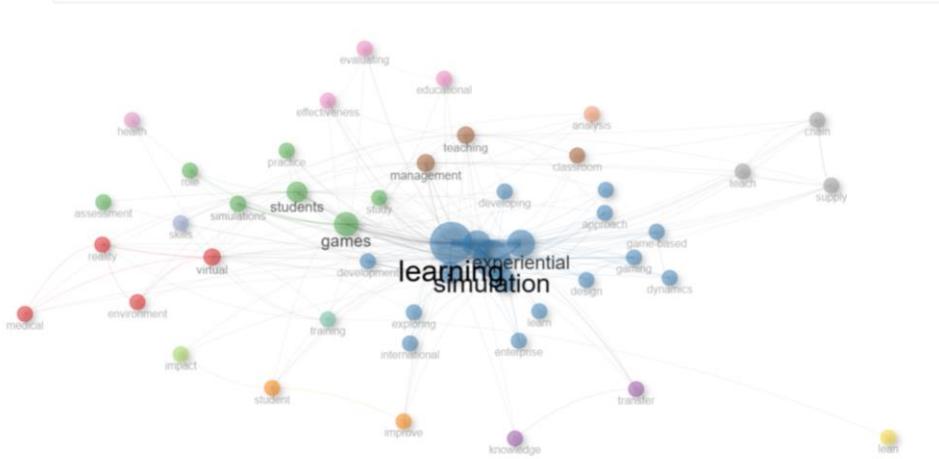

Figure 2. Co-occurrence network, unigram titles
Source authors’ own processings in R-Stata Bibliometrix

The second most used word is 'simulation' with a betweenness of 277.00, and the closeness is 0.017, which means that this node has 277 connections, very strong with a central and important position in the network (Table 1).

Table 1. Closeness of co-occurrence network, unigram titles

NODE	BETWEENNESS	CLOSENESS
learning	296.91	0,016
simulation	277.00	0,017
Games	84.13	0,0136
Game	64.68	0,0135
Training	53.35	0,010

The terms 'games/game' are relevant in the network with a betweenness of 84.13/64.68 but a very low closeness of 0.0136/0.0136. However, as can be seen in Figure 1, they are central and important nodes for the experiential learning network.

Thematic map analysis is based on centrality (intensity of its links with other clusters) and density (characterizes the strength of the links that tie the words making up the cluster together), and Callon, Courtial and Laville (1991) to develop the matrix with four quadrants or cluster: *Quadrants 1* - Clusters of type 1 are both central to the general network (they are strongly connected to other clusters) and have intense internal links (they display a high degree of development), *Quadrants 2* - Clusters of type 2 are central, that is to say that they are strongly connected to other clusters, but the density of their internal links is relatively low, *Quadrants 3* - Clusters of type 3 are not central - we will call them peripheral - and the strength of their internal links leads us to suppose that they correspond to research problems whose study has already been well-developed, Quadrants 4 - Clusters of type 4 are both peripheral and little developed. They represents the margins of the network.

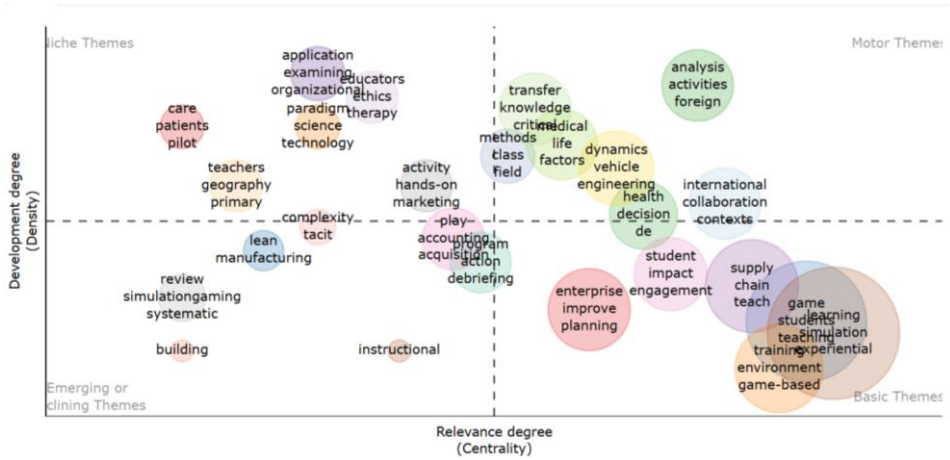

Figure 3. Thematic map, unigram titles
Source authors' own processing in R-Stata Bibliometrix

So, in this situation, according to Callon, Courtial, and Laville (1991), we can observe that the concepts identified as relevant for research—games, simulation, experiential—are situated in quadrant 2, central but not yet sufficiently developed from the perspective of the research conducted and included in the SCOPUS database. What is interesting is that some concepts related to the development and transfer of knowledge through this form of experiential learning are peripheral and undeveloped (Figure 3).

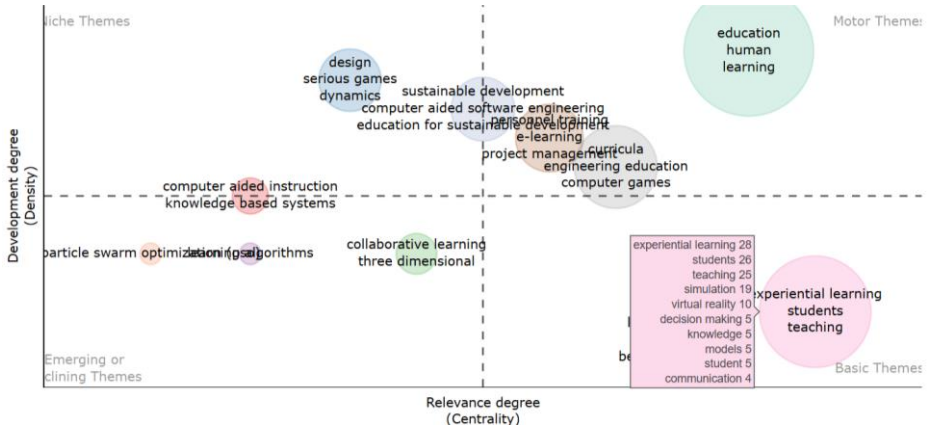

Figure 4. Thematic map, unigram keywords
Source authors' own processing in R-Stata Bibliometrix

The thematic analysis based on keywords highlights that the central and well-developed concepts in quadrant 1 are education, human, and learning, while experiential learning, students, and teaching are in quadrant 2, central but underdeveloped. Peripheral and underdeveloped areas in the current research include collaborative learning, knowledge-based systems, and learning algorithms, which have a high potential for development in the near future (Figure 4).

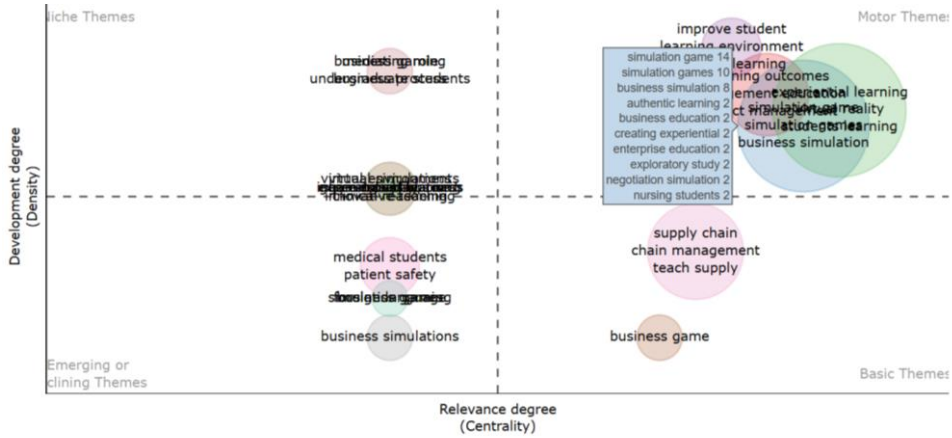

Figure 5. Thematic map, bigram titles
Source authors' own processing in R-Stata Bibliometrix

The bigram thematic analysis highlights that the central and well-developed themes this time are in the area of simulation games, business games, and **experiential learning—research themes that are important for the field.**

4. CONCLUSIONS

The qualitative analysis, using R-State Bibliometrix, of the 254 publications identified in the international SCOPUS database of scientific articles, allows us to gain an overview of the evolution of the concept of experiential learning. There are several useful elements from the perspective of the importance of certain words for this field, such as: learning, simulation, and games, which cover some directions in the areas of economic or medical education. We observe that, with COVID-19, these forms of education have become much more relevant for universities or training companies compared to a few years ago, when their importance was marginal and infrequently used. Computer-assisted learning may become a relevant way in the future for knowledge transfer from teacher to students, leading to a better understanding of processes that can easily be modeled and transformed into simulations.

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