

FOUR DECADES OF LITERATURE ON BUSINESS SIMULATION GAMES: A SEMANTIC AND CONTENT ANALYSIS

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Abstract: The paper focuses on the analysis of existing literature on the use of games in education from early adoption to 2021, making use of both semantic and content analysis to identify overlaps and relations among the concepts. To enhance conceptual clarity, we also use two different software programs. Our results demonstrate frequent and significant relationships between the concepts "game", "student", "learning", "education" and "simulation" in the context of management and business topics, therefore enabling a possible syntax to be further employed, namely: "business simulation games." These results may serve as input data when applying this concept on a pedagogical, scientific, or experimental level.

Keywords: literature, business simulation games, semantic analysis, content analysis

1 INTRODUCTION

Teaching management and business subjects requires a successful combination of theory and practice, resulting in multiple expectations from various stakeholder groups (students, employers, etc.). Teachers, instructors, and facilitators therefore face multiple challenges in preparing, delivering, and evaluating competencies that are specific to business and management topics. Since the 1960s (Lewis et.al., 1974) there have been

various initiatives meant to enhance students' learning opportunities and capabilities, resulting in the conception and implementation of games within teaching-learning programs. The way games were addressed, perceived, and assessed changed over time. One can notice both subtle and major shifts in addressing games such as "serious games" (Noemí & Máximo, 2014), "gamification" (Sandusky, 2015, Šćepanović, 2015), "simulation games and role-play" (Sutcliffe, 2002), "games and simulations" (Wilson & Schug, 1979).

Setting aside the differences and overlaps in finding the most suitable word in describing business simulation games, one cannot ignore their proven benefits up to this date, but there is still much to explore further (Anderson & Lawton, 2009). Many aspects of the benefits of playing games in the classroom can be acquired through the flow of international literature. Therefore, games may improve student performance (Araya et al. 2019), have a favorable impact on knowledge acquisition, interactivity, and collaboration (Bach et al. 2020), and assist students in developing deeper learning skills (Baldwin et al. 2012). Games would also be advantageous for higher education institutions (Bhargava, 2021).

Playing games in class would assist students in acquiring general soft and hard skills, while learning and feeling also satisfied (Buil et. al. 2018). Thus, they could improve student performance (Gordon et.al., 2013) and also promote engagement (Buil et.al., 2020; Emblen-Perry, 2018; Frick, 2020), increase students' motivation (Dichev & Dicheva, 2017) and increase their understanding (Katsaliaki and Mustafee, 2015, Kirkpatrick, 2020) of practical business implications. Deif (2016, p. 371) also states that such games enrich teaching processes with "a practical and applied sense."

Although business simulation games have proven to have multiple positive effects, they are still not implemented as a pedagogical tool on a large scale (Guest, 2015). Possible explanations stem from experiences that addressed the neutral or negative effects of using games in education. Following this line of thought, Huang et.al., (2020) support the idea that games do not appear to have positive or relevant influences on the outcomes of student learning. Also, games tend to be time-intensive (Bach et.al., 2020) and their results are difficult to measure, regardless of the chosen research approach (experimental, quantitative, qualitative).

However, there is currently no agreed-upon terminology, in contrast to various studies on the

subject. The popularity of using games in the classroom has increased, which has resulted in the creation of numerous definitions, assertions, and assessments that, despite their appearance of overlap, actually represent various viewpoints and presumptions.

In order to improve idea clarity and reduce scholarly debate on the subject, the main goal of this study is to sift through the most relevant research on business and management simulation games. In order to reach the declared goal, we elaborated a clear methodology for a twofold data collection and analysis process, firstly on a semantic level of discussion (see, chapter 2) and secondly, based on a content analysis of the relevant literature in the area of games in education (see, chapter 3). Thus, our objectives were: (1) to build a relevant and suited syntax, from the viewpoint of educational andragogic approaches, which describe the process of playing games in a higher education context, and (2) to paint a unique and specific canvas of relevant (sub)categories, extracted from the identified literature with focus on games in higher education, through generating a clear set of codes that (pre)define the specificity of this research domain. The research question that catalysis our scholarly endeavor is: What unique, specific features does the research literature on playing games in a higher education context have, with respect to the syntactic and thematic composition structures of the theoretical discourses promoted in the last four decades?

In order to fulfill our research aims and provide a qualitative and satisfactory answer to our research question, we made use of two separate, intertwined but mostly important – complementary software: (1) Tropes (2022), for a semantic analysis (i.e. from a technical, linguistically perspective) vs. MAXQDA (2021), for a content analysis (i.e. from a sociological point of view of the research methodology). This procedure enabled our research process to widen not only the impact of the results, but also

to stimulate fellow scholars to follow a similar mixed approach when aiming to fully understand the employed terminology of a debated area, conceptual differences, and potential overlaps of meaning.

Our findings demonstrate that while some notions (student, game, and learning) are closely related, others are drifting apart. We also provide a content analysis, highlighting the ideas that recur most frequently in the flow of recent writing. Overall, these findings are significant not only for academics conducting research on this subject but also for management and business teachers, educators, and instructors. The semantic and content analyses are covered in the next sections. Final thoughts and recommendations for potential future study projects are included in the paper's conclusion.

2 SEMANTIC LITERATURE ANALYSIS

As mentioned before, there is a colorful plethora of conceptual diversity, when dealing with and speaking of the overlap of games and education. A semantic analysis could provide meaningful insights on some key elements and their relationships. Therefore, we made use of the semantic knowledge software, Tropes (Molette & Landré, 2012), a natural language processing and semantic classification software. We performed a lexical semantic analysis, through which phrases were identified in order to extract the references (nouns) that could be distributed into semantic classes. Only the nouns, which carried meaningful information, were classified. In addition to the defined classes, the software used highlighted references that recurred within the text. In addition, the relationship of each relevant reference (i.e., meaningful noun) has been analyzed through comparison of the interwoven networks in the text. We sifted through current literature to find the most valuable research papers by searching two databases commonly used for scientific purposes: ERIC (EBSCOhost) and Web of Science

(SSCI). In order to build the following four initial search phrases, we employed Boolean operators, each with three components (i.e., descriptors): (1) "gamification AND higher education* AND management*," (2) "serious games* AND higher education* AND management*," (3) "classroom games* AND higher education* AND management*," (4) "simulation games* AND higher education* AND management*." We extended our search by successively replacing the third descriptor, "management," with "economic," and finally with "business," maintaining the first two operators from the initial four phases; hence, a final set of twelve search phrases emerged. The first descriptors of each phrase emerged from a prior literature analysis with a focus on gamification, serious games, simulation games, and classroom games. With the second and the only constant descriptor of each phrase, "higher education," we intended to narrow down the search to pedagogical endeavors from the academic sector, while the third position of each phrase placed the scientific literature in our field of expertise, i.e., business, management, and economics. As a next step, we also narrowed possible results by using the words "study" or "research," mainly because our goal was to gather relevant scientific literature on games in higher education within the management field. As a result of this approach, we selected only 842 peer-reviewed articles, regardless of the time span. Still, 77% of these articles were published within the last ten years. Thus, we can state that there has been an increasing interest in this topic. Further, we read the abstracts and continued to make stock of those articles that made use of games and simulation pedagogy in higher education. Thus, review articles, meta-studies, and empirical articles were included. Surprisingly, only a number of 31 relevant research articles, covering a time span from 1974 to 2021 could be withdrawn. The content of these articles has been transferred and merged into a single document comprising 325.178

No connections or overlaps between the codes were found by the code relations browser. As a result, in contrast to the earlier semantic analysis (section 2), we were unable to uncover any pertinent word relations.

4 CONCLUSIONS

The current paper investigates the existing terminology on business simulation games from the 1974 to 2021. In order to fully understand the employed terminology, conceptual differences, and overlaps, we performed a semantic analysis followed by a content analysis, assisted by two different software specialized in the analysis of texts. The semantic analysis pointed out the predominant word "game" throughout the literature, followed by "learning" and "simulations." The semantic analysis also revealed relations between the concepts by employing the most frequently occurring nouns.

The second analysis involved performing a content exploration. The word "game" was again predominant, but the next following words were "student," "learning," and "education." Consequently, there are slight differences in second-level words that appear in the literature depending on whether a semantic or a content analysis is employed. Consequently, we may say that games are viewed in relation to students, their education, and learning initiatives notwithstanding the disparities that emerge between the semantic and content analyses. Games are sometimes referred to as "simulations" while discussing business and/or management-related themes.

From the viewpoint of fulfilling our two research aims, our semantic analysis met its goal to generate a relevant and suited syntax, from the viewpoint of educational andragogic approaches, which defines the process of playing games in a higher education context. As a result, from both an andragogic and a scientific standpoint, we have found the syntax "business simulation games" for our own future works and

we would recommend fellow scholars to take into account this reference as well.

Thus, the first contribution of this paper is of theoretical nature, where we manage to generate a clear, undebatable syntax that can be used with no possible drawbacks or scholarly repercussions when doing research in the field of teaching through games in a higher education context.

The second goal was partially met, specifically, some relevant (sub)categories, were extracted from the identified literature with focus on games in higher education, thus a first set of codes have been generated. Nonetheless, more research is needed, perhaps on a broader set of scientific papers in the debated domain, from both a qualitative and a quantitative perspective, in order to accurately, define the peculiar, and clear the still blurry paradigm from this research field. Be that as it may, we managed to extract some unique, specific features of the research literature on playing games in a higher education context basing our research methodology not only on a validated method in the social sciences, the content analysis, but also offering a fresh, additional possibility of text analysis from a linguistically perspective.

Thus, the second contribution of this paper has practical implications that address the mixed nature of the proposed research methodology, which has an interdisciplinary character, which combines social sciences and linguistics. May this be a stimulus for fellow scholars to follow a similar mixed approach when aiming to fully understand the employed terminology of a debated area, conceptual differences, and potential overlaps of meaning.

In conclusion, the current research could be expanded (1) to an analysis of a larger collection of articles on business simulation games, (2) to an analysis based on coding that emerges in a deductive manner, (3) to a literature analysis that includes document variables and smart coding tools, and (4) to other methods of analysis specific to meta-studies.

Nevertheless, our research may serve as a springboard for future studies on this subject from a scientific and pedagogical standpoint, making it pertinent to both academics conducting research on business simulation games and educators, instructors, and facilitators.

BIBLIOGRAPHY

- Anderson, P. H. & Lawton L. (2009). Business Simulations and Cognitive Learning: Developments, Desires, and Future Directions. *Simulation & Gaming*, 40 (2): 193–216.
- Araya, R., Ortiz E. A., Bottan N., & Cristia J. (2019). *Does Gamification in Education Work?: Experimental Evidence from Chile*. Inter-American Development Bank Department of Research and Chief Economist. <https://publications.iadb.org/en/does-gamification-education-work-experimental-evidence-chile>.
- Bach, M. P., Meško M., Zoroja J., Godnov U., & Čurlin T. (2020). *Usage of Simulation Games in Higher Educational Institutions Teaching Economics and Business*. Proceedings of the ENTRENOVA 10-12, September 2020, Virtual conference, Croatia, 27–36. <https://www.econstor.eu/handle/10419/224673>.
- Baldwin, A. & Koh E. (2012). Enhancing Student Engagement in Large, Non-Disciplinary First Year Survey Courses. *International Journal of Teaching and Learning in Higher Education*, 24 (1): 113-121.
- Bhargava, S. (2021). Engaging Pedagogical Strategies for Students in Teaching Sessions: A Suggestive Framework Blueprint. *Journal of Management and Public Policy*, 12 (2): 4–26.
- Buil, I., Catalán S., & Martínez E. (2018). Exploring Students' Flow Experiences in business simulation games. *Journal of Computer Assisted Learning*, 34: 183-192.
- Buil, I., Catalán S., & Martínez E. (2020). Engagement in Business Simulation Games: A Self-system Model of Motivational Development. *British Journal of Educational Technology*, 51 (1): 297–311.
- Deif, A. (2017). Insights on Lean Gamification for Higher Education. *International Journal of Lean Six Sigma*, 8 (3): 359–76. <https://doi.org/10.1108/IJLSS-04-2016-0017>.
- Dichev, C., & Dicheva, D. (2017). Gamifying Education: What Is Known, What Is Believed and What Remains Uncertain: A Critical Review. *International Journal of Educational Technology in Higher Education*, 14 (1): 1–36.
- Emblen-Perry, K. (2018). Enhancing Student Engagement in Business Sustainability through Games. *International Journal of Sustainability in Higher Education*, Vol. 19 No. 5, pp. 858-876. <https://doi.org/10.1108/IJSHE-05-2017-0075>
- Frick, H., Birt, J., & Waters, J. (2020). Enhancing student engagement in large management accounting lectures. *Accounting & Finance*, 60(1), 271–298.
- Huang, R., Ritzhaupt, A. D., Sommer, M., Zhu, J., Stephen, A., Valle, N., Hampton, J., & Li, J. (2020). The impact of gamification in educational settings on student learning outcomes: a meta-analysis. *Educational Technology Research and Development*, 68(4), 1875–1901.
- Gizzi, M. C., & Rädiker S. (2021). *The Practice of Qualitative Data Analysis: Research Examples Using MAXQDA*, MAXQDA Press.
- Gordon, J., Henry P. & Dempster M. (2013). Undergraduate Teaching Assistants: A Learner-Centered Model for Enhancing Student Engagement in the First-Year Experience. *International Journal of Teaching and Learning in Higher Education*, 25(1): 103-109.
- Guest, J. (2015). 'Reflections on Ten Years of Using Economics Games and Experiments in Teaching'. *Cogent Economics and Finance*, 3 (1). <https://doi.org/10.1080/23322039.2015.1115619>.
- Katsaliaki, K., & Mustafee, N. (2015). Edutainment for sustainable development: A survey of games in the field. *Simulation & Gaming*, 46(6), 647–672.

- Kirkpatrick, N. (2020). Reality check: Helping students recognize, evaluate, and pursue realistic entry-level jobs in business. *International Journal of Management Education*, 18(2), 100384. <https://doi.org/10.1016/j.ijme.2020.100384>
- Lewis, D. R., Wentworth D., Reinke R., & Becker W.E., (1974). 'Educational Games and Simulations in Economics', *Joint Council on Economic Education*, 2: v, 134 p.
- Molette, P., & Landré, A. (2012). *Tropes. Reference Manual* (8.1; p. 62). UEFISCDI, Romania. http://www.forhe.ro/docs/tropes_manual_de_referinta.pdf
- Noemí, P. M., & Máximo, S.H. (2014). 'Educational Games for Learning'. *Universal Journal of Educational Research*, 2 (3): 230–38. <https://doi.org/10.13189/ujer.2014.020305>.
- Sandusky, S. (2015). *Gamification in education*. The University of Arizona, UA Campus Repository, 1-7.
- Šćepanović, S. (2015). *Gamification n Higher Education Learning– State Of The Art, Challenges and Opportunities, Gamification vs game based learning*. The Sixth International Conference on E-Learning (ELearning-2015), 24- 25 September 2015, Belgrade, Serbia, September, 24–25.
- Sutcliffe, M. (2002). *Simulations, Games And Role Play*, edited by Peter Davies. https://www.economicsnetwork.ac.uk/handbook/printable/games_v5.pdf.
- Tropes Software Semantic-Knowledge. (2022). *Semantic Knowledge [Computer Software]*
- VERBI Software. (2021). *MAXQDA 2022 [Computer Software]*. Berlin: VERBI Software. <https://www.maxqda.com/>.
- Wilson, C. R., & Schug, M. C. (1979). A guide to games and simulations for teaching economics (3. Aufl.). *Joint Council on Economic Education*. URL: <https://files.eric.ed.gov/fulltext/ED180873.pdf>