

The Use of Concept Mapping to Promote Meaningful Learning in a Real Estate Continuing Education Environment

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ABSTRACT

This paper is part of a wider research project, conducted at the Real Estate Research Group, whose main objective is to identify, test and eventually incorporate newer educational techniques in MBA courses related to real estate. In this context, the paper presents the results of a quasi-experimental research, conducted at the *MBA/USP-Facilities Management* course, in the *Real Estate Management* discipline. Our objective with this specific research was to verify the effectiveness of Concept Mapping as a leveraging resource to promote meaningful learning in a continuing education course. The methodological procedure was to apply to MBA students, in three different occasions, activities that involved the drafting of concept maps about specific topics of *Real Estate Management*. The results show a clear evolution between the concept maps produced at event 01 (diagnostic evaluation) and event 02 (three months later) but, more importantly, is the fact that after more than six months from event 02, when the same activity took place in another context (event 03), students were able to develop concept maps as complex as the ones produced at event 02. The research findings support the assertion that the knowledge acquired during the course, through the use of concept maps, was actually anchored in students' prior knowledge, consolidating itself as new subsumers in students' cognitive structure. Because of being a single experiment, and due the non-randomization of the elements, this research does not provide sufficient evidence for a generalization of the findings, but provides some evidence that supports the didactic-pedagogic use of concept maps in Real Estate education, as a way to cope with the heterogeneity of MBA students from Polytechnic School.

Keywords: andragogy; learning; subsumers; real estate; concept map.

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Main objective

- In this presentation, we show some of the results of an applied research conducted with a group of **25** students at a Facilities Management MBA course (Real Estate Asset Management discipline).
- The main objective is to identify, test and eventually incorporate newer educational techniques in MBA courses related to real estate.
- This research is aimed to evaluate some pedagogical deficiencies, and attempt to surpass them, making use of the **concept maps** technique, through which students could externalize and share meanings that arise from the reading of supporting texts.

Research context

- Students who attend continuing education courses, more specifically the students of MBA/USP- Facilities Management graduates are professionals, mostly engineers and architects, who seek a supplemental education, in **parallel to their professional activities**.
- These students have very **heterogeneous academic experience** and usually a **good practice of the concepts** discussed in class.
- There is a need of **constant reviewing of contents and methods** along the education process, considering knowledge, expectations, conditions and motivations of students
- It is therefore appropriate to **take advantage of this knowledge** in carrying out activities in the classroom.

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Theoretical foundation

- Real Estate professionals' education should be guided by **significant teaching-learning** situations (Manning *et alli*, 2006)
- To **learn significantly implicates in attributing meanings** and these always have personal components that should be taken into account when the educator develops his class. (Novak, 1977; Moreira, 1999)
- To promote the meaningful learning, Novak (1997) and Moreira (1999) recommend **the use of concept maps as didactic resource**, with the purpose of identifying pre-existent meanings in the cognitive structure of the student, necessary to learning.
- In order to obtain **qualitative evidences of meaningful learning**, the teacher should request oral or writing explanations, in relation to the elaborated map, so that the students externalize what they meant, reflecting their way to see, perceive and act. (Novak, 1997)

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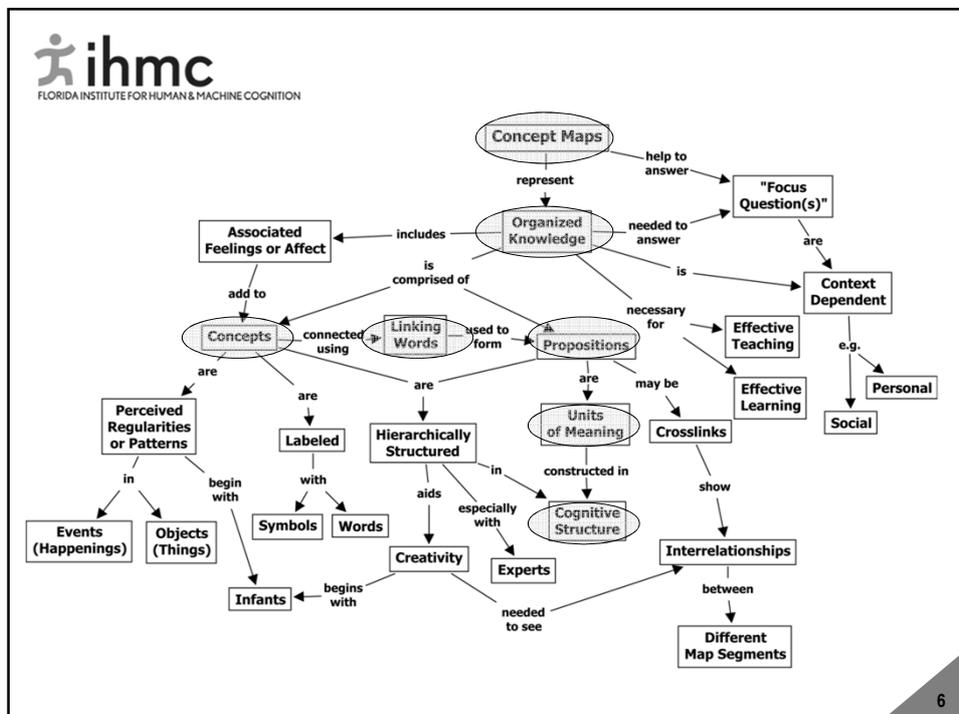
Concept Mapping

Joseph D. Novak developed the *Concept Map Theory* from David Ausubel's *Meaningful Learning Theory*, and its prospects for use as technical knowledge organization, which is based on prior knowledge.

It's aligned with Malcolm Knowles' *andragogy adult education* model, more familiar to Real Estate academics (Roulac, Manning).

A *Concept Map* allows [i] the formation of semantic networks in an specific area of knowledge and [ii] the graphical-hypertext representation of knowledge.

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Methodology

- We try to analyze the interaction and the production of meanings in the classroom using a learning sequence, where, through a **proposed problem**, we explore the vision and the understanding that the students have of a certain idea.
- These findings acts as a guide, giving the necessary support to the **process of externalizing the produced meanings**, consequently helping to understand the whole connection among the real estate syllabus, aiming for a potentially *meaningful learning*.
- The comparison of the maps was made between students in the same class at three different times.

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Results and Discussions

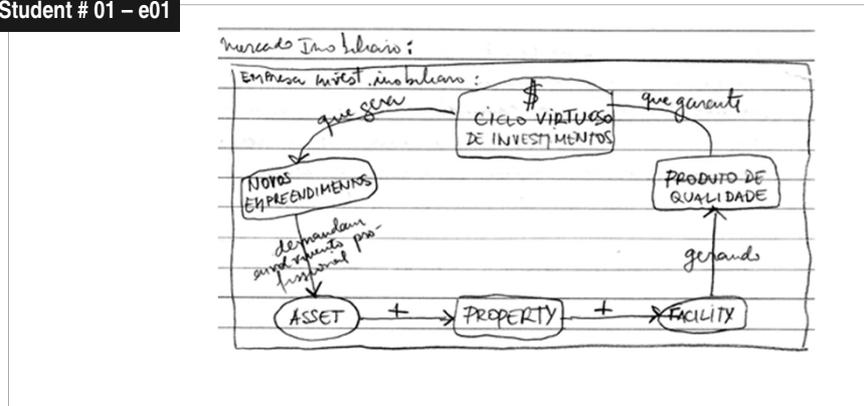
First Intervention (event 01)

- The students discussed a **proposed text** on the relationship between facilities management and real estate asset management.
- In this text, it is argued that quality of investment in real estate asset is directly affected by the provision of services and supplies needed to repair the building and its building systems, which is in the field of facilities management. (Then, 2008)
- Without prior knowledge of Concept Mapping, students were asked to build mental representations of their opinions on that subject. **event#01**
- The maps were presented and discussed by the students, and their speeches were **literally transcribed for analysis, interpretation of meanings and discussion.**

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Results and Discussions

Student # 01 - e01

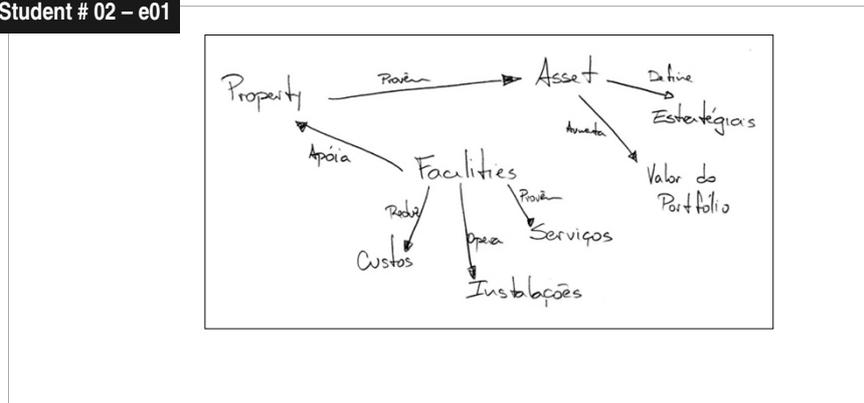


Notice the simplicity of the relations established between concepts and the use of simple verbs in the formulation of causal propositions. There has never been previous contact with Concept Maps, so the diagram has clearly a flowchart 'tendency', shown by the arrow signaling (+)

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Results and Discussions

Student # 02 - e01



Again, just simple relations without any clear criteria for the connections, and relations are made using simple verbs or nouns. The students' discourse analysis indicates the prevalence of property valuation concept.

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Results and Discussions

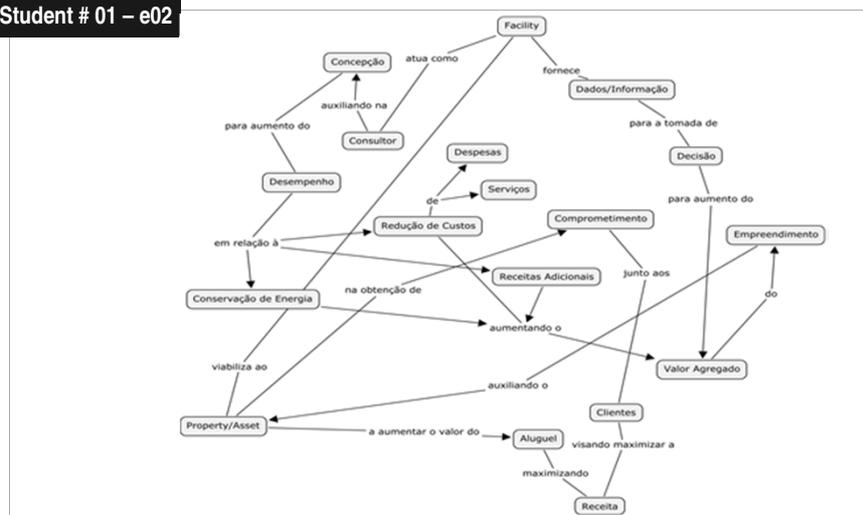
Second Intervention (event 02)

- Students were introduced to Concept Mapping Theory.
- The Cmap tools was explained an a quick training was given.
- During classes, Real Estate Asset Management content was given using, every time it was possible, Concept Maps.
- Three months later, on discipline's final exam, students were asked to build a Concept Map, on the same subject of the first intervention.
- They were also asked to write an explanation of the maps built. Although concept maps should be self-explicative, Novak recommends that an explanation should be provided by students, in order to access if significant learning has actually occurred.

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Results and Discussions

Student # 01 – e02

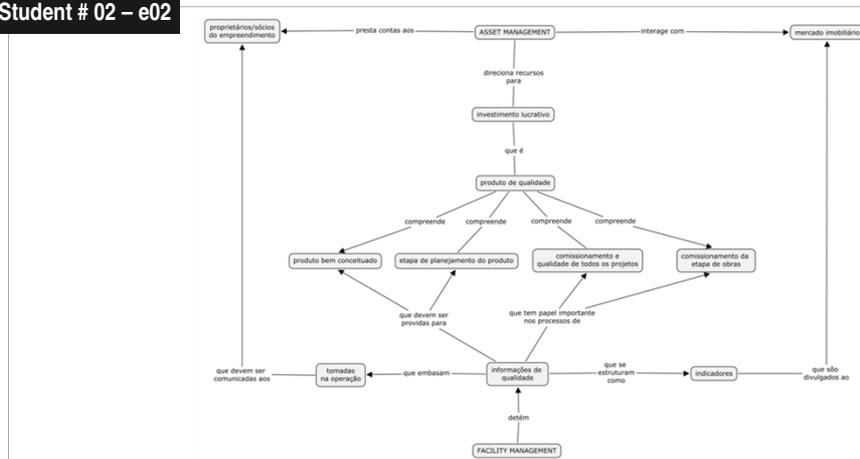


The evolution of concept mapping abilities is noticeable.

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Results and Discussions

Student # 02 – e02



The conceptual map shows a clear evolution of the knowledge expressed by the student. The propositions are more complex, the concepts are different levels and we can see the hierarchy of concepts

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Results and Discussions

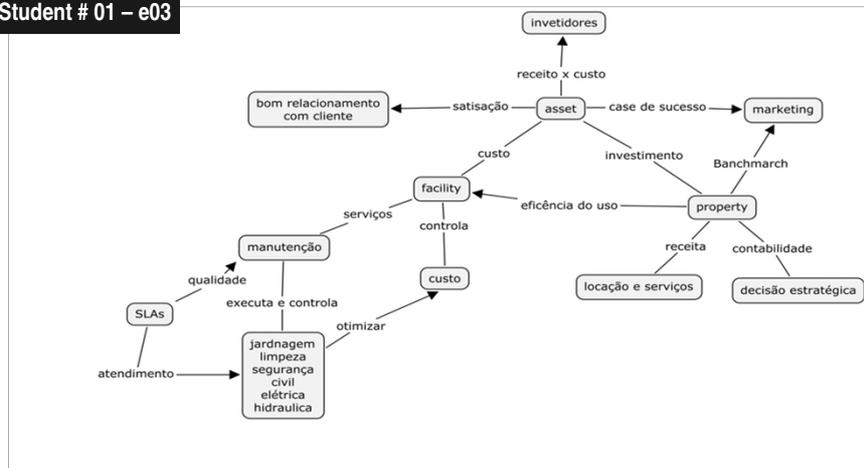
Third Intervention (event 03)

- In comparing the maps prepared by students at events 01 and 02, it was evident the evolution of students' knowledge.
- However, we aimed to investigate whether the concepts developed in the practice of conceptual maps actually constitutes new subsumers.
- For this a third phase of the investigation was planned, which occurred six months after the event 02.
- In a different context, in another discipline, the same group of students was asked to draw up a map on the same subject before.
- It was not previously informed to the students that they would be prompted to build conceptual maps, so that there was no bias or motivation for the maps originally prepared to be reviewed by students.

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Results and Discussions

Student # 01 – e03

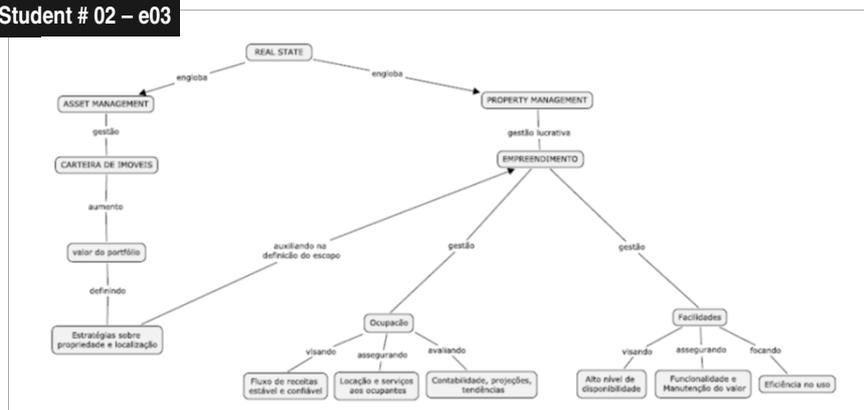


When responding to event 03, students have developed conceptual maps as complex as the event 02, although significantly different.

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Results and Discussions

Student # 02 – e03



From the standpoint of its hierarchy and the number of relationships between concepts expressed (propositions) maps are also complex, which may indicate that the knowledge was effectively incorporated into the cognitive structure of students.

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Final Considerations

- In spite of the initial difficulties for **structuring** the CONCEPT MAPS, as well as the **placement of propositions for logical establishment** of the reasoning, most students identified with this didactic resource.
- It was noticed, also, an **improvement of the capacity of discussing ideas and of working in group**, improving considerably the ability to define, relate and organize concepts.
- To support a discussion about the effectiveness of the use of CONCEPT MAPS as a support resource for the process of integrative reconciliation and progressive differentiation, it would be necessary to **allow more time to the development of the CM activities**.
- A second experiment was conducted this year, with a different group of students, presenting same results. These will be incorporated into a final paper.

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vielen Dank für Ihre Aufmerksamkeit

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