

HISTORY OF SCIENCE ON PHYSICS TEACHING AS SOCIAL REPRESENTATION OF TEACHER IN TRAINING

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Abstract. We investigate the views of a group of Physics teachers in training (N = 78) concerning History of Science on Physics teaching. We took Serge Moscovici's Theory of Social Representation as support and Abric's structural approach of a Social Representation to build a similarity network from the evoked words by the group. The representation showed a view of History of Science in the Physics Teaching concerning more facts and products and focused in its utility as context rather than the knowledge construction's processes of this Science. This view also showed its usage as an obstacle in Physics Teaching.

1 Introduction

The aim of this paper is to use a methodological approach of Social Representation [1] to explore the consensual visions represented by the students' group concerning the usage of History of Science as a teaching strategy. Moscovici [2] argues that building the social world from representations that turns the unfamiliar into the familiar allows one to shape reality and also to form stable consensus. As Moscovici said, in Social Representation we are [...] "*dealing with knowledge whose objective it is to 'create a reality'*" (p.229).

Those consensus emerges as a nucleus of a representation and carries beliefs and ways of living of a social group. Through Social Representations we can see at which extension the official norms reified in the undergrad curriculum permeates the universe of ideas of these students. Also, looking at these representation we can learn how the preparation of those future Physics teachers can (and must) be adapted.

2 Theoretical background

Social Representation (SR) has come a long way since Moscovici's first works. It has been adapted and updated and concerning educational research, SR has a particular solid ground in Brazil varying from works exploring students' SR [3] to teachers' SR [4]. We were influenced by Abric's structural approach of SR [5] and Sá's Central Core of a SR [6] in this work. These authors propose that a SR has a structure that is solid on the nucleus, where some core ideas remain stable but at the same time highly dynamic at the periphery where people's idiosyncrasies float.

3 Methodology

Our subjects (N = 77) were undergrad Physics students getting a license for teaching. They study

at a public university of São Paulo state, in Brazil. We used the free words evocation technique asking them to write down the five first words they thought about “usage of History of Science on Physics teaching”. Then we proceed a similarity analysis between those words using Jaccard (1908) method to build a similarity network, retaining words with frequency equal or greater than 3, and use wklaktrap algorithm (PONS, 2004) to determinate clusters in this network.

4 Results and discussion

The network (Fig. 1) showed 29 vertex and formed 4 clusters. The consensus of History of Science (HC) as a conceptualization tool emerges as central in the network. The cluster B show that although HC could be stimulant and useful, they represent difficulty connect with that. It might mean that students doesn't feel confident to take HC as a teaching strategy. The strong association teacher ↔ book in the cluster C show that they represent the textbook as the repository of HC. In the cluster B, historical elements (people, places) are connect to didactic.

5 Conclusions

Despite the presence of elements and the idea of HC as a teaching approach, the representation lacked the historical process of building knowledge in Physics. That rises the question of how just factual HC has been carried by these students and how can we rethink the curriculum in order to bring the process of Physics in history to the future teachers.

References

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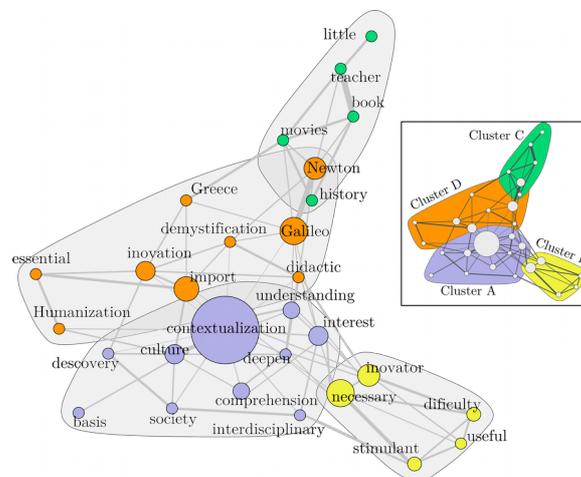


Figure 1: Similarity network of evoked words.