

The possible social representations of astronomy by students from integrated high school

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Abstract. In this paper, we present the possible Social Representations, which students of the Integrated High School of the Federal Institute of Alagoas (IFAL) have on the term inductor Astronomy, as well as identifying how they were probably elaborated. Therefore, in agreement with Moscovici (2010) is used the Theory of Social Representations.

Resumo. Neste trabalho, apresentamos as possíveis Representações Sociais, que alunos do Ensino Médio Integrado do Instituto Federal de Alagoas (IFAL) têm sobre o termo indutor Astronomia, assim como, busca identificar como elas foram provavelmente elaboradas. Portanto, de acordo com Moscovici (2010) é utilizada a Teoria das Representações Sociais.

Keywords. Teaching of Astronomy

1. Introduction

A Social Representation (SR) is an organized and structured set of information, beliefs, opinions and attitudes; It is a particular sociocognitive system, composed of two subsystems: a central system (or central nucleus) and a peripheral system (Abric, 2003).

2. Methodology

In order to identify the Social Representations of Astronomy by students of Integrated High School, the Central Nucleus Theory was adopted, so according to this theory, the data were collected through a questionnaire of free association or free avocational and hierarchical. This instrument was applied to 653 students from IFAL, 267 from the 1st year, 219 from the 2nd year and 167 from the 3rd year. The predominant age groups are: 1st year (14 to 17 years); 2nd year (15 to 18 years); 3rd year (16 to 19 years). The questionnaire was structured with the following questions:

1. When thinking about the term *Astronomy*, write all the words you have remembered and try to register as many of them in the following table (32 spaces) in order to complete it. Beware, **do not** fix your attention on the last word you wrote, but on the term *Astronomy*.
2. Among those words recorded in question 1, select and rewrite in the first column of the following table the eight words that you consider most important, that is, more related to the term *Astronomy*. Next to the second column, classify each one by its degree of importance from 1 to 8, with grade 1 being the most important, grade 2 being the 2nd most important, and so on until grade 8, which will be the least important.

3. Results and discussions

After tabulation of the data, we have 419 different words, out of a total of 5224 evocations, in the sequence the data were intro-

duced in the software IRAMUTEQ, and with this was carried out a prototypical analysis with the objective of detecting the possible social representations of the researched students in relation to the object Astronomy. For each word cited, its frequency (F) was calculated, that is, the number of times that word was mentioned, as well as the average order of recall (AOR), which considers the position in which the term evoked was hierarchized by the respondent, in this way, the AOR represents the degree of importance given to each word.

For this work were considered evocations with frequency greater than or equal to twenty. Thus, an average frequency of 89.4 and an AOR of 4.4 was calculated (Table 1). Therefore, these were the parameters used for the construction of the four houses, where the elements belonging to the possible central core and the peripheral region, highlighted in the table below.

4. Final considerations

In this sense, we conclude that the researchers have social representations of the object Astronomy, and these were based on elements that made or are part of the experience lived by the students within the formal space of education, as well as their interaction with the media of mass communication. It is also verified that the students possess information and a valuation position in relation to astronomical science.

References

- Abric, J. C. 2003, in Social Representations and Educational Practices, Campos, P.H.F. & Loureiro, M. C. S., eds., (Goiânia: Ed. da UCG), pg. 38
Moscovici, S. 2010, in Social Representations: Investigations in social psychology, (Petrópolis: Vozes)

Table 1. Four-house chart showing the social representations of Astronomy elaborated by the students surveyed.

| Central Core | | | 1st Periphery | | |
|-------------------------------------|-----------|-----|--|-----------|-----|
| Frequency ≥ 89.4 e AOR < 4.4 | | | Frequency ≥ 89.4 e AOR ≥ 4.4 | | |
| Words | Frequency | AOR | Words | Frequency | AOR |
| Planets | 446 | 4.1 | Stars | 312 | 4.4 |
| Astros | 217 | 3.1 | Moon | 173 | 5.1 |
| Galaxies | 200 | 4.1 | Sun | 173 | 4.4 |
| Universe | 184 | 2.9 | Satellites | 156 | 5.4 |
| Space | 166 | 4.2 | Gravity | 140 | 4.5 |
| Study | 157 | 3.2 | Constellations | 130 | 4.8 |
| Physical | 101 | 3.3 | Meteors | 117 | 5.6 |
| Earth | 95 | 4.2 | Astronauts | 110 | 4.6 |
| | | | Telescopes | 95 | 5.5 |
| | | | Movement of the astros | 94 | 5.1 |
| Contrast Zone | | | 2nd Periphery | | |
| Frequency < 89.4 e AOR < 4.4 | | | Frequency < 89.4 e AOR ≥ 4.4 | | |
| Words | Frequency | AOR | Words | Frequency | AOR |
| Solar System | 81 | 3.5 | Comets | 88 | 5.7 |
| Astronomers | 69 | 3.7 | Rockets | 65 | 5.1 |
| Life | 57 | 4.1 | Milky Way | 59 | 4.8 |
| Research | 52 | 3.5 | Time | 57 | 5.0 |
| Technology | 50 | 3.7 | Black Hole | 56 | 5.7 |
| Science | 50 | 3.4 | Sky | 54 | 5.1 |
| Big Bang | 37 | 4.0 | Observations | 53 | 4.7 |
| Scientists | 21 | 3.9 | Calculus | 48 | 4.5 |
| Celestial Bodies | 20 | 3.5 | NASA | 45 | 4.7 |
| | | | Discoveries | 41 | 5.0 |
| | | | Climate | 40 | 5.6 |
| | | | Phenomena | 39 | 4.9 |
| | | | Light | 38 | 4.8 |
| | | | Eclipses | 38 | 6.0 |
| | | | Atmosphere | 36 | 4.9 |
| | | | Material | 32 | 4.9 |
| | | | Asteroids | 31 | 5.6 |
| | | | Speed | 28 | 5.0 |
| | | | Gases | 27 | 5.5 |
| | | | Spacecraft | 26 | 6.1 |
| | | | Light years | 26 | 5.5 |
| | | | Vacuum | 21 | 5.3 |
| | | | Cosmos | 20 | 4.9 |