Who is that girl? She is the one who took the first photo of a Black Hole!

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Outlook

1. Introduction

   What is this research about?

2. Motivation

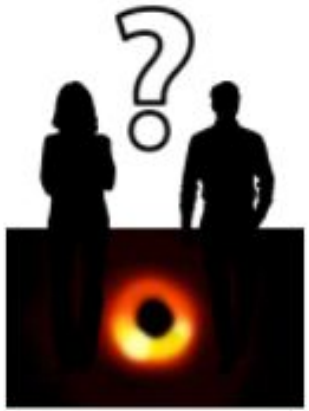
   Female's (lack of) Representativeness in Physics;
   Hegemony Vs counter-hegemony;
   The responsibility of school/university;
   Teaching Modern and Contemporary Physics.

3. Data analysis (in construction)
4. Last comments
5. References

1. Introduction

What is this research about? (1)

to understand what would be the idea of students from high school have about some characteristics of the scientist who took a black hole photo for the first time



1. Introduction

What is this research about? (2)

subjects: students from a public school;

where: at the city of Rio de Janeiro, Brazil;

methodology: the students were asked to draw a picture of such a scientist and write some comments on her/his personality (DAST);

data analysis: content analysis.

2. Motivation (1)

- Female's (lack of) Representativeness in Physics

  Numbers of women in science has increased over time;

  However this topic still needs a lot of efforts to change the current idea that the science is a masculine career;

  These mentioned efforts should start throughout both schools and universities in order to deconstruct this hegemonic thinking.

2. Motivation (2)

- An important element brought in this research is the idea of hegemony which appears, for instance, in Gramsci and Laclau;

- For our purposes, we are interest in the concept opposite to hegemony thinking, known as counter-hegemony;

- Throughout counter-hegemony concepts we can overcome the politicized notion of culture, where it is used by dominant classes to sustain power relations in society, and bring to debate issues regarding gender, ethnicity, diversity, etc.

2. Motivation (3)

- The current research place us directly at the center of an important debate: What is the role of a School/University as a responsible for contributing to the formation of socially active individuals?

- To contribute with the inclusion of the topics related to the Modern and Contemporary Physics in the high school classes.

3. Data analysis (in construction)

Following the content analysis scheme both the text and the drawing were broken down the code categories for analysis. Notice that such code categories come from directly from the text data.

3. Data analysis (in construction)

Preliminary Results (1) : emergent categories

- Race;
- Gender;
- Nationality;
- Personality (intelligent, hard-working, optimistic, etc.)

3. Data analysis (in construction)

Preliminary Results (2) : drawings and texts

Student A

- gender: male;
- Nationality: brazilian;
- Personality: intelligent, funny and “grumpy ”.

3. Data analysis (in construction)

Preliminary Results (3) : drawings and texts

Student B

- gender: female;
- Nationality: north american;
- skin color: white.

4. Last comments

- This research was suitable to stimulate gender issues among basic education students;
- Gender issues also meaning to promote both equity and equality;
- Discuss the under-representation of women in science;
- Within the counter-hegemony context, Modern and Contemporary Physics is just a way to reach the representation of women theme.

5. References

[1] Giroux, H. (1988) Teachers as Intellectuals. New York: Bergin & Garvey.
[2] Freire, P. (1998) Teachers as cultural workers. Boulder, CO: Westview Press.
[3] Schön, D. (1987). Educating the reflective practitioner. Oxford: Jossey-Bass Inc. Publishers.
[4] Dewey, J. (1997). How we think. Chicago: Henry Regnery. (Original work published 1933)
[5] Zeichner, K. M. & Liston, D. P. (1996). Reflective teaching: An introduction. New Jersey: Lawrence Erlbaum Associates, Publishers.
[6] Gramsci, A. (1971). Selections from the Prison Notebooks.
[7] Laclau, E., Mouffe, C.. 1985. Hegemony and socialist strategy. London: Verso.
[8] Miller, D.I., Eagly, A.H., Linn, M.C. Women's representation in science predicts national gender-science stereotypes: evidence from 66 nations, Japanese Journal of Educational Psychology, 2014.
[9] Carli, L. L., Alawa, L., Lee, Y.,Zhao, B., Kim, E., Stereotypes about gender and science: women ≠ scientists.
[10] Roper, R. L. Does gender bias still affect women in science? Microbiology and Molecular Biology Reviews, Volume 83 Issue 3, 2019.
[11] Chambers, D. W. (1983) Stereotypic images of the scientist: The draw-a-scientist test," Science Education, 67, 255–265. doi:10.1002/sce.3730670213.
[12] Bardin, L, Análise de conteúdo: edição revista e ampliada, São Paulo: Edições 70, 2016.

Thank you for your attention !