

The study of topics of Astronomy in Physics teaching that addresses the significant learning

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Abstract. In this work are discussed the results of the case study on the oceanic tides for which it was used didactic sequences, based on the Cycle of Experience of George Kelly (Kelly 1963), applied in four groups of the first year of the integral medium teaching. The data obtained in two same tests - Pre and Post-Test - before and after the application of the didactic sequences, as well as the verification of the significant learning analysed as for the conditions of the previous knowledge considering authors Boczko (1984), Horvath (2008) and Kepler & Saraiva (2013). Also the values were analysed obtained the Post-Test II applied to the long period. The results reveal that the worked groups presented previous knowledge in conditions adapted for the understanding of the event, as well as, for they be used in the situation-problem resolution that demands the understanding. Verify also that the idea of the didactic sequence can be used as tool in the relationship teaching-learning addressed to the significant learning.

Resumo. Neste trabalho são discutidos os resultados do estudo de caso para o qual foi utilizado sequências didáticas, baseados no Ciclo de Experiência de George Kelly (Kelly 1963), para o estudo das marés oceânicas, aplicada em quatro turmas do primeiro ano do Ensino Médio integral. Os dados obtidos em dois testes iguais — Pré e Pós-Teste I — antes e depois da aplicação das sequências didáticas, como também a verificação da aprendizagem significativa foram analisados quanto às condições dos conhecimentos prévios considerando os autores Boczko (1984), Horvath (2008) e Kepler & Saraiva (2013). Também foram analisados os valores obtidos no Pós-Teste II aplicado em longo prazo. Os resultados revelam que as turmas trabalhadas apresentaram conhecimentos prévios em condições adequadas para a compreensão do evento, como também, para serem utilizados na resolução de situações-problema que exigem sua compreensão. Constatamos também que a idéia da sequência didática pode ser utilizada como ferramenta na relação ensino-aprendizagem direcionada a aprendizagem significativa.

Keywords. Teaching of Astronomy

1. Introduction

This work had as purpose to study topics of Astronomy (Mourão 2008) in Physics discipline with students of the 1st year of the Medium Teaching of a located school in the city of Sirinhaém – PE in the period between August 2015 and May 2017.

2. Objectives

To analyse and to understand as the study of topics of Astronomy in Physics Teaching can be significant.

3. Methodological Procedures and Results

The Pre-Test was applied to 112 students, soon afterwards the application of the didactic sequences happened: anticipation of the knowledge, investment in the result, encounter with event, confirmation or not of the hypothesis and formation of new constructions (Kelly 1963) and at the end of the intervention the Post-Test I was applied; after five months the situations problems were introduced and, one year and one month later, the Post-Test II was applied to 86 students. The results can be observed in the Figures.

4. Results and discussions

In the Post-Test I it happened a variation of percentile between 36.0% and 100.0% for the adequate answers; as to the construction of the significant learning oscillated from 3.1% to 88.9%

for the developed category; and in relation to the Post-Test II it varied among 40.7% to 54.7% for the correct answer. So the application of the methodology is pertinent, but need to be adjusted to obtain a deepening of the topics.

References

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Table 1: Question one: what is tide?

	A		B		C		F	
	Pre-Test	Post-Test I	Pre-Test	Post-Test I	Pre-Test	Post-Test I	Pre-Test	Post-Test I
Appropriate	8.0%	48.0%	2.8%	75.0%	0.0%	71.9%	5.3%	63.1%
More or less Appropriate	48.0%	28.0%	27.8%	19.4%	28.1%	25.0%	15.8%	21.1%
Inadequate	44.0%	24.0%	69.4%	5.6%	71.9%	3.1%	78.9%	15.8%

Table 2: Significant learning: question one.

	A	B	C	F
Developed	48.0%	44.4%	68.8%	52.7%
Developing	36.0%	50.0%	28.1%	38.6%
Non developed	16.0%	5.6%	3.1%	10.5%

Table 3: Significant learning: question two.

	A	B	C	F
Developed	44.0%	88.9%	71.9%	78.9%
Developing	36.0%	8.0%	3.1%	5.3%
Non developed	20.0%	2.8%	25.0%	15.8%

Table 4: Post-Test II – Question I

	A	B	C	F
Correct	38.9%	46.7%	33.3%	42.9%
Incorrect	61.1%	53.3%	66.7%	57.1%