

Learning Physics Concepts through Language Syntagmatic Paradigmatic Relations

Authors : C. E. Laburu, M. A. Barros, A. F. Zompero, O. H. M. Silva

Abstract : The work presents a teaching strategy that employs syntagmatic and paradigmatic linguistic relations in order to monitor the understanding of physics students' concepts. Syntagmatic and paradigmatic relations are theoretical elements of semiotics studies and our research circumstances and justified them within the research program of multi-modal representations. Among the multi-modal representations to learning scientific knowledge, the scope of action of syntagmatic and paradigmatic relations belongs to the discursive writing form. The use of such relations has the purpose to seek innovate didactic work with discourse representation in the write form before translate to another different representational form. The research was conducted with a sample of first year high school students. The students were asked to produce syntagmatic and paradigmatic of Newton' first law statement. This statement was delivered in paper for each student that should individually write the relations. The student's records were collected for analysis. It was possible observed in one student used here as example that their monemes replaced and rearrangements produced by, respectively, syntagmatic and paradigmatic relations, kept the original meaning of the law. In paradigmatic production he specified relevant significant units of the linguistic signs, the monemas, which constitute the first articulation and each word substituted kept equivalence to the original meaning of original monema. Also, it was noted a number of diverse and many monemas were chosen, with balanced combination of grammatical (grammatical monema is what changes the meaning of a word, in certain positions of the syntagma, along with a relatively small number of other monemes. It is the smallest linguistic unit that has grammatical meaning) and lexical (lexical monema is what belongs to unlimited inventories; is the monema endowed with lexical meaning) monemas. In syntagmatic production, monemas ordinations were syntactically coherent, being linked with semantic conservation and preserved number. In general, the results showed that the written representation mode based on linguistic relations paradigmatic and syntagmatic qualifies itself to be used in the classroom as a potential identifier and accompanist of meanings acquired from students in the process of scientific inquiry.

Keywords : semiotics, language, high school, physics teaching

Conference Title : ICSME 2019 : International Conference on Science and Mathematics Education

Conference Location : Rome, Italy

Conference Dates : January 17-18, 2019