Conceptions on learning Physics in Spanish students of the Degree in Primary School Education

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Abstract. In this work, we investigate the initial conceptions of future teachers of Primary science and technology, about learning processes. To this end, the responses of 60 students of the Degree in Primary School Education to a set of open questions are explored. The results obtained indicate that the participants had conceptions about the learning of science that can influence both their current training process and their future teaching activity, which justifies that they should be the object of attention in their initial training.

1 Introduction

The implementation of Bolonia university process in Spain has meant an important change in the initial teacher training and a revulsive one for the investigation about the teacher training of that level. In this context, the subject of teachers' conceptions of teachers is receiving renewed interest from trainers and researchers, along with the development of methodological proposals that favor reflection in the classroom and professional teacher development [1][2](Korthagen, Loughran and Russell, 2006; Lin et al. al., 2014). **I**n this study**,** we try to analyze the initial conceptions of the students of the Degree in Primary School Education, to improve our knowledge on the subject

2 Methodology

The study was carried out with 60 students of the Degree in Primary School Education of the University of Valencia, during the academic years 2013-2014 and 2014-2015, as an activity of the subject "Natural sciences for teachers", compulsory of 9 credits ECTS, of 2nd year. The questions that have been used in this study have an open character, since they are part of the reflection tasks developed by the students at the beginning of some classes of the specific module. The questions were:

(Q1) How do you think students learn Physics?

(Q2) Indicate which are in your opinion the main factors that influence the learning of Physics?

(Q3) Do you think that high school students have previous ideas about the aspects that are treated in Physics? If so, what kind of influences do such previous ideas have on subsequent learning?

3 Results

The results that were obtained when analyzing the answers, we presented in Figure 1.

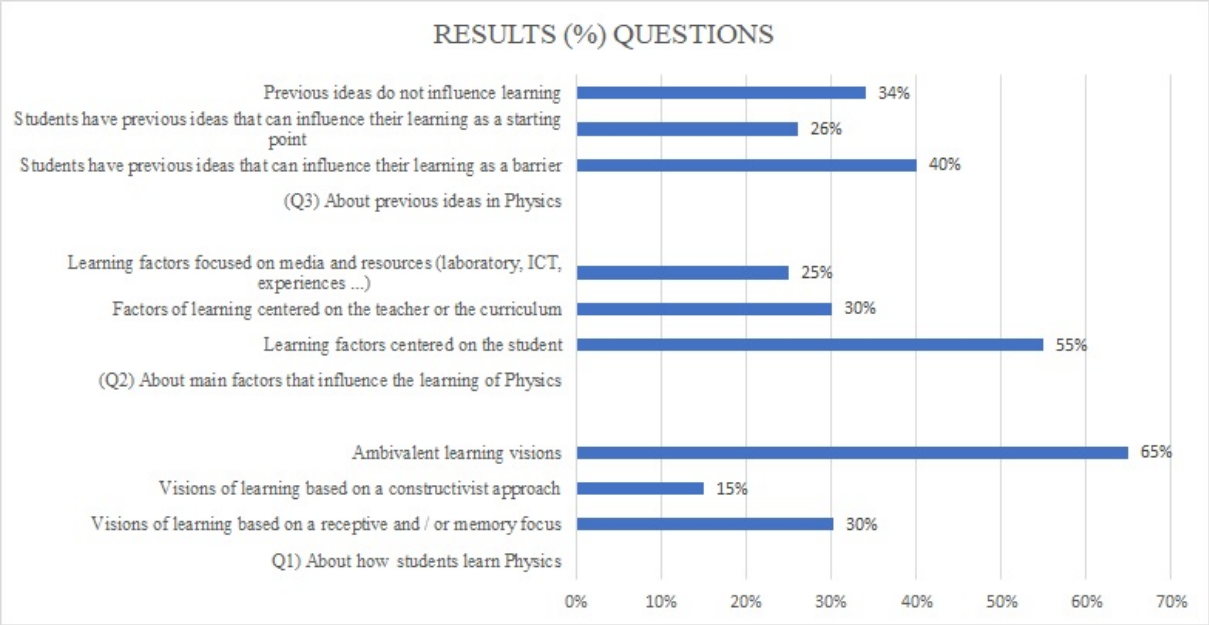

Fig. 1 Percentage of answers students for each question

4 Conclusion

In general terms, it seems that, mainly, conceptions about learning Physics are aligned to a greater extent with a student-centered approach, more or less identified with the constructivist framework, that with receptive learning focused on the teacher. However, the comparison of the results of different questions points to a greater coherence in responses close to the transmissive model centered on the teacher and in the curriculum that in the model centered on the student. So, while the transmissive approach remains stable around a third of the ideas recorded in each issue, there are important fluctuations around the intermediate approach and the model.

The data collected in this study can be useful to improve our knowledge about thinking initial teaching and the training role played by the reflection activities on specific problems related to teacher work in Physics (Pontes et al., 2013). We believe that some kind of coherence must exist between the thoughts about the processes educational in Physics and their implementation in the classroom. That encourages us to continue researching using other types of techniques information collection and data analysis that allow us to triangulate the results of this study, to compare them later with others obtained in the literature and to continue advancing in the development of this line of research.

References

[1] Korthagen, F., Loughran, J. y Russell, T. (2006). Developing fundamental principles for teacher education programs and practices. *Teaching and Teacher Education*, 22 (8), 1.020-1.041.

[2] Lin, T.J., Lee, M.H. y Tsai, C.C. (2014). The Commonalities and Dissonances between High-School Students' and Their Science Teachers' Conceptions of Science Learning and Conceptions of Science Assessment: A Taiwanese Sample Study. *International Journal of Science Education*, 36 (3), 382-405