

# THE ROLE-PLAYING GAME AS AN INNOVATIVE ACTIVITY IN THE TEACHING OF SCIENCE TO PROMOTE ATTITUDES AND HEALTHY NUTRITIONAL HABITS IN STUDENTS OF SECONDARY SCHOOL

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*This research is part of the R&D project of Excellence "Development of competences in daily life problems through scientific practices of argumentation, investigation and modeling in secondary and university education", financed by the Ministry of Economy, Industry and Competitiveness in 2017, reference: EDU2017-82197-P. It is framed, in the making, within a line of research whose aim of study is the role-playing game as an innovative methodological strategy for the teaching of science in secondary education. Based on the conclusions obtained in the first stages of investigation, when the impact of the role-playing game on the promotion of students' attitudes and values in terms of sustainable development were brought to light, an activity was designed, within a didactic unit referred to Nutrition and Dietetics, and put into practice with the students at the 3<sup>rd</sup> grade of Secondary Education. The present work focuses on the analysis of the students' previous ideas about the protein milkshakes as nutritional supplements, and it expects to define the impact of the role-playing game on their opinions before and after the development of the role-playing activity. The results obtained seem to indicate that the role-playing game also constitutes an appropriate strategy to promote attitudes and healthy habits in compulsory secondary education students in terms of nutrition.*

**Keywords:** Science Education, Health Education, Secondary School

## INTRODUCTION

The line of research, which this work is framed within, is about the role-playing game as an innovative strategy in the teaching of science, to promote the attitudinal change and the development of favourable behaviours in secondary education (from this point forward SE) students regarding the sustainable development.

The previous works, in which the impact of the role-playing activity on SE and A level students was analysed (González-Sánchez, Acebal y Brero, 2015), laid the basis to the present study, which expects to deal with a different theme, the Nutrition, by means of putting into practice a similar activity with regard to the design, following the same guidelines in the structure and organization used in the previous proposals.

Thus, the present study offers a new perspective to the process of research, continuing it, as well as providing really interesting information about the possibilities of the role-playing activity to deal with contents of different nature, but equally interesting for the participants, since they are really close to their daily life.

## THEORETICAL FOUNDATION

Our proposal is based, firstly, on the educational advantages of the role-playing game, which have already been exposed by numerous authors (Simoneaux 2008; España, Rueda and Blanco, 2013; among others), and the adaptation of this activity to develop the contents from the block of health, discussed by authors like Pérez López (2017).

Secondly, and following the line of work developed in previous stages of our investigation, the design of the proposal focuses on the learning through competences exposed in the current legislation in matters of education for our territory at the moment of the development, the key and basic competences (López-Gay,

2012; de Pro, 2013) and, especially, the scientific competence (Caamaño, Cañal, de Pro and Pedrinacci, 2011; Blanco, España and Rodríguez Mora, 2012).

Finally, our didactic proposal also attends to the principles of the CTS approach (España, Rueda and Blanco, 2012; Prieto, España and Martín, 2012) regarding the selection of contents, which bring the students closer to situations of the real life and promote positive attitudes that contribute to the scientific education and their role as citizens.

## **METHODOLOGY**

The didactic proposal was carried out through three class sessions, and it consisted in putting into practice a role-playing activity within a didactic unit about Nutrition in the subject of Biology and Geology in the 3<sup>rd</sup> grade of SE during the school year 2015/16 at Málaga (Spain). In total, 65 students from four class-groups participated, the majority of whom has already taken part in a similar activity within the same process of research (but referring to the sustainable development and carried out during the previous school year).

Following the same line of work established up to the moment of the practice, the work in class was based on the active participation of the students through the oral exposition of their opinions and the debates originated when comparing their points of view with their partners', to encourage an attitudinal change between their thinking and the new information that they receive from the reality where they are involved, and the attitudes of other people from their surroundings.

The role-playing activity was based on the promotion of the creativity, the teamwork, the capacity to speak in public, the autonomous learning and the use of appropriate methods of investigation –among other students' competences-, using the information and communication technologies properly (González-Sánchez, et al., 2017).

In order to evaluate the impact of the role-playing game on the promotion of attitudes and values in students, the participants' previous ideas were analysed, regarding the incorporation of dietetics supplements to their diet, and a comparative study was carried out in relation to their opinions, before and after the role-playing game, about drinking protein milkshakes. This topic was selected due to the interest raised among the students, since they had been offered to incorporate protein milkshakes to their diets at the moment of the put into practice of the activity.

## **ANALYSIS OF RESULTS**

The pre-post test consisted in a unique question, in which the students were asked to reflect on their own opinion about the sale of protein milkshakes in establishments from their neighbourhoods (fitness centres, herbalist's shop and small supermarkets).

Before the role-playing game, the 41% was in favour of the sale of these products and the 40% preferred not to express their opinion yet, since they did not have enough information (although they knew the topic). At this initial stage of the proposal, some students remembered their participation in the activity carried out during the previous school year, and they commented that their opinion at that moment were influenced by the process of looking for information. And that is why, in this case, they preferred to be sure before judging.

After the role-playing activity, all the participants opted for one of the two options (67% in favour and 33% against the sale), but not all expressed their whole opinion. The 43% of the students who were in favour of the sale of protein milkshakes, in establishments from their neighbourhoods, shown conditions: for medical prescription or for recommendation of a dietitian and a more rigorous sanitary control.

## PRELIMINARY CONCLUSIONS

In this stage of the investigation, it appears the influence of the students' experience in the previous didactic proposal, since the majority of the participants of the year before were more careful when expressing their initial opinions.

The analysed data point to a positive contribution of the role-playing game to the development of favourable attitudes in the students, in relation to their nutritional habits, but also regarding the attitude toward the science. This fact appears in the students' statements relative to the necessity of looking for proper information before judging, as well as their perception about the importance of the process of searching and selecting the information to have a justified opinion.

Therefore, it is considered that the put into practice of the work consolidate the preliminary conclusions from the previous stages, and propose a new line of study about the impact of the role-playing activity as a daily tool, that is, as a part of the programming and not only as an exceptional activity in the teaching of science at secondary schools.

## REFERENCES

- Caamaño, A., Cañal, P., de Pro, A. Pedrinaci, E. (coord.). (2012). *11 ideas clave. El desarrollo de la competencia científica*. Barcelona: Editorial Graó.
- Blanco López, Á., España, E., Rodríguez Mora, F. (2012). Contexto y enseñanza de la competencia científica. *Revista Alambique, Didáctica de las ciencias experimentales*, 70, 9-18.
- España Ramos, E., Rueda Serón, J.A. y Blanco López, A. (2012). Juegos de rol sobre el calentamiento global. Actividades de enseñanza realizadas por estudiantes de ciencias del Máster en Profesorado de Secundaria. *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias*, Vol. 10, N° Extraordinario, 763-779.
- España Ramos, E., Rueda Serón, J.A., Blanco López, A. (2013). Juegos de rol sobre el calentamiento global. Actividades de enseñanza realizadas por estudiantes de ciencias del Máster en Profesorado de Secundaria. *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias* 10 (Núm. Extraordinario), 763-779.
- González-Sánchez, E., Acebal Expósito, M.C. y Brero Peinado, V. (2015). Metodologías áulicas innovadoras en ciencias para promover actitudes y valores. Segunda etapa. *Opción*, 31(4), 564-580.
- González-Sánchez, E., Acebal Expósito, M.C. y Brero Peinado, V. (2017). Contribución del juego de rol al desarrollo de la competencia científica en educación secundaria. Percepciones del alumnado participante en una experiencia de juego de rol y dramatización sobre energías alternativas. *Enseñanza de las ciencias: revista de investigación y experiencias didácticas*, (Extra), 4769-4774.
- López-Gay, R. (2012). Los docentes noveles ante la preparación de las clases de ciencias. *Revista Alambique: Didáctica de las Ciencias Experimentales*, 72, 65-74.
- Pérez-López, I.J. et al. (2017). Mejora de hábitos de vida saludables en alumnos universitarios mediante una propuesta de gamificación. *Nutr Hosp*, 34, 942-951.
- Prieto, T., España, E., Martín, C. (2012). Algunas cuestiones relevantes en la enseñanza de las ciencias desde una perspectiva Ciencia-Tecnología-Sociedad. *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias*, 9 (1), 71-77.
- De Pro, A. (2013). Enseñar procedimientos: por qué y para qué. *Alambique: Didáctica de las Ciencias Experimentales*, 73, 69-76.
- Simonneaux, L. (2008). Argumentation in Socio-Scientific Contexts. En S. Erduran y M. Jiménez-Aleixandre (eds.), *Argumentation in science education: perspectives from classroom-based research*, 179-199. Springer: Dordrecht.

