

ANALYSIS BETWEEN THE DIFFERENT HIGH SCHOOL SUBSYSTEMS ON THE TEACHING OF THE TOPIC ORIGIN OF LIFE AND ASTROBIOLOGY

R. J. Tovilla¹, M. Arellano², A. Rizo², and S. Maffey³

The high school level in Mexico has a diversity of subsystems that satisfy the demand and coverage of the population in access to education, they teach biology in a similar way. This research analyzes how the issue of the Origin of Life and Astrobiology is approached, as well as the laboratory practices that are implemented to reinforce said themes; seven educational subsystems of high school level (CCH, ENP, CECyT, CONALEP, COLBACH, DGB, CDMX High Schools) contained in four public educational systems (UNAM, IPN, SEMS, IEMS) were analyzed.

The theme of the “origin of life” at the National Autonomous University of Mexico (UNAM) is taught at the College of Sciences and Humanities (CCH) in the 4th semester corresponding to Biology II and at the National Preparatory School (ENP) in the second year called college initiation 2.

In CCH, it is intended that the student be able to recognize different theories about the origin of biological systems and the historical stage in which they were formulated, as well as identify that the chemosynthetic theory allows explaining the formation of precursors of biological systems. Suggested strategies are proposed for the teacher, materials, and resources, both written, visual and digital, problem-based learning or conducting school research, as well as group discussions, presentations, and reports orally and/or in writing.

In the ENP it is intended that the student review in the bibliography some of the theories about the origin of life and analyze them in class, identifying the necessary conditions for the appearance and development of life. In this study plan, suggestions are made for the observation of coacervates, as well as the projection and discussion of films or videos.

In the CONALEP curriculum, it is called “identification of biodiversity” and the issue of the ori-

gin of life is not found, however, they introduce the concept of autopoiesis, where it is intended that the student explain living systems in their different levels of complexity as autopoietic systems. College of Baccalaureate teaches biology in the fourth semester where the theories of the origin of life are compared, the students are asked to debate the scientific arguments of the different theories. The origin of life was not found in the schools of the general direction of baccalaureate.

In the preparatory schools of Mexico City in the fifth semester the subject of the origin of life is taught, where it is intended that the student distinguish the different stages of pre-biological evolution, which gave rise to life from group discussions on theories of the origin of life and exhibitions.

The National Polytechnic Institute (IPN) has the Centers for Scientific and Technological Studies (CECyT). The theme of the origin of life is taught in the second level in the biology learning unit and emphasizes the historical approach of each theory.

The results show that the topic of the Origin of Life and Astrobiology is approached theoretically and in some subsystems it does not exist in their curriculum or is approached superficially, emphasizing the theoretical part where students are invited to debate the different theories of the origin of life integrating the social and cultural aspects of the historical moment in which the theory was raised; in some subsystems, a chronology of the theories of the origin of life is requested.

Regarding the laboratory sessions, it was found that the experiment to be carried out is that of Francisco Redi and the meat in jars, although the results obtained by the students confuse them according to the type of meat they use.

Another practice found was the formation of coacervates with gelatin, which interested the students, however, the use of microscopes is necessary and some subsystems lack this resource.

REFERENCES

Aydinoglu, A. & Taskin, Z. 2018. *OLEB*, 48, 55

¹Department of Research, CECyT No.2 IPN, (rtovillaq@ipn.mx).

²Academy of Digital Graphic Design, CECyT No.2 IPN.

³Academy of Physics, CECyT No.2 IPN, Apartado Postal Av. Nueva Casa de La Moneda 133, Lomas de Sotelo, Miguel Hidalgo, 11200 CDMX, Mexico.