

## ASTROBIOMOOC: AN ASTROBIOLOGY COURSE IN SPANISH

R. Vázquez<sup>1</sup>, P. G. Núñez<sup>1</sup>, and M. E. Peña-Salinas,<sup>1,2,3</sup>

**This project aims to carry out the design, filming, editing, promotion, and administration of a MOOC (Massive Open Online Course) on Astrobiology in Spanish. The authors have taught the course “Introduction to Astrobiology” at the University of Baja California (UABC), since 2004, with more than 45 students enrolled annually. The general objective is to maximize student learning in the INTRODUCTION TO ASTROBIOLOGY course through the use of the Flipped Classroom concept, freeing up class time to devote to practical activities.**

The “flipped classroom” concept as a pedagogical model that transfers some aspects of the teaching-learning process outside the classroom is not new. Since the last decade of the 20<sup>th</sup> century, King (1993) managed the idea of occupying time in the classroom to construct meaning instead of transmitting the information. However, it was not until the end of the decade that this concept took shape (Walvoord & Virginia 1998) and soon materialized as a model mediated by technology (Lage, Platt & Treglia 2000; Martínez-Olvera 2014). On the other hand, the COVID-19 pandemic has taught us the urgent need to have informative material of formal courses supported in formats that can be consulted online by students (Onyema et al. 2020). Books are still essential, but a course produced on video and set online is invaluable for students.

Prof. Charley Lineweaver (2019) remarks that nowadays, university students tend to promote the filming of teachers’ classes. Thus, in places like Australia National University (ANU), some teachers were already thinking of applying “flipped classroom” courses regularly. In these types of courses, instead of teaching theory in the classroom and leaving homework at home, the student takes the class at home (via the Internet) and attends the class for more practical sessions with their teacher. Flipped classroom promotes that interactive and dynamic

classes, where students apply what they learned. In contrast, the “traditional class” video is seen at home when students feel more receptive. Also, the students can pause the class, continue later, or go back to review several times. These methods are being tested and, if result effective, will change paradigms in education. Thus, inspired by the work of Prof. Lineweaver at ANU, we decided to make the ASTROBIOMOOC, that is, an online course about Astrobiology, in Spanish.

It is important to note that online classes were not as necessary when we proposed this project as they are now. Our original motivation was to propose a “flipped classroom” course, but the pandemic sent us to virtual classes, forcing us to adapt our course to this need: a virtual class without practice. We trust that the ASTROBIOMOOC can be used both in 100% virtual classes and in a “flipped classroom” mode, without much difficulty for the teacher. However, in our experience, practical classes are priceless (Vázquez & Núñez 2019).

The ASTROBIOMOOC will be realised in the first semester of 2022, in the website of the Lab ([www.astrosen.unam.mx/asbio](http://www.astrosen.unam.mx/asbio)).

This work was supported by UNAM-DGAPA-PAPIME PE108719 grant. PGN and MEPS thank CONACYT for their postdoctoral and graduate scholarship, respectively.

### REFERENCES

- King, A. 1993, *College Teaching*, 41, 30  
Lage, M. J., Platt, G. J. & Treglia, M. 2000, *The Journal of Economic Education*, 31, 30  
Lineweaver, C. H. 2019, *EPJ Web Conf.*, 200, 01019.  
Martínez-Olvera, W. et al. 2014, en “Los Modelos Tecnológicos Educativos, revolucionando el aprendizaje del siglo XXI”, I. Esquivel-Gómez, Ed. (Univ Veracruzana, Veracruz), 143-160pp.  
Onyema et al. 2020, *Journal of Education and Practice*, 11, 13.  
Vázquez, R. & Núñez, P. G. 2019, *EPJ Web Conf.*, 200, 01015.  
Walvoord, B. & Virginia, J. A. 1998. *Effective Grading* (Jossey-Bass Inc. Pub, Hoboken), 250pp.

<sup>1</sup>Laboratorio de Astrobiología, Instituto de Astronomía, Universidad Nacional Autónoma de México, 22860 Ensenada, B. C., Mexico ([vazquez@astro.unam.mx](mailto:vazquez@astro.unam.mx)).

<sup>2</sup>Facultad de Ciencias Marinas, Universidad Autónoma de Baja California, 22860 Ensenada, B. C., Mexico.

<sup>3</sup>Instituto de Estudios Avanzados de Baja California, A. C., 22880 Ensenada, B. C., Mexico.