Statistics Seminar

Friday, October 13, 12:00 pm CT, Zoom

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1. Describing the Didactic-Stochastic Knowledge of Pre-Service Mathematics Teacher: The Case of Chile
2. Civic Statistics and Interdisciplinarity in the Chilean School Curricula

Abstract 1: Stochastic education of teachers has become an important research topic as mathematics teachers are usually responsible for statistics and probability teaching in schools. However, the emergence of new theoretical approaches has highlighted the problem of organizing and describing the professional knowledge needed to teach stochastics. The aim of this paper is to characterize the didactic-stochastic knowledge needed for pre-service mathematics teachers, considering Chile as a case study. Following a qualitative approach through a content analysis of the Chilean Standards for Pre-service Teacher Education, we obtained, as a result, a set of 37 indicators organized according to the Didactic-Mathematical Knowledge Model, and validated by the judgment of 8 experts. The indicators consider disciplinary aspects (stochastics content); students’ knowledge and their learning (cognitive content) and teacher interests (affective content); and the instructional processes (interactional and mediational content) and their link with other areas of knowledge (ecological content). We hope that the identified indicators become a useful tool to organize and evaluate stochastic education programs for teachers.

Bio: Dr. Ruz is an Associate Professor at the Institute of Statistics of the Pontificia Universidad Católica de Valparaíso, Chile. International PhD. in Educational Sciences from the University of Granada, Spain. His topics of interest are statistical training at university, and statistical teacher education. Currently, he leads R&D projects on teachers' training and professional development, and on the generation of web and mobile tools for teaching statistics.
Abstract 2: Civic statistics aims to promote work with statistics on social phenomena in educational contexts. We asked ourselves how viable civic statistics would be in the Chilean educational context. For this purpose, we analyzed the curricular bases of the subjects Science for Citizenship, Citizenship Education and Mathematics for the last two years of compulsory schooling. Through a content analysis, using the eleven facets that make up the civic statistics knowledge and skills framework, we characterize the learning objectives of these three subjects. We observe that the facets related to the engagement and action dimension have a high presence in the subject of Citizenship Education and Science for Citizenship, while the facets related to knowledge models, patterns and representation and statistics and risk have a high presence in the subject of mathematics. Based on the results, we consider that the articulation of these three subjects would allow the development of knowledge and skills from an interdisciplinary perspective, which could result in the design of teaching modules that promote the development of civic statistics competences.

Bio: Dr. Ubilla is Postdoctoral researcher at the Institute of Education Sciences of the Universidad de O'Higgins in Rancagua, Chile. PhD. in Education from the Autonomous University of Barcelona. Her topics of interest are critical statistics education, statistics education in mathematics teacher education and the role of mathematics teacher educators. She is currently leading two projects, the first on civic statistics for future mathematics and science teachers, and the second on the challenges and opportunities of cooperative work among teacher educators in the context of teacher training.