

Research Spotlight



Research Focus

The study aims to investigate the science capital exhibited by students in a sample of UAE government schools.



Research Team

Professor Martina Dickson

Dr. Muriel Grenon (University of Galway, Founder and Director of Cell Explorers)

Dr. Catherine Cao (Researcher, KCL)

Dr. Dean Cairns

Science Capital: ECAE Funded Study

In February 2024, we were happily awarded an ECAE Research Grant to investigate the science capital exhibited by students in a sample of UAE government school/s. As part of the ECAE grant, Prof. Martina travelled to the University of Galway in April, along with Dr. Catherine, to visit Dr. Muriel and her team there. After presenting their work through academic seminar presentations, the visitors were privileged to be able to observe spring school visits in action through the longstanding Cell Explorers Science Outreach Program (www.cellexplorers.com), led by Dr. Muriel. Here, students were able to engage in science activities and experiments, and create visuals of their thoughts on science. The visitors were also able to solve the puzzles of the Cell Explorers Escape Room themselves! Several fruitful team meetings and discussions took place. In May, we were fortunate to have Dr. Catherine visit ECAE, where she gave an ECAE Research Seminar entitled "Science Capital and Science Capital Teaching Approach" and she also gave a short seminar for MEd science track students which was extremely well received by

all present.

The concept of 'science capital' was defined by Archer et al. (2014) as:

A conceptual device for collating various types of economic, social and cultural capital that specifically relate to science - notably those which have the potential to generate use or exchange value for individuals or groups to support and enhance their attainment, engagement and/or participation in science. (p. 5)



Visit to NUI Galway, April 2024

(Left to right: Dr. Catherine Cao (Researcher, King's College London, Dr. Muriel Grenon (Founding Director - Cell Explorers, University of Galway), Ms. Shannon Stubbs (PhD student, University of Galway), Prof. Martina (ECAE))



Dr. Catherine's Visit to ECAE, May 2024

(Left to right: Dr. Catherine, Prof. Martina)

'Science capital' is the sum of a person's cultural, economic, and social capital related to science, representing all the science-related resources, behaviours, and attitudes that a person possesses (Archer et al., 2015). This deep and reflective consideration of factors affecting science participation is important internationally, and particularly in rapidly developing countries like the United Arab Emirates, for whom the participation of citizens in its STEM workforce is such an integral part of a long-term economic sustainability plan. The key social justice element of science capital - the way in which it potentially serves social justice and equity for both boys and girls in science participation - means that science capital can serve as a unique conceptual lens to help in the understanding of uneven science participation patterns in order to identify patterns in the UAE, and posit implications for schools and in

particular, for the science classroom.

The specific research questions which our funded study aimed to answer were:

1. Do indicators of possession of science capital exist for the students involved in the study, and what are these?
2. What gendered differences, if any, can be seen in the themes which arise between the responses from girls and boys?
3. What differences can be drawn (if any) from responses from students in both general and 'elite' academic streams?

This is a qualitative study, using focus groups interviews to explore students' ideas about science. We compared the science capital possessed by girls and boys by analysing their qualitative responses to key questions on this construct. To date, we have interviewed close to 60 students (half males, half females) from Abu Dhabi government schools, across both general and elite streams. Early analysis seems to be suggesting that we see strong differences between the streams of students, rather than between genders, suggesting that this may be a more important variable in science capital possession. Students of elite streams seem to be more likely than their peers in general streams to report talking about science at home and with friends. They were also more likely to have a close family member who worked in a STEM or STEM-related field. Exposure to science trips, activities and out of school events was not experienced differently by the groups, and very few students (across both stream and gender groups) reported reading books or resources about science. Instead, we observed that students report TikTok as a very popular way to learn about science, with many students referring to particular science 'influencers'. This observation also cut across the groups. We are currently working on this manuscript where we explore this in detail, and with a publication planned for early next year.

References

- Archer, L., DeWitt, J., & Willis, B. (2014). Adolescent boys' science aspirations: Masculinity, capital, and power. *Journal of Research in Science Teaching*, 51(1), 1-30.
- Archer, L., Dawson, E., DeWitt, J., Seakins, A., & Wong, B. (2015). "Science capital": A conceptual, methodological, and empirical argument for extending Bourdieusian notions of capital beyond the arts. *Journal of Research in Science Teaching*, 52(7), 922-948.