Chapter 25
From Traditional Science Teaching to the i²Flex Classroom:
A Personal Transition

Ioannis S. K. Kerkines
https://orcid.org/0000-0002-9483-8327
American Community Schools (ACS), Athens, Greece

ABSTRACT

The chapter contains a personal reflection of the challenges encountered when a multilayered job transition took place: a PhD scholar doing scientific research and teaching in the Greek high-school system with traditional means and teaching philosophy transformed into an IB (International Baccalaureate) Science teacher using a constructivist teaching approach and technology tools to facilitate instruction. It is discussed how the i²Flex methodology was instrumental in guiding this transition. Relevant interventions in the IB classroom are described and discussed. An account of how previous experience in different sectors affected this transition is presented. Finally, i²Flex-based practices promoting student engagement and fair assessment in a fully online teaching setting are discussed.

INTRODUCTION AND OVERVIEW

Obtaining a pure doctorate degree (PhD) in a subject field, not including an educational/ pedagogical component has for long time been considered as a manifestation of the intentions of an individual to pursue a career in Academia in that specific subject field. No doubt this is possibly a direct consequence of how most PhD programs are built - usually by University professors who model and project their own career pathways onto such programs (Anderson, 2019). Additionally, people who have spent a large chunk of their educational and professional time in Academia might be aware of the occasional pejorative way non-academic careers are viewed.

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In Greece alone, during the last 30 years, about 40,000 doctorates have been awarded, with yearly numbers increasing up until 2015, possibly near the peak of the Greek financial crisis (EKT, 2015). According to these data, only 57.0% of PhD holders evidently served the idealized holy grail of becoming employed in higher education. Already a significant part of the share is taken up in employment positions in the government (20.6%) and business sectors (8.7%). International experience has indicated that there is an increasing difficulty for PhD holders in obtaining a position in Academia, one possible reason being the inflation in numbers of PhDs awarded without a concomitant increase in the offered academic positions ("Fix the PhD," 2011). As a result, PhD holders are increasingly finding their ways into industry, but many are now seeking another professional direction, teaching in the K-12 education which could be as (or even more) rewarding from many aspects (Smith, 2020). Furthermore, such individuals could perhaps be more suitable to serve the "Teacher-Scholar" model (Boyer, 1990) where components and methodologies of research form part of the teacher's activities within the school.

I have been fortunate enough to have spent working time (though unequally spread) in all these three professional directions, research, industry, and high-school teaching, both as an employee as well as a freelancer. Nevertheless, after obtaining my PhD in Physical Chemistry from the National and Kapodistrian University of Athens and spending about a decade as a postdoctoral researcher in Greece and the USA, there is no doubt that my main professional focus had always been Academic Research. As it turned out, a number of challenges necessitated that I completely change that largely predetermined and invested career path. In what follows, I will attempt to describe and discuss how my educational background as well as my experiences in different employment fields supported me against the challenges of this multi-layered transition: from a PhD/postdoctoral research scholar with a few years of experience in the industry sector as well as in teaching in the traditional Greek high-school system, to a 9-12 (mostly International Baccalaureate/IB) teacher in an international school setting embracing American educational values and employing a constructivist teaching model, involving the use of a multitude of tools, including inquiry/discovery-learning, flipped-learning methodologies, independent learning, and armed with significant, but targeted, use of technology. As this transition is unfolded, possibly, some readers may recognize themselves and their own stories, partly or wholly.

My Own Transition

My own transition had started a few years ago while working as a postdoctoral researcher. Starting 2010, Greece went into a deep financial crisis and academic job offerings in the country came to a temporary halt. Lack of research funding eventually lead me to unemployment. This was the first time I was unemployed, without opportunities in sight. The situation naturally involved a great deal of denial. How could a PhD holder with several years of postdoctoral research experience settle for *any* job outside Academia? It looked and felt like a step in the wrong direction.

Even with unemployment rates rising, I managed to obtain three part-time jobs, though not concurrently; a) teaching Greek students High-School Chemistry at a tutoring center and preparing them for University admission examinations, b) educational content creator in a private company offering digital content for high-school students on a subscription model, and c) freelance work as a quality control manager in a small cosmetics company that produced scented hand-wipes for restaurants.