1. You started your career as a teacher and researcher in the field of education in Brazil, continuing in the USA. There is some disbelief about the devaluation of the field in Brazil, despite its importance in society. Tell us a little bit about your decision to become a teacher and about your trajectory as a teacher.

Prof. Alandeom: Indeed, this is an issue that first came up in my last year of high school, when I was considering which major to pursue in college. Like many
(most?) other families in Brazil, my parents wanted their eldest son to become a doctor – medicine was seen as a profession that brought social status, prestige, and financial means to families. So, my decision to pursue an undergraduate degree in chemistry was not received by loved ones with great excitement and enthusiasm. Instead, it was met with skeptical reactions like “Why would you want to become a teacher?” and “So, your plan is to teach for a living?” Such reactions left wondering if I was making the right decision and concerned about the implications that it would have to my future life. Nonetheless, after considerable soul-searching, I went ahead with my decision to pursue a degree in chemistry at the Universidade Federal de Goiás. My teaching career began at this institution in 1995 when I was hired as an assistant instructor for an organic chemistry course offered to undergraduate nursing students. This was critical juncture in my life as it set in motion a lifelong series of events that led me to where I am today, an associate professor of science education (about to be promoted to full) and chair of the Department of Educational Theory and Practice. An achievement beyond the wildest dreams of that young boy. Unfortunately, the personal problems I faced are not that uncommon. They were a direct consequence of a larger issue that persists to this day in Brazil and most of other countries, namely the low occupational status of education compared to other professions like medicine and law. As a result, teaching continues to be seen as an undesirable occupation, or just a “semi-profession” (Ginsburg, 2009; Melton & McCrink, 2009), commonly being subjected to harmful societal processes such as depersonalization and proletarianization. Unlike doctors and lawyers (seeing as full professional), teachers are faced with limited status, autonomy, and remuneration. They also have to deal with negative images (stereotypes) of teachers in popular culture (Joseph, 2009). In Brazilian culture, this is particularly evident in the catch phrases of TV characters such as professor Raimundo who, at the end of each lesson, lamented “E o salario ó...” (“And the salary, like this [small]”).

2. You have experienced and still experience issues related to teaching and research in education in Brazil and in the USA. What are the main challenges to education, and specifically to science education, that you perceive today in both countries?

Prof. Alandeom: There is no shortage of challenges in education. Many of these
are a direct consequence of the problem of low occupational status of teaching, as discussed above. Personally, I consider teacher shortage to be particularly important. Covid burnout combined with low salaries and countless other problems have produced what Brazilians call an “apagão” (“the perfect storm”) in education. Low morale and feelings of discouragement have led to a dramatic shortage of teacher, unprecedented in US history! There are not enough new teachers entering the profession, and the brave few who do quit in their first few years. Similar trends can be seen in countries as far as Australia. In her article, “Reporting the ‘exodus’: News coverage of teacher shortage in Australian newspapers”, Shine (2015) describes the struggle to recruit and retain adequate numbers of schoolteachers due to dissatisfaction with pay, difficult students and/or excessive workloads. Another important problem is lack of professional autonomy. A good example of this are recent discussions about whether teachers should be required to come to the classroom armed – a measure recently proposed by conservative political groups as a solution to the problem school violence (shootings) in the US despite teachers’ opposition. It illustrates well how education can be subjected to controlling influences imposed by politicians, businesspeople, and other non-educational groups. Rather than being controlled by inside experts (educators), education is shaped by outsiders with little (if any) teaching experience who feel entitled to simply deny teachers the professional autonomy and expert status enjoyed by other professionals.

3. Many of our readers are interested in having a career in a university abroad, many in the USA, just like you. Tell us a little about this path you have taken, the difficulties, advantages, and tips to have professional success in a great American University.

Prof. Alandeom: My first years of doctoral study in the US were particularly challenging and characterized by a deep cultural shock. Having been trained in a very collaborative and friendly academic setting in Brazil, it was very difficult for me to adapt to the more competitive and (often) unfriendly atmosphere of American research-one institutions. At the beginning, I had serious problems relating to my peers and professors both linguistically and socially. However, with hard work, I was able to overcome this problem overtime as I became more comfortable with the language and culture. Additionally, I was lucky to meet
excellent mentors/advisers/collaborators/friends who provided me with all the support, guidance, and inspiration I needed. Successfully following this path takes more than just talent, dedication, and hard work. It also requires finding the right people to work with. For anyone considering this path, my tips would be: (1) to learn English early in your life as it opens many doors (scholarships, teaching positions, etc.); (2) to network broadly as having professional contacts helps create new opportunities; and, (3) do your best but accept that you cannot control everything in life – somethings can be simply a matter of serendipity or pure luck.

4. Tell us a bit about the two areas of research that you have been interested in: cooperative science learning and inquiry-based teaching, what do these forms of teaching and learning consist of? What is their importance for science education?

Prof. Alandeom: Indeed, these two instructional pedagogies have figured prominently in my work. Constructivist and experiential in nature, these pedagogies are based on the premise that science is best learned through discovery and active learning. Rather than passive receivers of knowledge, students are positioned as “scientists” who pose and investigate questions under the guidance of a teacher. Working in small groups, students begin with a question that can be answered in a scientific way (e.g., through an experiment); rely on evidence in attempting to answer the question; construct an explanation to answer the question based on evidence collected; evaluate their explanations; and, communicate and justify their proposed explanations. Learning is interactionally and dialogically accomplished through teacher-student and student-student social interactions (meaning-making). This is in sharp contrast to traditional science teaching approaches centered on teacher lectures, and monologic transmission of knowledge where the teacher is the sole voice in the classroom. Inquiry-based, cooperative science learning epitomizes constructivist philosophy as its best, constituting a central part of school reform movements in the US and other countries. Its social/discursive complexities (e.g., sharing of power with students) have long fascinated me, being the focus of several of my studies.

5. You have been very successful with publishing high-level scientific papers in high-impact journals, give our readers
tips for achieving this great standard of academic publishing.

Prof. Alandeom: Yes, at this point of my life I have published about 80 papers, chapters, and books. A critical factor behind this productivity was finding my inspiration. For me such inspiration was to be found in linguistics and discourse analysis. Perhaps, this is not surprising since language have always been such an important aspect of my life experiences (personal and professional). Nonetheless, my interest in discourse analysis and linguistic research was very much accidental (unplanned). When I first joined the PhD Program in Science Education at Indiana University, I did not know exactly what line of research I wanted to pursue. So, I began taking courses in the School of Education. Despite their high quality and informative value, I felt like those educational classes fell short of providing me with the inspiration and motivation that I needed to shape my own research agenda. Then, one semester I decided to take a class in linguistic anthropology. This was another critical juncture in my life. The scholarship on language appealed to me to a level that I had not experienced before – I had found a research topic that I was passionate about and fully embraced it by taking more linguistics courses, reading the linguistics literature on my own, starting projects focused on language aspects of science learning, etc. At the same time, with continued work on improving/refining my writing skills, I was finally able to find my academic voice, that is, I found a writing style that, though consistent with academic norms of the field of science education, was uniquely mine. I would definitely attribute my prolific performance to this combination of inspiration and voice. It made (and continues to make) writing for academic publication feel like a natural part of my life, a feeling that has now lasted nearly fifteen years!

6. The initial and continuing education of teachers has been a challenge for the field of education. You have worked in this area in Brazil and currently you work in the USA. For you what are the biggest challenges in this training? What is the difference in this challenge in the two countries in your perception?

Prof. Alandeom: Yes, teacher professional development occupies a special place in my academic heart. It was the topic of my doctoral dissertation, a considerable number of my publications, funded grants, talks, and even entire books (2 out of the 3 edited volumes I published). I find working with pre- and in-service teachers to be extremely rewarding. In terms of
challenges, I would cite teachers’ limited time (it can be quite difficult for teachers to find time for training given their excessively busy schedules), limited funding (training requires financial investment that can be difficult to secure), and lack of professional incentive (educational training is not always valued and can be even seen as a waste of time by some). I believe these challenges are common to both Brazil and USA. The main differences are perhaps in terms of degree. Funding for teacher training can be particularly scarce in developing countries like Brazil. Additionally, its position as a country situated outside the English-speaking world creates problem of accessibility to curricula and instructional materials (books, lesson plans, training programs, etc.) available internationally. Considerably less educational material is available in Portuguese, limiting the educational resources available to Brazilian teachers since translation can time-consuming and costly. This linguistic exclusion gives rise to educational disparities, making teacher training even more challenging.

7. You recently, in 2019, published a book on teaching evolution and creationism in Brazil (Cook and Oliveira, 2019), what was the origin of your interest in doing this publication? Give our readers tips for publishing a book. What are the challenges of publishing with so many authors and in different countries?

Prof. Alandeom: This is a good example of serendipity in academia. Prior to this book project, I had long worked with my colleague Kristin Cook on evolution education, publishing a series of journal articles on this topic. Then, in 2018, came the invitation from Hasan Deniz and Lisa A. Borgerding to write a chapter for their book Evolution Education Around the Globe. Interestingly, this was the first time I was asked to write about evolution education in a Brazilian context, and I jumped at the opportunity. While visiting my family in Brazil, I began reviewing the secondary school curriculum on the topic and this became the focus of the invited chapter. Having been in the US for many years, I was surprised by my findings. I still vividly recall my awe when I came across the first page of evolution chapter in Biologia em Contexto (Amabis & Martho, 2013) wherein a large and colorful reproduction of Michelangelo’s The Creation of Adam (below) was featured in a supposedly secular curriculum – something that would be unthinkable in a US context. This allowed me to recognize the importance of the topic and the potential for a productive line of research, which I quickly embraced.
Kristin and I decided to present the findings of the above study was presented at an education conference in New York City. To our surprise, there was a book publisher in the audience who, at the end of our presentation, approached us to express her interest in publishing a whole book on this topic. Our book was born. This illustrates well the importance of sharing one’s work at conferences as it can lead to publications opportunities – you never know who will be in the audience. After considerable advertisement, we were able to bring together an impressive team of science educators from across Brazil. Their affiliations include Universidade Federal do Rio Grande do Sul, Universidade de São Paulo, Universidade Estadual São Paulo (Unesp - Bauru), Universidade Federal de Goiás (UFG – Catalão), Universidade Federal de Uberlândia, Instituto Federal Catarinense, Universidade Federal de Minas Gerais, Universidade Federal do Rio Grande do Sul, Universidade Federal do Mato Grosso, Instituto Federal de Educação Ciência e Tecnologia Rio Grande do Sul, Universidade de Brasília, Universidade de Formiga/MG (UNIFOR/MG), and Pontifícia Universidade Católica do Rio de Janeiro.

Working with these Brazilian colleagues was wonderful. The only minor challenges that we experienced involved language (some authors needed support with the English language) and academic writing (Brazilian academic writers often make use of poetic language which does not translate well and is frowned upon by English scholars). Nonetheless, it was great opportunity for me personally to learn more about recent developments in Brazilian science education in more recent years.

8. In this book (previous question) you address the issue of creationism and how this movement clashes with the theme of biological evolution, a fundamental
theme for teaching science and biology (Dobzhansky, 1973) and for health and agriculture, for example. How do you perceive this movement in the USA and in Brazil? How do you see research on this clash?

Prof. Alandeom: The creationist movement in these two countries is not only similar but closely interconnected. In particular, our investigation illuminated the active role being played by US-based creationist groups like the Discovery Institute. Having been unable to overcome legal hurdles in the US, this institute appears to have to a certain extent refocused their efforts more broadly and globally, promoting and even joining educational efforts in other countries like Brazil. In addition to portraying Brazilian creationism as “flourishing” and “shining”, the institute proudly announced on their website the collaborative launching of a research center for creationist science at the Mackenzie Presbyterian University in São Paulo, a leading and traditional institution of higher education in Brazil. Corroborating previous claims of a worldwide spread of creationism, this international connection pointed to a larger issue, namely the rapid worldwide travel of competing ideologies, unbounded by national borders, in our globalized era.

9. I believe that you, like many science researchers and educators, have been concerned about the phenomenon of scientific misinformation, conspiracy theories, and Fake News. This phenomenon has been heightened since the Covid-19 pandemic, in relation to vaccines, harmless medicines, etc. Tell us a little about how to face this issue, from your privileged view of two countries that experience this problem, Brazil, and the USA.

Prof. Alandeom: This is a complicated question without a clear answer. Similar to Brazil, denialism has become a problem in many other countries, including the USA. In fact, this recently prompted a call for papers for a special Issue of the Journal of Research in Science Teaching entitled “Learning and Teaching in Times of Science Denial and Disinformation” (https://onlinelibrary.wiley.com/doi/10.1002/tea.21813). Edited by K.C. Busch & Doug Lombardi, this call emphasizes how:

Science denial and disinformation are a worldwide danger to democracy. Over the past several decades, purveyors of science denial and disinformation have honed their crafts by rejecting scientific consensus on such things as tobacco-related health impacts and causes of
current climate change (McIntyre, in press). This has created an environment where expertise and justice are rejected via mistrust, where deep and growing political polarizations threaten to thwart understanding of how science and science education can promote a common good (Feinstein & Waddington, 2020)… No single challenge is more urgent than addressing and guarding against these threats to scientific understanding.

The complexity of this problem stems (at least partially) from its location at the intersection of epistemic and civic spheres. Recent politization of science and relativization of knowledge through social media has created a situation where citizens have to “muddle” through multiple truths put forward by different interest groups as they attempt to make informed decisions and fulfill their civic duties. Such societal problem has led to widespread calls for educational reform. Still largely stuck at the old age of epistemic dualism (right vs. wrong) and with relatively limited emphasis on student preparation for future civic engagement, schools have been called upon to undergo a radical transformation with the goal of more effectively preparing future citizens to join this new politico-epistemic reality. How exactly this can be accomplished is still unclear though.

10. You are a master's and doctoral advisor in the USA, if one of our readers is interested in the topics you research, what would be the characteristics he/she would need to have or develop to be your advisee? What are the prerequisites to enter the master's or doctorate program at your university?

Prof. Alandeom: This is an interesting question. Over the years, I have advised a countless number of students from many parts of the world (Saudi Arabia, Turkey, China, USA, Canada, Spain, Nigeria, England…). Surprisingly, I have never had an advisee from Brazil! Part of the reason is the relatively small number of Brazilians that chose to pursue graduate degrees in the USA. This is particularly true for the field of education, which seems to be deemphasized in (excluded from?) scholarship programs (“programas de bolsas”) like CAPES and CNPQ in favor of high-priority areas like the STEM fields. I would certainly like to help change this picture by recruiting talented Brazilian students with potential to become international education scholars. Readers should be aware that considerable financial aid is made available to international students by American
Universities, and institutions like Fulbright. A case in point is my department, which offers 16 doctoral scholarships yearly. However, to be able to capitalize on this, applicants need to have strong English proficiency (good TOEFL scores), strong academic ability (good GRE scores), and strong academic performance (good grades). I would encourage anyone interested to reach out directly to me and inquire. I would be thrilled to see more Brazilians entering our graduate programs. Having more scholars, I believe, is a critical step toward improving education in Brazil.

References


