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CST 300 Writing Lab

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Education and Information Science Tools and Methodologies Development

In each passing year, the corpus of human knowledge steadily increases. With that corpus, the baseline of knowledge expected of each individual also grows. It is the aim of the field of education to impart at least that baseline of knowledge to students. Understandably, that has become an increasingly difficult task even without considering perennial concerns like the limited number of instruction days in a year and considerations about each student's individual ability to learn. Despite these challenges, education remains a gateway to improved circumstances, not only for individuals but for those societies they belong to as well. Developing tools and methodologies can help by making education both more efficient and effective. I want to do my part in contributing to those tools and methodologies.

The field of information science has a wide array of participants ranging from:

* Qualitative analysis software developers like QSR International and Atlas.ti.
* Developers of personal information managers like Microsoft's OneNote and Evernote.
* Government organizations such as the United States National Science Foundation (NSF), the United Nations Educational, Scientific and Cultural Organization (UNESCO), public colleges and universities.
* Non-profit organizations like American Library Association (ALA), Wikipedia, private colleges and universities, Stanford (Protégé).

One organization that has put a significant investment into the fields of information science and education is the United Nations Educational, Scientific and Cultural Organization (UNESCO). Founded by the United Nations on the November 4, 1946, UNESCO is headquartered at Place de Fontenoy in Paris, France (UNESCO, n.d.-c, 2017). UNESCO's purpose as its constitution states: "is to contribute to peace and security by promoting collaboration among the nations through education, science and culture in order to further universal respect for justice, for the rule of law and for the human rights and fundamental freedoms which are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations." (UNESCO, 2017) With 65 field offices worldwide and a Liaison Office in New York, UNESCO has nearly 2,700 direct employees (UNESCO, n.d.-b, 2014). Their operations are also supplemented by personnel within the organizations that they interface with (UNESCO, 2014). Over time, global political periods have shaped UNESCO's goals and methods. The most impactful among them were the periods of the cold war, western decolonization and the disbandment of the Soviet Union (UNESCO, n.d.-c).

Among important people at UNESCO, there are Director-General Audrey Azoulay, Assistant Director-General for Education Stefania Giannini and Assistant Director-General for Communication and Information Moez Chakchouk (UNESCO, n.d.-e). Regarding their education, Ms. Azoulay holds degrees from École Nationale d'Administration, the Paris Institute of Political Studies and the University of Lancaster (Altnoder, 2017). Mrs. Giannini earned a degree in Humanities at the University of Pisa and Pavia (Ministry of Education, University and Research, Italian Republic [MOE], n.d.). Mr. Chakchouk holds a Master's Degree in Telecommunications from ENIT Engineering School, as well as a Doctorate in telecommunications and applied mathematics, jointly from El Manar University, Tunisia and Paris Descartes University, France (Chakchouk, n.d.). Likewise, these Directors-General each have held high-level positions. Azoulay served as France's Minister of Culture and Communication from 2016 to 2017, before that she worked in 2006-2014 as Audiovisual director and financial & legal director at France's National Film Center (Altnoder, 2017). Equally impressive, Giannini was elected Senator in Italy, earlier, she worked as a professor at University for Foreigners in Perugia (MOE, n.d.). Mr. Chakchouk began his career as a research engineer at the Center for Studies and Research in Telecommunications before moving on to Tunisian Telecommunication Regulation Authority (INT) where he was eventually promoted to Head of Interconnection & Access. Additionally, he has had roles in the Tunisian governments including Adviser to the Minister of Communications Technology, Chairman and CEO of the Tunisian Internet Agency (Chakchouk, n.d.). Beyond Giannini's mixed reputation, due to her political background, no information was available related to the public image of these Directors-General. (MOE, n.d.). Obviously, political concerns did not stymie the offer of Director-General for Education being given to Mrs. Giannini, nor has it subsequently impacted her performance in that position.

As an organization, UNESCO's budget is closely monitored internally and reported to its member nations. In 2018 UNESCO will manage $182,968,685 USD and has $713,544,829 USD owed by member nations from previous years (UNESCO, 2018). In terms of their reputation among employees, Glassdoor.com --a workplace ratings and feedback website-- indicates their current and former employees have a positive view of the organization with a rating of 3.9 out of 5.0, with 157 respondents at the time the site was visited (Glassdoor, Inc., n.d.).

With 195 member states and 11 associate members, UNESCO is well regarded among the nations of the world (UNESCO, n.d.-a, 2012). Given that most member states have been participants for decades, their customers are generally satisfied with their policies and operations (UNESCO, n.d.-a). However, UNESCO occasionally receives politically motivated backlash. Two recent examples exemplify how the politics of member nations interferes with UNESCO's reputation, funding and goals. The first example is Japan's withholding of 4.4 billion yen (about $39 million USD at the time) in funding due to inclusion of Nanjing massacre documents, which were provided by China, into the Memory of the World list (France-Presse, 2016). Japanese officials dispute the documents' claim that 300,000 died over six weeks of by the hands of their military. Likewise, the United States is withdrawing from its active UNESCO membership on December 31, 2018 citing UNESCO's "continuing anti-Israel bias" (Nauert, 2017). While the United States is UNESCO's largest contributor, accounting for 22% of their funding, there have been years where the United States has not paid their share into UNESCO's budget (UNESCO, 2018). In those cases, UNESCO continues fundraising and adjusts their budget allocation for each program accordingly.

UNESCO's main products are policy proposals, research products and aid programs (UNESCO, 2012). Among those are (a) "education systems development"; (b) "science, technology and innovation (STI) systems and policies"; and (c) "promotion of freedom of expression, media development and access to information and knowledge" (UNESCO, 2014). For "education systems development", they provide support for their member's education agencies specifically with aid in developing education policies and programs. As affirmed by the United Nations Conference on Sustainable Development, addressing science, technology and innovation deficiencies is instrumental in resolving poverty and sustainable development issues, thus UNESCO provides technical support to member states, focusing on education, macroeconomics and industrial improvements. UNESCO also promotes freedom of expression, media development and access to information and knowledge through the use of information and communication technologies (ITCs). These ICTs ease access to disparate information, which in turn improves education quality and teaching competency. Despite espousing ambitious goals and facing political reprisals, UNESCO continues to develop and refine their objectives and methodologies, thereby keeping their member states satisfied.

Beyond the policy and aid programs UNESCO offers, they also produce software applications including CDS/ISIS, OpenIDAMS and IDIS (UNESCO, n.d.-d). CDS/ISIS is a free database application. OpenIDAMS software is used for advanced statistical analysis. It provides features for data visualization, multidimensional tables and time series calculations. IDIS is a data converter between the applications CDS/ISIS and OpenIDAMS. Although these tools are complete and still maintained by UNESCO, few recent websites reference or even claim to use their software tools.

Within the information science industry, topics of social media, quantum information science and metaliteracy are gaining attention (Mackey & Jacobson, 2011; Rubin, Chen, & Conroy, 2015; Williams, 2018). At the intersection of social media and information science, researchers are seeking methods to reliably identify fake news stories by using library and information science along with natural language processing (Rubin, Chen, & Conroy, 2015). Increasingly, members of the public are taking misguided action after reading fake news stories. Researchers are now working on methods to prevent the proliferation of fake news, since existing news vetting processes are slow and overwhelmed by the sheer amount of information they need to verify. New approaches to assessing credibility are in demand. Another topic of recent focus is the exploration of how quantum computing techniques can be leveraged in information science. A quantum computer is said to be a future replacement of the binary computer in common use today, it uses isolated atoms and monitors their quantum state as a means of calculating values (Mandelbaum, 2017). Quantum computing is a complex subject that even experts have difficulty explaining to a layman. Conceivably, when quantum computing becomes mainstream, it could considerably improve performance in the fields of sensing, navigation, communication, cryptography and simulation (Williams, 2018).

Overall, the information science industry is strong and growing "much faster than average" (Bureau of Labor Statistics, U.S. Department of Labor, n.d.-a). An upcoming information science trend is the shift from the concept of information literacy into metaliteracy. (Mackey & Jacobson, 2011). As designed, the framework of metaliteracy intends to use information literacy as a vehicle and extend it to foster critical thinking and reflection in massively online venues such as online learning courses and social media. It addresses the proper handling of original and re-purposed digital property. Learner's self-reflection as a metacognitive component to effective learning is another major topic within the metaliteracy framework. Organizations in the information science industry are hiring software engineers and subject matter experts such as educators and librarians.

My professional goal is to attain a tenure-track professorship. I am keenly interested in focused research on information science tools and methods development to further the field of education. I expect both serving as an instructor and conducting research are common responsibilities for a tenured professor. Though my personal experiences have not been at the rigorous level common for university professors, I have had the opportunity to instruct students in quality assurance and it was an enjoyable experience. Research and especially problem solving in interesting topics are likewise gratifying experiences for me.

To attain that goal of professorship, it is imperative that I attain a Bachelor's Degree in computer science. I've come into this program with some experience. I was trained in quality assurance and have worked in a startup as both a quality assurance/automation engineer and a product manager. I expect CSUMB to fill in some of the gaps in my knowledge, pushing to me learn my often avoided topics related to computer hardware and certain programming languages. Once this degree program is complete, depending on my level of preparation working toward a Master’s Degree may be necessary before proceeding to a Doctorate in computer science, software engineering and/or education fields (Bureau of Labor Statistics, U.S. Department of Labor, n.d.-b). To round out my experience, I have the option to complete several advanced software engineering courses (California State University, Fullerton, 2008). If I remain on my current education schedule, I will complete my bachelor's degree in 2020 and master's degree by 2023.

In seeking employment, my core education from California State University, Monterey Bay provides me with computer science experience, direct experience with approaches to computer science education, further problem solving experience and opportunities to interact with talented students and educators (California State University, Monterey Bay, n.d.). Regarding electives, I've yet to decide on any, so I am unsure how they will prepare me for future employment. I have also been planning and working on several personal projects on topics including executable programming language guides, an android user interface library, and a test language for Scala. Some of those projects, if completed, would impress potential employers. I would be willing to take an entry level position, volunteer or intern at a college or university, so long as it did not interfere with my studies. If given the opportunity, becoming a teaching assistant could help reinforce topics from previous courses, as well as provide valuable insight on the methodology and responsibilities of a university instructor. Being an assistant would also help to forge relationships with university staff, which I will undoubtedly need to rely on in order to progress further in pursuit of a doctorate. Beyond the possibility of a teaching assistant position, it is imperative that I forge new connections with my peers and mentors as I progress in my education. Additionally, I maintain some connections from previous work and training that I can ask for aid with employment in the future. However, I doubt they will be of much help in finding employment in the education field since most are working in the private sector, nevertheless, we have maintained a good rapport. In other areas of networking, the Association of College and Research Libraries is an organization that shares some interests in my intended field of study. I can also seek out various Computer Science related meetups, although not many exist in Fresno.

Overall, given the exciting knowledge that exists where education and information science meet as well as the upcoming challenges for educational institutions. This promises to be a field that offers opportunities to positively contribute and make a lasting mark on society. I'm taking that opportunity and looking forward to where it leads.

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