Web Science Presentation: Student Experience

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ABSTRACT

This presentation will relate the experience of a student of Web Science. It will provide an account of informal self-directed approach to learning the discipline. Following independent research into web science alongside study for an Information Technology related degree, the author then began studies for a PhD. Further independent learning took place, which was then, to some extent formalized through participation in the Web Science MOOC run by the University of Southampton. Although not an account of the participation in a structured programme of study, the account may provide insights into the challenges of learning about a discipline which is fundamentally inter-disciplinary.

Keywords

Web Science, Internet Science, Web Science Curriculum, Education.

1. INTRODUCTION

This presentation will provide an account of the following consecutive learning activities

1) preparing a undergraduate dissertation taking web science as a topic of exploration
2) preparing a masters report examining the web science curriculum
3) conducting a desk survey of web science related educational activities as part of initial phd studies
4) participating in the university of Southampton web science MOOC

Each section will contain a brief description of the activities and some reflection on the learning which took place.

2. Undergraduate dissertation: A Periodic Table of Web Science

The first experience this author had of Web Science, was when she was introduced to the subject as a potential topic of study for her undergraduate dissertation in October of 2011. Having not heard of the subject previously, she was inclined to believe it was something similar to Computer Science, but with a bias towards the Web, a misconception which is shared by many. The key aim of the dissertation topic [1] was to produce a visualization which attempted to depict the entire curriculum of Web Science. The inspiration of this diagram was drawn from the Periodic Table of elements, and was termed the 'Periodic Table of Web Science'. The key difficulty faced when initially approaching this task, was the fact that there was very little material available to draw on in order to determine the nature of Web Science. The Web Science Subject categorization and the Web Science cluster diagram [2] were the key points of reference when learning about the nature of Web Science, as well as material from the first three Web Science conferences. As the author began to study these, it soon became clear that Web Science was far more than the study of Computer Science and technology. The author approached the challenge of constructing the Periodic Table by performing a manual search for keywords, drawn from the few existing definitive Web Science sources. These included the Web Science conferences, the Web Science Subject categorization, [3] and the Web Science Cluster diagram. The author also collaborated with other students studying Web Science related dissertations in order to conduct interviews with academics and a survey of Southampton Web Science Masters students, all of which contributed to the gathering of opinions and Web Science related keywords.

Because of the difficulties faced when attempting to classify keywords into subject areas; the decision was ultimately made to use the WSSC subject listing for the basis of the Periodic Table of Web Science, as this was the most comprehensive definition. Despite the difficulties, the author succeeded in creating a diagram which resembled the original Periodic Table, which provides the originally intended 'visual map' of Web Science. Given additional future research, it might be possible to create a more comprehensive structured diagram, however, no amount of future research will alter a key challenge encountered, which is the fact that Web Science is a broad interdisciplinary subject, which is constantly evolving and hard to define. The experience of this project highlighted that there are currently very few definitive subject definitions currently available for Web Science. Additionally, the nature of the subject is constantly evolving as more and more different disciplines being to practice what might identifiably be called Web Science. This potentially provides educators and students with a problem; how do you teach or learn about Web Science when there is no clear definition for Web Science? This is something which the author examined in more detail in her following Master's project.

3. Masters Level Individual Research Project: Exploring the Web Science Curriculum

This Master's project was conducted during the spring of 2013 [4] provided the author with an opportunity to examine the Web Science curriculum in more depth, this time focusing more upon the educational aspect of Web Science. More specifically, this related to the availability of Web Science taught curriculums, as well as determining which are the more 'popular' areas of Web Science that people choose to study. The author began to conduct research into the educational institutions which teach Web Science related courses. A short list of institutions offering Web Science related course was discovered on the Web Science Trust Website, but upon closer examination, it was determined that some of the links were out of date and led to institutions which no longer offered Web Science as a taught subject. The author therefore began a desk survey, with the purpose of compiling an up-to-date list of institutions. In addition to this, the author attempted to conduct a survey of Web Science academics, with a view to gaining opinions on what constituted the key areas of Web Science. This provided to be the most challenging aspect of the project, as in this

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instance, achieving participation in the survey proved to be an impossible task. Numerous academics were contacted, and while there were a small number of keen initial responses, the survey ultimately provided to little data to provide any substantial level if insight.

This report concluded that a larger number of institutions are now offering Web Science related courses, which highlights the need for a well-defined and comprehensive curriculum, in order to provide consistency across the discipline. While the Web Science Subject Categorization is currently the best example of this, the findings of this study confirmed the findings of research carried out by Hooper et al. [5] into the representation of subjects within the Web Science curriculum, which highlights the need for more work in this area and a better spread of Web Science material representing all areas of the curriculum.

4. PhD: Web Science Education Desk Survey

During the initial stages of her PhD, the author sought to improve on a draft desk survey which was initially begun during her Master's report. The exercise of compiling a list of education institutions which teach Web Science was a challenging activity. This was mainly due to the fact that because Web Science is not a 'standardized' subject, the process of searching of Web Science courses is not always straightforward. Web Science courses are often not explicitly described or labeled as 'Web Science'; they might instead have a seemingly unrelated name, such as for example, 'Digital Sociology'. Part of the variation in names is due to the fact that ccourses range from the very technical, (which could almost qualify as Web Technology rather than Web Science) to the 'middle ground' courses, which include a fairly even spread of modules which cover both the technological and social aspects of Web Science, to the almost entirely Social Science based courses. Consequently, it is very challenging to identify potential Web Science curriculums. An additional issue that the author encountered when conducting this survey, was the fact that some courses which are labelled as 'Web Science' are not always strictly Web Science courses. For example the University of San Francisco's course 'Master of Science in Web Science' was described as focusing upon: "advanced topics in Internet-based computing including software engineering, distributed computing, artificial intelligence, networking, interface design, and Internet systems". This seemed to suggest a software engineering\computer science course, with little Web Science content at all. The desk survey attempted to identify and classify such courses, and provides something which is an area for potential future study.

5. Web Science MOOC

During the first semester of the author's Web Science PhD, the University of Southampton launched a Web Science MOOC[1], which provided a whole new experience and style of learning. The MOOC consisted of six structured weeks of material on different areas of Web Science, providing a broad overview of the Web Science subject. The author found the first week particularly inspiring, particularly the opening discussion video entitled 'What is Web Science?', which explained this key question clearly and concisely, confirming some of the author's existing conceptions of Web Science, and also providing some new perspectives. The MOOC added a new dimension to learning; as well as being able to pause and playback the video 'lectures', at the viewer's convenience, there was also the added benefit of feedback and discussion from other MOOC users. This provided some useful insights into what others thought of various topics.

The study of this MOOC introduced the author to the key concept that Web Science includes a very clear emphasis on the social science of the Web, and how understanding the effect that the Web has on people is just as important as the technology behind it. While this was something that the author was previously aware of, the valuable and considerable proportion of input from social scientists such as Professor Susan Halford helped to explain it with a far clearer emphasis. Another example of a valuable lesson that the author learnt from her experience studying the MOOC, was that in order to understand the Web as it is today, it is important to understand the origins of the Web, and why it works the way that it does. This is a perspective that the author had not considered prior to the study of this MOOC, and was hugely valuable as a background better to understanding the Web.

Additionally, the explanation of the original background of the Web from its initial creation at CERN, provided a sense of perspective, and clarified why the Web is the way that it is, as well as why some of the fundamental flaws such as poor privacy exist; this is because the Web was never intended to be private, it was designed to be open and to allow researchers to share information. This provided the author with the realization that this perspective can be influential when looking at the Web today, and is key to understanding some of the flaws that exist. More importantly, this may influence the way the Web is used and also the development of potential solutions to these flaws.

6. Conclusions

This research, which began in 2011, indicates that the WSSC is and the Web Science Cluster Diagram are currently the most comprehensive examples of Web Science curriculum definitions available. Although neither of these are fully comprehensive.

Additionally, the initial desk survey into Web Science courses available, suggested that there is considerable variety in the curricula of the Web Science courses which are currently offered. The need for standardisation of these curricula in order to create consistency between Web Science courses suggests that a definitive curriculum definition is required. This provides the author with much scope for future work; the relationships between Web Science courses and the emerging curriculum will be the topic of future study.

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