Blog for SSI - AEA Open Science Skills Workshops 19th and 20th November

Starting to close the skills gap!

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Petition presentation at the Senedd: Close the Gap from @NDCS_UK / Cyflwyno deiseb yn y Senedd: 'Close the Gap' gan @NDCS_UK - link: https://flickr.com/photos/nationalassemblyforwales/8716554167/in/faves-158986736@N06/

Written by Emma Karoune

There are still many academic disciplines that are on the periphery of activities related to open and sustainable research. Archaeology is making some steps in this direction but there is still a long way to go.

Archaeology sits at the intersection of the humanities and sciences and as a result open science practices are being adopted at different rates throughout the discipline. Certain sub-disciplines that have always used more computational tools in their research are implementing open ways of working more quickly due to their skills being complementary to this new way of working.

This sporadic implementation of open working is resulting in large gaps in skills for certain sub-disciplines of Archaeology. It is rare for computational skills to be taught as part of Archaeology degrees. The teaching of these skills is very dependent on the lecturer's own interests, or the universities own adoption of open science. This means that these skills are not being taught routinely to archaeology students, so that they receive a grounding in open science practices and related computing skills.

To see the acceleration of sustainable research practices in our discipline, we need to fill in these skill gaps so that there is a much more coherent approach in our research. Archaeological investigations often consist of large teams with many different specialists and therefore it is currently difficult to implement open ways of working in these large projects due to a lack of skills. If we are to really gain from open research, we need to make sure that

all members of our team have the knowledge of how to conduct open science projects, and also the related computational skills, so we are all heading in the same open and sustainable research direction.

Organising the workshop

As part of my SSI Fellowship, I want to start tackling this skills gap by organising Open Science Skills Workshops. I have already been helping another SSI Fellow, Alison Clarke, with running a workshop on reproducibility in archaeology and providing office hours for the Archaeology department at Durham University. But I wanted to organise an event for my own specialism, which is Environmental Archaeology.

Earlier this year there was a conference with the theme 'Open Science' for the Association for Environmental Archaeology (AEA) in which researchers showed how they are starting to implement open science practices in their work (see the videos from this conference). Therefore, I felt that organising the workshop through this association would complement this previous event.

I sent out a survey to the membership of the AEA to find out what type of workshop would be most useful and also to ask about how long, when and where it might be best to host the workshop. It turned out that an introductory workshop on open science was the most popular response. There were also comments favouring an event at the weekend and also in different timezones, especially in an Americas time zone, as most previous AEA events have been organised in a European time zone.

From these survey results, I decided to organise a full day online workshop that would cover all of the different aspects of open science, some in more depth than others, and that I would run this workshop twice - once in a European time zone and the other in a timezone for North and South America.

I also wanted to recruit some speakers to help me organise and run this workshop. I had seen some great talks at the conference earlier this year by early career archaeologists working with open and reproducible workflows, so I was keen to get them involved. I also wanted the presentations to show examples from archaeology to demonstrate how open science practices can be implemented in our discipline. Hopefully, this would have a greater impact on the participants to show how relevant open science is to their own work.

Workshop content

The workshop ran on Friday 19th and Saturday 20th November. The intention was to have a small group each day to create a friendly and informal environment, so that the participants would feel comfortable to discuss what they had heard and ask questions. We definitely achieved this as the participants on both days were enthusiastic to learn and asked lots of questions.

I started each day by giving an introductory talk about open science (Open Science - what is it all about?). This presentation introduced the overall concept of open science as an approach, explained the different motivations that researchers have for adopting open science and then briefly described the different practices that are involved. I also gave some examples of the different practices that we were not going to speak about in more depth such as open source hardware, citizen science, open education and equity, diversity and inclusion. All the participants were extremely taken with the example I used for open source hardware, a low-cost 3D printable microscope, as Environmental Archaeologists often use a wide range of microscopes that can be very costly.

We then had our first in-depth presentation that was about Open Data by Li-Ying Wang, a Postdoctoral Researcher at Institute of History and Philology at Academia Sinica, Taiwan. This talk covered the principles of open data, so taking into account the CARE and FAIR principles, the benefits of open data and also included a fantastic demonstration of Li-Ying's workflow that includes the use of Rmarkdown, Git and Open Science Framework.

Next we heard about Open Methods from Sam Leggett (a Postdoctoral Researcher from the University of Edinburgh, who specialises in isotope analysis). She presented lots of different ways of approaching opening up your research methods from scanning in lab notebooks to using online platforms such as protocols.io.

After the Open Methods talk, Gayoung Park spoke about Open Analysis in which she gave a wonderful personal account of her journey from conducting analysis in Excel to R. She focused on the benefits that she sees in working with R as compared to Excel, such as that it is free, it makes it easier to update and run your analysis, and it has helped her to keep her work more organised and available by using online repositories.

I gave the final presentation about Open Access Publishing. I explored how to approach open access publishing through the traditional route of journals but I also spoke about all the new ways of publishing. This included different types of articles (registered reports, data papers, software papers), the new online publishing platforms (such as Open research Europe) and pre-print recommendation services (Peer Community In Archaeology), publishing a wider range of research outputs and also making our research more accessible to wider audiences such as blogging and podcasting.

We ended the day with a discussion session so participants could have conversations about any aspect they had seen during the day and how this could be implemented in their own work. One of the aims of the workshop was that each participant would go away with one small step that they could start to do and they would also have found out how to go about achieving this through using our resource document or asking questions.

Positive feedback

From the feedback that we received, I think we achieved our aims of making it a safe space to ask questions, we introduced open science practices in an archaeologically focused way so that it was relevant to the audience and all participants said that they had learnt

something new that they could take back and implement in their current work. I look forward to running more of these events during the rest of my SSI Fellowship.

If you are interested in accessing the resources from this event, please see the links below:

- Presentation slides and resource document here.
- The videos of the presentations will be uploaded shortly on the AEA YouTube channel.

Special thanks goes to Sam Leggett, Gayoung Park and Li-Ying Wang for helping me organise the workshop and for giving fantastic presentations.