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Open Research Case Studies: Faculty of Medicine and Health

Table of Contents

School of Healthcare

Implementation of Open-Source Electronic Health Records Systems in Low and Lower-Middle Income Countries

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What ideas and thoughts come to you when you hear 'open research'?

When I think of open research, I think of something that is made accessible or something that is freely available, like sharing knowledge with a wider audience. And something that is not as restrictive as closed research, for example, where you would have to pay for membership or licence fees to read an article in an academic journal. I think open research is really about collaboration and distribution of knowledge or shared learning.

In terms of my personal experience, I have not really had much exposure with open research concerning publications. I have shared some research outputs with the postgraduate community at Leeds and other UK, EU, and international higher education institutions. For example, where I have presented my research methodology and findings at certain events/ conferences - open to a wider academic audience.

Also, I have shared my research findings, methodology, and analysis approaches with the open-source software community I study. I try to be mindful of the audience I reach out to – reflecting on what kind of information would be most appropriate for the target audience.

What is your PhD research on?

I am in my final year of undertaking an interdisciplinary PhD, so I am working closely with the School of Healthcare, School of Computing, and the Business School. My research project looks at responsible innovation in the implementation of an open-source electronic health records (EHRs) system in low and lower-middle income countries (LMICs), particularly resource-constrained settings that lack robust infrastructure, funding, technical expertise, and other key resources. Open-source EHRs can improve healthcare delivery in LMICs, address high-costs and rigidity associated with commercial EHRs to some extent.

My research explores the role of local organisations - in particular social enterprises and non-profit organisations - that support the adoption of an open-source EHR system in LMICs. These organisations adapt and implement the software to make it work in a given context. They are the ones who align the technical and the human aspects of responsible innovation. They engage with software developers and IT providers, with funders and government officials and, most importantly, end-users such as healthcare practitioners, administrators and patients. We need to better understand the role of implementers because responsible innovation is about being responsive - and about generating value. Local implementing organisations and the implementers are key to achieving both, and yet they are often overlooked.

The aim of the research has been to capture variations in implementers understandings of the work they do and then to explore how these understandings shape the way implementers approach the process of implementing open-source EHRs in LMIC settings, and what that means for what they can or cannot achieve in terms of outcomes.

How do you incorporate open research practices?

For me it was important to engage with participants throughout the research project. I have, for example, shared some preliminary findings with the participants and the open-source EHR community as I have progressed with the research project. It was important for me to provide regular updates because I want to contribute to that community. After all, they have supported this research project and are looking forward to the final outputs – research findings.

Phenomenography

I adopted phenomenography as a methodology which explores the variation in understandings of a specific phenomenon of interest. For example, you could explore health care professionals' understanding of diabetes care or examine how surgeons determine competence. I looked at understandings of what healthcare IT implementation involves, and what role local implementers have in this process.

Phenomenography shifts the focus of analysis from commonalities to an appreciation of diversity in understanding. Having said that, it looks for patterns in understandings. The methodology hence takes a second-order perspective focusing on the experience as described by individuals. This methodology was suitable for my research because I was looking to capture the distinct ways in which implementation was understood by a group of implementers and how such understandings informed implementer actions. I conducted 30 online in-depth semi-structured interviews with implementers from 19 organisations across LMICs. The online interviews really helped me focus on capturing such variation and how the implementers understood the implementation process, and how such understandings translated to different aspects of implementation responsibility and accountability.

Have you encountered any challenges in your research?

Data collection and the Covid-19 pandemic

Yes, unfortunately there have been challenges, especially with how the Covid-19 pandemic limited opportunities for conducting research abroad. I had to give up my plans for conducting field research in Africa because of the lockdowns and travel bans. As a result, my research direction and approach had to change significantly. With the support from my fantastic supervisors (Dr Lena Jaspersen, Owen Johnson, Professor Rebecca Randell), I developed a new research design and methodology, where I had to think carefully about online research methods, especially interviewing online. But even then, there were challenges. For example, there were significant delays in the recruitment of participants and arranging interviews.

We have to remember that my research participants (implementers) based in LMIC settings were busy responding to the Covid-19 crisis, and it was really difficult for me to ask participants, in an ethical way, to give their time for remote interviews! The interviews were conducted late, and they took longer to complete. So, it was important for me to be patient, resilient, and adaptive throughout the global pandemic.

When I conducted the online interviews, I encountered further challenges. For example, internet connectivity; some rural settings did not have strong or stable internet connection. Sometimes the connection would cut off because of power cuts. In such instances, I had to spread out interviews across two sessions or more, which again was not logistically ideal but manageable. In the end, I achieved great progress and a quality research project!

What have been the ethical issues you had to deal with, especially around participant anonymity and data collection?

I had to be mindful, given my research project, the setting, and sensitivity of the subject, where confidentiality and anonymity were extremely important. So, I made sure participant identities were kept anonymous, pseudonyms were used, and the data was secured following the relevant protocols.

Are you planning for your research and findings to have a public engagement and/ or policymaking impact?

Definitely, there will be some kind of public engagement from my side, giving back to the participants and the wider community. I am hoping that my research will have a tangible impact. I have participated at the annual conferences and kept the community updated with my research progress. I will continue to do so – and I hope that my work helps towards building sustainable implementation practices.

In terms of policymaking impact, I think there are various aspects in this research project that can help shape effective policymaking but I will need to think more about that – in practical terms.

Because of the nature of your research has decolonisation featured as major aspect?

I think ‘decolonisation’ as a feature was inherently embedded in my research and what I wanted to explore. If you think back to when I said that I wanted to capture the variation of implementers’ understandings, how this notion of implementation manifests - I wanted to ground it faithfully in *their* experience, voices, identities - and not mine.

As researchers, we have to be very mindful and self-reflexive in the choice of words and concepts we use, and how we define them, because we have this North/South divide.

“For me it was important to show my research participants that I am the novice; they are the ones who are the key subject experts.”

Of course, there is a tension between my position as researcher in the Global North and the experiences of my research participants in the Global South. Many implementations are funded at least in part through development cooperation. This context is fraught with power asymmetries.

While I cannot be sure that these did not play a role in my research, I adopted a self-reflexive approach where I tried my best to ensure that I listened carefully when I sought to capture the experiences of the implementers as truly as possible. I do believe my research provided a safe and open platform to allow the implementers to speak and express their concerns - and to do so in a way where they felt heard. I learned a lot from the implementers, and I am grateful for it.

What are your views on open access?

I think open access is an interesting and useful concept because as a researcher, it is important to keep abreast of developments in your field. Often restrictions/ paywalls can be a major obstacle towards making research open and accessible. When you look at the costs of academic journal subscriptions, it becomes clear that the audience who can read articles published in such journals is by and large limited to fellow academics in the Global North.

Moreover, while a PhD may aim at a contribution to academic debate, we also want to achieve impact. We put so much effort into our work, we want to engage with both the academic community as well as practitioners. I hope that open access will therefore help me give back to the organisations and communities that I have worked with throughout my PhD project.

In terms of publication costs, these can be a major obstacle for PGRs who usually don't have funding allocated for publications and are given a limited training budget anyways. I think it is unfair that we are asked to rely on our own funds to make our research accessible – we already do all the hard work! So, I am a big fan of open access and platforms for openly publishing research without having to pay any publication or user access charges.

School of Medicine

Open Research in the Health Sciences and ReproducibiliTea

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What does 'open research' mean to you?

“Being open as possible across different stages of the research process, and being transparent. I also associate it with research quality, like better research quality.”

What have been some of your personal research experiences with open research?

I originally did open research practice in my masters when I preregistered my dissertation. It was a secondary data analysis of an existing dataset, and I preregistered it online, and since then I've done more and more practices. I’ve preregistered all my studies. I've also put code online, like analysis code, both SPSS-based. But also I've learned how to use RStudio, which is open source, so I can write code for analysis. It's a lot more transparent that way and now I can share that code online and anyone can look at it. You don't need a subscription like SPSS.

In terms of open data I've just started using it. For my qualitative studies I put anonymised transcripts for those who consented on the Leeds Restricted Access Data Repository (RADAR), so restricted access. Then for a large quantitative survey I'm doing, and it's all anonymous, I'm going to put it straight onto Leeds data repository, the public one. I'm trying to get more adept on the software side with things I don't know well, but I know there’s talks about research and using RStudio and GitHub and trying to learn how to use them.

What is your PhD research about?

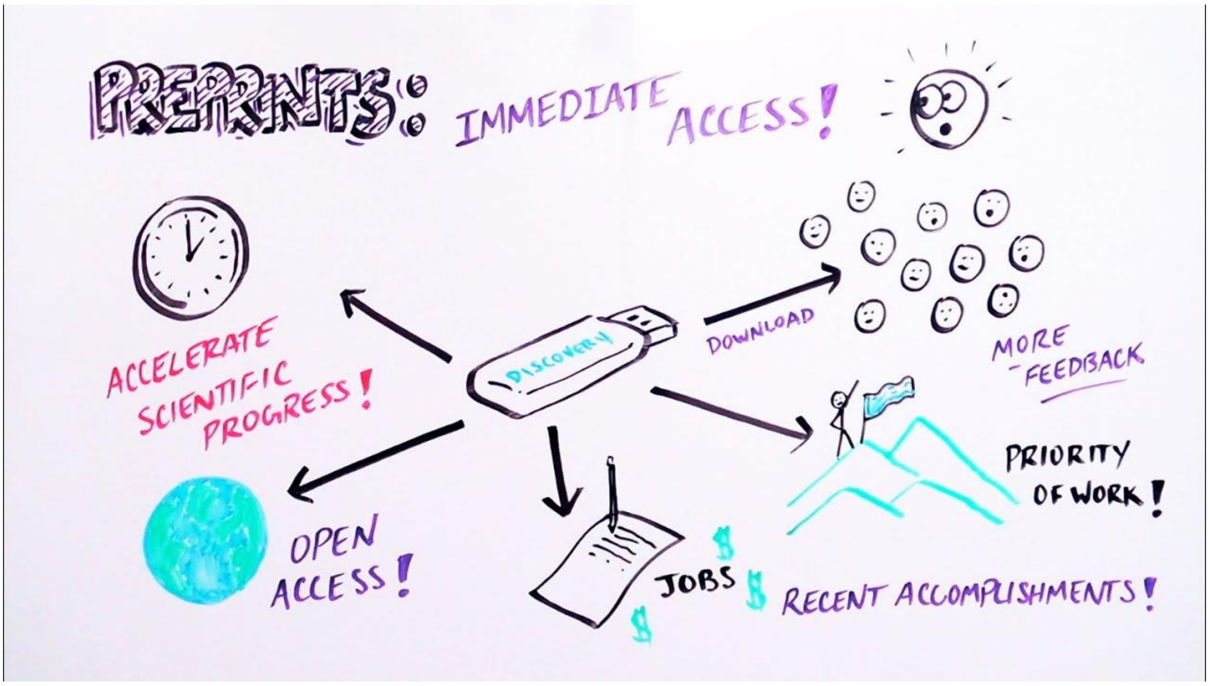
I'm investigating the facilitators and barriers to using aspirin for colorectal cancer prevention. My background is Psychology and I'm in the Health Sciences, so I use a lot of psychological methods like qualitative interviews, and experimental observational studies. It’s quite interdisciplinary spanning multiple departments and schools in health. My supervisors are based in the Health Sciences with some with educational backgrounds in psychology. One of my supervisors is also a GP, which is really handy because I investigate a lot of behaviours among healthcare professionals, including GPs.

Do you engage with open access?

Publications being open access is complicated. Everybody should preprint and put their written manuscript online, the one that they've sent to a journal that's not been peer reviewed. I think everyone should put that online if they can. And when it comes to publishing open access with journals, obviously it's great if it's done as I just think journal fees are ridiculous, and not everyone's got funding attached to it to help with publishing.

You mentioned you've done preprints, what sort of feedback have you received?

I probably haven't got loads of feedback because I feel that what I research and publish is so niche. But I think preprinting generally is helpful: it gets results out to others a lot quicker. Also, I do actually know there's a group in Southampton doing some similar research to me and are developing a decision aid in this sort of area I'm working in. So, I've given them some of my preprinted papers to read and they found them interesting. It has been good that I can give them something to read publicly online, before it's published in a journal because that process can take such a long time. So, it’s good to get things out sooner rather than later.



What are views towards preprints like in your discipline?

I don't know how regularly they’re used. I think in my research area, people use them but I don't know outside of that. Actually, I feel like a lot of people don't preregister or don't put preprints online. I do think there has been a pushback and some misinformation on preprints. You know, there was a pushback during the Covid-19 pandemic in that you can put stuff online as a preprint and there be a lot of misinformation or research not fully or adequately conducted.

But that can also be the same for journal articles, because a lot of bad studies get published by journals, and then they become misinformation. I don't feel like there is enough discussion on preprints as a practice, where I feel like maybe awareness is still relatively low.

What are your views and experiences with open and FAIR data (findable, attainable, interoperable, reusable)?

I think data sharing is good. There's two things I often think about when it comes up. One, is that the Library are very good at promoting this. Two, FAIR reflects the mantra of open data/research being “as opens possible, as closed as necessary”. I think there's a lot of data that's sensitive and I don't think qualitative researchers should be made to share their data. I don't think that should be the default. It's like, "why aren't people sharing data?", and there are lots of cases where people can't and they shouldn't be penalised for that.

More education on this is needed for qualitative-based researchers, especially reconciling it with ethical issues. For example, potential data sharing needs addressing very early on in ethics approval and data management plans, where it can be very hard to change later down the line with your research. This is something I think is still overlooked and requires more training from the very start, so we can try to make our data open and FAIR after completion.

Where do you deposit your work?

RADAR for my qualitative transcripts, and that was a process where participants could opt in, but their transcript would be put in a restricted access repository. I haven't made any other data publicly available. But with my PhD study I'm doing now, I'm going to put it in the Leeds data open public repository because I've learned my lesson, and I put it in the ethics application and data management plan to allow for this.

Do you think more needs doing to facilitate qualitative data sharing in open research?

Yeah, there is a bit of a quantitative bias in open research presently. I know that Leeds have done things like Timescapes Archive to try to help in this regard. I think greater consideration needs giving to qualitative research and from a qualitative perspective rather than trying to adapt quantitative methodologies and practices, and fit them onto qualitative. It's just not how it's going to work. It needs to start from the ground-up with qualitative researchers. Timescapes is a good start but it needs expanding.

Do you use social media to disseminate your research?

Yeah, I use Twitter quite a bit, mostly for research stuff, but I do promote my studies on there and I've seen researchers at other universities access my research, but also patient advocates on Twitter and through that they've also found some of my research, which is really interesting because that's actually who I really would want to see/engage with. I have also advertised recruitment for studies from Twitter and I get good engagement. Further, I've collaborated with people through social media and we've written a paper together, so there are some good benefits.

Does the university provide awareness and training on open research practices for PGRs?

Yes, the Library offers things on it. I don't know how much training is available and a lot of stuff I learned has been from reading books and papers, and going to workshops that I find myself, not at the university but external. I think there needs to be more training. I think it needs to be done at the disciplinary-level, where it needs to be in the curriculum. I think it needs to be facilitated for undergraduates, masters students, PGRs, everyone. But I guess the issue is who's going to teach it? Because I don't know if there are enough people who are knowledgeable enough to teach it in a module-type format and that might be the issue.

What is ReproducibiliTea?

"ReproducibiliTea journal clubs help early career researchers build a local community of ECRs interested in open and reproducible research. It can be very isolating to be one of the few within a research group, or department, that are actively engaged or interested in improving research practices. ReproducibiliTea helps researchers who want to change this." **ReproducibiliTea website**

Starting in 2018 ReproducibiliTea is a UK research initiative spread across numerous institutions, however it attracts researchers from all over the world. Leeds's club has been up and running since 2019, where Kelly played a major role. It is an early career researcher-led journal club that provides space for informal discussions on a paper or topic. All topics are focused on the general area of open research. So, for example, we had a session earlier on the importance of negative findings. We've also had one on preregistration, but also the controversies in preregistration. We had a session to teach skills on RStudio and running statistical analysis. We've also had sessions on debating more the other side of open research, so debating it from a qualitative perspective, and from a decolonisation perspective.

So, challenging the existing paradigm that open research has/is being championed by people in the global north, and even exploitation of the global south. For instance, some indigenous communities may be reluctant about you sharing data you've collected from them. So, it's about considering the multiple perspectives and issues that can arise from open research, about ensuring inclusivity, and not just bulldozing away with insisting everything needing to be open.

ReproducibiliTea logo

How has engagement with it been?

Participation varies, when we had it in-person it tended to be less because people have to go to the Library, and I think even just that could take out time walking from the office to the library. The Library supported us since with moving online, where actually attendance has increased.

You can have up to 30 or 40 or, you can have just 15. It depends on the type of session or if you have an external speaker. They tend to do quite well. I think some people would like it to go back to in-person because discussions are just easier in-person than virtually, so I'm hoping we'll move to a hybrid format. The core demographic has always been those based at Leeds, which was the aim of ReproducibiliTea here. Since it's gone virtual, we do get a few people externally and that's really nice as well because we've had people from industry which helps in bringing various, different perspectives.

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#ReproducibiliTea with @NickBenCoop: How many replicators does it take to acheive reliability? Investigating researcher variability in a crowdsourced replication doi.org/10.31235/osf.i… #ukrnLeeds

ReproducibiliTEA
May 2020
Inter-researcher variability

How Many Replicators Does It Take to Achieve Reliability? Investigating Researcher Variability in a Crowdsourced Replication

Author:
Nate Breznau, University of Bremen

Principal investigators:
Nate Breznau, Eike Mark Rinke and Alexander Wuttke

11:06 AM · May 19, 2022

Read the full conversation on Twitter

What are you present and future plans for ReproducibiliTea at Leeds?

I think we will try the hybrid format. That's my next plan I think. Really it’s just about keeping it going and getting more people interested. I'm not planning to really change the formula. I think we work through the same formula for the last 2-3 years. So, we’ve been trying to work out the perfect mix between presentations and discussion, and we're worked out maybe about 20-30 minutes for the presentation segment and up to 30 minutes for discussion. However, I'm finishing my PhD, so I need to somehow keep it going when I'm gone. I would also really like to expand more wider outreach events, where maybe a University of Leeds open research-style conference would be fun.

Participatory Research in Health

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What do you think of when you hear 'open research?'

I probably associate that term more with research dissemination. I think about it in terms of having journals that are open and not behind a paywall, and public dissemination. Also, research processes being made open, so having people who are not academics think about how we do research or actually doing some of the research for us or with us.

My role is in public involvement and engagement and participatory research. I do my own research and I support other teams to think about how they can make their research more accessible to the public and how they can facilitate involvement. I suppose, in my role, open research is about making all aspects of research open to public involvement and scrutiny. Because I work in health research, my 'public' is often NHS service users, carers, patients etc.

The Child Cosmos Sculpture project

This project brought together an exciting team of artists, public engagement practitioners, researchers and community partners. Together we used visual art techniques to facilitate public engagement with Better Start Bradford.

Better Start Bradford is a 10 year project which will implement 22 services in 3 Bradford wards (Bowling and Barkerend, Bradford Moor and Little Horton). The aim is to improve young children's health; social and emotional well-being; communication; and diet. Community engagement is central to the programme.

We were awarded funds from the University of Leeds 'Inspiring the Public about Biomedical Research' small grant scheme. I also used funds from my Wellcome Trust Engagement Fellowship. The funding allowed us to establish a cross-disciplinary team and pilot arts based activities with our target age group. That included making hand and foot casts; collecting children's' drawings and handwriting; and creating a large hand-print mural.

Better Start Bradford is about implementing and evaluating lots of different services related to young children, ranging from pregnancy to when children start go to school. Its got a really big community engagement aspect to it and the team have done some brilliant engagement work. My colleague at the time, Professor Maria Bryant, was trying to think of a way to bring to life this incredibly complex, long-standing research programme. The team are working with lots of different services and stakeholders, and wanted to find a way to bring that to life in a visual way and encourage more public engagement with the project.

We worked together with Deborah Gardner, a sculptor from the School of Design. At first we thought we were going to try to develop a sculpture that sort of represented the complexity of the project, but when we started talking to community members, we found they were interested in doing something that was a bit more abstract, something that was about the health of the community rather than something which visually represented a research project.

We went to a big community event, a big Christmas fair, run by Better Start Bradford. We had a stall and I talked to families about what 'sculptures' meant to them, how they could be used, how they feel about having something like that in their community. This was where we got the steer for the project: they would like something more abstract because parents can engage with their kids, you can say to your kids "what do you think that means?" And it starts a conversation rather than something that just represents a research project.

We did some mapping work, thinking about where something could go and then we also got some of the kids to do some hand markings and drawings about health. Deborah came up with idea for the hand sculptures and contributed her expertise greatly to this project, putting in much valuable time and effort to help have the successful end products and project outcomes. Then we also went to the children's centre where there was a toddler and baby group. Again, we talked to parents and we took hand casts of some of the kids and the adults as a way of showing what sculpture was, that it's a 3D form. Deborah also played a lead role in devising this, providing valuable help and guidance for us, and we created many little sculptures with the communities that they felt represented something about their health and what Better Start Bradford meant for them.

Courtesy of Delia Muir

Benefits of the project

What was really interesting is that we found practical and hands-on work was a really nice way of engaging with people rather than like, let's all meet in a room and talk about health, which can be a bit intimidating. Instead, we were chatting with them about health while doing a bit of painting with the kids or hand casts. It makes things more informal and takes the focus away from individuals while they are talking.

Some of the sculptures were then displayed at some of the community centres that are involved in the Better Start Bradford project by Bradford Trident, a community organisation. The hope is that because we've done this sort pilot work, we've shown this type of engagement works with this community. The hope was that we would get some funding to do more permanent sculptures somewhere in Bradford, which would serve as a focal point for further community engagement. Unfortunately, we haven't managed to secure funding for that yet, but I do think it has a lot of potential.

Because you were working with young children did you encounter any ethical challenges? How did you overcome them?

Because they were very young children their parents were always there, you were never on your own with them. We also did the activities at established community venues; we weren't inviting children into the university. Those venues have their own processes and policies for safeguarding. I think it's helpful to partner with existing organisations and piggyback onto their existing groups and events.

What was the feedback like from those who participated in the project?

It was really positive. With the Christmas event especially, I was quite surprised by some of the things that the parents were saying about liking art to be a bit more abstract and the idea that if something is a bit more abstract and unusual, you can project your thoughts and feelings into it and start conversations. I think probably that wasn't what we were expecting to come out of those conversations and that has informed other stuff that I've done. So, you can see how, by using participatory approaches, our project changed course and was informed/shaped by the community involved.

"It was like turning these research findings into a picture. It's a starting point for further discussion."

Other experiences in using participatory research methods

Patient Participant Groups

A colleague of mine, Dr Jess Drinkwater, does research around 'Patient Participation Groups' (PPG) in GP practices, and I have supported that as an facilitator and evaluator.

All GP surgeries should have these PPGs, who are supposed to support GP practices to develop and run their services, but it's mixed whether that happens and how well those groups run. There's some really good ones and others are not so effective. Jess, who is a GP herself, worked with a group of patients, carers and GPs to do participatory research project on understanding and improving PPGs.

One of the things I helped with was trying to facilitate some collaborative analysis. So, helping people in the research group to look at the data and make sense of it together. Because we were doing this during lockdown, we had to do it all online. We used something called Miro, which is a visual sticky note type software. For example, if you're doing a workshop in a room you might write quotes or themes on sticky notes and move them around to form groups. Miro allows you to do something similar but online.

Jess, myself and the research group also worked with Professor Alice O'Grady, from the School of Performance, to turn some of the findings from that research into a workshop, where we used applied theatre and performance. We wrote a mini play that was based on the project's findings, which portrayed a fictional PPG meeting.

The play is used within a wider workshop, acting as a starting-point for discussion about the project findings. We have done the workshop with PPG members and GPs. It's intended to encourage people to reflect on their own practice and experiences, and how well they're working together, or not. One of the findings from the research was that PPGs need space to reflect on how they're working together, the workshop is designed to facilitate that. So, this is an example of us presenting the results of a project to the people who need it, in a more creative and open way.

Pressure ulcer prevention

Another project I'm working on at the moment is about pressure ulcer prevention. People who have disabilities that affect their mobility may be at risk of getting pressure ulcers from, for example, sitting in wheelchairs for extended periods or having to rest in bed a long time. The pressure ulcer research team here at Leeds work closely with a network of service users and carers. Network members have experience of lots of different health conditions and many of them have had a pressure ulcer.

They came up with an idea for a research project, so we've helped them to shape that, build a team and get funding. Funding resides with us in Leeds, but service users and carers are very much driving the research. We've set up what we call 'cooperative inquiry groups' with service users, carers and Personal Assistants (PAs). They will go out and interview other people and analyse the data, with our facilitation and support. We're also using an app to help people document their daily lives. Eventually, we will bring all of that info together via a process called systems mapping and develop interventions to help people prevent pressure ulcers at home.

What challenges do you encounter when doing participatory research?

Research infrastructure isn't ideally set up to support participatory research. For example, participatory research is very iterative. Some of the methods development happens throughout the project, and you want to do it that way, where it is part of the research process. That makes it challenging to fit within some of the traditional research structures, especially when we're applying for funding. Funders want to know exactly what you're going to do and you don't always know, because you're working with people to shape it at every step.

It's the same with ethics applications. So, for example, they often want an interview topic guide, but you're developing it with your participants, so you can't share it at the start of a project.

Within participatory research, people move between roles, acting as both participants and peer researchers at different points. I've had to think carefully about what that means for me as a 'professional' researcher. What do I add to that process? It's a different type of role and a different type of leadership. I'm more of a facilitator and supporter.

What kinds of training do you offer the peer researchers?

I would say it's less about training, and more about preparation and support. They are sometimes called co-researchers or peer researcher. They are experts via their personal experience. They know stuff that I don't know and I know stuff that they don't know. So, it's coming together to create something that's valuable and useful.

"Sometimes there can be an idea that in order for service users to be able to contribute fully to work with academics, they need to learn about the research world. They need to be trained in those skills. I would say that isn't always the case. It's our responsibility as academics to explain things in a clear way and to make processes engaging and accessible."

For example, when I'm facilitating analysis, I don't expect people to go away and read up on qualitative analysis or understand it from an academic point-of-view. I have to think of exercises which help people to draw on their personal experience and bring that to the analysis process.

There are times when training is helpful. For example, we are doing some interview training within the ulcer prevention project. So, making sure that people feel comfortable and confident going out to do interviews, that if they are asked questions about the project they feel comfortable answering them, that they know enough about safeguarding etc. I think any training should be based around the needs of the individuals talking part.

Do you keep participants informed of the analysis, findings and dissemination after a project is completed?

Yes we try to, but there are challenges associated with that. For example, within clinical trials research, we're getting a lot better at asking for permission upfront to recontact participants after the study is finished, but people have to opt in to that. If we have their permission, we can then send them the results of a study, or invite them to public dissemination events. For example, we are planning a webinar for one of our studies.

But that hasn't always been the case. Sadly, there have been plenty of trials where the participants were never told what the results were, which I think is quite unethical, and there's a pushback against that now.

Again, there's an ethical dimension to this. So, it could be years down the line before trials are complete and/or the results released. We then need to consider if / how people want that information, do they want to be reminded of somewhere they were ten years ago? Will they remember it? If a participant has passed away, do relatives want to be contacted? So I absolutely believe participants have the right to find out about results, but it's not always straight forward.

With participatory research you absolutely would want to keep a relationship with participants, because they are part of the project team. They will be helping you to shape and share the key messages from the work. It's a very collaborative process.

What is the stance of major UK funders towards participatory research projects?

I can only talk about the ones that I know. I think in the past, it's been a struggle to get funding for it. However, I think it's becoming more recognised within the applied health research world. There’s recognition that research is not always the most inclusive and that it serves some communities better than others. I think there's been a realisation now that participatory research is one way to address that disparity. It's not the only way, but it's part of the picture. Big funders (including NIHR, who fund my current research) are investing more in that.

School of Psychology

Open Research Practices in Psychology

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What words and ideas come to your mind when you hear 'open research'?

'Reproducibility' and 'transparency' are two key words I associate with open research. I'm an Experimental Psychologist, so for me sharing your raw data and analysis code is best practice. It allows people to check your analysis if they would like to, or use your data for a new purpose.

I think pre-registrations are also important as you clearly state ahead of time what your hypotheses are and what analyses you will conduct. This makes your research more transparent and reduces the possibility of questionable research practices such as 'hypothesising after the results are known' (HARKing).

Project example: typing skill acquisition in children and adults (Turbo Typing)

With my current project, Turbo Typing, I'm interested in how people learn the skill of typing. I'm breaking down typing skill into different components or 'sub-skills' and I want to know why people who are highly skilled *are* highly skilled – what tricks are they doing besides hitting the keys faster. My hypothesised sub-skills include, for example, how many letters someone is already planning ahead whilst typing, how much they have memorised the layout of the keyboard, whether they can overlap their key presses, and their general finger tapping speed.

My first key study will measure typing skill and my hypothesised sub-skills in a large sample of around 100,000 adult volunteers through a gamified online typing test. I'll be measuring some of the sub-skills through mini-games, such as how many times a person can tap a key in 15 seconds. I'll then have data from the whole continuum of typing speeds, from painfully slow to painfully fast, and I can compare how important each sub-skill is at different places on this continuum.

The second key study is tracking the key presses of schoolchildren learning to touch type over several months, checking how each of the sub-skills develops over that period. Are some sub-skills, e.g. keyboard familiarity, only important at the start, becoming obsolete when you are able to touch type at a certain speed?

In the future my purpose-built touch typing course could be developed to harness my findings about sub-skills so that, after a short assessment, each learner receives a tailor-made package of touch typing modules according to their sub-skill profile. This could be particularly helpful for individuals with motor difficulties (e.g. developmental co-ordination disorder) so that they can practice the specific sub-skills that they find challenging, rather than simply practicing the activity of typing on the whole.

How will the project incorporate open research practices?

Pre-registration

I am planning on pre-registering this project, with two separate pre-registrations; one for the adult component, one for the child component. These will include detailing the purpose(s) of the project, the sample size (how many adults and children will participate) and the activities involved. I will also describe my planned analyses in detail. This will be the first time I am pre-registering a project that I am the lead of, so it's an exciting challenge for me, to figure out all my analyses ahead of time.

Open and FAIR data (findable, attainable, interoperable, reusable)

I will make my materials, data and analysis code available upon submission of the relevant papers. This way, others can check my working, use my tasks with their own participants, or use my data in a new way. So, reproducibility and reusability are key open research practices here.

I'm working on a small project right now where I'm trying to predict how difficult a sentence is to type based on factors such as how many capitals are in it, how frequent each pair of letters is in the English language, etc. I've used the largest open dataset on keystrokes to create a mathematical equation for sentence difficulty based on those factors. So, I need to test the equation on a new dataset to check it's reasonable. I've got quite specific requirements of this new dataset, where several people need to have typed the same set of sentences, and the timestamps of the keypresses need to be available. Luckily, I found a dataset from 2012 from two researchers in Computer Science (a field miles ahead in certain aspects of open research), who had made it open and FAIR, which is incredibly helpful and means I can check the accuracy of my sentence difficulty equation.

Public engagement

I don't yet have concrete plans for disseminating my findings for the purposes of public engagement and/or affecting education policymaking. However, I think in several years' time I might be in a place where I could investigate whether touch typing should be on the national curriculum in UK primary schools. Also, I am invested in public engagement, so will be designing activities for pupils, teachers and parents throughout the three years of this project.

Collaboration with external stakeholders

I'm going to co-design the touch typing course that will track schoolchildren's learning of typing. I've already got a draft of it, but I'm going to go into schools and chat with teachers and pupils about their experience of the course and improve/tune it based on their feedback. For example, I might add a points system where pupils are rewarded for large increases in typing speed over time, with bonuses handed out by teachers who observe that the children are actually touch-typing. The pupils could then use these points to unlock different colours of on-screen keyboards or jewellery for the on-screen hands. Though it could also be the case that the pupils hate these ideas and come up with completely new ones!

Collaboration with the schools is obviously necessary and central, because they need to agree to allocate some of their pupils' time for a couple months to participate in my study. Also, there are ethical considerations, where consent from parents is also required. In cases where parents don't consent to their child participating in the research, I thought it would be nice if they could have access to the touch typing course for their own educational purposes, in which case I have created separate log-ins for them. This means their data won't be tracked or collected, but they still have the same opportunity as their classmates to learn to touch type.

What are your views and experiences with open access?

I see open access as vital for research. Really, I think anyone, including the public, should be able to access research papers freely and easily. Most of the time it's the taxpayer who has funded the research, so they deserve to at least access the outputs. I think it's great that many funders now necessitate papers being made open access as part of their grant stipulations. As a researcher, it still blows my mind that many journal articles are behind pay walls and that universities have to pay for subscriptions. It's a bit ridiculous that this publication model is still in place in the digital age.

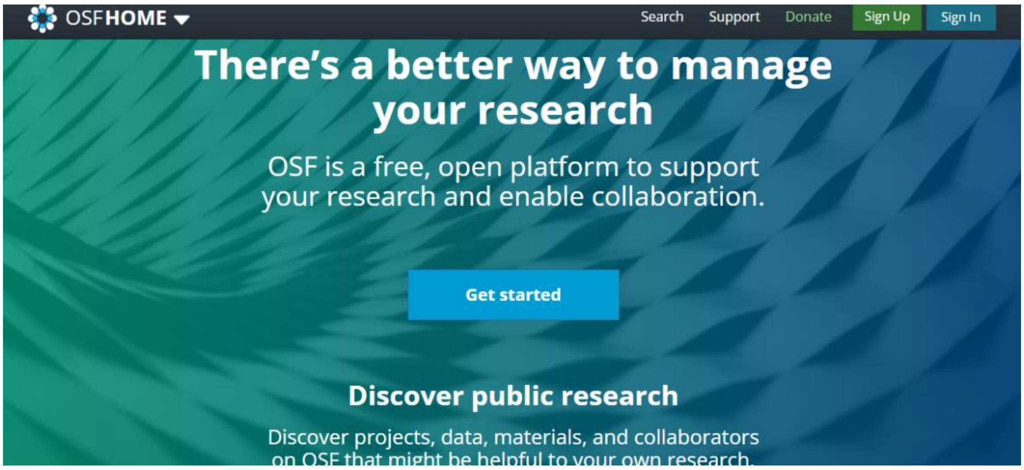
Of my six publications to date, four are open access. For the two behind paywalls, identical manuscripts besides those for the journal formatting are freely available online. Really, I don't see any excuse for not having a version of your paper freely available somewhere online. Some journal publishers can get weird about it (they want the money!) but we need to make it a standard practice.

Where do you deposit you work?

I mainly use the Open Science Framework (OSF), which I became familiar with when I was doing my PhD. It's kind of a one-stop shop for sharing whatever you like – pre-registrations, digital materials (e.g. experiment files), data, code, pre-prints. For my first PhD project, I shared just my data. For my second and third, I shared my data and pre-prints.

I was really nervous to share my analysis code as it can be messy in places and I sometimes get worried people will judge me for doing things in sub-optimal ways (e.g. writing 20 lines of code where 5 might have sufficed, though both produce the same output). Embarrassment about one's own code is quite common, but I think it's really important to overcome it, to enable greater transparency and reproducibility. It also means that people may find an error in your analysis, which is ultimately a positive thing, but unfortunately in the current research culture is often shrouded in shame.

For Turbo Typing, I am using GitHub to track changes I make to the code for my experiment and analysis. My repositories are currently set to private but I will make them public upon paper submission and will likely copy my final code over to the OSF so it's all in one place. But GitHub will allow people to see every time I have 'committed' changes to my code, which is an extra layer of transparency.



There's a better way to manage your research

OSF is a free, open platform to support your research and enable collaboration.

Discover public research

Discover projects, data, materials, and collaborators on OSF that might be helpful to your own research.

Screenshot of OSF website

What are your views on pre-registration?

I have been involved in two pre-registrations to date where I am a collaborator and will soon be pre-registering my analyses for Turbo Typing. I think pre-registering is ideal in psychology research. Ideally, you know your hypotheses and how you will test them. In practice, psychology researchers often have a fuzzy grasp on how many participants they will work with, what activities they will do, and which analyses they will conduct. Research is sometimes conducted in a 'flying by the seat of your pants' fashion, especially during PhDs. This is where cognitive biases and questionable research practices can creep in. It can be a pain to have to sit down and figure out what you're going to do and exactly how you'll do it. It feels like a lot more work. But I think it's worth it for increased transparency and confidence in your work.

In addition, pre-registration has a bigger sibling, registered reports. Here you write the introduction and methods section of your paper, specifying your research questions and analyses, and send it to a participating journal to receive peer review on our plans before you collect any data. I see this as a gold standard of open psychology research, though it is a big step.

"If researchers pre-register then they can be super transparent about what they will do. And if they end up changing something or doing extra analyses, they can say this explicitly in the paper, and it's perfectly fine. Pre-registration is not the pair of handcuffs people often think they are."

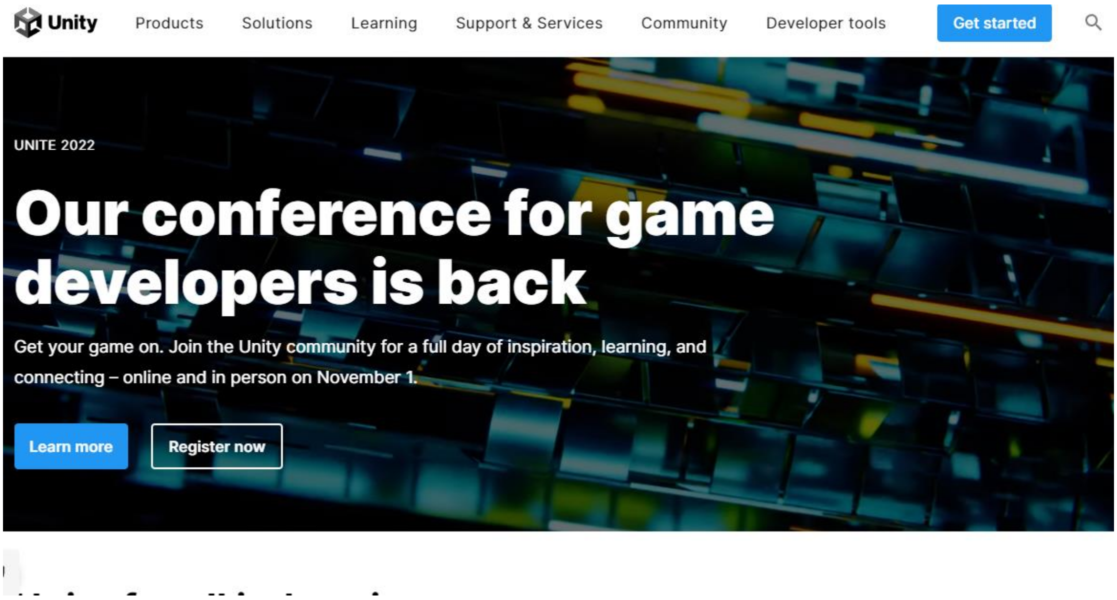
The main benefits are that you get useful input before you collect the data (compare this to traditional reviewers saying "You should have done the experiment this way instead!") and that you can receive in-principle acceptance where the journal will publish your paper regardless of whether your results were significant (many psychology journals will not publish 'null results').

I'm planning to write at least one of my papers for Turbo Typing as a registered report. I have 3 years of funding to conduct the research and am in complete control of when I do each component of it. I should finally have the leisure to flip my usual workflow and figure out my data collection and analysis plans, go through stage 1 peer review, collect and analyse my data, write up my work, then go through stage 2 peer review (a check to see if I did what I said I would). It sounds like a lot, but it's generally the same research steps but in a different order.

Have you used pre-prints?

Yes, I now pre-print all my papers. I see them as very beneficial as it allows for faster and smoother dissemination of research. You don't have to wait like six months until it's actually published in a journal; people from other universities can benefit from your research right away. It's also good for your academic CV and can help a lot in grant applications to fund new projects. I tend to use PsyArXiv for my pre-prints, which I can link to the relevant projects on OSF.

What has been your experience with open software?



UNITE 2022

Our conference for game developers is back

Get your game on. Join the Unity community for a full day of inspiration, learning, and connecting – online and in person on November 1.

Screenshot of Unity website

For Turbo Typing, I've created an online touch-typing course and sets of typing tests in Unity, which is free software used for game development. The underlying sets of code are not currently available for others to access/use, but I will make them available once I submit the relevant papers.

Role with ReproducbiliTea

I was one of the founders for ReproducibiliTea here at Leeds. Before, I was involved with the one at the University of Manchester, where I was doing my PhD, and I found it very useful for raising awareness and debate around open research practices. I worked with the local UKRN leads and Nick Sheppard from the Library to set the one up here.

Due to project commitments I had to step back and take more a backseat role, but the others who run it have done an excellent job. When I was helping to run it, our main responsibilities were devising the monthly schedule of journal articles to discuss, organising meeting venues (usually at the Library) pre-pandemic, and working with/ alongside the UKRN.

Open Research in Psychology

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What do you think of when you hear 'open research?'

For me it's about transparency in how one conducts their research. It is also about inclusivity and accessibility, so making our research more open and inclusive, not just for other researchers but beyond. Much of my views on this matter are orientated around me being a social psychologist. As such, research being done properly and informed, with a bearing on the people/sectors we are trying to help, whereby their engagement with us is critical.

What is your research background?

I have two main focuses when it comes to by research. My PhD research was based on feminist social psychology. For example, I researched 'benevolent' sexism, gender stereotypes, and how people and different groups frame stereotypes. I therefore also look into the consequences of these including gendered stereotype stigma. Second, I conduct research around student outcomes and pedagogy with colleagues in Psychology. So, this covers exploring student learning and best practices for such, participatory research with students around issues like global citizenship and the 'hidden curriculum'.

Views and personal experiences with open research practices

Open and FAIR data (findable, attainable, interoperable, reusable)

This is an area I have tried to practice, mainly with quantitative and experimental data. On a general note, I'm interested in trying to expand the debate on open data to address more issues for doing such with qualitative data and/or mixed methods. This is because I also deal with qualitative data in some of my research and we can encounter challenges. For example, it can be hard/impossible to make such data FAIR because it can't be anonymised or it may not be appropriate to share.

Open access

I feel like I still have limited knowledge about how to make publications open access. It can be a bit like feeling around in the dark because of all the regulations, stipulations and copyright restrictions you can encounter across numerous journals. Regardless, it's a concept I very much agree with.

Preprints

I think one of the tools and practices that has revolutionised my field and helped my own research has been preprints. For example, recently I led a huge team, about 75 authors, where we preprinted our research as soon as everyone signed off on the paper. Subsequently, I've been asked to speak about this paper at conferences and across different departments. The great thing about it is we have got loads of feedback, especially via Twitter, which is predominantly outside the traditional peer review(ers) associated with journals.

It's a good means to fast-track feedback and sharing important results, as traditional peer reviewing can take many months and you can end up being rejected and having to start that process all over again. Preprinting offers an opportunity around it, to get your analysis and findings out there to others, and receive feedback faster. This was something I accustomed myself with when I was doing my PhD, and I now regularly engage with it. They're ideal for research impact and earlier career researchers particularly, those who are still trying to establish their profile in academia.

The only sort of criticism or reluctance towards preprints I've heard of are from those who question its integrity and thoroughness, especially considering they don't go through a traditional, journal-style peer review. However, I would contest, with the above example of 75 authors, pre-printing can still guarantee those attributes are followed. After all, we were a large group, with numerous expertise and academic backgrounds, and we were regularly communicating, developing ideas; overall working on that preprint. That in itself is a form of peer review, I would argue.

MetaArchive Cooperative is a digital preservation network created and hosted by and for memory organizations.

MetaArchive is integral to our preservation system, particularly since the MetaArchive

MetaArchive Member Profile: Virginia Tech University Libraries

MetaArchive founding member, Virginia Tech University Libraries, discuss the past, present, and future of their digital preservation program.

Screenshot of Meta Archive website

Concerning the specific platforms I've used for uploading preprints these have tended to be ResearchGate, Meta Archive, and PsyArXiv.

A free preprint service for the psychological sciences
Maintained by The Society for the Improvement of Psychological Science
Powered by OSF Preprints

Screenshot of PsyArXiv website

Preregistration

Within Psychology preregistration is being increasingly adopted. You can get preregistration badges on journals, where if I happen to be reading one I'm like: "oh cool, this is someone who really wants their research to be rigorous." However, I would say it still isn't quite mainstream.

I think it's important to teach students and early-career researchers about the importance preregisters can offer for their own work, and how to use them including appropriate platforms like the Open Science Framework (OSF). One of the great things about preregisters is that you have to be really clear on the questions that you're asking in order to develop compelling hypotheses, so it can act as an additional area of project development training, which can be particularly useful if Masters students are considering pursuing a PhD later.

We've actually just finished phase two of a big older project where we're looking to see whether the process of preregistration with/in undergraduate dissertations can help students understand and develop skills in statistics. This was a longitudinal study with researchers across the UK at numerous universities. We'll be doing the analysis of that data soon.

There are some challenges/concerns. A major one is that preregistering can make you feel like you've been 'locked-in' with your project, where you can feel like you don't have much room for manoeuvre or to change it as it progresses.

The dilemma can be, for example, if you have showcased a preregister with one of those badges I mentioned where loads others see it, and the end product (papers, publications, etc.) don't match up, then it could look like you've manipulated your data and analysis. Alternatively, if you stick fully to the preregister and end up producing less than sufficient results and findings people may question how informed and thought-out the preregister was. So, there can be some perceived reputational risks.

“However, generally I think if something is time-stamped in advance of when they got their data... that to me is a pretty good indicator that they take robustness seriously.”

Open education

I have had some experiences with this. For example, I've done some school initiatives like 'I'm a Scientist, Get Me Out of Here!' (link to video example: https://www.youtube.com/watch?v=e1T4zi-DIh8), which involved me talking to school kids about science, which was quite fun. On top of that, I have experience in creating and sharing open educational resources. A load of us did this quite intense project where we created a set of lesson plans for educators in higher education. The purpose was to get them to think about open science. So, we created these plans and would peer review them among ourselves and then devised a solid teaching plan with teaching activities, writing a paper which signposted readers to it. More generally, we uploaded these plans to the OSF for more people to access

Research dissemination through social media

I use Twitter a lot in my practice. I think that it has been such a useful space to get involved with the open research conversation. More generally, it's also become ideal for research dissemination and impact.

It has also allowed us to re-consider and reframe research collaboration. So, I've worked with collaborators on a publication where a lot of our interactions and engagement have been through this platform, like an 'academic Twitter'. We've worked on all kinds of interesting projects, and I've never met any of them in person! It's has therefore become a relatively new and intuitive way of forging research co-operation across the world, and I think it has really accelerated over the past 2-3 years because of the pandemic.

Participatory research/citizen science

I'm trying to get more involved with this practice, especially with my recent focuses on students and the curriculum, however currently I would say it's more of a 'consultative' nature than participatory-based. We've been exploring areas like student perceptions of various teaching practices, both related to in-person and online delivery.

We did, however, secure some funding so to hire and train some students to conduct focus groups with their peers. The rationale was that they would likely be more open and candid in their responses because they were talking to someone like them, not a lecturer-esque figure. So, they were given a lot of independence in organising the groups, the schedule and in running them. On top of that we are inviting those students to help do the analysis of the data gathered, and I believe the data collected was enrichened by it having been done by student researchers, not us.

I am also currently in the process of planning a participatory action research that is based around asking 'what does success look like to students?'. We are planning to use Creative Arts photo-based methods to work with students to try and figure that out. So, it's kind of a shift from a quantitative way of thinking to a more qualitative, creative, participatory process.

There are numerous benefits for conducting participatory research/citizen science. Of course, there are those related to transparency and inclusivity, where interacting with the agencies your research is about can help facilitate more accurate, efficient impacts.

But, there are broader implications for us researchers. For instance, by interacting more with those outside of our academic 'silos' we are forced to adapt our language so to be more accessible for others. One of my main grievances is that there is too much jargon in academia. I've encountered students who have told me they really struggled with reading some papers, and usually it's because they are badly-written with convoluted language. This lies at the essence of open research, about making what we do more accessible beyond our circles. So, citizen science/ participatory research 'forces' you adopt your language to make in more broadly-understandable.

Project example: Developing a global citizenship education toolkit

Project description:

A global citizenship education equips students with skills that allow them to contribute to global problems in a responsible, informed, and ethical way. However, there are challenges associated with embedding a global citizenship education. For example, the methods for effectively embedding global citizenship into the curriculum are unclear.

In this fellowship, we'll first investigate where global citizenship sits within accreditation standards across the university. We will then identify best practice in global citizenship education across the higher education sector, and assess stakeholder perceptions.

This fellowship will create a toolkit that will facilitate the implementation of a global citizenship education at a programme and module level. The toolkit will inspire, provide practical guidance, and pedagogical evidence for global citizenship approach to education, and assist educators in implementing a global citizenship education.

I'm working on this project with Dr Pam Birtill and Dr Richard Harris. The essence of this project is moving perceptions (especially among students) of education away from viewing it as knowledge accumulation/learning towards being active in generating it. So skills around things like ethics, critical thinking, problem solving, global responsibility, and psychological literacy in psychology are all major attributes.

Crucial questions we're looking at include what does 'literacy' look like in other disciplines? So, what does mathematical literacy mean? What does physical literacy mean? What does arts literacy mean? Etc.

Psychological literacy has been referred to in the literature as being a kind of subject specific version of global citizenship. So, then we were like what if this fellowship tries to figure out what 'global citizenship' means to different people? How do they relate to it?

There are essentially two main phases. With the first, which we are currently doing, we're asking what 'global citizenship' means to them, and what it looks like across different disciplines. For this, we're setting up panels of students to discuss this with. The second phase will be to then develop a toolkit that will basically help others from across different disciplines to have these kinds of conversations on pedagogy.

How has the project used open research practices?

One is our intention to make the data openly accessible. It also has a strong participatory angle with it being a form of 'democratising science'. The panels are/will be made up of staff and students, and we have monthly conversations as part of our fellowship where we invited anyone who wanted to come along to just chat about global citizenship. In order to create this toolkit I thought it important that we have a very transparent process, where these methods helped in doing just that.

We regularly consult or get back in touch with students to run things by them, asking questions like "does this make sense?", "does this feel right?"; rather than just kind of imposing something top-down, where we just collect data and leave.

"I think in that sense that's inherently an open research approach because it's trying to make things transparent, inclusive, accessible and thoughtful."

What are other attitudes like towards open research in Psychology?

Overall, it is something that is actively or passively embraced. Concerning the former, people like myself try to engage more with open research training, knowledge exchange events, etc. all designed to foster debate and increase the awareness of associated practices. Of course, this goes hand-in-hand with using open research practices with our own research projects.

There are some who associate open research advocacy as being a distinct 'academic identity', where you're perceived as being obsessed with these practices and/or having an agenda. So, there can be some ambivalence or even indifference when you throw the term out there. However, at the same time there are many researchers who are essentially practicing open research without necessarily knowing they are, for example open access and/or making their data open and FAIR. This is what 'passively embraced' refers to. I do think there needs to be more departmental incentives to engage with it; I can see there's a lot of people who are not part of the conversation because it doesn't serve them.

Widening Perspectives and Open Research

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Act Early: Holme Wood - The community-engaged data science scheme recently won the University of Leeds Research Culture Award for Widening Perspectives

What does 'open research' mean to you?

For me, 'open research' represents a cultural shift in academia towards more transparent research practices. My background is in psychology, and within that field we have for a while now (over a decade) been grappling with this topic- which was sparked by what is known as the "replication crisis", and there has been a concerted community-wide effort since then to try and implement practices that make our research more reproducible.

From there, I think there's been a big push, particularly among the early career researchers (ECRs) towards open research. So, this spans a range of activities across the entire research lifecycle, but most often is implemented through the sharing of data (and now increasingly) the code underlying your analysis and experimental paradigms. It's taken a while, but we are now in the stage in our group that wherever it is possible, the PhD students, research assistants, postdocs and faculty members in our research group try to ensure our outputs are as openly accessible to other researchers as much as possible.

"Sometimes it's not always possible because there can be constraints in terms of what permissions we have for specific data, but wherever and whenever we can, we strive to make our research as open as possible."

Act Early: Holme Wood - Community-engaged Data Science Scheme

"The project is a collaboration between Bradford Council, Bradford's Centre for Applied Education Research, Leeds Institute for Data Analytics, local health services and schools, the Integrated Communities Programme (Bradford For Everyone) and Bradford's Opportunity Area. We are ambitious in delivering activity aimed at bringing together residents and local service providers who will work together to design, trial and evaluate more effective approaches to tackling issues, together." BradFORd Everyone, 2020

Act Early: Holme Wood had two important goals:

1) For Holme Wood, it would propose to Bradford's decision makers and service planners, ways to more effectively align and target services, with a focus on early intervention. It would suggest ways to empower communities to make informed choices, take more ownership of issues, and improve access to services. Local decision makers were represented on the Act Early: Holme Wood 'leadership group', and committed to participate fully in the action research projects, and to take seriously recommendations for change.

2) For Bradford, and beyond, this project tested, modelled, and shared a process that brought cutting edge data science into the conversation about public services and public policy, to improve outcomes for all. Our vision was of a process (a "place-based approach" to working) that could be replicated across Bradford, adopted by other communities, and help those involved in policy making at a national level design programmes that can adapt to local circumstances. We further anticipated that Act Early: Holme Wood would allow the scientific community to sharpen its techniques and data science tools.

The project was an offshoot of some work that we've been doing in Bradford for over a decade now, where we've been working with communities to do a wide range of research projects. I have been part of a large team engaged with it, where I've personally taken part in several of the projects. The overarching goal/theme has been to try to reduce health and social inequalities.

Bradford is a local, ideal case study because the city has very large disparities between the wealthiest and poorest residents. As part of the wide-ranging and multifaceted approach to this project we therefore looked at links between education and health, and their bearings on such disparities. The objective of this was to reduce the gap and improve the life trajectories for children who are born into these disadvantaged settings.

As you can imagine there has been significant engagement with external local and national organisations, including community groups/networks (and a special mention for Lauren Batty at OutLoud and Kayle McCoy from the United Art Project) and the Department for Education (DfE). So, it has been part-and-parcel that they participate in the research process itself.

A finding we discerned from our analysis was that whilst there are government policies (both local authority and national policies) aimed to help in these areas they are often blanket policies. They are not fine-tuned or specific to the region, not fully accounting for and addressing the needs for the individuals and communities in that locality. So, there needs to be more specific tailoring; Manchester is not the same as London, Bradford the same as Bristol, etc. Even within a given-locality there is variation. For example the inner city areas of Bradford are not comparable to some of the outer suburbs in terms of education and health access and quality.

The issue isn't just financial. It has also been about forging trust and discussion in the communities we're researching. Therefore, we have been bringing them together, involving them directly in the process. For example, we organised a workshop where we brought together local policymakers and stakeholders, along with data scientists from the Turing Institute and artificial intelligence experts from across the UK. The purpose of the project was to devise priorities for the city, and we came up with six at a stakeholder meeting in January 2020: Healthy Choices, Healthy Lives; Life Choices & Aspirations; Mental Health; Dental Health; Crime; Data Profiling Workflow

One of the priorities in Holme Wood was access to health food sources/outlets in poorer areas. Data scientists found through an analysis of routine datasets (which they used to create interactive maps with data overlays) that there was limited accessibility to food on Holme Wood and the type of food outlets very close by lacked healthy options. Through work with a community organisation called OutLoud and their co-development of a community event, we were able to engage with local residents and stakeholders on the topic of health and eating habits.

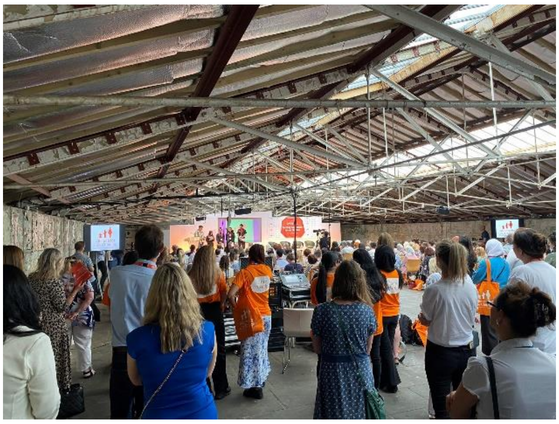
We gained useful insights from the locals on this topic and, in the process, learned that there were several additional priorities they wanted to focus on (some different from the initial priorities decided upon in January 2020) – so hosted several more events that used community engagement strategies to generate specific ideas for change on Holme Wood. These included mapping exercises to pinpoint where assets and areas of concern were on the estate, collecting data in creative ways (such as through artistic projects), and brainstorming as a group to find solutions. Our events led to the creation of community 'cookbooks,' with 'recipes' for policy change – the steps and 'ingredients' needed to achieve change.

Directly engaging these communities was crucial, especially in giving them a proactive role so to have their voices heard. You needed to hear their narratives, life stories and the 'real' lived experiences in order to produce accurate, complete data to feed into constructive impacts. More generally, I think it was an innovative way of generating new data.

What is/was your role in the project?

This was a big team effort and I can't really take personal credit. The pandemic was obviously a major surprise and that really changed the dynamics of both the research and the make up of the team. With our Research Culture award we had to provide list of 10 people who were our partners. This was a big struggle because we could easily have had a list of up to 40 that we worked closely with. Unfortunately, I don't think there is enough space for me to list all of them here either! But I do want to say a special thank you to Lauren Batty (OutLoud), Kayle McCoy (United Art Project), Mallory Morehead (CAER), Shahid Islam from the ActEarly programme and the Immersive Networks team. They have been instrumental in the success we have had so far and created the foundation for what we hope will be further engagement.

What have been the societal outcomes?



The examples of the cookbooks have been quite successful. In terms of public engagement and policymaking impacts, this type of place-based initiative is now being funded in other areas, with oversight by the Education Alliance for Life Chances (EALC), a Bradford District multi-agency partnership that launched following an event in July 2022, which aims to improve outcomes for children. The Holme Wood programme inspired an EALC initiative in Bradford called 'Act Locally' that continues in Holme Wood and has expanded to Keighley and Manningham. The ‘Act Locally’ programme, based in schools and Early Years' settings, is focussed on creating bespoke solutions for these areas, by growing local cross-sector partnerships that provide the most needed (as indicated by data and stakeholder input) services and support for children and families. In the future, we plan to continue work with these areas and expand our reach within the Bradford District and beyond.

Given the scale of the project were there any data management and/or copyright issues?

As there were six different internal sub-projects being done by different teams, there would be some complexities and coordination issues in data collection. For instance, in some projects there was very little data the team could generate by themselves and they had to collect it through social community service surveys and so on, through to having huge volumes of data from the DoE from other projects that we have in Bradford.

Linking up the various datasets (e.g. health, education, demographics, etc.) has been challenging because of all these distinct teams and has take several years. There are different levels, different degrees of description, some missing/shortcoming sets and so on, and achieving a sort of 'harmonisation' (bringing it all together into one dataset) has been difficult.

The outputs have not yet been published, but each of those will have an open access statement concerning data sharing and reusage. However, given the various types of data and varying levels of sensitivity, as well as agreements with partnering organisations, there are some sets that will be more-easily accessible (open and FAIR) than others.

Has the data from the project been made open and FAIR (findable, attainable, interoperable, reusable)?

Yes, this is the plan. Each project itself is going to have its own way of doing that. There is a consensus that the data collected should be made open for others to access. Of course, there will be some areas where this may be harder than others (e.g. identification and anonymisation), but we will find solutions. In terms of outlets/platforms this will be down to the teams. So, some could opt for university repositories and others might choose platforms like Open Science Framework (OSF).

What are attitudes like towards open research in your field?

As I mentioned at the beginning, open research has for a long time now been a concept psychologists have been working with to incorporate more. Big shifts in attitude and mindsets have been needed, and that is both difficult and can take time.

One big shift in our own research group, the Immersive Cognition Lab, has involved moving away from using MATLAB, a proprietary platform to Python, which is open source. That has taken several years and there are still a few areas where MATLAB (and the toolboxes that have been built on top of of it over the last few decades) is superior to Python for our needs, so the transition to using more open methods has not always been smooth. Of course, time is also needed to learn how to use new software too, which can be a constraint for many of us with our other commitments.

Time can also constrain learning more generally, and the implementation of new practises. For instance, registered reports (a formal approach preregistration where papers are peer-reviewed prior to data collection) was new to me a few years ago. I've been making my papers and data open access for a long time now, but had struggled to find the time to incorporate registered reports into our lab's workflow, even though I was aware, at least in theory, of the benefits they can bring. But recently, thanks to funding from the BBSRC, we are embarking on a new programme of work centred on delivering on the world's largest open science neuroscience project, #EEGManyLabs. This project involves the generation of 20 registered reports and brings together hundreds of neuroscientists from across the world, so I have had the motivation to learn quickly!