Hacky Hour as a Model in eResearch Training, Engagement & Community Development

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What is Hacky Hour?

In the biosciences, as well as many other fields of research, there are often relatively **low levels of mathematical and statistical expertis**e, as well as a lack of basic computing, e-research and data skills. This is despite such skills becoming increasingly important across many fields to create cutting-edge research. Towards filling this knowledge gap, we have been experimenting with running "**Hacky Hours**" at The University of Queensland for the last 2 years. *These are weekly events, held in an outdoor cafe, where researchers who'd like assistance with their research IT can come along and ask questions or can just work on whatever they are working on, in the company of other researchers who are into computing.* A strong community of both helpers and researchers with questions has built around this event, with many returning regularly. Often, a researcher with a question one week will come back and be a helper another week.

Who Brings Problems?

Of our problem owners, **65.2% are female & 34.8% male**, hence women outnumber men almost 2:1.

The fields that problems come from are very diverse and include: the **biosciences, economics, psychology, humanities, languages, chemistry, mechanical engineering, nanotechnology, biomedical engineering, ecology, and the library**. However, by far the majority, **57%, come from the bioscicences**.

Of the visits, **47.2% are return visits**:

# visits	*1*	*2*	*3*	*4*	*5*	*6*
# people	*47*	*5*	*3*	*3*	*1*	*1*

Several Hacky Hour problem owners have returned repeatedly to get help on a problem over a period of weeks.

Community of Solvers

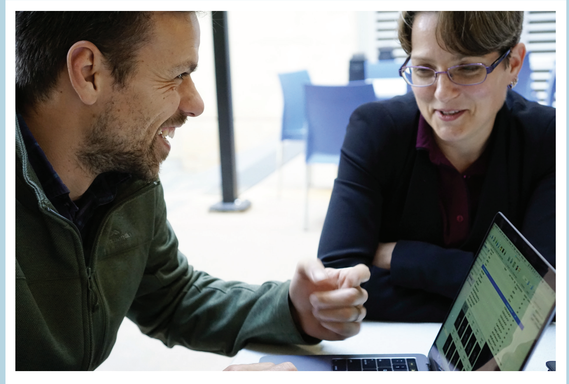
While 2/3 of problem owners were women, **only 24.9% of solvers/helpers were female**. Hence there was a strong bias towards male helpers. The majority come from the research computing and bio-research fields.

Of the visits to help at Hacky Hour **96.4% are return visits**:

# visits	*1*	*2*	*3*	*4*	*6*	*7*	*17*	*22*	*24*	*27*	*29*
# people	*7*	*3*	*1*	*1*	*3*	*1*	*1*	*1*	*1*	*1*	*1*

As can be seen in the table, there is a dedicated core of 5 or so Hacky Hour helpers who come to the majority of sessions. It is worth noting while we have specialists in HPC, R and programming and so forth who regularly attend, the main characteristic of a good helper is someone who is willing to say "I don't really know, but perhaps we can figure this out together." **The Hacky Hour ethos is much more to help the problem owner develop the skills to find a path to the solution themselves.**

An important part of Hacky Hour is maintaining a collection of regular helpers who are friendly, non-judgemental, and enjoy helping others. While we have not formally interviewed the helpers as to their reasons for vounteering their time, we could speculate that the informal environment of Hacky Hour over a coffee is an enjoyable way for member sof the University technical and training community to catch up, chat and sometimes exchange technical knowledge. We value our Hacky Hour helpers ard are careful to acknowledge their contribution in publications, on Twitter, and so forth.



Collecting Hacky Data

Hacky Hour has run for two years at UQ and for the last 11 months we have collected basic data on our attendees. This included: school or institute attendee; whether a problem owner or solver; type of problem; gender; date of attendance; and whether attended before. In total this gave data on:

33 Hacky Hours; 283 attendees; 194 helpers; 89 problem owners.

Note that return visits are counted as distinct events. On average, 5.9 people attended each session.

Problem Types at Hacky Hour

While the problems at Hacky Hour are often diverse, there are recurring themes that can be placed in the following classes. Numbers in parentheses denote the number of problems in each category.

- R (24)
- Cloud/HPC (13)
- Programming [excluding R/Python] (13)
- Data Wrangling (9)
- Python (7)
- Maths/Stats/Modelling (6)
- Data Visualisation (5)
- Training Advice (5)

Publicity and Representation

The main avenues for advertising Hacky Hour are (1) via a dedicated Twitter account (**@HackyHourStLuc**); (2) centre and institute newsletters and mailing lists; (3) a blog (https://hackyhourstluc.wordpress.com). As well as explaining what Hacky Hour is via these avenues, we think an important element is to **represent the diversity** of people who attend. As such, at most Hacky Hours we (with permission) take pictures of our problem owners, post them on Twitter, and use them in email announcements. In this way Hacky Hour is seen to be normal people asking IT/research questions, and not a stereotypical technical "nerd" event. We think this may explain in part why 2/3 of problem owners attending are women.

Benefits of Hacky Hour

We see a number of benefits of the Hacky Hour training model.

- **Efficiency.** A few minutes of help can sometimes save hours or days of researcher time and frustration.
- **Good will**. Both the volunteer helpers and the schools and institutes they come from gain in reputation as good University citizens.
- **Limited help**. Helpers are more willing to donate their time without fear that a problem will blow out when they know help will be limited to 1 hour.
- **A knowledge resource**. Hacky Hour helpers build up a knowledge base of common problems and their solutions, as well as resources to point researchers to such as R cheat sheets, short training courses or good web sites on how to get started with Python.
- **A referral service**. While it may not be possible to solve all problems immediately, often a solver will know a person or organisation who may be able to help.
- **Helper skills development.** Helpers develop great skills in problem solving, training and working with people.
- **Academic publications**. While all advice is given freely without any expectation of anything in return, help has in some cases led to coauthored journal publications.
- **Diversity.** The friendly, informal environment encourages a greater diversity of attendees.
- **A community of helpers**. The helpers and problem owners have now become a community that can be drawn upon to help at or participate in other training or community events such as Software Carpentry Bootcamps, HealthHack or ResBaz.

Conclusions

It is clear that there is an large unmet need for training in computational, eResearch and IT skills in the University research sector. This is particularly the case in the bioscicences which have traditionally been perceived to be less computational than other sciences such as physics, chemistry and mathematics, but which is now being flooded with ever bigger waves of "big data" as experimental methods are increasingly automated. Given that 2/3 of attendees bringing problems to Hacky Hour are women, the need for training appears to be particularly acute amonst female postgraduates and postdocs. As a friendly, informal and low cost model of training and engagement, Hacky Hour offers many benefits and can be used to provide pathways and channel researchers and students to further training, as well as create a pool of enthusiastic volunteers to support and initiate other training ventures.

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