

Building local leadership in research education

Case Study 3: Building Research Leadership

This case study identifies initiatives undertaken to build a research community and program across conventional departmental and disciplinary structures. In this case the community was constructed under the umbrella of a Research Institute in which it was felt there was greater freedom to offer an enrichment program additional to support offered by departments. The focus is on preparing researchers to be knowledgeable in their research field, as well as adaptive leaders able to meet the challenges of the future. The initiatives outlined in this case study are particularly relevant considering the annual survey of postgraduate research students (PREQ) consistently confirms that postgraduate students are most dissatisfied with the intellectual climate at Australian universities. It is also noteworthy that this case received an Office of Learning and Teaching citation for their work.

Context

Genes to Geoscience is a Research Centre, made up of a federation of independent research laboratories encompassing a fusion of genomics disciplines: functional ecology, earth system science and palaeontology. Research groups affiliate voluntarily with the research centre. There are about a hundred HDR students and about thirty to thirty-five academics involved each year.

Since 2005, the Genes to Geoscience Research Centre has been running a program for all research students called the Genes to Geoscience Research Enrichment Program (GGREP). The Director, who has an American education background, introduced the concept for the program, partly based in his belief that although the American style PhD system goes over a longer time period, students actually get a broader range of experiences. He felt that was really lacking in the Australian context. The Director was keen to get all students, but particularly the top 10% of students, more inspired by letting them see a broader range of cutting edge research disciplines.

One of the strengths of the GGREP is that a large proportion of the participating labs are leading-edge within their own fields, as measured, for example, by recent ERA Assessments. Each lab pursues its own external research funding and attracts its own PhD students, and each student is learning research through the intensive apprenticeship within their own lab that has always characterized the Australian PhD. These independent labs affiliate with GGREP on a voluntary and co-operative basis. The common conviction and voluntary contribution of the affiliated members and their research groups helped establish the philosophy and primary aim of GGREP which is to enhance postgraduate learning to produce the next generation of research leaders. GGREP's leadership continues to articulate this shared purpose.

The primary aim of GGREP is to incubate future research leaders with a broad outlook scientifically and societally. The program aims to focus on a diverse set of skills not explicitly taught during the standard PhD experience. The idea is to enrich the research experience of postgraduates beyond just basic support so they get to see cutting edge research disciplines that they wouldn't otherwise be exposed to. The program does this through a series of intensive masterclasses (or modules). Masterclasses increase breadth and excitement factor for research students and provide skills and research connections that they would otherwise miss. The aim is to produce researchers who are able to think and act independently, and to lead multi-disciplinary research fields for next 10 – 20 years and become leaders in the field. However the program is different to many similar programs in that it's not just for postgraduates; it is actually for all the members of the Research Centre and that includes academics and post docs as well. The aim is to develop a community where everyone looks after each other and provides support, and the HDR students can see how academics do things.

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GGREP activities are designed to *complement* those of departments and of individual labs rather than to compete with them. Through the masterclasses students and postdocs from different labs get to know each other. This flows on into other types of collaboration and social support. GGREP provides a microcosm within the University where postgraduate students feel they are part of a distinctive, supportive and nurturing community. This is made possible by voluntary time commitment from leading research groups. This voluntary co-operative approach is a key characteristic of this Program.

Role of Committees

The Genes to Geoscience Leadership Group is led by the Research Director. All decisions about the programs for HDR are made at the committee level. The GG Leadership Group coordinates activities, organizes the masterclass menu and guides improvement of the Program based on reflective feedback from masterclass convenors, postgraduate students and the Advisory Board. Both the Director and the Program Coordinator do lots of things to ensure that events happen, however everything is guided by the committee and its strategic direction.

The Research Centre also had an Advisory Board. The insights provided by Advisory Board members are also valuable in shaping the specific nature of some of the GGREP masterclasses offered. One example of this was the creation of the 'soft skills' masterclass in 2010. External members of the Advisory Board identified the characteristics of university graduates that they looked for when hiring into their institutions. They identified that soft skills are seen as particularly valuable in non-academic scientific institutions but that these skills were typically lacking in university graduates. In addition to identifying this need, they also provided resources and advice around how best to train postgraduates in identifying their own soft skills. On their advice and information, GGREP added a 'soft skills' masterclass to the GGREP masterclass menu in 2010 and 2011.

Role of the GGREP Convenor

A dedicated GGREP Convenor is charged with the day-to-day implementation of the Program by coordinating masterclass convenors and participants, and by fulfilling the objectives of the GG Leadership Group. The Coordinator job is a paid position. Currently, he works 2 days a week as Convenor and has a postdoc position for the other 3 days. Everyone else's time is given voluntarily. The Coordinator's role is to make sure that the Program happens on the ground. The Coordinator commented that having resources (money and time) are important in doing the job of coordinator, but that also the accessibility of the Research Director has been important in giving the program support and direction.

The Coordinator liaises with everyone to make sure everyone knows what's going on and manages the program for the year. People are often willing to provide modules but it requires some logistical manoeuvring to actually make it happen. The job of the Coordinator requires a lot of liaising with staff, and being sensitive to people's workloads and responsibilities. He commented that he runs around trying to chase people up, talks to people face to face rather than sending email, provides an opportunity for people to re-engage with what they're doing by offering a module, and decides when it is best to leave people alone who've got a particularly busy semester or year. The evaluation of masterclasses is a critical element in the cohesion of GGREP and participants who do not provide it are not considered as having participated in the masterclass. The convenor summarizes the feedback, which then helps guide the Leadership Group in modifying and improving the GGREP masterclass menu.

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The Coordinator believes he is more of a facilitator than a leader in research education, but stated: *"I guess as an active member of the committee and someone who's making the program run on a day to day basis my input into all of these discussions would be considered a leadership type role I would think. I'm in a very supportive environment so that's useful."*

Scope of program

Research leaders from the Research Centre are invited to offer masterclasses at the frontiers of world research, thereby building a community rich with new ideas and new collaborations. Participating labs commit their postgraduate students to take part in 3-5 days of masterclasses per year. An upper limit of 5 masterclass-days is enforced to ensure students are not distracted from their personal research milestones.

A Module Menu is put forward each year of up to about thirteen modules. These run from between a day to three days in length and they're offered by members of the Genes to Geoscience community ie. primarily academics but also some post docs and students. Modules focus on developing generic skills (writing, presentation, & data analysis), discipline specific skills (research at leading edge) and soft skills (communication, collaboration, teamwork & leadership. Examples of modules include: writing for publications; 'Outlook' which is a two day research festival with visiting researchers from around the World; statistics; relating to media; biomechanics, biogeochemistry, colour analysis, modelling and so on. These events are in addition to what the department is providing. GGREP lab-leaders, and sometimes postdocs, voluntarily offer each masterclass. The masterclasses on scientific topics are given by researchers active on the world scene. They are at the cutting edge of their research discipline, which means they raise issues ahead of what has yet been published in the scientific literature – a truly valuable experience for postgraduate participants.

The self-select masterclass menu.

At the beginning of each year postgraduate students select a set of masterclasses based on their requirements, stage of development and candidature. Supervisor and GGREP convenor advise on this choice, thus ensuring the needs and expectations of both the student and supervisor are met. For example, at the start of a candidature a supervisor and student might select masterclasses that build up specific skills (e.g. "Writing for Journals and citation metrics", or "Introduction to the programming language R") while towards the end of their candidature they may select masterclasses that provide a broader outlook and context to their research (e.g. "Outlook", or "Global Carbon Cycles"). They may also include masterclasses that prepare them for employment beyond their postgraduate degree (e.g. "Transition from PhD to Research Career", or "Research Proposals"). These are just examples, and the choice of masterclasses taken during their tenure will vary depending on the needs of the student and the supervisor. Both supervisor and postgraduate student discuss their needs and expectations, and together they take ownership of postgraduate learning.

Most significantly, academic researchers see the direct benefit to the learning of their postgraduate researchers. They have reported that they see the increased confidence and success of their students and an increase in their skills and abilities as early career scientists. The masterclasses provide a vehicle for research groups to interact and brainstorm ideas in a supportive and inclusive environment. Researchers at all levels (Professors to post-docs) also participate in these masterclasses, reflecting the overall inclusive philosophy of the Genes to Geoscience community. This provides postgraduate students with a range of views, experiences and opinions. Postgraduate students are more likely to engage in their own learning if they feel they are part of a caring and supportive community that values intellectual discourse.

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Genes to Geoscience Outlook

The flagship masterclass is Genes to Geoscience Outlook, a two-day research festival where leading Australian and international researchers present what they think are the most exciting future research directions. Afternoons are spent in focus groups where all participants together develop these ideas into pre-proposals and collaborative opportunities. Postgraduates are encouraged to take 'Outlook' at least once during their candidature, but many participate every year.

Resources that support the program

As well as a strong committee leadership of the program, other resources and activities contribute towards sustaining the coherence and clarity of purpose of the initiative.

1. At the beginning of each year a GGREP Handbook is provided to all members. In addition to advertising the masterclass menu, the Handbook outlines the aims and philosophy of GGREP and the expectations of all members of the Program. This document is a critical first point of contact for participants.
2. GGREP has an active website (<http://www.ggrep.mq.edu.au/rep/>) where the masterclass menu is kept updated and additional materials are made available to participants. The website also contains information and advice for postgrads and is a convenient way of keeping GGREP members informed and updated around GGREP activities. Having an online presence is an important way of communicating to all GGREP members and helps maintain the Program's coherence.
3. At the beginning of each year the GG Leadership Group and all GGREP members attend the launch of the masterclass menu. In addition to showcasing the masterclasses available for the coming year the launch acts as an opportunity to communicate new developments and gather feedback. This meeting also articulates and reinforces GGREP's aims and strengthens the sense of an interactive, inclusive and multidisciplinary research community.

Role of research supervisors

Academic staff have acknowledged that they receive direct benefit to their research efforts and to the training of their postgraduate students by being affiliated with GGREP. Academic convenors of masterclasses find that the time and effort they spend on preparing and delivering the sessions is easily outweighed by the advantages of having the opportunity to re-engage with the literature around their research discipline. They claim that these efforts provide stimulus for the generation of new ideas for future research. Other academics have reported that attending masterclasses can also be a time effective way of keeping abreast of developments in related research disciplines. Attendance also provides unique opportunities to explore potential collaborations that would otherwise be unavailable.

Commentary

The case study illustrates specific initiatives designed to create a research environment that is a positive and inspiring for all researchers, but in particular HDR students. The Director identified a shortcoming with the design of HDR education in Australia and established a strategy and program that provides researchers with opportunities to develop important skills as well to mingle and learn

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from leading-edge researchers. This creation of a strong research community and culture is seen in this university context as key to producing world leaders in research.

The leadership for maintaining the initiatives lies with the Director of the Research Centre and the Advisory Board. The key investment to make sure the program works well has been the funding for, and selection of, the part-time position of the Convenor. The minimum requirement for involvement by HDR students and the mandatory feedback helps maintain momentum and engagement. Whilst not specifically directed at the research supervisors, their involvement is critical. Their feedback and value for the program indicates that the program has been beneficial to their own research engagement and currency.

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