REFLECTIVE ESSAY

Connecting community online and through partnership: A reflective piece

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In this reflection, three faculty members (Associate Professor Linda Galligan, Associate Professor Rachel King, and Dr. Trevor Langlands), a student partner (Ekta Sharma), and the peer learning coordinator (Leigh Pickstone) from the University of Southern Queensland (USQ), a regional university in Australia, consider the partnership experience undertaken in the ongoing development and management of an online mathematics and statistics discipline learning management system site. From the perspective of academic members, an important outcome of this Students-as-Partners (SaP) project was to bring student voice and engagement to the site. This was invaluable to a resource seeking to provide a point of connection, communication, and encouragement for students and staff teaching and learning within the discipline. From the student perspective, the partnership led to increased learning about research, industry, and career opportunities and the chance to share areas of knowledge and interest. From the perspective of the peer learning coordinator, this project was an opportunity to nurture and encourage partnership work at the university.

BACKGROUND

At the time this project was undertaken, the University of Southern Queensland had not developed a university-wide approach to partnership work in learning and teaching activity. The university is well established in the field of online learning and teaching, and academic and professional staff seek to continuously improve the online student experience. Through the mathematics and statistics Moodle learning management system site, the fields of partnership and online learning came together.

Teaching and learning student/staff partnerships occur informally at USQ, providing beneficial outcomes to projects and partners, usually without broader acknowledgement. In

the absence of a shared understanding and process of partnership work within teaching and learning activities at the university, library services personnel, including Leigh Pickstone as peer learning coordinator, seek opportunities to nurture and progress this work through the Peer Assisted Learning program. By supporting and co-developing partnership projects, the authors aim to foster greater awareness and understanding of this approach among staff and students.

MATHEMATICS AND STATISTICS SITE DEVELOPMENT

Associate Professor Linda Galligan and Associate Professor Rachel King
Throughout 2017 and 2018, we built and developed the mathematics and statistics site. We intended to demonstrate community engagement within our discipline through the site, both by the 15 academics within the discipline at USQ, and with the broader professional community in the pursuit of teaching, learning, outreach, scholarship, and research. We were mindful that the medium of online learning is often associated with feelings of isolation among students and a sense of disconnection from the university and teaching staff (Dumford & Miller, 2018). We wanted students and staff to see each other as more than just these labels and to focus on research, industry connections, and opportunities in our field.

We aimed to utilise the site to support informal learning and employability skill development for students and staff in the discipline (Miller et al., 2017). Students studying mathematics and statistics may not be aware of the types of further education, career paths, or research paths that they can pursue. Unlike many other areas of study (such as nursing and engineering), completing a mathematics and statistics program does not provide a singular or well-defined job description. We hoped that the resources provided and our engagement with the site would help encourage student progression through their program and expand their awareness of possibilities and opportunities in the workforce, in research, with professional bodies and professional accreditation, and in further education.

We also sought to provide a common place for mathematics and statistics academic staff to be able to "see" who all our students are and ultimately use this page as a way to provide more support to students interested in continuing into mathematics and statistics research programs or those about to graduate. We wanted students to feel that we, the mathematics and statistics academics, are engaged with the site, with them, and with the broader mathematics and statistics community. Often, student interaction with academics is within individual courses. We hoped that the engagement of academics with this site would show students that we also collaborate across teaching and research.

Enrolment to the mathematics and statistics site is automatic for all students undertaking a mathematics and/or statistics program. We envisage students will visit the site at different stages throughout the progression of their study, focussing on information relevant and of interest to them. We did not consider a student/staff partnership when the mathematics and statistics site was first established.

PARTNERSHIP DEVELOPMENT

Associate Professor Rachel King, Dr. Trevor Langlands, and Leigh Pickstone
In 2019, we met to discuss taking a partnership approach to the ongoing development and management of the mathematics and statistics site. We, Associate Professor King and Dr. Langlands, wanted to involve one or more students in the

management of the site so that the dynamic component was increased and not lost due to academic workload issues, which would make regular updating difficult. Through the Peer Assisted Learning program, we were given support to employ a postgraduate student, Ekta Sharma, for 3 hours a week to regularly update the site. Her casual employment status meant Ms. Sharma was, in fact, both student and staff, a convolution common to other SaP initiatives.

In 2019 and 2020, academic staff worked with Ekta, providing her with relevant content whenever they became aware of something. Ms. Sharma also sought to find relevant resources and links that she would upload. She began a fortnightly newsletter which was uploaded and distributed through an announcement on the main forum and emailed to all students. Particularly in the initial stages, the partnership between faculty staff and the student could be described as one in which tutors controlled decision-making informed by student feedback as depicted in Figure 1. There was a shift over time, however, so that the student partner's influence and input into decision-making increased to a point where she had control of some areas of choice (Bovill & Bulley, 2011).
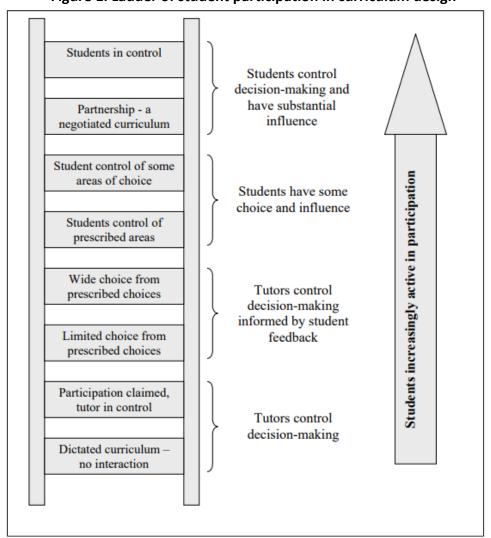
Figure 1. Ladder of student participation in curriculum design

Source: Bovill & Bulley (2011)

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MATHEMATICS AND STATISTICS SITE STRUCTURE

Associate Professor Rachel King
The mathematics and statistics site is divided into the following sections:

- Forums, including announcements, general discussion, and a problem of the week. A student other than the student partner established the problem of the week.
- Profiles for all mathematics and statistics academics and an invitation for students to create and post their profile. This section includes career information and resources, links to professional bodies, and advertisements. It includes a page titled "Finding a Job in Mathematics and Statistics".
- Articles of interest, including links to relevant publications and newsletters, developed by the student partner.
- Further learning opportunities including honours program information, Australian Mathematical Sciences Institute summer schools and workshops, and other online workshop resources.
- Further research project information and opportunities offered by academics at the University of Southern Queensland.
- The "Teaching Mathematics and Statistics" section provides information for the students studying teaching with a mathematics major or minor. This section includes links to curriculum information and resources to help mathematics teachers.

MATHEMATICS AND STATISTICS SITE ENGAGEMENT

Associate Professor Rachel King and Dr. Trevor Langlands
At the end of 2020, 472 students and 32 staff were enrolled in the mathematics and statistics site. Three hundred and sixteen (66.9%) of the students enrolled had accessed the page since enrolment, and 210 (44.5%) had accessed the site during 2020. We consider this result encouraging as we did not expect that students would access the page regularly throughout their program.

In total, there were 3,483 views of resources on the mathematics and statistics site by active students to the end of 2020, with evidence of engagement across all site sections. Thirty-seven percent of the students active on the site engaged with academic staff profiles, indicating that they wanted to know more about the academics who were teaching them. Additionally, the section "Finding a Job in Mathematics and Statistics," a page of links to resources developed by professional bodies including job advertisements and career development resources, was viewed by 38% of the active students.

STAFF-PARTNER REFLECTION ON THE MATHEMATICS AND STATISTICS SITE

Associate Professor Rachel King and Dr. Trevor Langlands
We view the operation of the mathematics and statistics site, throughout development and operation to the end of 2020, as successful. We believe it has provided a place for students to access a range of relevant, pertinent information at a time in their student progression that is most appropriate to them and for academic staff and students to build community and a better understanding of each other.
One of our aims was to use the data from the site to help identify students close to graduation and to try to engage with them for further education or research or as alumni.

This has been a bit restricted by the limitations of Moodle analytics themselves. However, we can identify those students who have engaged with the site repeatedly, and in 2021 we will be mapping those students to their program progression. In 2021 we will also focus on higher-level mathematics and statistics courses usually taken by students in their final year. Within these courses, examiners will be actively promoting the site and the career resources available.

STAFF-PARTNER REFLECTION ON THE PARTNERSHIP

Associate Professor Rachel King and Dr. Trevor Langlands
In reflecting on the student/staff partnership, we think it has been invaluable in ensuring the site has not lost momentum in its development and operation. There were shifts in the relationship between partners over time, particularly as the student partner brought resources and links to our attention and as she researched and created fortnightly newsletters. Through the partnership, we have gained a broader idea of what students are seeking in terms of workshops, internships, and courses.
In 2020 we sought to increase the interaction between other faculty staff and the student partner. Ekta's involvement in the project made it easier for other academic staff to contribute resources, announcements, and project proposals to the site. They could engage with the goals of the site and contribute without having to spend time interacting with the technical side of contributing. Having student partner involvement has set the foundation for engagement with the site by students and staff even though the partnership finished at the end of 2020.

STUDENT-PARTNER REFLECTION ON THE MATHEMATICS AND STATISTICS SITE

Ekta Sharma
The mathematics and statistics site has been quite effective in stimulating discussion and highlighting opportunities for students enrolled in undergraduate and postgraduate studies. It has helped them to be aware of upcoming conferences, scholarships, and further learning events as well as encouraging them to communicate effectively with the support network. I conducted an informal discussion recently particularly with women students interested in making a career in maths and directed them to the site. We all believed it was a great resource, and it was particularly inspirational to hear about other math researchers and their solution approaches, as well as to share mine.

STUDENT-PARTNER REFLECTION ON THE PARTNERSHIP

Ekta Sharma
While working in this partnership, I have personally made many new connections and attended events that varied in content and focus, enhancing my own learning in the study of mathematics and statistics. I encountered several research scenarios and problems that I had never considered earlier. Raising awareness of scholarships, lectures, and events through the platform helped me to understand industry drivers and to foster future research collaborations.
The resources and links the team passed onto me as well as the resources I found online increased my awareness of the mathematics/statistics discipline. The newsletters I developed are also a great source for connecting the mathematics/statistics community and

making the students aware of the collaboration between academia and industry, along with timely announcements and job postings.

I have an affinity for the challenges associated with attracting and retaining women in science, technology, engineering, and mathematics fields, and the partnership allowed me to proactively bring this focus to the mathematics and statistics site, highlighting opportunities, resources, and role models within the discipline.

PEER LEARNING-COORDINATOR REFLECTION ON THE PARTNERSHIP

Leigh Pickstone
This project provided an exciting opportunity to nurture partnership work in which the student partner has an increased level of choice and influence in a teaching and learning endeavour, as compared to our well-established Peer Assisted Learning model. A student/staff partnership was not initially planned as part of the development and operation of the mathematics and statistics site, although the aims of the site, to foster connection, communication, and collaboration across the community, are common to the aims and benefits of a partnership (Cook-Sather et al., 2014). The site, like partnership work, is a vehicle to enhance the student experience and build connections within the discipline (Bovill et al., 2016).

CONCLUSION

The achievements of the mathematics and statistics learning management site goals, to build connection, collaboration, and communication within the mathematics and statistics community, are supported through the engagement data and the reflections of the partners. Partnership work within teaching and learning is a new experience for many staff and students at the University of Southern Queensland. This collaboration between faculty staff, library services personnel, and a student partner represents a step toward nurturing the practice of, and appreciation for, partnership at USQ. Acknowledgment of this and other partnership projects at the University of Southern Queensland may encourage faculty staff to engage with a Students-as-Partners approach from project conception rather than later in the process.

NOTE ON CONTRIBUTORS

Leigh Pickstone *was the peer learning coordinator at the University of Southern Queensland from 2018 to February 2022. Her areas of interest are SaP, employability, and career counselling.*

Ekta Sharma *has been awarded her PhD and is now working at the University of Southern Queensland. Her areas of research interest are artificial intelligence, machine learning, mathematics, operations research, statistics, air quality and atmospheric sciences.*

Rachel King *is an associate professor that teaches mathematics and statistics at the University of Southern Queensland. Her areas of research interests are biostatistics, astrostatistics, analysis of UV radiation data, and statistical consulting for research students.*

Linda Galligan *is an associate professor and the head of school (mathematics, physics, and computing) at the University of Southern Queensland. Her areas of research interest are*

embedding numeracy in nursing, language and mathematics, cross-cultural differences in mathematics education, adult/academic numeracy, and technology in mathematics education.

Trevor Langlands *is a senior lecturer in mathematics at the University of Southern Queensland. His areas of research interest are anomalous subdiffusion, fractional calculus, and industrial modelling.*

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