

The Australasian Journal of Engineering Education in the words of its Editor-in-Chief

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ABSTRACT

CONTEXT

While engineering education research (EER) has been widely recognised as a field of inquiry since early this century, recent years have seen an emerging focus upon the importance of a meta-research approach to study its historical evolution and the need to curate data and artefacts is being increasingly recognised. Recent examples of this can be found in the case of the Journal of Engineering Education where interview data were studied from three recent editors in chief of that journal. A similar approach was adopted in a recent study of the evolution of the European Journal of Engineering Education where the current and previous editors in chief were interviewed.

PURPOSE OR GOAL

This study presents an account of the evolution of the Australasian Journal of Engineering Education (AJEE) over the last seven years.

APPROACH

The paper uses an oral history approach via an interview with the journal's Editor-in-Chief.

OUTCOMES

The oral history data presented will be useful to future historians of the EER field in Australasian and global contexts.

SUMMARY

This study describes how the Editor-in-Chief of the Australasian Journal of Engineering Education has introduced changes such as expanding the pool of associate editors, creating an Advisory Committee, publishing targeted special issues and introducing a best paper award. Under her stewardship, the journal has increased citations and risen to the first quartile in SCOPUS CiteScore. While consolidating its role as a publishing outlet for Australasian scholars, the journal has also defined a distinct role in the global ecosystem of scholarly engineering education journals.

KEYWORDS

Engineering education research, oral history, Australian Journal of Engineering Education



Introduction

Engineering Education Research: historical context

While formal education in engineering began in France with the establishment of the École Polytechnique in 1794, publication of research into engineering education (EER) gathered impetus in the 1980s (Wankat et al., 2014). Early this century its status as a field of inquiry was the subject of debate among engineering educators, particularly in the US (Froyd & Lohmann, 2014) and by 2006, researchers began calling for "rigorous research" in engineering education (Loui & Borrego, 2019). Today research in engineering education is supported through the same structures as research in older academic disciplines: university departments, doctoral programs, research centers, academic journals, specialized conferences, and groups within professional societies.

The EER field has been represented as comprising five categories (Loui & Borrego, 2019):

Engineering epistemologies

Engineering learning mechanisms

Engineering learning systems

Engineering diversity and inclusiveness

Engineering assessment

These five categories define the overall organization of the *Cambridge Handbook of Engineering Education Research* (Johri & Olds, 2014), which provides a comprehensive overview of the field.

Context of the present study

In addition to the five categories listed above, the importance of a meta research approach to study the historical evolution of the field and curate data and artefacts is being increasingly recognised (Froyd & Lohmann, 2014; Loui & Borrego, 2019). A recent example of this historical approach can be found in the *Journal of Engineering Education* (JEE) where interview data were presented from three recent editors-in-chief of that journal: Jack Lohmann, Michael Loui and Lisa Benson (author et al., 2023). A similar approach was adopted in a recent study of the evolution of the *European Journal of Engineering Education* (EJEE) where the current and previous editors-in-chief were interviewed (author, 2024).

To complement these studies, this paper presents data on the *Australasian Journal of Engineering Education* (AJEE). The research question (Scientific Research in Education, 2002) addressed is:

What can we learn about the evolution of AJEE from 2019 to 2024 by interviewing its Editor-in-Chief?

The AJEE has been published since 1995 under the auspices of the Australasian Association for Engineering Education (AAEE), a technical society of Engineers Australia. According to its website "AJEE publishes research to inform high-quality engineering education in Australasia and internationally. Contributions must be relevant to readers in Australasia and/or internationally. Studies that are relevant only to readers in a region outside Australasia would not be considered for publication." Prior analyses of the development of engineering education research in Australasia and AJEE have been conducted (Beddoes et al., 2009a, 2009b, 2010; Jesiek et al., 2008, 2009a, 2009b, 2010, 2011) and the present paper will add to the historical picture of EER in the region.

Methodology

Adopting an oral history methodology (Lambert & Frisch, 2013) the lead author interviewed Sally Male (AJEE editor-in-chief 2019 - present) in 2024. This approach is frequently applied in historical research (Janesick, 2020) although as yet it is not common in EER. The procedure followed was in line with the Principles and Best Practices of the Oral History Association (Oral History Association, 2018). The interview lasted approximately 40 minutes, was conducted online, recorded and transcribed. The transcriptions were then sent to the interviewee who could refine their statements. Ethics approval was obtained from [blinded] university.

Interview data

Motivation

In 2016 I was invited to be an associate editor for the Journal of Engineering Education (JEE), which I really enjoyed, and I was fortunate to be very well mentored. I was also a guest editor for a special issue in the European Journal of Engineering Education (EJEE) and another in the Australasian Journal of Engineering Education (AJEE). All of these experiences I found really enjoyable, a great learning experience. I considered it a really valuable way to contribute to the field. In 2017 when the Australasian Association for Engineering Education Executive Committee called for nominations to join a brand new editorial team for the Australasian Journal, I applied and was delighted to be successful. I saw this as a great opportunity to contribute to providing a stronger voice for research in the Australasian region. I could never have done it without the learning that I had been fortunate to gain from the Journal of Engineering Education - that gave me confidence to know, I would be able to do it.

Challenges

There were simple pragmatic initial challenges: although I knew how an editorial team works from my previous experience, I didn't know how the Australasian Journal in particular worked. I knew it was the Journal of the Australasian Association for Engineering Education, which is a Technical Society of Engineers Australia. What I didn't understand was how that meant it worked. So it is published by Taylor and Francis, through an agreement between Engineers Australia and Taylor and Francis, and I found all of a sudden when I'd just been appointed and I was at an A squared E squared (Australasian Association for Engineering Education, AAEE) conference, and the journal's manager, who is extremely experienced and committed, was contacting me saying, we need the latest issue proof read and we need your editorial, and it's really urgent that it's published. And I was thinking, what's going on? Are they going to publish it if I don't get the things checked in time, or don't get the editorial written in time? Are they going to publish it without the editorial and without me checking it. It was the first time I'd ever done it and I was at the conference trying to balance a zillion other things as I always do at the A squared E squared conferences. These were surprises that I probably should have been ready for but I wasn't because I hadn't actually been an editor in chief before, just an associate editor.

There were other things that I needed to learn quickly that were just pragmatic things. The journal had at first 150 pages per year, through the agreement with Taylor and Francis, and later we increased that to 200. That meant that we needed to publish just 2 issues per year, as is still the case, and we had to be very careful about not exceeding the page limit that was in the agreement and that meant being very strict on authors. Asking authors to keep to within reasonable page limits, so that we could publish a reasonable number of papers in the 2 issues per year was often quite difficult.

Then there were more fundamental challenges: I was concerned with identifying the journal's distinct contribution within the global ecosystem of engineering education journals and I was very aware that we were a Q. 3 (third quartile) in Scopus. There were challenges attracting papers and also in securing reviewers for the papers. And on top of that, I was just very keen that we

contributed something different from the other journals and something that would be especially relevant for the Australasian engineering education community.

We've had a few revisions to the aims and scope with consultation with the editorial team and the advisory committee members, and I'm quite proud of our present aims and scope. Distinct features are that our scope includes the whole engineering team, including not only professional engineers, but also associate engineers and technologists. Aside from being important because the engineering team involves all of these, it also makes perfect sense because Engineers Australia has members at all 3 levels. Also, we will consider papers about engineering education across the whole lifespan, from kindergarten to the end of the career. We also welcome papers on understanding engineering practice to inform engineering education, which I see as very appropriate, given the leadership provided by James Trevelyan in Australasia and beyond in the field of engineering practice research. He is a member of our Advisory Committee.

And I also think it's important that we have a voice, and that different regions, not only the first movers in the world, have a voice. We each have different contexts - in Australasia we have indigenous people, we have different industries, different populations, different education systems. And it's really important that there are studies that are relevant to the Australasian context.

Another challenge in the very early days was, just the challenge of having to say no - it's still difficult. Many people get in contact asking to publish a special issue from their conference but we now have a policy that we only have special issues arising from specific needs we identify in the field. In earlier years I saw it as a trade-off. It was really good to have special issues. We had special issues from A squared E squared conferences. I was keen to do that then. And we had special issues from REES. With both groups, it was a way to support the authors of the conferences, and that develops research and researcher careers. Publishing the REES special issues worked out very well for us, I think, because they put us on the global map among the journals.

We used to publish special issues associated with A squared E squared, because, especially in those days when we were Q. 3 or Q. 4, that meant that we had papers coming in that were coming specifically to our journal rather than going elsewhere. But they were a lot of work without doubt.

A new challenge is being able to recognize papers that are written using artificial intelligence. Fortunately, we have editors on the team with strong interest in artificial intelligence who have been able to say when there are red flags. Of course, I think that using artificial intelligence in ways that you declare could be very valuable.

As an editor, I find rejecting papers a challenge. It is hard to do, but obviously you have to do it. It goes with the territory. We wouldn't be Q. 1 if we weren't rejecting papers. But we know it has consequences, serious consequences for the authors, and I really appreciate being able to say often now that it's outside the scope, and you might find that it's within the scope of one of the new journals on advances in engineering education. Practice-focused papers are equally valuable, but they're just different kinds of papers for different journals, and it's nice that there's a place for them.

At one point in the author guidelines section on scope, we indicated that we wanted empirical papers. We didn't say only empirical papers, but we said empirical papers, and the implication was that this was what we were really looking for. I have thought very carefully about that, and discussed it with the members of the editorial team and we've moved away from that formulation now. One of the prompts for this change was a special paper we received which was effectively a review. It's not a position paper, not an empirical paper, not a review of literature. It's basically a review based on the authors' very extensive experience of the trends in engineering education (Hadgraft & Kolmos, 2020) and I decided that it makes a valuable contribution to knowledge in the field and will be valuable for educators and researchers. And so we did consider that one to be within scope.

I would also consider theoretical papers - for example one combining 2 theoretical frameworks could be a valuable contribution that would be within scope as well. And most recently, Taylor and

Francis has encouraged me to consider research design papers. We have published some of those now, too.

AJEE while mainly a digital journal, it is also in print, which was one of the surprises I got at the very start. This means that I proofread the inside and outside covers. The print copies go to some libraries and I don't think we're wasting paper because while there are not large numbers printed, it does mean there are somewhere on record. There's quite a lot of information in those front and inside covers that is important. That's why I write an editorial as well. I only have 2 issues a year, and I do like to put some important things in the editorial like thanking the reviewers. I know that could be on the website or on those covers of the print copies but then the information might get lost. So I put that in the editorial, and I also put changes to the editorial team there and I name the best paper as well as highlighting the strengths of each paper. And that's because I want the authors to be able to refer to something, and I know that might seem trivial, and I might be overstating the significance of my words, but I like to think that the authors might be able to cite this in a promotion application, or use the comments when thinking about the quality of their research - it says something about the significance of the paper, and who might find it valuable and why. But it does take me a little bit of time, and I do struggle to get the issues out because of that. And I could see if I had more issues that would be a greater problem.

To address the increasing number of submissions and all this represents, I have gradually expanded the editorial team and appointed more associate editors. I have for some time now had two deputy editors, who can make final decisions, whereas the associate editors have less experience, and they make recommendations to me.

Achievements

We are now getting many more citations and consequently we have achieved Q. 1 status in Scopus Citescore. And we've maintained it now, I think, for 3 years. And I have to admit I was nervous when we first reached Q. 1. Everyone was celebrating so much. I was thinking, well, let's just wait and see if we can keep it up. The REES special issues contributed to achieving Q. 1 status, and that has meant that we've had to evolve how we run the journal. The number of submissions has been increasing dramatically: in the last 2 years we received 100 papers a year while in 2024 we've already received 150 papers, and we're not at the end of the year yet. So we have been gradually adjusting. The editorial team has been fairly stable, but I introduced the Advisory Committee, which has a diverse range of members, and including, in fact, one of the editors of JEE and I'm very grateful for that. It also includes highly experienced people based in the US. I think this diversity is great. I usually invite people to apply, although some people approach me. Potential members need to have a PhD and to demonstrate that they meet criteria with regard to publication experience. And they have to commit to reviewing at least 5 papers a year. It's a nice path for people to move from there to develop and get more experience reviewing and then move into become associate editors in the Journal. It's been fabulous to have that opportunity for us to share experiences with each other. So the advisory committee, I think, has been a good thing; it was necessary with the increasing numbers of papers, but it also provides an excellent pathway for people to develop. And the associate editor role is another developmental opportunity. We also hold workshops on reviewing and writing at conferences and the people who come to those really appreciate them.

Many of our editorial board have completed the mentoring program with JEE, and say how useful it is. And Kristina Edström has poached some of our members for EJEE as well which is all good, because I think the learning that people get from being involved with the different journals is fantastic.

When I first took on the journal I maintained a strict limit of 7000 words and I still ask that the first submission is not more than roughly 7,000 words and that's partly because one of the things I've seen that I've had to do is to position ourselves, you know, where do we sit? What's our contribution in the global engineering education field. And I think we serve as a journal that publishes relatively concise papers. This means that they don't take as long for people to review.

They don't take as long for all of the revisions to occur. They can be published online hopefully, without too much delay, and certainly we don't have a backlog of papers waiting to go into an issue. Generally they'll go online once they're accepted, and then within 6 months they should be in an issue, except on the odd occasion where I hold them, to put them along with some other papers that are similar. So I've kept it to 7,000 words and that doesn't put too much burden on the reviewers, because one of my challenges certainly has been the trade off between balancing what we can do as the journal that we are, especially when we were Q. 3 or Q. 4. And we're relying on the work of volunteers as members of the editorial team and as reviewers. There's not the same kudos that someone would get for their career, contributing to a Q. 3 or Q. 4. journal as there is contributing to a Q. 1 journal. And I don't mean by contributing just writing a paper for I mean reviewing or being an editor or editing for. So we need to be really mindful of the time of the volunteers and keeping the word limit, I think, is part of that.

And similarly, I see that JEE does a tremendous job providing professional development for the authors who submit through very detailed reviews, often, recommending places for the authors to go to learn to develop papers and quite a lot of detail on how to improve the paper. I don't expect quite the same amount of detail. I don't expect the reviewers of the journal to be providing so much detail that they are almost supervising young researchers' development. I don't think we can expect that of our volunteer reviewers. So I think that is a distinction, and it's great that JEE does that. They can do it with their status, but we can't. I recognize that we each benefit from each other.

I also introduced a best paper award. I think that, for one thing, it gives visibility to the journal. In addition, we need to be doing everything we possibly can to provide opportunities for members of the engineering education community to gain recognition for their work.

We also had a specific issue that I especially noticed when we had the REES special issues: papers from the Australasian region were not being published open access because it cost thousands of dollars for someone to have their paper published open access, whereas the papers from Europe in the Australasian journal were being published open access because there were agreements with the publishers in Europe. I was concerned about this, and so I asked the A Squared E Squared executive committee to support open access for the winner of the best paper and that was beneficial for papers from other parts of the world as well, that did not have access to open access. Even American papers were often behind a paywall, and were able to become open access if they won best paper overall. It's beneficial for a paper to be open access, because it receives many more downloads and therefore citations. And it's also equitable for people from all parts of the world to be able to access the papers. It shapes the practice and our research, and consequently our engineering practice in different parts of the world and among different communities, if they are or are not able to access papers and to have their papers accessed. I mean if not all authors can publish open access that means that engineering education practice only be informed by the regions where the authors can publish open access, And the context is actually really important. That's one of the reasons I think it's important that we have an Australasian journal and have journals from other regions of the world as well. Now, fortunately, the Council of Australian University libraries and the New Zealand librarians have negotiated agreements with the publishers and most of our Australasian authors are now also publishing open access.

Recently I've been really pleased that when a PhD student had submitted to the journal, their supervisor actually wrote to me and thanked the editorial team for the smooth and respectful developmental process experienced by the author. I've also had a gratifying experience recently, at the World Engineering Education Forum where an author from Africa said to me how supportive the process was for publishing a paper - that's really nice to hear.

Funding is very difficult to find in Australia and New Zealand for higher education research. The Australasian Association for Engineering Education has funded small grants to career academics, and some of those educators, early to mid career academics, who have won the grants have been able to publish the findings from their studies in the journal, which has been very satisfying.

One of the hurdles that I would like to overcome is the diversity of the editorial team. We've worked hard at building the journal while aligning it in the direction we consider to be important. And so I like to change the editorial team slowly, but at the same time we do need to keep increasing the size, especially with the growing numbers of papers, and also just because some people move on. And I also am mindful of succession planning. And I want more diversity in terms of the backgrounds of the researchers who are on the editorial team, including the regions that [they] come from in the world.

Future

Eventually, I would love to have an issue on indigenous engineering - and incidentally I'm delighted that we have an Australian indigenous engineering image on the cover of the current issue of AJEE.

Right now we are looking ahead to a special issue to celebrate the 30th volume which will be on evolving engineering education.

Conclusions

This study describes how the Editor-in-Chief of the Australasian Journal of Engineering Education has introduced changes such as expanding the pool of associate editors, creating an Advisory Committee, publishing targeted special issues and introducing a best paper award. Under her stewardship the journal has increased citations and risen to the first quartile in SCOPUS CiteScore. While consolidating its role as a publishing outlet for Australasian scholars, the journal has also defined a distinct role in the global ecosystem of scholarly engineering education journals.

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