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Retired Engineering Education Research Academics – their Plans and Outcomes

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ABSTRACT

CONTEXT

As the field of Engineering Education Research (EER) evolves, an increasing number of senior scholars are retiring. While much literature explores entry into EER, little is known about the retirement transitions of EER academics. Broader research on retirement in academia suggests many scholars remain active post-retirement, but these patterns have not yet been studied in EER. Capturing these experiences is essential for understanding the evolving nature of the field and informing EER scholars about opportunities later during (or after) their careers.

PURPOSE OR GOAL

This study aims to document the retirement experiences of three senior EER academics, examining how their roles, activities, and motivations have changed post-retirement. It explores their ongoing contributions, reflections, and advice to both early-career scholars and those approaching retirement. The goal is to identify themes and insights that can guide current and future members of the EER community.

APPROACH OR METHODOLOGY/METHODS

Using an oral history methodology, semi-structured interviews were conducted with three prominent retired EER scholars from Australia, Europe, and the USA. Transcripts were analysed using Google Notebook LM and validated manually. Participants reviewed the draft paper to confirm accuracy.

ACTUAL OR ANTICIPATED OUTCOMES

All three participants remained intellectually engaged post-retirement, though in different ways. Their retirement paths diverged from initial expectations and were shaped by personal motivations, institutional contexts, and access to funding or community. Each offered reflections on identity, autonomy, and purpose, alongside practical advice for younger colleagues and future retirees.

CONCLUSIONS/RECOMMENDATIONS/SUMMARY

Continued engagement in EER after retirement appears to be strongly tied to intrinsic motivation, identity, and the ability to self-direct one's work. Flexibility, community, and foresight in planning can support meaningful post-retirement contributions. Future research could extend this work by engaging more retired scholars to build a broader understanding of retirement in EER.

KEYWORDS
Engineering Education Research; EER retirees; EER history; oral history; retirement plans; advice

Introduction

Engineering Education Research (EER) is a field that has evolved considerably over the last twenty-five years. As the EER field has matured, efforts have focused on building research capacity, strengthening theoretical foundations, and fostering international networks and infrastructure that support a cohesive community of scholars (Borrego & Bernhard, 2011). These developments have helped establish EER as a distinct and growing field of inquiry. 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).

There is a growing body of research literature about pathways into EER and why engineering academics decide to commence educational research (e.g. Dart, Trad & Blackmore, 2021; Dustkera et al., 2024; Gardner & Willey, 2018; Seniuk et al., 2023). As EER has evolved, experienced scholars in EER have begun to retire from their formal academic roles. Some retired academic scholars maintain affiliations with their universities. With EER being a relatively new field, and with retirements beginning to occur, it is important to begin to capture and share the knowledge of senior scholars in the field who have retired. This paper presents early research results based on interviews with three retired, experienced EER academics, each of whom was active in the field prior to their respective retirements.

Prior scholarship on the aging workforce, mainly published in the management field, has looked at the reasons why people continue to work post- retirement (Wang & Schultz, 2010). This literature suggests that people will stay active when opportunities arise if either a) their health permits it, b) they have intrinsic motivation or interest, job satisfaction, and acceptable working conditions, and/or c) they have a financial imperative (Kanfer et al., 2013; Moen et al., 2016; Oakman & Wells, 2013)

In the case of academics, a review of 20 qualitative studies from 2000–2016 about academics' experiences of transitioning to retirement found that many academics do not fully retire as they value the freedom to choose projects, schedules, and collaborators, while academic identity remains central even after formal employment ends (Cahill et al., 2019). Baruch and Hall (2004) characterise academic careers as being driven by personal values, lifelong learning, and intrinsic motivation and academic identity tends to persist beyond formal retirement. It has been noted that academics frequently continue to be active both in academia and in other areas of civil life after formal retirement (Moodie, 2010) and it has been suggested that "many have generally greater satisfaction levels than experienced in their previous work" (Hutchings et al., 2022).

Positionality

Two of the authors are themselves retired academics, one a continuing and experienced EER researcher; the other is more recently retired and continuing to stay active, but not in a focused way. The third author is a mid-career EER academic representing the target audience of this paper.

Purpose

The aims of this research are a qualitative study to:

- begin the process of capturing the history of the field of EER, and in particular its development as a community of scholars.
- help future EER retirees, by identifying and describing the retirement paths of earlier EER academics. With a growing EER field, this will be an increasing population.
- help the universe of 'non-retirees' to see potential through capturing the experience and lived experiences of 'grey hair' academics.

The key research questions explored through interviews are as follows:

- RQ1: How has retirement affected participants' contribution to EER?

- RQ2: What recommendations would participants make to younger scholars in the field?
- RQ3: What recommendations would participants make to forthcoming retirees in the field?

Methodology

The project involves a qualitative study which will expand our understanding of the current and potential contribution of retired scholars to the field of EER. The research was commenced by drawing up a 'long list' of retired academics who the authors believed were active in the EER field. This long list was considerably shortened through discussion and a short list of five scholars was agreed. While responding positively to the intentions and objectives of the authors, two of these scholars did not proceed to interview.

In advance of the semi-structured interviews, the retired scholars were emailed a list of thirteen questions that the interviewers would explore during the interview. These thirteen questions are included (attachment 1). The authors then conducted semi-structured interviews with 3 retired senior EER academics: James Trevelyan (Australia), John Heywood (Europe), and Phillip Wankat (USA) who have been active in the field.

Finally, after the first draft of this paper was written, the retired scholars were asked to review and comment on the draft to ensure accuracy and relevance of the points made. Each scholar replied, and their comments have been incorporated into the paper.

Interview Data

Adopting an oral history methodology (Lambert & Frisch, 2013) the lead author separately interviewed Phil Wankat and James Trevelyan. Each interview was designed to last approximately 40 minutes, was conducted online, recorded and transcribed. The transcriptions were then sent to the interviewee who could refine their statements. The first two authors conducted an interview with John Heywood, which lasted approximately 90 minutes. One author was present with John Heywood, while one author was online.

To proceed with the data collection through interviews, TU Dublin university ethical approval was secured.

Use of Artificial Intelligence for this Paper

Google Notebook LM was used to analyse the transcripts of all three participants. Specifically, Notebook LM was asked each of the key research questions. The output was validated as accurate in terms of the content of each transcript. The transcripts were further reviewed for omissions of key points. At that point, the output was edited for style and focus.

Results

This study should be of value to future EER retirees, by identifying and describing the retirement paths of earlier EER academics. The study will also be useful to the broader EER community as it shows how the retirement paths of these experienced academics did not pan out exactly as they had planned. The study highlights some of the ways that experienced scholars can continue to contribute to the field after formal retirement.

RQ1: How has Retirement affected Participants' contribution to EER?

While each of the three participants has pursued different retirement paths, they all have remained active in positive and vibrant ways. Not surprisingly, retirement has affected the participants' contribution to scholarship and Engineering Education Research (EER) in varied ways, with some continuing their involvement, while others experienced a decline in certain areas of their academic engagement.

Although **Phil Wankat** was active in engineering education research (EER), he did not consider it to be his major educational focus. He considered himself as "a teacher of engineering teachers",

and noted his best known work is titled “Teaching Engineering” (Wankat & Oreovicz, 2015). Within the discipline of EER, he is best known for analysis of the engineering education literature, see for example his paper Analysis of the First Ten Years of the *Journal of Engineering Education* (Wankat 2014).

For retirement, Phil had a specific plan that included some EER-related activities, but also non-academic activities (e.g., boat building). His post-retirement EER involvement saw both successful continuation but also a subsequent significant decline in output. In his initial plan, he intended to stay connected with the Purdue Engineering Education School (ENE) and to co-author with ENE colleagues a 3rd edition of "Teaching Engineering". He intended to solo write a 5th edition of "Separation Process Engineering"; and to also continue as editor of *Chemical Engineering Education* (CEE) “for a few years”.

Despite the plan, the 3rd edition of "Teaching Engineering" did not materialize as his co-authors withdrew. In fact, his engagement with ENE at Purdue “died down pretty quickly”, with only maintaining contact through the Multidisciplinary Engineering undergraduate program. In line with his plan, he successfully served as editor of CEE for 2.5 years, assisting with a smooth transition. While he was initially consulted regularly by CEE, this has since decreased significantly to only being asked to review one or two papers.

On an engineering disciplinary basis, his educational activities within chemical engineering also continued, with the 5th edition of "Separation Process Engineering" published in November 2022. His engagement with the education communities in AIChE and ASEE has also "died down significantly". He now refuses to review technical papers, as he has not kept up with the literature since 2017. He is developing a new safety laboratory demonstration, sparked by his observation of a distilled water bottle that imploded in his closet.

When we asked about funding to continue with EER activities, he provided a humorous, negative answer, noting that discretionary research funding for conferences was not available upon retirement, and that he attended only two ASEE meetings where he won awards, with travel costs covered for one of those.

He now works on his own terms, taking breaks from projects for months at a time, and does not have responsibilities to graduate students or post-doctoral students.

Phil said that he does miss interactions with students and colleagues, and advises academics to "develop activities and a life outside of engineering education before you retire”.

Essentially, the retirement plan for **James Trevelyan** involved a transition from academia to entrepreneurship, which interconnected with his continued EER research. James had planned a year of long service leave, and to work part-time, but was told by his dean that he was too old, leading him to negotiate a better severance and pursue his entrepreneurial venture full-time.

His research on why engineers from developing countries struggle in foreign environments, which directly impinges on engineering education, continued after retirement. He describes this research as "unfinished business" and finds it intellectually stimulating and financially beneficial.

His research insights into the impact of culture on engineering practice and collaboration are useful for planning his company's manufacturing strategies in countries like India and Pakistan, and noted a "mutual kind of benefit" between his continued research and his role as CEO.

The community of researchers that James engages with has largely remained the same, with graduate students taking over some of the research. He continues to speak at conferences, write journal articles, and has edited books such as "30-Second Engineering" and finished a chapter about engineering education and *Bildung* (edited by Anders Buch, but commenced by the late Steen H Christensen).

His research is funded by large companies and national sources, indicating a significant potential impact. He emphasizes the importance of using one's brain actively in retirement to maintain mental health and productivity.

His advice for Early Career Researchers includes maintaining a strong publication record in one's home discipline for career security, as engineering education research can be "insecure and subject to changing fashions". He also stresses the importance of critical thinking and understanding the influence of culture on engineering practice.

For **John Heywood**, almost thirty years ago, in 1996, his retirement was not planned; he describes it as happening "out of pique" during a departmental meeting. Despite this unplanned retirement, his engagement with EER continued and developed significantly. Subsequent to the interview with John, he clarified this point: “My best work has been done since I retired. The output has been enormous but there is a lesson I have very slowly learnt especially during the last couple of years, and that is one 'learns to slow down' and that gives time for reflection which the business models applied to universities do not allow. This improves one's work enormously. I think this realisation came after you had interviewed me.”

John’s long-standing involvement with the American Society for Engineering Education (ASEE), which began in 1962 and "took off" around 1980, has continued. He was recognized as an expert in EER long before retirement, having published on project-based learning in *Nature* in 1960. He identified three key communities which were important to him at retirement: a community developed through colleagues and links with Salford focused on engineering sandwich courses and the teacher as a researcher; the USA (through the ASEE and FIE communities); and the Department of Teacher Education at Trinity College Dublin. These three communities were very important to John as he transitioned into and post-retirement.

John chose to engage in newly developing fields (Philosophy of Engineering Education, Technological and Engineering Literacy, and Technological Citizenship). “I think my general background from technical college teacher to higher education research and teacher education (and not least as hon Director of the British Astronomical Associations Radio-electronics Section) must have been very helpful.” Interestingly, John is also of the view that, of the three retired scholars interviewed, “I do not conform with a normal career pattern”.

John self-funded his continuing EER activities by completing 12 weekends of in-service training a year, using the mechanism to fund his conference and travel expenses until 2012. This was part of a departmental agreement that allowed faculty who participated in self-financing in-service training to use their payments for equipment, conferences, or travel.

John identified as self-fulfilment "three or four tasks I wanted to do which I would have found it very difficult to do while working ". He recognized a need for a substantial book in engineering education due to the exponential growth of research in the field. One of his later books focuses on philosophy in the engineering curriculum (Heywood et al, 2022). He advises that engineering education is primarily a developmental activity, not solely a research one, and that understanding learning beyond mere information gathering is crucial for educational research.

For John, engagement with his EER work is intrinsic motivation, and he states his family sees his continued work as "part of who he is" and he himself states that it would be "impossible for me not to be working". His most recent book, which John considers to be his best, is a significant contribution to the history of engineering and technology education in post-war Britain (Heywood 2025).

RQ2: What recommendations would participants make to younger scholars in the field?

The three experienced scholars offered different styles of advice to younger scholars in the field, with the advice which seemed to reflect their own different journeys that each had since retirement.

Phil Wankat was the most prescriptive, with valuable advice that could essentially be put on a career task list. His advice for early career EER researchers was practical and strategic:

- “Take a course on how to teach and work at becoming a good or excellent teacher. Bad teaching will destroy your credibility as an educational expert".

- Remain active in your technical area and engage with both EER professors and those outside EER. This is because engineering education aims to improve the teaching and learning of technical material.
- Join appropriate professional societies like ASEE or SEFI.
- Collaborate on engineering education research with people from different backgrounds.
- Explore education research in fields beyond engineering education, as other disciplines may offer useful educational expertise that can be adapted to engineering.
- Phil also advised obtaining written clarification on how EER work will be counted towards promotion and tenure if working in a disciplinary engineering department.

The advice provided by **James Trevelyan** emphasised career security and critical thinking for early career researchers, as follows:

- Maintain a strong publication record in your home discipline because "Engineering education research is insecure and subject to changing fashions," and a solid base in one's primary discipline is crucial for career security.
- James stressed the importance of critical thinking for engineers.
- He also advocated for using a standardized review template to ensure that evidence supports conclusions in research papers.
- More generally, for engineering educators, especially those in the Global South, he advises imparting the message that there is a desperate shortage of genuine engineering skill, and that, for engineers in under-developed countries understanding collaboration and delivering practical results can lead to greater financial success in their home countries than migrating abroad, even if these essential skills are "never taught in a university".

John Heywood advises younger academics engaged in EER to adopt a specific mindset:

- Recognize that engineering education is primarily a **developmental activity**, not solely a research activity. He suggests bringing the approach of a development engineer to problems rather than that of a researcher in science.
- Understand that **learning is fundamentally different from mere information gathering**, possessing epistemological dimensions and ontological dimensions. He notes that his latest book delves into philosophy in the engineering curriculum, highlighting the depth required in understanding learning. This understanding is crucial for changing existing educational systems, which often rely on the "public epistemology" that learning is about "pumping knowledge as information into people's brains".

RQ3: What recommendations would participants make to forthcoming retirees in the field?

The three participants offered varied perspectives and advice for colleagues considering or approaching retirement, again apparently drawing from their own experiences.

John Heywood stated that he does not have a direct answer to what advice he would give someone approaching retirement. Instead, his advice relates to his own experience. His direct advice is that that he would "listen to them. Listen to what they're saying themselves. And tell them what happened to me. That's all". Perhaps this reflects his own experience that his post-retirement engagement in EER was not part of a strict plan, since he retired suddenly and unexpectedly "out of pique". Despite not having a strict "plan," his continued engagement in Engineering Education Research (EER) and other intellectual pursuits, like studying wine labels, became a fundamental part of his identity. He pursued "three or four tasks I wanted to do which I would have found it very difficult to do while working," which contributed to his self-fulfilment. He also noted that as a Trinity Fellow, he had presumed he would "carry on with things that I was interested in".

Phil Wankat offers clear advice that academics should "Develop activities and a life outside of engineering education before you retire". His own retirement plan included both academic and non-academic pursuits, such as writing a new edition of "Teaching Engineering" and "Separation Process Engineering," as well as fishing and building small boats. While some of his academic plans did not materialize as expected, his engagement in non-academic activities, particularly

building physical objects, provided satisfaction. He identifies himself as a problem solver and continues to pursue new problems, such as developing a new safety laboratory demonstration, but now on his own terms.

James Trevelyan advises retiring academics to "join organizations like the College of Emeritus Professors to stay connected and active". He highlights that retirement is really quite pleasant, and can be "a busy and fulfilling time if financial planning is done well". Crucially, Trevelyan emphasizes the importance of "using one's brain actively in retirement to maintain mental health and productivity" His personal experience reflects this, as his transition into entrepreneurship was unplanned but allowed him to continue intellectually stimulating research that meshed with his business ventures.

Conclusions

Based on the experiences and recommendations shared by Wankat, Trevelyan, and Heywood, there are several conclusions that can be made about their post-retirement activities. Each pursued quite different academic retirement paths.

Two transversal themes are the continuation of intellectual engagement and a strong sense of purpose, which is also tied to a sense of identity. All three scholars emphasize the importance of remaining mentally active and engaged. John Heywood explicitly states that it is "impossible for me not to be working" and that his academic pursuits are "part of who he is," contributing to his "self-fulfilment" by allowing him to complete tasks he found difficult while formally employed. Phil Wankat identifies himself as a "problem solver" who continues to seek out and work on new challenges, albeit on his own terms and without graduate students. Similarly, James Trevelyan highlights the importance of "using one's brain actively in retirement to maintain mental health and productivity" and continues his research as "unfinished business" that keeps his mind active. This suggests that for these individuals, retirement is not an end to intellectual contribution but a transition to a more autonomous and personalized phase of work.

Another significant conclusion is the value of flexibility and autonomy in their post-retirement activities. Wankat now "only work when I want to and often leave a project for months at a time". Trevelyan praises the "freedom to be able to travel whenever I wanted or whenever I needed to" for his entrepreneurial venture, contrasting it with prior constraints. Heywood's ability to pursue "three or four tasks I wanted to do which I would have found it very difficult to do while working" also underscores this newfound freedom. This increased control over their time and projects appears to be a highly valued aspect of their retired life, allowing them to focus on areas of genuine interest without the typical academic pressures.

However, the paths to and experiences of retirement varied considerably, particularly concerning planning, funding, and community engagement.

Phil Wankat had a clear retirement plan that included writing and editing, although some aspects of his plan did not materialize as expected. He found that academic community engagement "died down significantly" for him after retirement due to personnel changes and lack of discretionary funding.

James Trevelyan's retirement was also a planned transition towards entrepreneurship, which was accelerated by an unexpected early retirement offer that he negotiated to his advantage. His continued academic research often interconnects with his business ventures, and he advises joining organizations like the College of Emeritus Professors to maintain connections.

In contrast, John Heywood's retirement was entirely unplanned, occurring, as he said, out of pique during a departmental meeting. His continued engagement in EER was partially sustained by a departmental agreement that allowed him to use self-financing in-service training payments for conference and travel expenses until 2012. His academic communities, especially ASEE, were long-standing connections that continued post-retirement.

These differences highlight that while continued engagement is common, the logistical and social aspects of retirement are typically individual and dependent on circumstances and proactive planning.

Future Work

In terms of future work, the authors propose continuing to engage with retired and retiring EER scholars and to provide information that is new and relevant to current EER scholars, and those who are beginning to realise that there is a life waiting after their university career ends.

Summary

For those considering retirement from EER, the three retired scholars advise maintaining intellectual engagement and a sense of purpose. Heywood's experience suggests listening to oneself and embracing unexpected paths. Wankat strongly recommends developing activities and a life outside academia before retiring. Trevelyan stresses using one's brain actively and joining organizations like emeritus groups to stay connected.

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Appendix 1

Interview Questions

1. Did you have a retirement plan?
2. As an EER-active academic, how has your EER-related life changed? Has this matched your original plan (if there was one).
3. Did you retire with any discretionary research funding, such as for conferences, etc?
4. Did the issue of funding, or lack of funding, influence your retirement plan viz a viz EER activities?
5. Were you part of a particular EER community (or communities) before you retired, and how did your engagement continue after retirement?
6. Did your academic community change post-retirement?
7. Did you pursue other non-EER activities that were in your plan, or did other non-planned activities arise post-retirement?
8. What can you say about your focus/enthusiasm for academic activity post-retirement?
9. If you are still active in EER - why? What have you gained from post-retirement EER involvement?
10. If you are no longer active in EER, why?
11. Are there other relevant issues that would be helpful to share?
12. Have you any advice for colleagues approaching retirement?
13. Have you any advice for early career engineering education researchers?