Solving the Education – Research Tension

Pj Radcliffe

RMIT University, Melbourne, Australia
pjr@rmit.edu.au

Abstract : the traditional warning about serving two or more masters can be ignored by universities as they pursue under graduate education, research, and consulting work. There are serious questions of moral and legal obligations related to cross subsidisation in the use of monies, labour and other resources. Rules and guidelines from government and university policy add to these questions.
This paper examines claim and counter claims about the tension between teaching, research and consulting made by academics from Melbourne, Monash, RMIT, and Swinburne Universities in Melbourne Australia. Widely differing, contradictory and strongly held views were discovered along with a notable tension between undergraduate educationalists and researchers.
The resolution of these disparate views starts with each work group (department , school, …) creating a public guideline which states their understanding of the funding and policy constraints placed on them, and a vision of what their enterprise is trying to achieve. The next step is to put in place systems that enable staff and the public to see resources are being used according to the public guidelines. In short system visibility and accountability are introduced.
The paper concludes by describing a financial and staffing model used in the School of Electrical and Computer Engineering at RMIT. The model has solved significant problems related to the education-research tension to the benefit of all parties.

Keywords: Education-Research Tension, Financial Accountability, Funding Models.

Introduction

Every academic will have discussed or heard arguments such as “research is vital to maintaining good education” or “research saps time and money from undergraduate education”. In the past this issue did not create heated debate in Australia because universities were adequately funded for both activities. In recent years the alarming reduction in government funding, new funding models and a rise in student-staff ratios [1][2] has increased the tension between these two viewpoints as both education and research scrabble for adequate funding.
Few academics would argue against the proposition that the quality of undergraduate education has dropped seriously in the last decade due to funding decreases - especially the practical component of courses such as engineering [1][2]. While universities continue to produce graduates the relative lack of practical skills may well be detrimental to the

Australian economy in the near and long term.
Clearly educationalists have serious concerns and are justified in trying to hold onto any funds that legitimately belong to education.

Few academics would argue against the proposition that funding in Australia for research is much lower than equivalent OECD countries [3]. This leads to a lack of expertise and leading edge development that can drive the local economy and compete internationally. Clearly researchers have serious concerns and are justified in trying to hold onto any funds that legitimately belong to research.

There may be synergies between education, research, and consulting that result in a mutual beneficial outcome. Clearly researchers and educationalists need to identify these opportunities and actively pursue them.

Funding issues have exacerbated the natural tensions to the stage that we can no longer politely ignore the issue. It must be openly discussed and resolved.

Methodology

This paper does not aim to provide numerical measures of what academics believe regarding the tension between education and research. Instead it aims to uncover the variety of arguments mounted in favour of the undergraduate educationalist view and the research view in regards to the tension between the two activities. Given the collected views a solution path will then be sought that satisfies as many viewpoints as possible.

The collection of views was made by consulting academics from universities in Melbourne including RMIT University, Melbourne University, Swinburne University, and Monash University. Some academics were known personally by this author while others were suggested by students who perceived particular academics as notably good researchers or good educationalists. All conversations were on the basis of total anonymity for the interviewees.

The questions asked of all interviewees were quite simple and usually led into considerable discussion-

- Is there any cross subsidisation between research, education, and consulting?
- Do the activities of any one area act to the detriment or benefit of the other area?
- What is the evidence to substantiate any arguments presented?

Pleasingly many academics could mount arguments both pro education and pro research though most academics clearly had a preferred orientation.

Pro-Educationalist Arguments

Several arguments suggest that research saps resources that legitimately belong to education.

Labor effort diverted: most academics believed that educational achievements by academics did not greatly help promotion prospects even at universities such as RMIT when promotion guidelines give education considerable weight [4]. This led to staff stealing

teaching time to spend on research.
The dilemma faced by several untenured staff was quite poignant. One interviewee was remarkably frank-

> *"I know I am doing a sub-standard job of lecturing but it has been made clear to me that I must publish to get a permanent position. I feel that I am cheating students but what choice do I have?"*

Clearly resources intended for education have been subverted for research to the considerable detriment of education.

Financial resources diverted: most academics agreed that most sources of money were either completely or partially tagged for a particular purpose. For example government grants which have legal limitations, and full fee income where there is a moral obligation to use much of the money to provide a good quality education.
Several academics firmly believed that resources intended for teaching had been diverted into buying equipment and other activities that in reality only benefited research. It was also believed that the accounting practices within the department or university made this impossible to confirm.

Not student centred: some academics stated a view that research can lead an academic to become fixated on research and what they want to do and so provide a poor service clients such as undergraduate students. Most academics interviewed did agree that this could happen.

Academic management is undervalued according to several academics. One academic pointed out that in industry a management role would be relatively well rewarded but in universities such work is often given lower status and reward than teaching or research.
It is generally accepted that strategic planning is of very high value and a small group of planners can make or break an enterprise. It does seem odd that in universities such activities are often poorly rewarded.

Changing the world: several academics made the point that much research is ignored and forgotten but good teaching clearly improves the skills and motivation of students who will soon be powering our economy. They felt that the social good that quality teaching achieved fulfilled our obligations to society, government and students. In contrast much research was done for the good of the researcher and made no difference to the world.

Pro - Research Arguments

Research improves technical skills: many academics claimed that the act of doing research makes an academic delve into the depth and detail of technical work and such activities improves their technical ability and keeps them up to date. This should make an academic better at teaching.

Case study: this author went through an electrical engineering course in the 1970s. The academic responsible for teaching operational amplifiers and active filters taught none of this material ; just his pet research area of electronic noise.
The lack of such key knowledge was a serious impediment to the entire graduation group.

Some academics put forward counter arguments-

- Frequently research areas are not relevant to undergraduate education and so the knowledge gained and the skills developed are of little value.
- Academics are diverted from relevant undergraduate material and so teach that material poorly.

Research improves written skills : many academics claimed that writing technical and academic papers for peer reviewed journals did help improve written communications skills. There seemed to be no disagreement with this contention.

Diversion is OK : some academics essentially claimed that the real purpose of a university was to perform research and this had to be pursued by what ever methods were available. Other academics felt that this approach was totally unacceptable because of legal obligations imposed by funding sources and moral obligations to provide a service to such clients as full fee students.

Subsidises education : one academics claimed that the profit from research was being used to prop up an inadequately funded education system.

Consulting and Industry Links

While education and research might be seen as the primary area of conflict the role of consulting work and other industry linkage activities must be considered.

Benefits education and research : most academics agreed that industry work is an excellent way to learn skills and professional attitudes that are highly relevant to undergraduate education. The stories and anecdotes from industry work can greatly enhance lectures and other educational activities. There appeared to be no disagreement with this view.
Most academics agreed that industry work was an important factor in research applications, and sometimes led to research contracts.

Time diversion : many academics felt that industry work was a problem as frequently there was inadequate release from other duties and no compensating personal reward. . The net effect was that academics time was diverted away from education and research.
In some universities this was seen as a primary reason why industry work had radically declined

No real profit : one academic stated that "we can't tell the difference between turnover and profit" on contract (and research) work and so there is either no profit or in reality a loss. Further it was claimed that despite university guidelines, project costing does not include infrastructure costs such as providing offices and network support.
Using education monies to subsidise consulting work is illegal and could result in severe embarrassment for a university [6][7].

Analysis and a Solution Path

Clearly research, education, and consulting work have the possibility of being of benefit to each other. Clearly there is the potential for these activities to divert funds, labour and resources from each other.

The most outstanding problem visible from the discussion appeared to be good evidence of academic labour time being paid for with teaching monies but being diverted to research because of the academic reward structure.

In most cases academics could not substantiate their claims about resources by examining available financial, workload, or performance evaluation documents. This is possibly the real problem. Without easily available records, suspicions, accusations, and inappropriate activities can all flourish.

The solution to such problems is well known in management circles-

- Publish clear operational guidelines.
- Establish full visibility and accountability for all activities.

In a typical university situation several activities should be targeted for guidelines, accountability and visibility-

- Money sources must be tagged with their intended destination or that the monies are discretionary.
- All department activities must be identified and monies for each activity clearly financed from the appropriate source.
- Workload calculations for all staff must be based on a public formula and be publicly available. This should result in a consolidated labour budget which clearly outlines teaching, research, and consulting totals.
- Promotion processes must include a visible scoring for candidates so that the published weighting on education, research, consulting, and other factors can be seen to have been taken into account according to the published guidelines.

Some of the actions above are relatively easy to achieve, for example tagging the purposes to which various income sources can be put. Some actions may generate controversy and conflict – for example the collation and publishing or workload figures.

The publishing of promotion rankings raises difficult questions of privacy versus accountability. One solution is that the rankings of all applicants are published with no identification attached, and each applicant can see their own ranking. In this way applicant's information may be kept private but the veracity of the selection process can still be demonstrated.

Experiences at RMIT University

The RMIT school of Electrical & Computer Engineering (ECE) had some problems in the early part of the new millennium which culminated in the closure of the entire engineering faculty and the creation of the SET (Science Engineering and Technology) portfolio. A new management team for ECE with Head of School Prof. Irena Cosic and resource manager Ms Danielle Horvath had the unenviable task of solving many problems

within the ECE school. In effect their new processes implemented accountability and visibility and made significant improvements to the system.
Notable processes that related to the education-research tension included-

- Every academic had to identify their teaching load, research load, and any sources of funding for non-teaching activities. Each activity type was allocated a number of WLUs (Work Load Units) [8] and this led to considerable controversy over the balance between various activities, and there is still some disagreement.
  From a big picture view the process was very effective in balancing work loads between staff.
- Academic staff have 20% of their time paid to perform research. Staff are allowed to claim between zero and 40% of their time for research such that the overall average for the school is 20%. This allows staff some ability to specialise more in research or more in teaching.
- All activities apart from teaching must belong to a project that in turn must have a specific funding source. Expenditures may not be made until income is certain. This has also been a great success and detected several situations where staff had assumed money was available where in fact it was not available. In previous times such shortfalls would not have been detected until too late and so any burden fell on school general revenues.
- Project accounts and WLU calculations from all staff are checked and made public within the school. Initially there were large surprises, followed up quickly with a balancing of monies and work load. Since the initial introduction there have been far fewer surprises as the impending public release makes all of us more careful in our estimates and planning.
- The use of discretionary money is decided by an executive group and the decisions are public within the school.
- Many activities such as purchase requests have been made more robust and simplified.

The processes outlined have largely eliminated the suspicions of cross subsidisation and reduced the education-research tension.

One area does remain a difficulty. Staff perceptions are that promotion is heavily biased toward research and this may lead to problems with teaching quality as staff struggle to find time to research and publish. The issue or rewards and promotion for good teaching performance may need to be addressed as part of a continuous improvement process.

Overall the new processes have been a great success and the school of Electrical & Computer Engineering operates much more smoothly with less staff tension.

Conclusion

The tension between education, research, and consulting is real and in the modern climate of reduced funding it can no longer be politely ignored. More restrictive legal constraints on how monies are allowed to be spent is another factor that cannot be ignored.

There appears to be strong academic opinion that teaching resources do get diverted into research, especially staff time as they pursue promotion. Perhaps the largest problem is that suspicions and opinions cannot be quickly eliminated by looking at labour and money records.

The solution to these problems lies in the standard management practices of ensuring all related activities made visible and staff are made accountable. This can perhaps best be implemented at department or school level. Institutional support can only help. The school of Electrical and Computer Engineering in RMIT has made significant progress using this approach and has significantly reduced the education-research tension. The methods used could be adopted in most university departments.

A particularly difficult problem is that of staff promotion criteria. At minimum the promotion criteria must be public and processes developed that provide for individual privacy but also allow verification that the selection process is working according to the published guidelines.

Acknowledgements

Thank you to Prof. Irena Cosic and Ms Danielle Horvath for permission to describe the management processes used with Electrical and Computer Engineering at RMIT.

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Bibliography

Pj Radcliffe is a senior lecturer in the school of Electrical Engineering at RMIT University. In 2004 he was one of four winners of the RMIT Student Centred Learning awards and also won a Student Choice award. His main interests are software engineering, software testing and Linux for application in the domains of electronic, networking and communication engineering.