

# Digital Futures research and society: action, awareness and accountability

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The contemporary Higher Education research environment demands 'real-world' impact as a key means of accounting for public sector funding. As such, there is increased pressure on researchers and research institutions to ensure research delivers outcomes for public good. This paper reports on research focused on a Digital Futures collaborative research program. The aim of the research was to explore how researchers and research stakeholders understand research impact. Impact was articulated as 'making a difference' however that 'difference' was translated by research participants as meaning the tangible impacts relating to quantitative components of research activities. The subtler influences of research impact on society were less well articulated. Results from this research suggest that in the complex world of impact, action, awareness and accountability, as elements of research practice, are key to creating maximum value from knowledge creation initiatives.

**Keywords:** research impact; technology; learning; evaluation; Higher Education; collaboration

## Introduction

Higher Education research is seen to deliver two types of impact – academic impact and non-academic impact. Academic (scholarly) impact is 'the intellectual contribution to one's field of study within academia' (Penfield, Baker, Scoble, & Wykes, 2013, p. 21) and is primarily evidenced through academic publications. Non-academic impact (referred to forthwith as 'real-world' impact) is the influence of research on 'policy, managerial and professional practices, social behaviour or public discourse' (Sumner, Crichton, Theobald, Zulu, & Parkhurst, 2011, p. 3). A range of interrelated terms have been used to denote this real-world impact, including non-scholarly impact, societal impact, non-traditional impact, external impact and secondary impact. However, real-world impact (and all these related terms) share in common a philosophical commitment to the public good. In contrast, while not necessarily ignoring the public good, it has been suggested that the publishing priority of scholarly impact preferences private reward to the researcher ahead of public benefit (Campbell, 2012). Assessment, and therefore understanding, of real-world impact has been seen to be problematic due to challenges of quantifying and recording the intangible influences of research.

## Recent developments in impact

The role of research as being of benefit to society is well-recognised. Over recent years, the ways in which the use of research is conceptualised has changed. A preliminary database search reveals that, from the 1950s onwards, and with a noticeable increase from 1993 to 2013, many articles focused on 'using research.' In the 1990s, there was a general understanding that research findings would be 'handed over' to others, and implemented by those in the 'real world' (Jackson, 2014, p. 127). From 2003 to 2014, the term 'translating research' became popular in recognition of the fact that research often requires interpretation prior to implementation. A range of other terms including 'knowledge production' and 'evidence utilisation' were used commonly from 2000 onwards, with use of the term 'knowledge mobilisation' peaking in 2013. In the period between 2010 and 2014, 'engaged scholarship' was popularised. Engaged scholarship recognizes the need for multiple knowledge systems to be directly included in the knowledge creation process (Van de Ven, 2007).

The dynamic nature of the science-society relationship in discovering and integrating scientific knowledge has been explored by scholars. For example, Boyer (1990, p. 16) proposed a re-definition of scholarship to include 'building bridges between theory and practice', and Gibbons et al. (1994) identified contemporary knowledge production as a socially accountable process. Yet making use of research remains a haphazard process with many scholars lamenting the slow or nil application of research for the benefit of society (Shokar, 2014; Steffens, Weeks, Davidsson, & Isaak, 2014). Achieving real-world impact from research relies upon collaboration and knowledge-sharing between researchers and research users (Armstrong & Kendall, 2010; Hemsley-Brown & Sharp, 2003).

There is extensive discussion in the literature about the impact of research on policy and practice. Yet the process of translating research is complex (Bastow, Dunleavy, & Tinkler, 2014). There is a well-recognised academic-practitioner gap in many fields (Steffens et al., 2014) and a 'valley of death' between discovery and application (Butler, 2008). While the health sector actively encourages evidence-based practice (Balakas & Sparks, 2010), many other disciplines, including education and business, struggle with bridging the gap between research and practice (Hemsley-Brown & Sharp, 2003; Skapinker, 2008).

Research institutions across the globe have been increasingly required to demonstrate the relevance of research endeavours in terms of real-world impact. The focus on demonstrable impact is being driven by an international impact agenda that calls for greater accountability of public sector expenditure. The issue of accountability has been a key policy focus of governments since the early 1980s (Slavin, 2002). Identifying and articulating broad concept of research impact has become an important skill for researchers seeking engagement and investment (Chubb, 2014)

## **Assessing Digital Futures program impact**

An intensive case study was undertaken at a regional university in Australia with the aim of enhancing understanding about the broad impacts of Higher Education research. The research sought to identify how Higher Education research delivers real-world benefit beyond contributions to academia. A phenomenological approach explored the lived experience of research impact from the perspective of researchers and research stakeholders in a collaborative multidisciplinary research program. A phenomenological method is concerned with illuminating certain aspects of lived experience that can be tied to experiences of the past, even though this can be 'subject to reversals, surprises and readjustments' (Diprose & Reynolds, 2014, p. 33). Meaning making through experiences can, therefore, involve the emergence of common themes where similar contexts of understanding are influential. Qualitative data was captured through a two-stage data collection process. In Stage 1, 27 semi-structured interviews were conducted. In Stage 2, ten researchers participated in two focus groups to discuss the main themes emerging from Stage 1 data. Data was analysed through thematic interpretation supported by NVivo data analysis software.

A common theme that emerged during the data analysis process was that impactful research should 'make a difference'. Researchers used a range of terms to denote the way research impact is conceptualised: change, variation, development, movement or difference. There was little reference to impact using terms such as worth or value, which have financial connotations, and no reference to impact having positive or negative dimensions, reinforcing the theme of 'making a difference' regardless of what the difference may be. Researchers demonstrated a good understanding of the distinction between research quality and research impact, as it is defined above, however there was little evidence of a direct or forced correlation between research quality and research impact. This supports literature which acknowledges that there is the potential for poor quality research to achieve high impact (Mendel, 2014). This can happen when highly-relevant but less-rigorous research is extensively promoted and highly cited as a result.

The majority of researchers also demonstrated a good understanding of research impact in terms of the defined concept of 'academic impact,' and most researchers were confident that research impact would be achieved as a result of disseminating research findings. Academic outputs of publications, conference papers, presentations and citations were articulated as being the most tangible evidence of research impact.

Additionally, researchers were comfortable sharing evidence of scholarly impact, yet found it difficult to articulate the real-world impact of projects that they were undertaking in the program. The

challenges of specifying real-world impact included time for impact to be realized and reliance upon other stakeholders to implement the findings of research. Researchers cited access to resources, time pressures and a lack of accountability as barriers to assessing the impact of research. A common theme emerging from the interviews was that real-world impact isn't dependent on the production of research outputs. Impact frequently occurs during the research process through the interaction with research participants. Researchers perceived that impact had been achieved through altered opinions, improved understanding and broadened perspectives, reinforcing the concept that research impact is as much about creating awareness of research knowledge as it is about applying research knowledge.

## **The manifestation of impact**

Assessing impact is not the same as evaluating impact. Impact evaluation suggests a quality judgement (Baehr, 2005) with a focus on financial and social measures. Guidelines for evaluating impact recommend activities such as baseline assessment in addition to understanding stakeholder needs and encouraging more than one source of evidence (Bromley & De Campos, 2014). In the case of impact assessment, the process is less clear. Assessing impact is more than identifying 'additionality' which is a quantitative measure that fails to recognize changes that are difficult to measure (Bromley & De Campos, 2014, p. 89).

The results from the Digital Futures case study reinforced the two dimensions of research impact – academic impact and non-academic real-world impact. Additionally, the data analysis revealed an interdependency across the two dimensions that varies according to researcher accountability for mobilising research findings in terms of awareness and action.

Awareness of research primarily occurs through dissemination of research findings and generates academic or scholarly impact. Activities that generate academic impact can be measured by counting publications, citations, tweets, blogs, etc, however this is a volume-oriented metrics-approach that is insufficient to fully capture the less tangible impacts of research activities. It is not possible to count or weigh every instance of impact and it is not phenomenologically possible to articulate the entirety of a particular researcher's lived experience (Diprose & Reynolds, 2014), in this case, of research production. Research awareness therefore brings many benefits to society that are less obvious. [ENREF 23](#) Stanwick and Hargreaves (2012) [ENREF 25](#) identify four impact domains: producing knowledge, building capacity, informing policy and informing practice. The 'producing knowledge' dimension of impact was evident throughout the interviews with researchers conveying that participants in research activities benefitted as a result of participating in data collection activities and through community/industry/university collaborations. Participants gained an awareness of particular research objectives, methodologies, hypotheses and previous research findings, and researchers felt that they had made a real-world difference by imparting knowledge without the production of more tangible outputs.

Action, as it relates to research impact, was reported by researchers as being largely outside the domain of their accountability. The implementation of research findings is dependent upon action by government, community organisations, industry associations, businesses and other research stakeholders. Specific examples of action arising from research was more challenging to articulate with researchers resorting to examples of academic impact as demonstrable evidence of their research impact. Researchers were familiar with the intent of research impact as 'the demonstrable contribution that research makes to the economy, society, culture, national security, public policy or services, health, the environment, or quality of life, beyond contributions to academia' (Australian Research Council, 2014) yet were less comfortable providing specific instances of having influenced these dimensions of real-world impact.

## **Considerations for the future**

Research conducted by Higher Education institutions remains an essential activity for the health and wealth of a nation (Bauerlein, Gad-el-Hak, Grody, McKelvey, & Trimble, 2010). Whilst the contribution of research is well-understood in terms of scholarship of discovery (Boyer, 1990), assessing the influence of knowledge on society is a complex and challenging activity. Assessment frameworks that use a logic model approach to understanding impact are useful for assessing the academic and non-academic impacts of research where impact is directly related to research outputs. However, these

frameworks do not capture the more subtle and less tangible real-world impact that arises during the research activity, and which has perceptive, and therefore, interpretive experiential influences. In this sense, research impact is also created during collaboration and communication processes external to the research environment, and similarly brings interpretive qualities to such processes.

Impact can also give rise to the intention of 'making a difference' (Chandler, 2014, p. 2). The researchers in this study were committed to making a difference, yet grappled with articulating the real-world impact of research beyond scholarly influences. Assessing impact extends beyond measuring 'what can be measured' to measuring 'what should be measured' (Wells & Whitworth, 2007, p. 1) and is an inherent complexity of impact assessment activities.

## Conclusion

The Higher Education sector is under increasing pressure to demonstrate value to society (de Jong, Barker, Cox, Sveinsdottir, & Van den Besselaar, 2014) yet it is difficult to demonstrate value when there is no accepted framework for measuring real-world impact (Bornmann, 2012). More research is needed to understand research impact and clarify impact terminology that is inconsistent and confusing (Penfield et al., 2013). Assessing impact is feasible but current methods need to be improved (Ovseiko, Oancea, & Buchan, 2012). Understanding how impact manifests through action, awareness and accountability is an essential first step in re-conceptualising research impact.

## References

- Armstrong, K., & Kendall, E. (2010). Translating knowledge into practice and policy: the role of knowledge networks in primary health care. *Health Information Management Journal*, 39(2), 9.
- Australian Research Council. (2014). Research impact principles and framework. Retrieved 27 June 2014, 2014, from <http://www.arc.gov.au/general/impact.htm>
- Baehr, M. (2005). Distinctions between assessment and evaluation. *Program Assessment Handbook*, 7.
- Balakas, K., & Sparks, L. (2010). Teaching research and evidence-based practice using a service-learning approach. *The Journal of nursing education*, 49(12), 691-695.
- Bastow, S., Dunleavy, P., & Tinkler, J. (2014). *The impact of the social sciences: how academics and their research make a difference*: SAGE.
- Bauerlein, M., Gad-el-Hak, M., Grody, W., McKelvey, B., & Trimble, S. W. (2010, 13 June). We must stop the avalanche of low-quality research, *The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/article/We-Must-Stop-the-Avalanche-of/65890/>
- Bornmann, L. (2012). Measuring the societal impact of research: research is less and less assessed on scientific impact alone - we should aim to quantify the increasingly important contributions of science to society. *EMBO Rep*, 13(8), 673-676. doi: 10.1038/embor.2012.99
- Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the professoriate*. New Jersey: The Carnegie Foundation for the Advancement of Teaching.
- Bromley, T., & De Campos, A. (2014). How can impact evaluation be planned? In P. Denicolo (Ed.), *Achieving impact in research*. London: SAGE Publications Ltd.
- Butler, D. (2008, 11 June 2008). Translational research: crossing the valley of death. Retrieved 30 September 2014, from <http://www.nature.com/news/2008/080611/full/453840a.html>
- Campbell, H. (2012). Lots of words... but do any of them matter? The challenge of engaged scholarship. *Planning Theory & Practice*, 13(3), 349-353.
- Chandler, C. (2014). What is the meaning of impact in relation to research and why does it matter? A view from inside academia. In P. Denicolo (Ed.), *Achieving impact in research*. London, UK: Sage Publications Ltd.
- Chubb, J. (2014). How does the impact agenda fit with attitudes and ethics that motivate research? In P. Denicolo (Ed.), *Achieving impact in research*. London, UK: Sage Publications Ltd.
- de Jong, S., Barker, K., Cox, D., Sveinsdottir, T., & Van den Besselaar, P. (2014). Understanding societal impact through productive interactions: ICT research as a case. *Research Evaluation*, 23(2), 89-102. doi: 10.1093/reseval/rvu001
- Diprose, R., & Reynolds, J. (2014). *Merleau-Ponty: key concepts*: Routledge.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P., & Trow, M. (1994). *The new production of knowledge: The dynamics of science and research in contemporary societies*: Sage.

- Hemsley-Brown, J., & Sharp, C. (2003). The use of research to improve professional practice: A systematic review of the literature. *Oxford Review of Education*, 29(4), 449-471.
- Jackson, A. (2014). How can knowledge exchange support the development of impact through partnerships and university infrastructures? In P. Denicolo (Ed.), *Achieving impact in research* (pp. 127-142). London: SAGE Publications Ltd.
- Mendel, J. (2014). Bad Research and High Impact: The Science: So What Campaign and Social Media Criticism. *ACME: An International E-Journal for Critical Geographies*, 13(1), 56-61.
- Ovseiko, P., Oancea, A., & Buchan, A. (2012). Assessing research impact in clinical medicine: a study using Research Excellence Framework pilot impact indicators. *BMC Health Services Research*, 12(478), 1-23.
- Penfield, T., Baker, M., Scoble, R., & Wykes, M. (2013). Assessment, evaluations, and definitions of research impact: A review. *Research Evaluation*, 23(1), 21-32. doi: 10.1093/reseval/rvt021
- Shokar, N. K. (2014). Translating Research into Practice: The Colorectal Cancer Screening Experience. *Journal of General Internal Medicine*, 29(1), 10-12.
- Skapinker, M. (2008). Why business ignores business schools. *Financial Times*, 8, 11.
- Slavin, R. E. (2002). Evidence-based education policies: Transforming educational practice and research. *Educational Researcher*, 31(7), 15-21.
- Stanwick, J., & Hargreaves, J. (2012). Measuring and maximising research impact in social science research settings: good practice guide. Adelaide: National Centre for Vocational Education Research.
- Steffens, P. R., Weeks, C. S., Davidsson, P., & Isaak, L. (2014). Shouting from the ivory tower: a marketing approach to improve communication of academic research to entrepreneurs. *Entrepreneurship Theory and Practice*, 38(2), 399-426.
- Sumner, A., Crichton, J., Theobald, S., Zulu, E., & Parkhurst, J. (2011). What shapes research impact on policy? Understanding research uptake in sexual and reproductive health policy processes in resource poor contexts. *Health Research Policy and Systems*, 9(Suppl 1), S3.
- Van de Ven, A. H. (2007). *Engaged scholarship: a guide for organizational and social research: a guide for organizational and social research*: Oxford University Press.
- Wells, R., & Whitworth, J. A. (2007). Assessing outcomes of health and medical research: do we measure what counts or count what we can measure? *Australia and New Zealand Health Policy*, 4(1), 14.

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