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What constitutes high quality higher education pedagogical research?

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ABSTRACT

Over the last 20 years there has been significant growth in the volume of higher education pedagogical research across disciplines and national contexts, but inherent tensions in defining quality remain. In this paper we present a framework to support understanding of what constitutes internationally excellent research, drawing on a range of conceptual frameworks, international and national performance-based research funding systems, discipline/professional body frameworks, and research council guidance. While acknowledging the contested nature of excellence in pedagogical research, we provide criteria to guide discussion and to support individual and organisational learning. A key premise is that if learning and teaching in higher education are to be enhanced, considerable investment is required in supporting the development of integrated academics where emphasis is on both research and practice to inform pedagogy. Research and evaluation are essential aspects of teaching and need to be embedded within it. The framework is designed to enable colleagues to develop the necessary tools and approaches to support understanding of educational research and adapt these within their disciplinary context.

KEYWORDS

Pedagogical research; research excellence framework; excellence in research; scholarly research; higher education

Introduction

Higher education learning and teaching provision has been heavily scrutinised over the last five years. The importance of value for money, maintenance of academic standards, ensuring academic integrity, addressing the complex needs of growing student populations with an emphasis on equity, inclusivity and wellbeing are issues impacting higher education institutions globally. Government efforts to make universities more accountable for the quality of their teaching are exemplified through initiatives such as the Teaching Excellence Framework (TEF) in the United Kingdom (UK). There are, however, serious concerns that approaches such as the TEF have not significantly improved the quality of teaching and may have had the unintended consequence of decreasing teaching quality (Evans, Kandiko Howson, and Forsythe 2018).

To support sustainable high impact pedagogies within higher education, a research-informed approach to learning and teaching is needed, and such an approach requires significant

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investment in developing staff capacity in high quality pedagogical research. Such investment is essential if informed decisions are to be made about how to deliver effective sustainable pedagogy; a need highlighted by the COVID-19 pandemic.

Pedagogical research has the potential to make a significant contribution to the quality of learning and teaching but the disciplinary and contextual nuances around pedagogical language often act as a blocker to progress in the field (Malcolm and Zukas 2003; Stierer and Antoniou 2004; Usher and Edwards 2007; Wood and O'Leary 2019). A vast body of higher education pedagogical research exists which traverses paradigms, theoretical and conceptual boundaries and methodologies. However, to be able to attain excellence in pedagogy, scholars need to be able to define what pedagogy looks like, how to develop it, and be mindful of disciplinary nuances in the translation of what constitutes high quality pedagogical research.

Philosophically, research excellence is a contested term, open to differing interpretations, and it manifests in differing goals and interests (Ferretti et al. 2018). There are 'technical excellence' issues in the robustness of processes and procedures to investigate practice. Concerns around the 'research-practice gap' are manifested in several ways. Limited and poor translation of research into practice is frequently due to a lack of understanding of pedagogy, which also impacts what inferences are made from research. Theoretical and conceptual work may be too dense and abstract for those delivering the curriculum to see how it can be applied to practice. Conversely, methodologically technically sound work may be ignorant of the situational requirements and therefore lack pedagogical understanding. This results in work that is of little value on the ground in informing teaching and learning (Evans, Kandiko Howson, and Forsythe 2018).

Excellent pedagogical research demonstrates how learning and teaching can be enhanced through a research-informed approach. To do this, the researcher needs to take complex ideas and explain them clearly, demonstrating face validity and relevance to the intended audience (i.e. Does the idea make sense? Is it important?) For the research to be relevant, researchers need to have a holistic understanding of issues impacting the field and an in-depth knowledge of the immediate context they are reporting on. For buy-in, the ideas being presented need to be plausible. Rigour is essential in relation to how the work has been designed and undertaken along with transparency to enable practitioners to be able to trust the research and be willing to consider using it. Work at the pinnacle in this area gives us something new; it provides a new slant on an area, it challenges us to think differently, and fundamentally shows us how.

This paper explores what constitutes internationally excellent higher education pedagogical research and provides an explicit framework of key considerations in the development of such work. This framework draws on a range of sources including national research assessments such as the UK's Research Excellence Framework (REF 2019), the Excellence in Research for Australia (ERA 2018) and the European Union's Composite Indicator for Scientific and Technological Research Excellence (Hardeman, Van Roy, and Vertsey 2013). While our discussion is informed by the work of US scholars and practices, no equivalent national framework exists in the US. We draw on relevant conceptual frameworks (Boyer 1990; Glassick 2000; Hodgkinson, Herriot, and Anderson 2001; Ashwin and Trigwell 2004; Moore et al. 2015; Evans 2018). The framework has been debated, tested and revised through engagement with pedagogical researchers, educational developers, sector experts and practitioners over a two-year period. In doing so, we offer clarification of the key concepts and terms commonly, but sometimes variably, used to define quality in the context of higher education pedagogical research.

Higher education pedagogical research issues and concerns

The role of pedagogical research in relation to 'excellence' in teaching has historically been contested (Gordon et al. 2003). The field has been perceived as lacking respect across universities (Yorke 2000; Tierney 2020), offering 'little intellectual value' (Macfarlane 2011), being only of

relevance to those in ‘lesser’ or ‘teaching-only’ roles (Cotton, Miller, and Kneale 2018). Pedagogy ‘emphasizes the interrelationships between policy, theory, knowledge and rationale, all framed by political and social agendas, cultures of practice and power relations’ (Waring and Evans 2015, 27). To be impactful, higher education pedagogical research therefore fundamentally needs to be rigorous (reliable and valid) to maintain relevance. If its impact on teaching and research remains largely theoretical, an entire area of scholarly work will continue to be under-valued and under-utilized (Jenkins 2002; Todres, Stephenson, and Jones 2007).

A vast continuum of higher education pedagogical research (conceptual and empirical) exists with different aims and intentions. These relationships are reflected in Ashwin and Trigwell (2004) typology of the different types of pedagogical research based on intention (e.g. to inform oneself; to inform a group within a shared context; and/or to inform a wider audience). While they argue the importance of scholarly educational practice at all three levels of their hierarchy, intention and scale are often conflated. This leads to misinterpretations of what counts as quality, with small-scale, focussed research undervalued compared to large-scale studies. Our argument is that investigating one’s own practice should still be rigorous and, if the quality of teaching and learning is to be enhanced, investment is needed in what constitutes high quality pedagogical research and, importantly, how to achieve this. While some make the clear distinction between high quality educational research, practice research and scholarly inquiry (Bernstein 2010), established definitions such as those of Boyer (1990) and Shulman (1999) do not address the importance of rigour within all levels and variants of higher education scholarship, including pedagogical research. In this context, any notion of scholarship which seems to permit a ‘dumbing down’ of quality is unhelpful.

Research excellence is especially challenging given the broad range of pedagogical research, and confusion arising around the rigour of scholarship and its contribution to higher education. ‘Close to practice’ research, is for example, often defined as ‘research that focusses on aspects defined by practitioners as relevant to their practice, and often involving collaborative work between practitioners and researchers’ (Wyse et al. 2018, 14), whereas scholarship has been defined as encompassing the scholarship of discovery of knowledge, the application of knowledge, and its integration into teaching (Boyer 1990). To meet the requirements of scholarship, work should meet the following criteria: (i) it must be made public; (ii) it must be available for peer review and critique according to accepted standards; (iii) it must be able to be reproduced and built on by other scholars (Shulman 1999). This list nods to the importance of replication of work but speaks little to the contribution that scholarship has on the development of research as part of a two-way endeavour in both developing and utilising theory and practice. Thus, scholarship is more than evaluation of practice, but few criteria exist to judge the quality of scholarship.

An additional issue with interpretations of scholarship is that formal national research quality frameworks may define scholarship inadequately. For example, scholarship for the UK’s REF is defined very narrowly as ‘the creation, development and maintenance of the intellectual infrastructure of subjects and disciplines, in forms such as dictionaries, scholarly editions, catalogues and contributions to major research databases’ (2019, 90). Such a definition says little about impact on policy, principles and practices (e.g. tools; frameworks; training programmes) to which scholarship in higher education makes a significant contribution.

Disciplinary pedagogic research is frequently perceived as being of lower value than pure substantive discipline content; an issue which is exacerbated by the relatively low impact factor of pedagogic journals compared to discipline-specific ones and the inclusion of low-level scholarship alongside high quality pedagogical research within journals. In exploring the state of health of pedagogical research, Evans, Muijs, and Tomlinson (2015) discussed quality standards in relation to the clarity of the pedagogical ideas being presented, methodological congruence and transparency, and demonstrable impact on practice, and noted that only 13% of academic articles in their systematic review ($n=1642$) met these quality standards. Problems included methodologies that were so poorly specified that they made replication impossible. An analysis of the complete publication history of the current top 100 education journals ranked by 5-year

impact factor, found that only 0.13% of education articles were replications (Makel and Plucker 2014). Commonly cited issues with pedagogical papers includes an overemphasis on the statistical significance of findings while ignoring effect sizes that might indicate only minimal impact of such interventions, ethical approval being absent or insufficient, copying of approaches with little understanding of them and how they need to be fine-tuned to meet specific contextual requirements and a tendency to defend methodologies, analysis and findings in the superlative, such that any improvements to teaching and student learning are often overstated.

Judged on journal-based and funding metrics alone, pedagogical research has lower levels of recognition and esteem than other areas of research and scholarly pursuits (Cotton, Miller, and Kneale 2018). The field has been hampered by a stigma of being under-researched and under-theorized (West and Rich 2012; Felton 2013; Cleaver, Lintern, and McLinden 2014; Curtin and Hall 2018). Improving attitudes towards the use of metrics as a judgement of quality may have in part contributed to a positive change in pedagogical research with the field finally experiencing a much-needed shift towards a resource that can play a crucial role in improving the quality of teaching and learning in higher education (Kaynardağ 2019). Pedagogical research is now becoming firmly embedded in university culture, with the aim that capacity can be developed both within and across institutions. The building of sustainable, research-informed communities of practice is essential to this (Evans et al. 2019).

The contribution of national research frameworks and professional bodies to defining quality

Globally, performance-based research funding systems provide a strong steer as to what they regard as constituting quality in research. However, until recently there has been little recognition of higher education pedagogical research, and where it has been recognised, it has frequently been conflated with education research, which is much broader and covers all aspects of education (Opie 2004). Performance-based research funding models such as the REF and its precursor the Research Assessment Exercise (RAE) in the UK are regularly critiqued (Taylor 2011; Kelly 2016; Olssen 2016), but they remain a global model for research funding (Hicks 2012; Sivertsen 2017). The REF evolved from a focus on informing funding decisions to funding excellence, changing behaviour as well as accountability and benchmarking (McNay 2015). Performance-based research funding systems rely on two major approaches to measuring excellence: indicators of institutional performance (metrics) and panel evaluation and peer review of individual and group performance (Wilsdon et al. 2015).

The United States (US) does not operate a national performance-based research funding system. While the US has a long and widespread tradition of training higher education researchers and student affairs professionals, these graduate-level programmes predominately focus on student affairs, college student personnel and administration (National Association of Student Personnel Administrators (NASPA) 2020). In the US, pedagogical research does not exist as a major field of research, entailing national conferences, journals, formalised standards and funding streams. The seminal work of Boyer (1990) identified the importance of the 'scholarship of learning and teaching' but remains a "hard sell" and misaligned with recognition and reward schemes such as tenure and promotion (Boshier 2009). There are active pedagogical researchers and published pedagogical research, but it remains an area dominated by training and evaluation (Center for Research on Learning and Teaching 2020).

The tensions in institutions between teaching, research, and practice play out in the measurement of pedagogical quality (e.g. the TEF in the UK; Performance-Based Funding 2020 in Australia), and what counts as research (Tierney 2020). For example, prior to the REF 2021, in the UK the impact of higher education pedagogical research within one's own institution did not qualify for inclusion. This meant that such work was not counted in official returns and

associated allocated funding, impacting on its perceived value, and the personal and team identity of those engaged in this type of research. Following feedback from the sector, for the REF 2021 the impact of research on learning (staff and students) and curriculum development within a researcher's institution can now be included in the research return.

Research exercises are disruptive in that they may distract and detract from high quality research by influencing the nature of work undertaken. Uniformity is increased and not always for the good (ERA 2018). Efforts to align research activity with perceptions of requirements may lead to a narrower focus of inquiry and dissemination outlets, and short-termism in needing to get one's output out, impacting the quality of research design (Parsons and Burkey 2011). The predominant focus on outputs has shifted thinking towards what quality looks like, rather than on the process of promoting knowledge creation (Sørensen, Bloch, and Young 2016). Increasing use of terminology such as novel, innovative and ground-breaking in publications reflects the need to promote such qualities through judicious use of language rather than any significant shift in the quality of work itself (Vinkers, Tjldink, and Otte 2015).

For pedagogical research to be useful, it needs to be accepted by the relevant community (Brown and Edmunds 2011). However, performance-based research funding systems adopt variable practices in relation to what counts as research, and even where principles of equity are espoused (e.g. 'All types of research and all forms of research output across all disciplines shall be assessed on a fair and equal basis' (REF 2019, 5)), interpretation at the local level may not be as inclusive in practice, with certain types of output being more favoured than others. The increasing emphasis on interdisciplinarity of higher education pedagogical research also creates tensions regarding different conventions of academic disciplines as to what counts as quality and how the work should be framed.

In emphasising the need for originality, the REF and similar approaches can undermine science in that replication studies are essential in addressing important reliability and transferability issues. While performance-based research funding systems have emphasized the importance of originality, impact and significance, many colleagues within higher education are excluded from such conversations by the nature of the language, and local misinterpretation of the 'rules' which keep many as peripheral participants in research.

Key influencers of higher education pedagogic research include higher education special interest groups (SIGs) associated with educational associations (e.g. American Education Association (AERA), Australian Association for Research in Education (AARE), British Education Research Association (BERA), and European Association for Research on Learning and Instruction (EARLI)). Within the UK, organisations such as the Society for Research in Higher Education (SRHE) and AdvanceHE have made significant contributions to enhancing the quality of pedagogical research. In the US several universities have well-funded centres to support institutional-based pedagogical research.

The development of frameworks for the conduct and reporting of research across disciplines over the last twenty years has been impressive (Altman et al. 2001; Des Jarlais et al. 2004; American Education Research Association (AERA) 2006; Appelbaum et al. and JARS team 2008; Moore et al. 2015). However, the extent to which these have entered the everyday language and practices of those engaged in higher education pedagogical research is limited (Evans, Kandiko Howson, and Forsythe 2018). Challenges remain in defining, interpreting and evaluating pedagogical research standards to address discipline-specific problems and challenges (Dolan et al. 2018).

What constitutes quality in higher education pedagogical research?

Terminology used by funding bodies to describe research outputs typically includes parameters such as originality, significance, rigour for outputs (ERA 2018; REF 2019); significance and reach for impact; and vitality and sustainability for the research environment (including strategy,

people, income infrastructure facilities, collaboration and contribution to the discipline) (REF 2019). Acknowledgement of different interpretations at the discipline level are highlighted. However, both within and across disciplines, there is considerable variability in how such measures are understood and interpreted, and an acknowledgment across the sector that calibration, in spite of the metrics, is an inexact science.

World class-ness terms such as ‘world leading’ (REF 2019) and ‘world standard’ (ERA 2018) refer to quality standards in terms of originality, significance, rigour and relevance and do ‘not refer to the nature or geographical scope of particular subjects, nor to the locus of research nor its place of dissemination’ (ERA 2018, 16; REF 2019, 86); these are matters of *reach* and *range*. The meaning of such terms is locally constructed. How different individuals and discipline communities interpret terms and definitions separately and in combination to produce a holistic judgement of quality is complex.

For the UK REF four-star, the highest level of quality that is world-leading in terms of originality, significance and rigour (and ‘5 band’ ERA in Australia) demonstrates *some* of the following characteristics as highlighted in the REF 2021 Education return panel, (2019, 67):

- outstandingly novel in developing concepts, paradigms, techniques or outcomes;
- a primary or essential point of reference;
- a formative influence on the intellectual agenda;
- application of exceptionally rigorous research design and techniques of investigation and analysis;
- generation of an exceptionally significant data set or research resource.

Other discipline panels have adapted the wording of the generic definitions to align with disciplinary paradigms and support consistency of decision making, but these attempts are likely to fail unless they are accompanied by calibration activities to ensure some degree of consistency in interpreting terms such as ‘outstandingly novel’ or ‘exceptionally rigorous’. For the education panel, the set of indicators highlights the role of significance in relation to the impact of the world on the state of the field. How one combines these different elements of world class-ness is open to interpretation, but rigour is essential.

Dimensions of quality

Rigour (reliability and validity) and relevance are of paramount importance (Hodgkinson, Herriot, and Anderson 2001), but these are contested topics even for experts within the field of education (Krause 2012). For those with little experience of educational research methodology and methods, applying the constructs is problematic. There is also tension around what constitutes quality from quantitative, qualitative and mixed methodological perspectives. In the educational sphere the emphasis on evidence-based approaches has promoted the value of randomised control trials and meta-analyses over other forms of research. However, meta-analyses have limitations (Stegenga 2011), and especially in the ways they are conceived and at the level of reporting. In reviewing quality, it is essential to consider the extent to which the methodology is appropriate to the questions being asked whatever the research methodology. The key question is how thorough and true to the research frame (i.e. alignment of aims, theoretical framework and methodology) the work is.

Validity and reliability

Internal validity is concerned with whether the measurement of a construct is logical or factually sound, and multiple sources of evidence from both theory and data are needed to establish it.

Pedagogical research that is useful in describing, predicting or explaining learning hinges on validity because without it, researchers cannot have confidence in the conclusions. However, *validity* is possibly the most important and misunderstood construct in research. It is, for example, a common misconception that test items, questions or constructs are 'valid' or 'have validity'. Such devices can intrinsically be neither valid nor invalid, rather it is the accuracy and the legitimacy of *interpretations* which determine validity. For example, a researcher may believe that problem-based-learning is a valid and useful tool for developing medical competence, but its utility and validity depends entirely on the nature of the job to be done (Provan 2011).

Secondly, there are practical, theoretical and measurement factors that influence the strength of evidence that supports intended use and interpretation. Validity is not an all-or none issue, there is no magical validity threshold that can determine when a construct or process is valid and when it is not.

The subjective nature of qualitative research means that it faces additional challenges regarding internal and external validity. The former can be defined as credibility within the research context, the extent to which the findings of a study appear to reflect reality. The latter refers to the extent to which findings are transferable to other contexts. The lack of control and measurement, the absence of 'facts', and a process that involves communication, shared or discordant experiences and opinions means that even the most diligent and competent of researchers may interpret data in a way which compromises the validity of findings. Such errors lead to poor decisions and guidance, that are at best wasteful or at worst cause considerable harm. The goal for qualitative pedagogical researchers is to improve the validity of their research by striving to attain saturation. In other words, additional participants are added to the study until no further perspectives or new information emerges (Glaser and Strauss 1967). Saturation ensures that the entire range of an attribute or concept is captured, and further analysis is therefore unnecessary.

Reliability/dependability is about the consistency of results across time, and their trustworthiness. Reliability is the extent to which we can measure real differences accurately. From a measurement science perspective, values obtained from an individual are the observed score of some phenomenon of interest, but these measures rarely capture real amounts of the characteristic of interest (the true score). The true score captures the ideal; it is perfect, precise and error free. The aim for the researcher is get as close as possible to the true score, by reducing as much noise as possible by ensuring that the processes around data collection are controlled and recorded in a transparent way.

The most common way to communicate to other researchers the extent to which data is reliable is to calculate the reliability co-efficient (reported between 0 and one with larger coefficients indicating greater reliability) and to contrast that with data reported in test manuals, journal articles or other publications. There are, however, no methods for reliability that can provide accurate estimates under all circumstances and if the assumptions underpinning the analysis are not *valid* to begin with, then such estimates will be inaccurate in any event. In particular, the homogeneity of the subjects involved in research is likely to have a disproportionately negative impact on the extent to which results are reliable. This is because as researchers we need to capture the entire range of attributes of interest.

From a qualitative perspective we are concerned with dependability, the consistency of processes used within a study over time, and confirmability in the extent to which results can be corroborated by others (Lincoln and Guba 2000). Silverman (2016) recommends enhancing reliability through refutational analysis, constant data, comparison, comprehensive data use and use of deviant or negative case analysis. This involves a process whereby researchers triangulate their data (normally with their peers by systematically comparing the extracted data with the original sources for accuracy), by including as wide and as inclusive a range of data as possible and adopting the falsification approach (Popper 1959). In other words, results which stand up to such attempts at disproof are robust findings, not merely the result of 'cherry picking', and other researchers stand a much stronger chance of accurately replicating that work.

Relevance

Pedagogical research has relevance if it is likely to influence the practice of others. This is also linked to notions of timeliness in addressing key issues at specific times; excellence can therefore also be rooted in a specific time frame. Research is significant in its ability to address current problems in new ways, change ways of thinking and practising, be disruptive, and attain the best outcomes that could reasonably be expected.

Originality

Originality is concerned with novel approaches to ideas. It may also involve looking at old ideas through a new lens, adapting theory, creating new conceptual frameworks, adapting ideas to new contexts. It can be disruptive in replacing what went before. Originality can also be framed in terms of methods of analysis, new ways of exploring and reporting on phenomena. It can be significant in changing the ways in which people think about, investigate and present an idea.

Significance and reach

The importance of the two-way relationship between research and practice in educational research is fundamental (Hargreaves et al. 2005). *Significance* is a defining factor of research impact, together with *reach*. Significance refers to the extent to which the research processes or outputs positively influence, or have the potential to influence, pedagogic policy and/or practice. This is also strongly linked to *reach*, the extent to which the *intended* audience is engaged. Reach is therefore aligned with the ambitions of the project and targeted population, it is not about total numbers per se (e.g. reaching all first-year students only, rather than all students, if transitions into higher education are being considered). It is also highly possible that projects/research may have many unintended positive and negative outcomes beyond the immediate target of the research. Lack of a positive result does not negate the potential worth or impact of the work.

A frequent misconception is to perceive volume of subjects or data (as evidenced in meta-analyses and randomised control trials and large quantitative surveys) as resulting in higher quality than relatively small focussed studies (e.g. ethnographic studies with qualitative approaches), and to improve higher education we must move beyond this and look at what quality looks like from different paradigmatic stances, and in relation to addressing the key questions being asked (Sullivan 2011; Rowe and Oltmann 2016). Quality depends on whether the methodology and methods fully address the research questions being asked.

Impact

There is substantial advice from research and government bodies on what constitutes impact (Erasmus 2018; REF 2018/02; Economic and Social Research Council (ESRC) 2019), although the extent to which such information reaches and is accessible is debateable. In ascertaining impact, we are concerned with establishing who is impacted (e.g. colleagues and students in higher education, policymakers, professional bodies, schools, business and industry), and how they are impacted (e.g. impact on learning and teaching, curriculum development, policy formation and implementation). As such we are interested in outcomes (beliefs, attitudes, behaviours, performance) and outputs (resources, articles, papers, materials), and ensuring the *integrity of the process* (links between ideas, processes, outputs and outcomes). This also leads us to consider notions of *fidelity* (how true is the operationalisation of the methodology to the intent of the study, where

and how much it needed to be adapted, and how clear this is). The notion of fitness for purpose also highlights the ethics of the approach: is the research doing what it set out to do?

Linked to impact are notions of *transferability* (the ease of application of pedagogical research to another setting beyond the individual, the department, the discipline, the institution, the country), *adaptability* (ease with which an idea can be applied across different contexts), *sustainability* (whether the ideas have life beyond a project, whether they be embedded within practice) and *dose*, the amount of something needed to have an impact (Moore et al. 2015). These parameters align with reach and significance in the way that initiatives and ideas become owned and adapted by local populations and cease to be solely owned by the innovator. Releasing one's 'patent' within education, and it being adopted and owned by others, across different contexts, indicates significance and reach. It also points to generalisability, being able to generalise the impacts of an idea/concept across populations, cultures and disciplines. This is enabled by replication, together with fidelity, such that the principles underpinning an approach are adhered to or are reported on where this cannot be achieved.

Importance of balancing rigour and relevance

The need for rigour *and* relevance, and not just rigour for rigour's sake is emphasized in our adaptation of Hodgkinson, Herriot, and Anderson (2001) and Worrall's (2008) model as depicted in Figure 1. This typology questions notions of the continuum of higher education pedagogical research from classroom inquiry to educational research, suggesting that we should strive for rigour at all levels of pedagogical inquiry. Rigour is not the preserve of high-quality pedagogical research. If the ideas are underpinning practice, they must be evidence-based.

In repositioning higher education pedagogical research within this typology, we have replaced 'pedantic' with 'pure' in our typology to acknowledge the value of this research in driving new conceptions and new understandings. It is the bridging point between this and pragmatic research that is important. It is the taking of such pure research and demonstrating its application in a robust and rigorous way that defines our pragmatic research in relation to what it should be: world leading applied research. Pragmatic research needs to combine theoretical and methodological and practitioner relevance, while research predicated on methodological and theoretical rigour, intent on investigating phenomena for the sake of doing such, situated in the bottom right quadrant of the diagram, needs to be made accessible through a range of dissemination vehicles.

It is the left side of the model that presents the greatest challenges. Work of low rigour and relevance (which we have described as 'petty' rather than Hodgkinson et al.'s 'puerile') is wasteful of resource and damaging to the field and should not be encouraged. A more important challenge for the higher education sector is how to support well-intentioned 'populist' orientations towards taking a more research-informed approach. Populist outputs risk being described as pretentious when what they label as research may not be research at all according to discipline-based standards. Such work demonstrates a poor grasp of research principles and pedagogical research methodologies and methods. Case studies of personal accounts of practice, for example, do not equate in terms of research quality to rigorous case study research. A key issue for higher education institutions in promoting high quality pedagogical research is supporting staff to bridge the gap between populist work that has considerable potential and work which meets the requirements of research-informed pragmatic research. This requires investment in pedagogical research methodology training and its application across disciplines.

Understanding how to make the transition is essential from both resource and ethical perspectives. Perpetuation of poor-quality pedagogical research, however well-intentioned, undermines enhancement of the quality of learning and teaching in higher education and is a significant drain on valuable time-limited resource. In addition, in supporting maximisation of

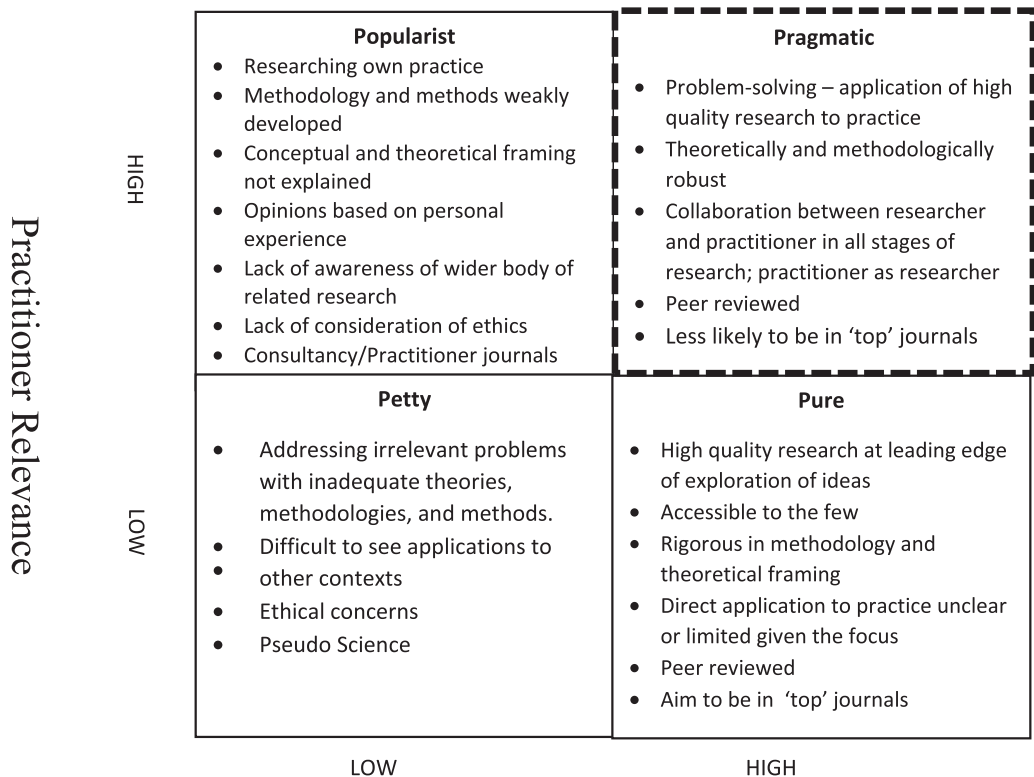


Figure 1. Pedagogical research typology based on Hodgkinson, Herriot, and Anderson 2001; Worrall 2008.

impact by translating key findings from pure research so that they impact practice also requires investment. What is needed is a move towards investing in the upskilling of academics and professional staff in pedagogical research literacy, defined here as ‘the ability to judiciously use, apply and develop research as an integral part of one’s teaching [and or support of teaching]’ (Evans, Waring, and Christodoulou 2017, 404).

Developing criteria for high-quality pedagogical research: a criterion-based research framework

In working towards higher education pedagogical excellence it is vital to consider key baselines. The research framework presented in Table 1 evolved from Evans, Muijs, and Tomlinson (2015) evaluation of high impact empirical pedagogical research. The choice of constructs was initially informed by the work of Kuh (2008), Aitken and Sinnema (2008), Cools, Armstrong, and Sadler-Smith (2010), Gibbs (2010), Gilbert, Whitelock, and Gale (2011) and Parsons et al. (2012), and then tested through operationalisation in the conducting of two systematic literature reviews. Review one involved the analysis of 21,055 higher education pedagogic peer reviewed articles, and the second review focussed on 12,000 articles and detailed analysis of 1,200 full articles (Evans, Muijs, and Tomlinson 2015; Evans 2020). Articles were graded A (highest quality) to C (poorest quality) based on the extent to which they addressed the core criteria summarised here

Table 1. A framework of criteria for high quality higher education pedagogical research.

Design/description	Pedagogical Clarity	Methodological Transparency	Methodological Congruence	Strength of the Evidence-base	Accessibility of Findings	Transferrability	Impact
	<i>Focus:</i> The central nub of the pedagogical issue or intervention is clear and the limits of the scope of the work are defined	<i>Replicability:</i> The methods for collecting data and measuring the outcomes (<i>impact</i>) of the inquiry are clearly explained with sufficient detail to enable evaluation and replication	<i>Fidelity:</i> There is a clear account of the extent to which the research is enacted as planned and where plans are adapted it is clear how principles are adhered to	<i>Objectivity:</i> Data, and the extent to which this informs findings, is reported fully, accurately and objectively; availability of and access to data sets is made clear	<i>Explicitness:</i> Implications and recommendations from the study are explained explicitly for those both within and outside of the discipline	<i>Transparency:</i> There is sufficient detail about the pedagogy to make the work accessible to those beyond the immediate discipline or context of the study	<i>Realisation:</i> The extent to which the research impacts those intended in the ways intended and set out in the warrant is clearly reported, together with unintended / broader impacts
Contextualisation	<i>Setting:</i> There is a clear account of the context of the issue and/or the <i>application</i> of the intervention including the research subjects and intended beneficiaries	<i>Grounding:</i> Previous research in the field and methodological trends are acknowledged and the theoretical and/or conceptual frameworks that inform the approach are clearly presented	<i>Fit:</i> The justification for the choice of methodology and research and evaluation methods includes consideration of fit with context	<i>Generalisability:</i> The extent to which findings could be generalised, depending on the methodology, is made clear	<i>Situation:</i> The findings are situated within the broader body of knowledge of the HE pedagogy field nationally and internationally	<i>Application:</i> It is clear how the findings have applications in situations beyond the immediate discipline or context of the study	<i>Scalability:</i> It is clear how ideas can be applied on a larger scale facilitated by inherent flexibility and accessibility to all within and/or across disciplines; relative impact on different groups and at various scales is explored
Argumentation	<i>Warrant:</i> The importance and relevance of the work within the immediate context and beyond is explained; there is a clear case for the work's significance in changing practice and advancing knowledge in the field	<i>Justification:</i> A clear rationale is given for the choice of methodology and the methods of data collection, analysis and evaluation	<i>Alignment:</i> There is a convincing case made for how the choices of methods align or can be reconciled epistemologically	<i>Rigour:</i> There is thorough scrutiny of factors that may affect reliability and validity; limitations are identified and a clear explanation and rationale given for any mitigating actions taken	<i>Reflexivity:</i> The ability to step outside one's research to critique and acknowledge strengths and limitations from others' perspectives is deployed	<i>Adaptability:</i> consideration is given to how easily and to what extent applications could be adapted to other contexts without compromising their integrity	<i>Credibility:</i> Evidence and persuasive arguments are provided to justify the recommendations in terms of both pedagogical gains and best use of resource

(continued)



Table 1. Continued.

Integrity and Integration	Pedagogical Clarity	Methodological Transparency	Methodological Congruence	Strength of the Evidence-base	Accessibility of Findings	Transferability	Impact
	<p><i>Currency:</i> The work is clearly situated within current pedagogical debates and systematic, critical awareness of relevant literature is evidenced</p>	<p><i>Ethicality:</i> Ethical clearance and enactment of ethical procedures are described for all stages of the inquiry</p>	<p><i>Coherence:</i> There is clear alignment between aims and objectives, research question(s), paradigms, methodology, methods, and data analysis processes</p>	<p><i>Adequacy:</i> The quality, quantity and relevance of the data collected provide a sufficient and credible basis for the findings reported</p> <p><i>Criticality:</i> Evaluation is underpinned by a critical pedagogy and is theoretically informed</p>	<p><i>Embeddability:</i> It is clear how ideas can be embedded within curriculum design and delivery</p> <p><i>Engagement:</i> It is clear how the work engages the HE community, including students, as active participants in pedagogical research</p>	<p><i>Inclusivity:</i> Transferability is supported by the use of inclusive principles and practices to underpin the applications</p>	<p><i>Sustainability:</i> The pedagogical recommendations are manageable and feasible in practice and the resource and effort needed for effective implementation is clearly set out and is proportionate to the intended impact</p>

in Table 1. A composite score was derived from the data and related to the categories of evidence framework (Evans, Muijs, and Tomlinson 2015, 15).

The seven key domains developed from Evans, Muijs, and Tomlinson (2015) and highlighted in Table 1 draw on a range of sources from across disciplines and traditions (Des Jarlais et al. 2014; Moore et al. 2015; Bezjak et al. 2018; British Psychological Society (BPS) 2018; Evans, Kandiko Howson, and Forsythe 2018; Economic and Social Research Council (ESRC) 2019; Evans 2020; Horizon 2020). These seven domains include pedagogical clarity (what is the pedagogic idea and what informed it, the conceptual/theoretical base); methodological transparency; methodological congruence (the approaches are appropriate to address the issue under investigation); strength of evidence base (information is sufficiently comprehensive to substantiate claims being made); accessibility of findings (information is described in a way that is clear to those beyond the immediate context of the study); transferability (it is clear how the ideas could be applied in a different context); and impact (on opinions, behaviours, outcomes in relation to the focus of study and wider).

The seven research domains are organised according to four descriptors: design/description, contextualisation, argumentation and integrity/integration as generic aspects of research design, conduct and writing. This meta-framework for pedagogical research quality invites consideration of all aspects (29 criteria) in informing the research process at every stage – design, implementation, evaluation and reporting, while acknowledging that some criteria will be more centrally relevant to certain stages. The aim of the framework is to support the move to high-quality, pragmatic pedagogic research, key features of which are summarised in the next section.

Key features of pragmatic pedagogical research

Pedagogical clarity

High quality pedagogical research has a clearly defined pedagogical focus, with the central premise of the idea being clearly identified (Evans, Muijs, and Tomlinson 2015, 42-61). The research connects with the theoretical and conceptual work in the field and demonstrates an ability to step outside of the immediate context to see the relationship of the key idea to the wider field nationally and internationally, as well as within and beyond the discipline (Evans 2013). The rationale underpinning the work and its warrant, in how the research is contributing to knowledge development is explicit (e.g. exploring new ideas, looking at existing ideas differently; evolving methodologies etc.), and demonstrates a comprehensive understanding of work within the field. The parameters and the context of the study are clear to enable colleagues to see how ideas have been developed in practice, and in relation to affordances and constraints. Such research, while focussed on the immediate context, demonstrates awareness of the bigger picture and is explicit about why the study is of value beyond its immediate context (locally constituted and globally aware). The work is authentic in being able to accurately portray the nature of participants' contexts and experiences through rich description. Research may be small or large scale in nature; it is adherence to the question posed and choice of appropriate ways to explore it, that makes the work stand out (REF 2019).

Methodological transparency

The methodology and methods are clearly explained and justified. The ethical conduct of the study is highlighted, and the process of ethics clearance explained (BERA 2018). Attention is given to how samples and subjects are selected and recruited, and what the research process involves in the case of empirical research (Köhler, Landis, and Cortina 2017). For conceptual papers, emphasis is on detailed surveying and mapping of the research area. Hirschheim's (2008)

guidelines for reviewing conceptual papers provides an invaluable steer and highlights essentials of practice.

Discussion of methodology and methods are thorough, and innovations and adaptations of methodologies clearly explained. Data is presented clearly with links to relevant data bases. There is transparency in how data has been analysed (e.g. in how coding of data develops into themes and in data interpretation, statistically significant and non-significant results are reported) (Appelbaum et al. 2008). Effect sizes, where relevant, are provided to give a measure of the scale of the impact of approaches acknowledging the limitations of statistical significance without indication of the scale of impact (Aarts, van den Akker, and Winkens 2014).

Methodological congruence

Coherent research designs ensure the methodology and methods are aligned to the question being asked of the research. Good understanding of theoretical perspectives and paradigms situate the work appropriately. There is clear justification of why an approach was chosen over others. The processes involved within the research are clearly laid out and the limitations of the approach clearly explained enabling replication and development of the ideas. Triangulation has been used appropriately to support findings using a range of approaches:

- data triangulation – pulling together different sources of information to corroborate findings;
- method triangulation – using multiple methods to collect information to gain a comprehensive understanding of a phenomenon;
- space triangulation – collecting data from multiple sites to test cross context consistency;
- person triangulation – collecting data from different types of people with the aim of validating data through multiple perspectives on a phenomenon, and or to ratify decisions – e.g. coding of data (Nurse Key 2017)

Strength of the evidence-base

The strength of the evidence-base considers the extent to which the data can be trusted. Central to the quality of papers is an understanding of reliability and validity which leads to examination of the quality of the evidence that is being considered, which in turn impacts design issues such as the nature of measures used. Analysis of data is thorough, and the reader can have confidence in the arguments presented given the level of scrutiny attached to the interrogation of data sets. Arguments are corroborated by the data (Levitt et al. 2018).

Accessibility of findings

The ability to convey complex ideas simply is essential. Writing is undertaken with the needs of a non-specialist audience in mind. Discipline-specific and abstract ideas are explained clearly with the use of concrete examples so the reader can see how to apply the ideas in a different context. Terms specific to a subject, culture or organisation are kept to a minimum, and where they are used, care is taken to explain the meaning of these, mindful of a broader audience.

Transferability

Transferability is maximised where there is a clarity about how ideas have been operationalised and what has informed decisions. An awareness of practices and beliefs beyond the discipline is needed to successfully cross disciplinary divides. Transferability also impacts generalisability, the extent to which ideas can be corroborated across studies.

Impact

Articles explicitly demonstrate the links between ideas/innovations and impacts. Impacts on process and/or outcomes are explained. Impacts are substantiated through reference to changes in behaviour of stakeholders (individuals, groups, organisations and more widely), and in terms of other outcomes (awareness and understanding, attitudes and beliefs). Impacts on processes, systems and policies are clear. Critical pedagogies explain any differential impacts on different groups/individuals (Waring and Evans 2015). Longitudinal studies track impact over time and evidence-sustained impacts. Research identifies how ideas have sustainability through embedding them in practice and demonstrating scalability and manageability. Correlation is not confused with causality. Investigations are thorough in their analyses of causal factors and demonstrate due diligence regarding what claims can be made about relationships between variables, and what inference can be made from the work more widely.

Impact quality

In attending to pragmatic research that has rigour, impact is foregrounded but it must be underpinned by high quality research (ESRC/UK Research and Innovation (ESRC/UKRI) 2019). Quality impact studies show explicitly how their work has been taken up and used by policy makers, by industry users or has led to improvements in services or businesses (REF 2014). Drawing on evidence from impact case studies (Pommert 2015; Reed et al. 2018), high quality, rigorous papers are written in accessible, straightforward language. Ideas are well shaped, and the links between previous research, what was expected and what was reported are transparent. The research methodology is grounded in the overall approach and adequately describes what took place. Sample sizes are robustly supported with evidence from previously peer reviewed work or through *a priori* calculations, and data analysis clearly maps onto the questions and hypotheses being proposed. Such papers are more likely to lead to work that is both replicable and has real world application to the field, and increases the likelihood that there will be clearer, directional links from the research to the wider impact of the work (REF 2014).

For impact to be demonstrated, corroborating evidence must be robust and credible. High-scoring case studies articulate significant and far-reaching benefits using specific phrases, not general language about international impact ('cited in policy documents', 'used to inform' and 'resulted in'). Those phrases indicate a focus on the effect, that is, on what the activity led to. Low scores reflected more of a unidimensional attitude towards knowledge transfer. High scores demonstrated clear links from the research to the impact with directional evidence (what change was expected and what was seen) (REF 2014).

The REF 2014 Impact Case study of Meyer (2014) is a case in point. Meyer introduces the key idea of threshold concepts (elements of a subject that are difficult to understand) (Meyer and Land 2003). In the case of this article, an example of a threshold concept would be the troublesome knowledge associated with how high quality pedagogical research is tied up with understandings of research methodologies. In the Meyer example, reach is extensive in its impact across disciplines, education sectors, industry, professional bodies and continents. The simplicity of the concept is its key strength. Dissemination is achieved not only through high quality publications but has 'gone viral' through a range of training materials, internet materials, engagement by professional organisations such as the Staff and Educational Development Association (SEDA) and integration of threshold concepts into professional development training for staff.

Developing shared understandings of and for quality in pedagogical research

Many initiatives have sprung up with the aim of enhancing overall quality of learning and teaching in higher education including the development of performance-based funding for the

Commonwealth Grant Scheme in Australia (Wellings et al. 2019), and Advance HE's (2019) degree standards project which aims to maintain and protect degree standards, mainly through better training of external examiners, including calibration activities. High quality pedagogical research has a central place in ensuring that pedagogical developments are informed by a solid evidence base to prevent the damaging flip-flopping associated with frequent policy changes and strategies and 'jumping on the bandwagon' of new, but poorly evidenced pedagogic trends by well-meaning senior managers and policy makers. Efforts therefore need to be made to support enhancements in using research-in-practice and practice-in-research to avoid resource being squandered on poorly designed pedagogical interventions (Evans, Kandiko Howson, and Forsythe 2018). The efficacy of professional development (Amundsen and Wilson 2012) to address research-implementation gaps (Farley-Ripple et al. 2018) has been questioned. Ifanthaler (2017) has also raised the issue of the need for training in the use of data if the higher education workforce is to meet the requirements of the 4th industrial age.

Quality matters. If the quality of higher education pedagogic research is to be improved, significant investment in the development of pedagogical research literacy within the disciplines, undertaken by academic experts, is required. In addressing the research-practice gap, the development of interdisciplinary communities of practice across research, teaching and professional development teams and students is needed. To support such work, Evans (2018) offers the concept of the 'integrated academic'. Integrated academics can take the best of research, appraise it critically, apply it through implementing contextually appropriate pedagogies, and, through good design, use outcomes from practice to inform research and vice versa. This concept can be considered at the individual level in relation to what is needed in high quality pedagogical outputs, and at a collaborative level in assessing the extent to which pedagogical teams can cover all areas in addressing an area of common need (e.g. making assessment more efficient).

In developing the 'ability to judiciously use, apply and develop research as an integral part of one's teaching' (Evans, Waring, and Christodoulou 2017, 404), integrated academic expertise can address key higher education concerns: the lack of understanding of pedagogy within context to be able to apply research findings effectively, and pedagogical research designs which lack methodological rigour impacting credibility of findings and raising ethical issues. The integrated academic concept can be applied across the typology of pedagogical inputs to support the move from popularist to pragmatic research. Using the integrated academic concept, an entry point is provided where colleagues can be initiated into the academy and make a significant contribution to how research is designed and implemented by engaging in aspects of pedagogical research to which they feel most comfortable. Through colleagues coming together to address complex pedagogical issues, it is possible for staff and students to work together to develop pedagogical research literacy, and in the process also acquire significant leadership skills to support the embedding of research-informed approaches within disciplines (Evans et al. 2019).

Figure 2 identifies key dimensions of practice that require attention as part of the professional development of an integrated academic and which require bridging of research methods and pedagogical training. These areas include disciplinary knowledge, pedagogical expertise, academic practice, contextual awareness, data analytic competence, research methodology expertise and critical evaluation of practice. The critical issue is the quality of the integration of the component parts to meet the key objectives of the research. A strong commitment to enhancing learning and teaching in higher education involves investment in high quality educational research positioned within and owned by the disciplines. Training is needed to enable, for example, educational and psychological constructs and understanding of ethics within pedagogy to become accessible and integrated within disciplinary practice. Understanding of the richness of different research methodologies and methods of evaluation to embed within practice is a crucial part of this.

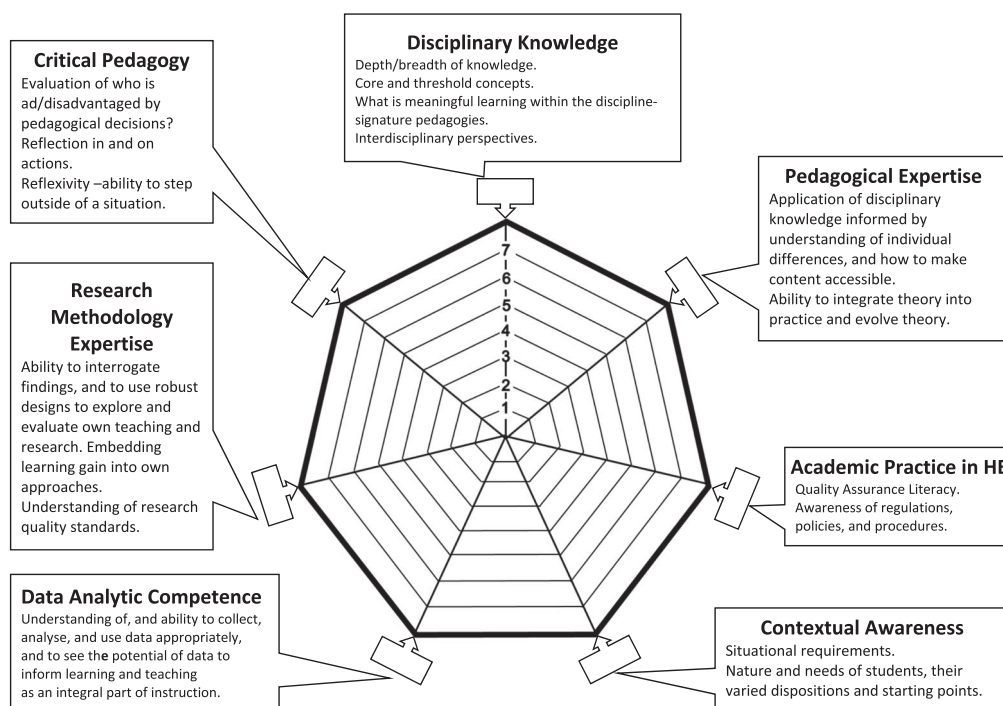


Figure 2. Integrated academic (from Evans, 2018).

- **Disciplinary Knowledge:** Capacity to utilise disciplinary research in practice.
- **Pedagogical Expertise:** The ability to design and progress learning within the discipline with an awareness of relevant theory and interdisciplinary perspectives, and appropriate utilisation of technology.
- **Academic Practice (QA):** Awareness of HE academic conventions to support learning and teaching, and regulations (e.g., quality assurance and professional and statutory body regulations that impact decisions locally, nationally, and internationally).
- **Contextual Awareness:** Awareness of the requirements of the discipline, affordances of the environment, and individual differences in learning to include the nature of cohorts and specific needs within groups, and how inclusivity can be enacted.
- **Data Analytic Competence:** The ability to design, collect, and analyse data to inform and evaluate practice.
- **Research Methodology Expertise:** Awareness of pedagogical/discipline research methodologies/methods conventions and quality standards in order to inform appropriate collection, analysis and inferences drawn from data. Understanding of ethical conventions (e.g. BERA, 2018, GDPR) to ensure ethical collection of data, management of processes and reporting of findings.
- **Critical Pedagogy:** Ability to critically evaluate practice to consider the impacts on all learners. To ensure evaluation is iterative and ongoing throughout all processes to ensure any issues of disadvantage are addressed in a timely way.

In reviewing the integrated academic dimensions as an individual and/or as a team, assess the extent to which you feel that you have expertise in each of the areas (1 = little expertise/novice, and 7 = considerable expertise/expert) to plot your own/team's radar chart.

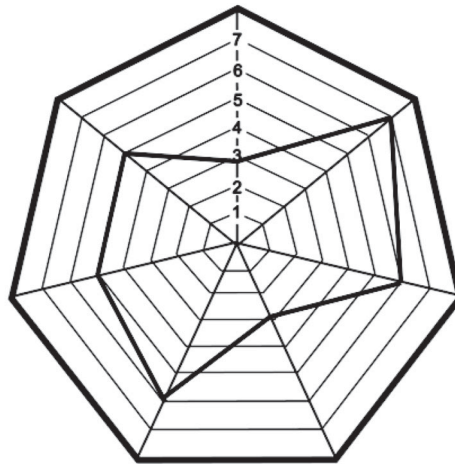


Figure 2. Continued

In sum, high quality pedagogical inquiry is a necessity for all those involved in the business of learning and teaching, and this includes teaching-focused and research-focused staff, albeit to different degrees. The issue is how to build research-informed approaches into everyday practices that engage staff and students in the rigorous exploration of the situated nature of pedagogy and the role of individuals in this. Developing and supporting research-informed communities of practice is key to enhancing quality and ensuring efficiency using an evidence-based approach to enable a focus on what matters. This article offers a framework, criteria and associated tools to help clarify standards; it is down to the academy to consider these in developing a consistent, shared understanding of what those standards mean and look like in practice.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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