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— ***Research Matters*** —
The Pedagogic Research Conference and Articles 2019

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Edited by Rachel Masika



University of Brighton

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CLT Publications
Managing Editor: Lynda Marshall
Centre for Learning and Teaching
104 Watson Building
University of Brighton
Village Way
Falmer
Brighton BN1 9PH

Tel: 01273-644767

Email: l.marshall2@brighton.ac.uk

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Assessment in higher education: the anatomy of a wicked problem

DR JOHN CANNING AND JULIET EVE, CENTRE FOR LEARNING AND TEACHING

Abstract

Assessment and feedback are matters of perennial angst in higher education. There are concerns about student satisfaction, fairness in assessment, grade inflation, assessment types, assessment 'burdens' and equivalences between institutions. This paper examines assessment through the lens of Rittel and Webber's (1973) concept of 'wicked problems'. Understanding assessment as a 'wicked' social problem rather than a solvable technical problem offers a lens through which to address the complexity of assessment in higher education.

Introduction

Knight (2002) described assessment as 'the Achilles' heel of good quality'. We can be great teachers, we might be inspirational in the classroom or in our ongoing support for students, but get the assessment wrong and this can all be forgotten. Although, assessment and feedback are frequently cited as major areas of student dissatisfaction in the UK's National Student Survey (NSS), the same 'problem' is widely discussed in compulsory education and in the higher education research literature from other countries such as the USA, Australia and Hong Kong (Medland, 2016, pp.82-83). This paper examines assessment through Rittel and Webber's (1973) concept of 'wicked problems'. Rather than being a cause of discouragement, understanding assessment as a wicked problem can provide the higher education teacher with a nuanced and self-aware lens through which to assess students better.

Assessment as a wicked problem

Applying Rittel and Webber's (1973) concept of 'wicked problems' demonstrates that assessment in higher education exhibits their ten characteristics of a wicked problem. Assessment is a good example of a wicked problem as there is widespread consensus that a problem exists, but not what the problem is exactly or how it could be addressed. We have taken each of Rittel and Webber's concepts in turn and applied them to assessment in higher education; in short 'wicked problems' are not only unsolvable, but it is impossible to formulate the exact characteristics of the problem, and the problem is intrinsically linked to other, possibly more complex wicked problems. While wicked problems may have technical dimensions, it is their social complexity which makes them tough to manage (Camillus, 2008, p.100). The advantage of identifying a problem as a

wicked problem is to understand that the problem is social rather than technical. While new technologies such as online assessment and virtual learning environments offer potential ways of responding, the core problems of assessment remain. As Minor (1901) observed in his discussion of whether law examinations should be, written or oral, long or short, practical or theoretical:

‘Objection is frequently raised to a high and fixed examination standard that it is unfair and unjust, since the student’s percentage will depend in large measure upon the whim or caprice of the person grading his paper; or at least that it is fluctuating and uncertain, since a certain grade with one teacher or at one institution may mean a very different thing from the same grade as used by another teacher or at another institution’. (Minor, 1901, p. 473)

It is important to understand at this point that although ‘wicked problems’ are fundamentally unsolvable, they are not necessarily ‘evil’ in a moral or ethical sense.

However, it is also important to understand that just because a problem has been identified as wicked, this does not mean that all responses are equally good or equally bad; In fact one of the characteristics of a wicked problem is that the responses can be ‘good’ and/or ‘bad’, but they cannot be ‘true’ or ‘false’. Therefore, the identification of assessment as a wicked problem does not mean that the situation is hopeless or that all possible responses are going to lead to poor outcomes.

1. ‘There is no definitive formulation of a wicked problem’

Rittel and Webber suggest that in order to understand or describe a wicked problem, we need to have developed ‘an exhaustive inventory of all conceivable solutions ahead of time’. If getting assessment and feedback ‘right’, or ‘improving’ assessment and feedback is the wicked problem then, we must have as a starting point an agreement as to what the problem is – and current thinking on assessment and feedback in higher education evidences agreement that there is a problem, but not the exact nature of the problem. This is perhaps best exemplified by an issue commonly identified in the literature: the gap between what academics think, feel and say about their feedback and how this feedback is received and understood by students, (for example, see Carless and Boud, 2018). The range of stakeholders with a view on this wicked problem also complicates the search for solutions, or a solution – who defines the problem: academics, institutions, students, employers, the Office for Students (OfS)? ‘To find the problem is thus the same thing as finding the solution; the problem can’t be defined until the solution has been found’ (Ibid. p.161).

We can be great teachers, we might be inspirational in the classroom or in our ongoing support for students, but get the assessment wrong and this can all be forgotten. However, the broader question is simply: how do we describe the problem of assessment in higher education? If there is a consensus around assessment and feedback it is that some sort of problem exists. Different stakeholders can have a different perspective on the definition of the problem; as a consequence there are a diverse range of possible ‘solutions’. Moreover, ‘... every solution ... explores new aspects of the problem’ (Conklin, 2005, p. 7). One possible response to a wicked problem is to tame it through imposing a definition onto the problem, but this, at best, can only lead to a short-term

solution. Figure 1 (pp. 54-55, over) provides some examples of how the formulation of the assessment problem can lead to diverse and often contradictory solutions.

2. 'Wicked problems have no stopping rule'

A non-wicked (or tame) problem is a problem which is solvable, at which point it comes to an end. Moreover, the problem solver knows that they have done their job, the solution to the puzzle is found, or the proof of the equation is found. Additionally, experts in the field can evaluate the solution and confirm that the problem has indeed been solved (Rittel and Webber, 1973, p.162). However, in the case of wicked problems, it is not possible to see that a problem has been solved, and 'because there are no ends to the causal chains that link interacting open systems, the would-be planner can always try to do better' (Ibid. p.162). The lack of a definition of problem of a wicked problem (as mentioned above) means that the problem is constantly reshaped and redefined.

Suppose we take the view that reducing the number of students on a course or doing a module, may well make for a different (better?) experience of assessment and feedback for those students – it may be possible to provide all feedback verbally, face-to-face, and students may feel better supported and more engaged. NSS data for assessment and feedback may go up on that course, which could be regarded as a vindication of the smaller class sizes policy,

In practice this success is likely to lead to an institutional pressure to take more students and have larger class sizes. Success on institutional and course level metrics as measured in the Teaching Excellence Framework (TEF), would logically lead to an increase in demand for places at a given university or on a given course, and the economic realities of universities are such that they will take more students to increase their income, thereby increasing the size of classes, which in turn will make the assessment practices that enabled the success impossible to sustain.

3. 'Solutions to wicked problems are not true-or-false, but good or bad'

'For wicked planning problems, there are no true or false answers. Normally, many parties are equally equipped, interested, and/or entitled to judge the solutions' (Rittel and Webber, 1973, p.163) – in this case, academic staff and students, as well as others. The evaluations of the solutions are 'likely to differ widely to accord with their group or personal interests, their special value-sets, and their ideological predilections. Their assessments of proposed solutions are expressed as 'good' or 'bad' or, more likely, as 'better or worse' or 'satisfying' or 'good enough' (Ibid. p.163).

While proposed solutions to wicked problems do not solve the problem of assessment (see 2 above) some actions will bring about improvement and others may intensify the problem. Additionally, there will be winners and losers in terms of who benefits from the solution being implemented. Halving student numbers may be beneficial to those who get into university, but could be detrimental to those who don't. The solution may seem to fix the immediate problem at the expense of creating wider problems. If we fix the 'assessment problem' by having fewer students, there are consequences for wider social mobility. In other words, a small wicked problem is actually a component of a bigger wicked problem.

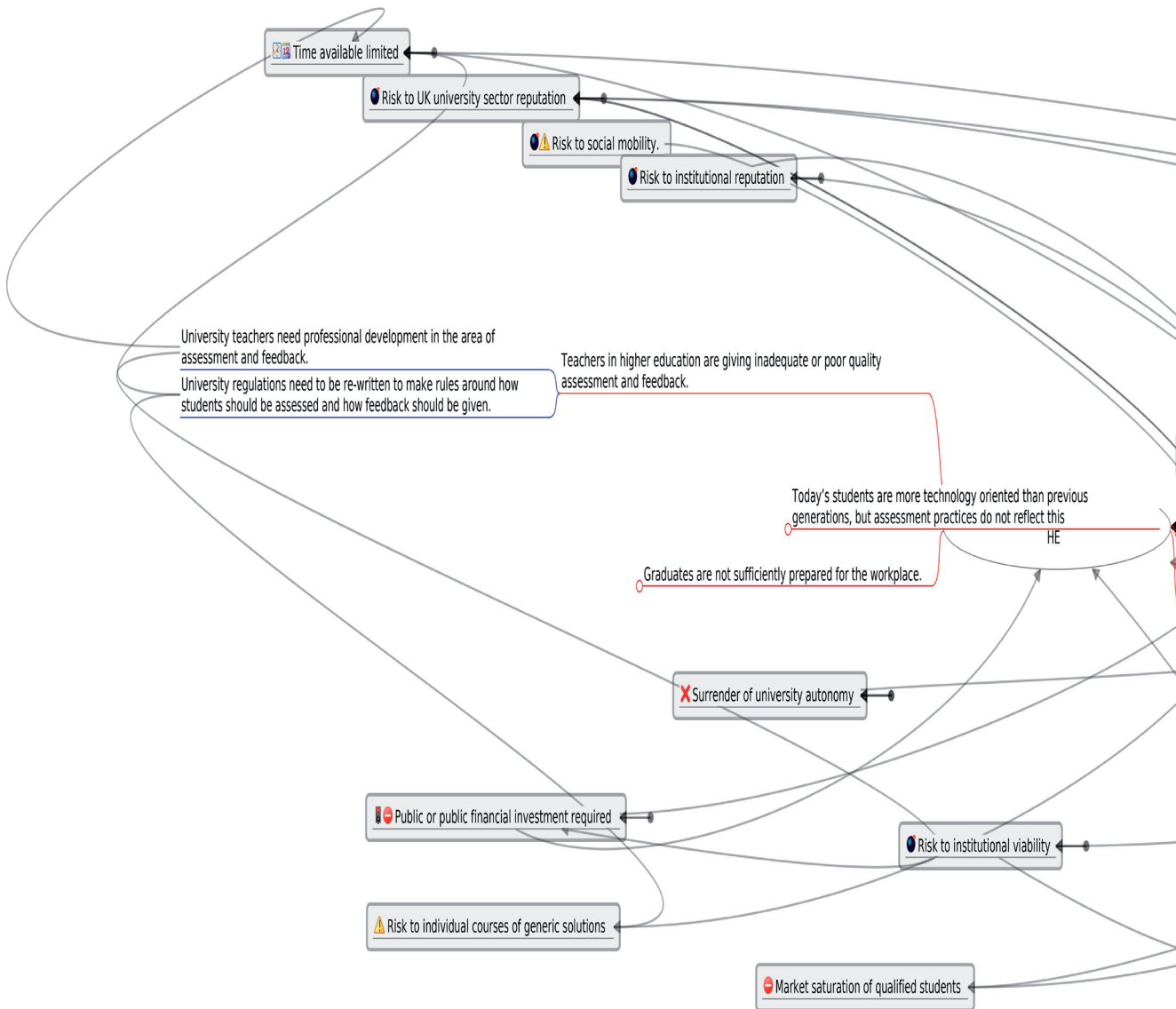


Figure 1 Assessment and feedback in higher education: anatomy of a wicked problem

4. 'There is no immediate and no ultimate test of a solution to a wicked problem'

In a non-wicked problem it is possible to assess whether a solution has worked or not. We can evaluate the assessments in terms of what is known about good assessment, and we can seek the opinions of colleagues and students, but there is no certain test of whether what we have done is really a solution, firstly because we can't define the problem, and secondly because we cannot determine the basis for evaluating the success or otherwise of an intervention. While a course team might celebrate better NSS scores,

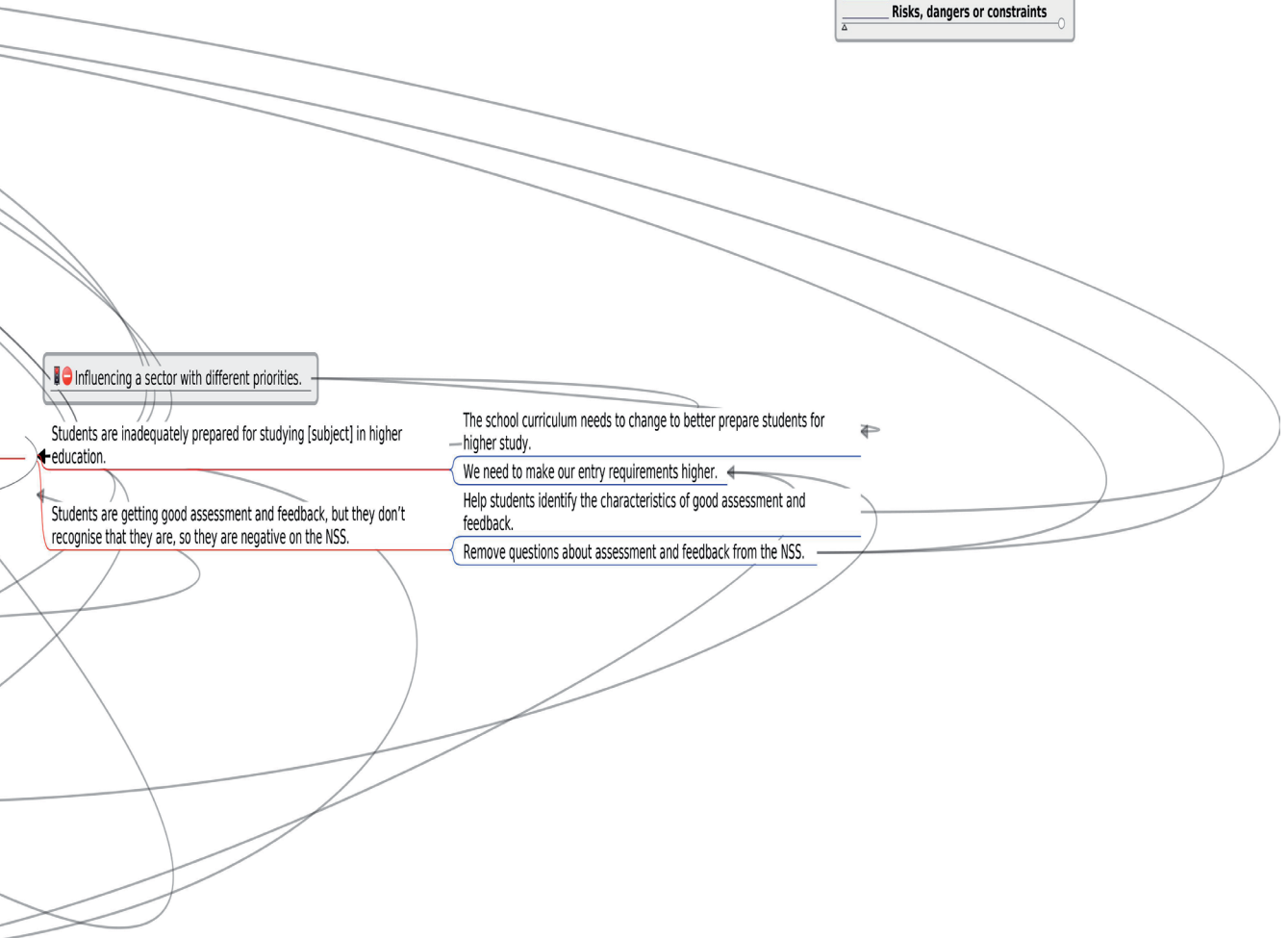
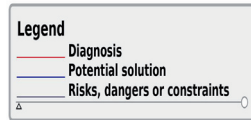


Diagram available at: <https://staff.brighton.ac.uk/cti/SiteAssets/Assessment%20and%20feedback%20in%20HE%20legend%20final.svg>.

these are not necessarily traceable to specific interventions; nor do they necessarily indicate that the interventions are pedagogically sound. Not only are the views, experiences and performance of my current students no immediate test of whether my solution was intrinsically a good one, we cannot seek an ultimate test by going back to those students in five, ten or 20 years' time. Knight and Page (2007, p.4) identify 'Wicked competences' which are '... achievements that cannot be neatly pre specified, take time to develop and resist measurement-based approaches to assessment'.

5. 'Every solution to a wicked problem is a 'one-shot operation''

'Every solution to a wicked problem is a 'one-shot operation'; because there is no opportunity to learn by trial and error, every attempt counts significantly. ... 'every implemented solution is consequential. It leaves 'traces' that cannot be undone' (Rittel and Webber, 1973, p.163).

A 'solution', to the experience of assessment and feedback of students on any given module will have an impact on those students' experience – and may have an unforeseen impact on a future group of students. On the micro-level, how often do we respond to student feedback only to find a different, sometimes opposite problem emerges later on? Students tell us a topic isn't valuable so we take it out, only to have the following year's students tell us that they needed guidance on the topic we just took out. In both cases some of the student feedback indicated some degree of dissatisfaction. If we take this problem from the individual level to the policy level, the lack of opportunity for trial and error is even more pronounced. While a trial and error approach might be possible from the point of view of the teacher, each solution is a 'one-shot' operation from the student perspective. Additionally, it can take many years to really evaluate a particular solution as 'With wicked planning problems ... every implemented solution is consequential. It leaves 'traces' that cannot be undone'. (Ibid. p.163).

6. 'Wicked problems do not have ... [a] set of potential solutions'

'Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan'. (Rittel and Webber, 1973, p.164).

As there are not finite limits to the description of the problem, there are no finite solutions either, or any agreement about which possible solutions might be implemented. 'There are no criteria which enable one to prove that all solutions to a wicked problem have been identified and considered' (Ibid. p.164).

Assessment on any scale, whether across a module, a course, an institution or a national system could be potentially improved by:

- a) More summative assessment tasks or fewer summative assessment tasks.
- b) More formative assessment opportunities or fewer formative assessments.
- c) A larger range of assessments or a narrower range of assessments.
- d) An increased volume of feedback, or less feedback provided in a quicker time.
- e) More staff training courses or teaching qualifications.

Some of these potential solutions are contradictory which intensifies the sense that there are no finite number of solutions. Even if a course-wide or institutional 'sweet spot' in balancing these different solutions can be found, it will be temporary.

7. 'Every wicked problem is essentially unique'

Rittel and Webber expand on this heading by suggesting that 'despite long lists of similarities between a current problem and a previous one, there always might be an addi-

tional distinguishing property that is of overriding importance' (Rittel and Webber, 1973, p.164). This is highly pertinent in higher education, where discussion about broad issues such as the need for consistent assessment criteria, may seem like a simple issue for all module assessments, but the *specifics* of the criteria for any given discipline area, or any given group of students, or particular task, make the 'solution' (and therefore the problem) highly different for each instance. While we can talk about assessment problems generally, what assessment looks like in each individual university, course or module looks different. We can put into place university-wide regulations protecting students from the possibility of over-assessment or under-assessment, but there is no certainty that such regulations will benefit every student or every course and every module. While such regulations around word limits and the number of assessments seek to supply justice and fairness, existential questions such as whether a 20 minute oral presentation is equal to a 1,500 word essay arise. Moreover, is a 1,500 word essay on Module A at Level 4 intrinsically the same in terms of demanding an effort as a 1,500 word essay on Module B at Level 4 covering a different area of the same discipline? Relating to 3) above it is necessary to point out that solutions are good and bad, even though they are not solving the problem. For example, we would regard the setting of regulations around assessment equivalences as a much better solution than insisting that all 20 credit modules must have a two-hour unseen exam.

8. 'Every wicked problem can be considered to be a symptom of another problem'

'Problems can be described as discrepancies between the state of affairs as it is and the state as it ought to be' (Ibid. p.165). Rittel and Webber provide an example to illustrate this – 'crime in the streets', which to them 'can be considered as a symptom of general moral decay, or permissiveness, or deficient opportunity, or wealth, or poverty, or whatever causal explanation you happen to like best' (Ibid. p.165). Therefore, the issues of assessment and feedback can be seen as: a problem caused by mass expansion of higher education (too many students to give them the individualised attention that might be seen as a solution); lack of time or training (academics don't have the time or skills to provide good feedback); lack of student skills (students lack feedback literacy and are unable, or unwilling, to turn feedback into action). However, the assessment of students, even those under five years old is a key issue which extends in wicked problems around social mobility, equality of opportunity and, social welling and mental health. A student educated in England between the ages of four and 18 has undergone nationally set assessments at seven, 11, 16 and 18 at the very least. These prior experiences of assessment play an important part in shaping students' attitudes to assessment at university.

9. 'The existence of a discrepancy representing a wicked problem can be explained in numerous ways'

Continuing their example, Rittel and Webber indicate that 'Crime in the streets' can be explained by not enough police, by too many criminals, by inadequate laws, too many police, cultural deprivation, deficient opportunity, too many guns, phrenologic aberrations, etc'. (p.166). The choice of explanation determines the nature of the problem's

resolution. For example, we can regard the core of problem of assessment as being that teaching staff need to give students better feedback.

Or we can view it as students being inadequately prepared for study at higher education level. In this reading the ideas about the causes of the problem (and therefore any possible solutions) lie outside higher education. Is it that there are simply too many students per teacher to do a good job of assessment? Rittel and Webber suggest that 'everybody picks that explanation of a discrepancy which fits his intentions best and which conforms to the action-prospects that are available to him' [sic] (p.166). Therefore, academics might pick an explanation that indicates students do not read or use feedback, whereas students might be more likely to favour an explanation that suggests academics need to provide better guidance (feedforward) on how to improve work.

10. 'The social planner [educator] has no right to be wrong'

In contrast to scientific problems, where hypotheses are put forward and refuted as a way of advancing knowledge (and therefore no blame attached to postulating a theory that later gets refuted), wicked problems as defined by Rittel and Webber tolerate 'no such immunity' (p.167). In education, as in social planning (the area Rittel and Webber draw upon for their discussion), the aim is to improve aspects of the world/higher education experience, and people are liable for the consequences of their actions (p.167). Universities (singular or plural) and teaching staff (singular and plural) are never granted the right to be wrong. Any attempts to solve a given problem, whether at the micro or macro level inevitably has consequences – a lecturer changes the assessment on a module which may suit some students, but others criticise the change. A university can reformulate its curriculum design on an institution-wide basis, possibly to equalise opportunities or fairness across different courses, but possible errors are amplified throughout the system. The other side of 'no right to be wrong' argument is that there are not always rewards to being right and improving matters. It is not straightforward to persuade students that this year's assessment regime is good because you used last year's feedback to improve it.

Final thoughts on responding to the wicked problem of assessment

1. Assessment is a social issue and not a technical problem

An overarching characteristic of the wicked problem is that the problem is inherently social and not technical. It is instructive at the institutional level that assessment is often addressed through technical means, such as the rewriting of the rules and regulations around assessment or mandating technological systems for the delivery of assessment. Such changes may be necessary and beneficial, but if they ignore or override the social dimensions of assessment, technical solutions are unlikely to improve outcomes. It is essential therefore, that technical solutions (for example, through technology or policies) do not precede considerations of the social dimensions of the issue.

2. Assessment is a wicked problem but there are good and bad responses

As stated previously there are good responses and bad responses to wicked problems. Therefore, awareness of assessment as a wicked problem does not mean that all the responses are equally valid or equally futile. Just as with the other wicked problems like climate change where individuals, businesses, institutions and governments can make

choices, policies, regulations and laws to address the challenge, individuals and universities can work to improve their assessment practices through staff development, research, the sharing of good practice and better engagement with students. Recognising the wicked nature of a problem does not mean that all responses are equal in quality, nor does it mean that all responses are equally futile.

3. Finally, the definitions of what is really wrong with assessment are in a constant state of flux

Whether the nub of the problem is the internet, poor teaching, government policies, universities, schools, grade inflation, plagiarism, contract cheating, lack of agreed standards across the sector or poor assessment design, the essential wickedness of assessment can always be viewed from another angle. Different perspectives on the problem can serve diverse personal, academic, political and ideological agendas and these perspectives underpin the 'solutions' which are put forward.

Conclusion

In conclusion, rather than leading to a sense of hopelessness, recognising assessment as a wicked problem can provide thoughtful and nuanced perspectives, which are actually helpful in making assessment work better. Therefore, rather than being stifled by the panaceas often presented by governments, institutions and individual, an understanding of assessment can be strongly liberating.

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Biographies

Dr John Canning joined the Centre for Learning and Teaching in 2013 after 10 years working at the University of Southampton, mostly for the Subject Centre for Languages, Linguistics and Area Studies, providing support for teaching and learning across the UK. He studied geography at Aberystwyth (BA Hons) and Bristol (MSc, PhD). His research interests include student voice, interdisciplinary teaching and learning, and the professionalisation of university teaching. John co-ordinates the Postgraduate Certificate in Learning and Teaching in higher education for early career academic staff.

Juliet Eve is Assistant Head of the Centre for Learning and Teaching at the University of Brighton and leads on professional development for academic staff. She has been teaching at the University of Brighton since 2009. Juliet started as a lecturer in information, media and communication, eventually becoming Head of Division. Her research interests are mindfulness and emotional intelligence in teaching and learning, and experiences of Assessment and feedback in higher education.

Centre for Learning and Teaching | 

104 Watson Building
University of Brighton
Village Way
Falmer BN1 9PH

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