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A new framework for the design and evaluation of a learning institution's student engagement activities

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Abstract

In this article we explore the potential for attempts to encourage student engagement to be conceptualised as behaviour change activity, and specifically whether a new framework to guide such activity has potential value for the Higher Education (HE) sector.

The Behaviour Change Wheel (BCW) (Michie et al. 2011) is a framework for the systematic design and development of behaviour change interventions. It has yet to be applied to the domain of student engagement. This article explores its potential,

by assessing whether the BCW comprehensively aligns with the state of student engagement as currently presented in the HE literature.

This work achieves two things. It firstly allows a prima facie assessment of whether student engagement activity can be readily aligned with the BCW framework. It also highlights omissions and prevalence of activity types in the HE sector, compared with other sectors where behaviour change practice is being successfully applied.

Keywords

Student engagement; higher education; behaviour change; attainment; learning gain.

Introduction

Student engagement is highly correlated with student activity (Kahu, 2013), and such activity is related to better retention, completion rates (Thomas 2012) gains in content knowledge, skills, competencies or personal development (McGrath et al. 2015; Brooman and Darwent 2014). Maximised learning gain is socially beneficial because it aids the development of human capital and boosts economic productivity (Braun and Bily 2013).

However, there is still much to learn about the linkage between engagement programmes, effects, and outcomes in Higher Education (HE). There is no shortage of data available to capture the student's view of their university experience and levels of engagement (Thomson and Douglass 2009; e.g. Liu, Bridgeman, and Adler 2012), but the factors which influence levels of engagement in academic activities are still unclear (Xerri, Radford, and Shacklock 2017). The academy also needs to evidence the direct link between specific student engagement initiatives and learning gain (Thomas 2012). As Brooman and Darwent observe (2014), learning institutions need to know much more about how and why interventions work. The challenge is made more difficult by the fact that what constitutes a 'student engagement' initiative is still being clarified (Bryson, 2015).

This article explores the potential for university activity around student engagement to be conceptualised as behaviour change activity, and specifically whether a new framework to support such activity is of potential value as a tool to design and evaluate interventions at any level (university, faculty, school or tutor-led) to promote student engagement.

Engagement and experience

Despite a large body of literature on student engagement (Wimpenny and Savin-Baden 2013), no universal definition of student engagement exists. Krause describes it as 'a compendium of behaviours characterising students who are said to be more involved with their university community than their less engaged peers' (2005, 3). The terms 'experience' and 'engagement' are often used to refer to very similar or highly overlapping concepts, with 'engagement' being a core ingredient of student 'experience'. The critical distinction is that while 'experience' infers activities and opportunities which the students are offered, 'engagement' involves students having responsibilities as learners, rather than considering themselves as passive receivers (Kandiko 2012). Many factors that predict student success are within the student's control, such as attendance and study hours (Dollinger, Matyja, and Huber 2008). Student capabilities relevant to engagement have been categorised as behavioural, cognitive and emotional (Trowler 2010, 8). When looking at the capabilities students need in order to engage, 'motivation is the portal to engagement' (Barkley 2010, 15). Other relevant capabilities associated with a student engagement include trust in self/others, belonging, and social capital (Zepke 2015).

While this suggests that 'experience' is focussed on what is on offer to a student, and 'engagement' on the efforts a student makes to take up what is on offer, this does not imply that engagement is the sole responsibility of the learner. Considerable literature makes the case that it is what HEIs do that makes engagement more likely (Chickering and Gamson 1987; Coates 2006; Thomas 2012; Bryson 2015; Ramsden 2013; Gunn and Fisk 2013). Thomas (2012) argues that the curriculum should be designed to promote engagement, and that all engagement activity should be holistic, with the manner of delivery and culture of the organisation as important as intervention content (Thomas 2012). Activities should not, however, be uniform as

this may create pressure for conformity and result in alienation and disengagement (Mann 2005).

Existing tools to improve student experience

An increase in levels of student engagement requires a change in observable behaviour (Thomas 2012). Encouragement of the prevalence or incidence of specific behaviours can be defined as a behaviour change intervention (Michie, van Stralen, and West 2011). For example, as class attendance correlates with student success (Dollinger, 2008) a university, faculty or course team might decide to implement a behaviour change intervention which encourages students to improve their attendance rates.

There are already existing frameworks and tools to help an institution or individuals within it to try to manage and improve student engagement. The UK Higher Education Academy identifies key issues and activities likely to promote student access, retention, attainment and progression in HE (Higher Education Academy 2016). The Student Engagement Partnership is similar in proposing activity and associated indicators to know if these have been effective (Thomas, 2017). A further student engagement model focusses on plotting the stages of a student journey and the order and timing of student engagement activites to support students (Morgan, 2012). Such models are informed by common themes and experience in the sector. We argue they are complementary to the framework used in this article, which focusses instead on the factors which influence engagement as the starting point for intervention choice.

The Behaviour Change Wheel

The Behaviour Change Wheel (BCW) is a framework for the systematic design and development of behaviour change interventions. The developers of the BCW argue that it can be applied to 'every intervention that has been, or could be developed' (Michie, van Stralen, and West 2011, 3). However, it has yet to be applied to the domain of student engagement.

The BCW was developed from the identification that other current behaviour change theories, frameworks and guidance were not comprehensive enough to cover

the full range of intervention options available (Michie, van Stralen, and West 2011). The BCW was the result of a systematic review of 19 behaviour change frameworks and comprises features common in these frameworks (Michie, van Stralen, and West 2011). The BCW has also been found to fit well to a cluster analysis of 33 different theories of behaviour change (Cane, O'Connor, and Michie 2012) and has been judged to be a simple yet comprehensive behaviour change framework (Wolski and Richardson 2015).

<insert Figure 1 about here>

The BCW has three layers (see Figure 1). The inner layer, or core of the BCW, contains three determinants of behaviour: capability, opportunity and motivation. These determinants help understand 'what needs to change' (Michie, Atkins, and West 2014, 57). Each behavioural determinant is further subdivided into two categories. Surrounding the six behavioural determinants on the wheel are nine intervention functions (middle layer) and seven policy categories (outer layer). Definitions and examples of behavioural determinants, intervention functions and policy categories of the BCW can be found in Table 1.

<insert Table 1 about here>

A key feature is the relationships both *within* and *between* layers of the BCW (Michie, Atkins, and West 2014). Thus, a specific behaviour might have multiple determinants, which can be addressed via multiple associated interventions and policies. In this way, the BCW appears to offer a framework to review student engagement holistically, as a group of behaviours affected by a variety of factors, such as the extent a student feels they belong to the campus as a result of its social activities or spaces. Situational context – information about levels of engagement in a particular university, school or course – is fed into the BCW at the determinant level via *physical* and *social opportunity*. This reveals what needs to change. Further guidance is then available as part of the BCW framework, about which intervention and policy choices would be most appropriate to change the *physical* and *social opportunity* determinants (Michie, van Stralen, and West 2011).

A key component of the BCW is its requirement for clarity about a specific behaviour and a specific subject. In this work we have selected student behaviour as

the focus, acknowledging, as earlier, that student behaviour is determined by factors both internal and external to the student. Our starting point is to address a prima facie question about whether the framework is fully applicable to the domain of student engagement activity. We do this by investigating two research questions:

1. What can be learned from omissions or prevalence of activity types in the HE sector as identified in the BCW?
2. Does student engagement activity as described in guidance for the HE sector align with the components of the BCW?

Methodology

To assess whether the the BCW might be applicable to student engagement in HE we adopted a methodology used by previous authors (Michie et al. 2011; Jackson et al. 2014; Wilson and Marselle 2016). The methodology requires assessment of existing guidance on policies and practices to encourage behaviour change in HE. This methodology contributes to the academic literature by investigating whether the BCW can be used to categorise every [student engagement] intervention that has been, or could be, developed. This is an essential preparatory step to test the efficacy and transferability of a framework, previously applied to health behaviours, to HE.

Student engagement intervention guidance was included for coding in this study if it met the following conditions: it was comprehensive (i.e. described a range of student behaviours rather than having a limited to a single topic, such as on digital learning, or class-based learning); addressed all three layers of the BCW; was relatively recent (i.e. since 2010); and written in the English language. Three guidance documents were selected as best matching this criteria.

- Bryson (2015) set out to map student engagement conceptually, drawing on an extensive body of research literature going back 50 years. He articulated students as active learners rather than consumers and undertook a broad review in order to consider 'all relevant material that may inform the scholarship' of student engagement (Bryson 2015, 2).

- Thomas (2012) produced a synthesis of findings, implications and recommendations from the UK Student Retention & Success programme 2008-

2011, a research programme to generate evidence-based analysis and evaluation about the most effective practices to ensure high continuation and completion rates of students.

- Ramsden (2013) deliberately addressed the issue of student engagement from the perspective of senior management in HE, acknowledging the roles leadership and policy have on student engagement.

The three selected HE student engagement guidance documents were informed by the academic literature and by research into student engagement behaviour, and were preferred to use of research literature directly. As has been found by other scholars (e.g. Trowler 2010), little of the academic literature on student engagement includes comprehensive guidance for practitioners and leaders wishing to adopt better practice, so had an insufficiently holistic focus to be used directly for the purpose of this work.

Instructions on how to code the content of the selected engagement guidance documents to the BCW were created based on Michie et al. (2011). The first step in the coding instructions was to 'familiarize yourself with the definitions of the determinants, intervention functions and policy categories' of the BCW (see Additional File 1). However, as we started coding the guidance documents against the BCW, we found terms and concepts from HE did not fit into the definitions from the original BCW (Michie, van Stralen, and West 2011) (see Table 1). Consequently, we adapted the BCW, adding new definitions and examples using current BCW literature, as has been the practice in other explorations of the utility of the BCW (Michie, Atkins, and West 2014; Cane, O'Connor, and Michie 2012; Wilson and Marselle 2016; Hendriks et al. 2013). Definitions and examples from the three student engagement guidance documents which were appropriate to a HE context were also added to the BCW to aid the coding process. Two authors then independently coded the behaviour change interventions found in the engagement guidance against the components of the BCW. We then compared our coding for each piece of guidance. Similarities and differences in coding were identified. Differences were readily resolved through discussion and with the third author, an experienced coder. Table 1 in this article shows both original and our amended definitions and examples of the BCW. Each author was then more readily able to code the behaviour change

interventions found in the selected HE student engagement guidance documents against the components of the BCW.

Results

The final coding of the determinants, intervention functions and policy categories of the three documents was achieved (see Additional File 2) with inter-rater agreements of 93% for Bryson, 95% for Thomas; and 98% for Ramsden. This is in line with other similar coding exercises (Michie, van Stralen, and West 2011; Wilson and Marselle 2016).

Prevalence of BCW factors in HE student engagement guidance

Most of the BCW categories were readily found in the student engagement guidance (see Table 2), with varying frequency. The determinants of the BCW, which sit at the core of the framework, are all to be found in the HE literature. The frequency with which the determinants feature appears in line with the nature of the act of engaging in learning, which is the target behaviour in this work. *Reflective motivation* – defined as mental processes around intentions, willingness, and goals (see Table 1) – is the determinant which appears most frequently. *Social opportunity* – the social cues around us about how to perform – was the second most common behavioural determinant identified as being associated with increased student engagement. Interestingly, *psychological capabilities* – increasing knowledge or psychological skills – was not a frequently coded determinant, although in line with the target behaviour, which is not to learn *per se*, but to encourage engagement in learning. Emotions – defined as *automatic motivation* in the BCW – do not feature frequently in the HE student engagement guidance. *Physical capabilities* and *physical opportunities* are the determinants least frequently identified in the reviewed guidance as relevant to engaging in learning in HE.

When considering the intervention functions and policy categories it is worth noting that the 'agent of change' in all of the guidance documents was considered to be above the level of the student, i.e. teacher, faculty, university or Government. The most commonly advocated intervention is *environmental restructuring* – defined as the adding of objects to the environment to change the physical or social context (see Table 1). *Persuasion* – the use of communication or imagery to motivate – also

appears frequently in the HE student engagement guidance as a means of encouraging students to engage in their learning. It is noted that *coercion* features infrequently, and *restriction* not at all.

The policy category most found to be featured in the HE student engagement guidance was *environmental/social planning* – defined as designing and/or controlling the physical or social environment. Another frequently coded policy associated with student engagement is the use of *guidelines* – defined as documents which recommend or mandate certain types of practice. The use of *fiscal* policies – such as the use of financial levers to influence behaviour, or legislation – barely feature as a means to encourage students to engage in learning. *Legislation* was mentioned only once in the HE guidance documents as a policy to encourage student engagement.

Limitations and difficulties applying the BCW to HE student engagement guidance

Two problems were encountered when applying the BCW to HE student engagement guidance: when wording in the HE student engagement guidance was insufficiently specified to be aligned to a BCW component; and when the definitions of BCW components were insufficiently specified. Each is discussed in turn.

A lack of specificity was found in the three HE guidance documents. The HE student engagement guidance occasionally discussed an intervention involving *motivation* without sufficient detail to enable specification of its type, such as: 'Improving the motivation of students to engage in learning and to learn independently' (Bryson 2015, 16). In such instances, the coders took the view that because the target was student learning and thinking behaviour, then it was coded as *reflective motivation*. Terms like 'empowerment' (Bryson 2015, 16), the 'culture of the school' (Ramsden 2013, 16) or the 'institutional climate' (Ramsden 2013, 17) are insufficiently explained in the HE student engagement guidance to identify which behavioural determinant, intervention or policy are being targeted. Leadership is frequently cited as a component of change, especially by Ramsden (2013). However, 'leadership'is not a specific policy. 'Conditions, opportunities and expectations to become involved' (Bryson 2015, 5) are advocated without specifying what kind. The developing of relationships with others and promoting connectedness is advocated

(Thomas 2012, 13) again without linking to an intervention or policy likely to achieve this.

A lack of clarity was also found in the specification of components of the BCW. Content in the HE student engagement guidance proved difficult to place onto the BCW in three ways: key concepts are not fully specified in BCW; the potential for opportunity to be restrictive is not acknowledged; and there is a blurring of the definitions between BCW components. A sense of 'belonging' is frequently referred to in student engagement literature, and in the three HE guidance documents coded, as playing a critical role for increasing student engagement. However, 'belonging' does not feature in the BCW. Belonging 'is closely aligned with the concepts of academic and social engagement' (Thomas 2012, 12). Thus, social belonging – 'a sense of having positive relationships with others' (Walton and Cohen 2011, 1447) – is related to social identity, which other researchers have coded as *reflective motivation* (Wilson and Marselle 2016).

Developing student confidence (Ramsden 2013, 12; Thomas 2012, 14, 15, 18, 20; Bryson 2015, 13) is cited as a means of promoting engagement in all three HE guidance documents. Yet, confidence is not clearly defined in the BCW. The only time 'confidence' is associated with *capability* is when the BCW is related to other behaviour change frameworks (Cane, O'Connor, and Michie 2012). Other researchers have coded feelings of self-efficacy as *reflective motivation*, in that levels of confidence or self-efficacy will affect reflective processes (Jackson, Smith, & Conner, 2003). For these reasons, we coded confidence as both *psychological capability*[1] and *reflective motivation*.

In our work, it was found that *opportunity* could be restrictive as well as supportive. Restrictive opportunity refers to the lack of physical opportunity in the environment (Wilson and Marselle 2016). Ramsden (2013, 8), for instance, gives the

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[1] Confidence might have been coded as being determined by physical capability had there been an example in the guidance of encouraging a physical skill, such as a medical student being able to administer an injection.

example of large class sizes as a physical factor likely to adversely affect student engagement. Yet, this distinction is not mentioned in the BCW. We amended Table 1 to reflect these two aspects of *physical opportunity*. Bryson also listed social practices in institutions that could restrict opportunity to engage, including pressure to get a 'useful degree', 'academic discourses which constrain student identities' or offer little sense of control over learning (2015, 14). We coded these as examples of intervention types where *incentivisation*, *persuasion*, and *enablement* are intended, but which may have the opposite effect.

Finally, a blurring of definitions for some interventions and polices of the BCW was found. *Enablement*, according to the BCW, involves 'increasing capability, beyond education and training' (Michie, van Stralen, and West 2011, 7) in a manner unspecified. As such, these three intervention functions cannot be easily distinguished. Policy categories *guidelines* and *regulation* in the BCW are similarly blurred.

The coding instruction (see Additional File 1) recommended coding material as Unclassified (U) when an intervention is implied but not identifiable. A great deal of uncoded material might suggest poor alignment between the BCW and HE advocacy around student engagement, but this was not found to be the case. As an example of uncoded material, Thomas (2012, 16) gives clear indication of an intervention: 'engagement to promote belonging must begin early and continue across the student life cycle', but not what type.

Discussion

The work undertaken in this research addresses two research questions:

1. What can be learned from omissions or prevalence of activity types in the HE sector as identified in the BCW?
2. Does student engagement activity as described in guidance for the HE sector align with the components of the BCW?

As a result of our responses to those questions we offer a judgement about whether a framework which links the factors that influence engagement with appropriate activity can be suitably adopted for encouragement of student

engagement, addressing a gap in sector knowledge (Xerri, Radford, and Shacklock 2017).

What can be learned from omissions or prevalence of activity types in the HE sector as identified in the BCW?

As the BCW is formed of a systematic review of 19 frameworks of behaviour change (Michie, van Stralen, and West 2011) and has been further found to align well with 33 major theories of behaviour change (Cane, O'Connor, and Michie 2012), it would be expected to find good correspondence between the BCW framework and guidance from the HE sector advocating specific activity to promote student engagement behaviour. This is the case at the determinant level in that all of the determinants of the BCW were also identified in the HE student engagement guidance. *Physical capability* appeared infrequently. This is in line with expectation, as the majority of students are acquiring cognitive rather than physical skills[2]. Unsurprisingly, given the nature of the behaviour sought, *reflective* (rational) *motivation* is a key determinant. However, the HE student engagement guidance was found to underspecify *automatic* (emotional) motivation, especially as Bryson observes that *'feeling engaged'* is critical (2015, 8) (emphasis added). The prevalence of *social opportunity* over *automatic motivation* in student engagement guidance is perhaps a reflection of the fact that universities are more easily directed to work with those features which it finds easiest to change and measure – such as the *physical* and *social opportunities* available.

At the intervention level, advocated activity also appears to favour intervention functions that are easier to achieve. *Environmental restructuring* – the creation of cultural and physical spaces which encourage engagement in learning – are advocated most frequently. The number of times in which *persuasion* features is a reminder to those within HEIs that students (who are at an early stage of their career

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[2] However, this is not the case for medical, art and dance subjects; generalisations made in the three HE student engagement guidance for all students might need adjusting for these more physical disciplines.

journey) need the relevance of their learning communicated to them in a way which is perhaps frequently only implicit. Thomas (2012) highlighted the importance for teachers to highlight the relevance of what is being learned. *Restriction* did not feature as an intervention. This kind of lexicon is probably not seen as appropriate given the consumer orientation direction of HE, especially in the UK. The same is likely to be the case for *coercion*, which also did not feature frequently.

At the intervention level *modelling* appears under-specified in the HE guidance. This is an approach to behaviour change frequently deployed by programmes designed, for instance, to encourage energy users to adopt efficient behaviour (Wilson and Marselle, 2016), but it is found less frequently in HE guidance on measures to enhance engagement. This would appear to be a missed opportunity. The teacher as role model is an established component of the teaching role (Harden and Crosby 2000; Kukulska-Hulme 2012). It can only be speculated why this dimension of engagement is under-specified.

When policy categories were examined, *environmental and social planning* was most frequently coded. This is in line with identification of linkages between interventions and policies (Michie, van Stralen, and West 2011), in that systems, controls and organisational support need to be in place before environmental features (such as inviting study spaces) or social support features (such as learning coaches) can be provided.

Does student engagement activity as described in guidance for the HE sector align with the components of the BCW?

We find that student engagement activity, as described in HE guidance, aligns well with the BCW, with all of the determinants codified and most of the interventions and policies. When guidance was difficult to categorise it was frequently because the HE guidance reviewed lacked sufficient detail - examples discussed in the results include how leadership should be invoked or students be 'empowered' without corresponding guidance as to how these features fit into a programme. Similarly, examples were found of specific changes in behaviour being recommended without an allied specification about how these should be achieved.

However, there was also some evidence of key features associated with encouraging student engagement, such as belonging, not being easily be placed onto the BCW. As reported in the results section, precedence was found for aligning 'belonging' with social identity and thus *reflective motivation*.

The acknowledgement that physical opportunity can also be restrictive is also an issue that it is important to be aware of when operationalising a behaviour change programme. For example, an intervention to encourage student engagement might be undermined if, at the same time, class sizes are increasing or classes are held at times when it is difficult for students to attend.

Can the framework be recommended for use to address student engagement behaviour? What is its value?

The BCW appears to have useful value as a tool to help policymakers and practitioners identify the clear process of change that interventions will support. Examples have been highlighted in the reviewed student engagement guidance of general features associated with better student engagement that are not matched against an indication of what type of action would encourage such features and how they need to be linked in a programme. Similarly, the role of policymakers and practitioners is made clear by the layers of the BCW. As was mentioned in the results section, clarity is called for about the target of the behaviour and the agent of change. The BCW is useful for clear identification of who does what, with what effect.

The HE student engagement guidance frequently involves exhortation for a vision of an ideal state and a 'call to action' rather than an in-depth practical steps to achieving it. Complementing the existing HE guidance, the BCW offers insight into the factors underlying engagement in a given context and links them to activity most likely to address these. Feedback is an example of a tool which could gain increased transparency via analysing through the BCW framework. The BCW allows practitioners and policymakers to break down the features feedback will comprise, such as comparison of behaviour with other's or one's own previous behaviour. A student dashboard is an increasingly popular form of feedback intervention (Sclater, Peasgood, and Mullan 2016). Such dashboards are intended to provide near real time feedback data to encourage student engagement and improve learning gain (Verbert et

al. 2013). Currently these dashboards appear to contain readily available data rather than data whose presence is driven by theoretical constructs. The BCW might help map which features should be presented on a dashboard for maximum effectiveness in supporting engagement, helpling practioners be explicit about what is needed.

Conclusion

We believe this to be the first study to examine the potential of the Behaviour Change Wheel (BCW) as a tool to address student engagement. The first contribution of this work is to introduce the framework adapted for student engagement use as in Table 1, which we believe sufficiently characterises the current range of student engagement interventions to merit trial adoption in HE. We believe this to be a potentially useful tool to help evaluate existing programmes and devise future programmes in this sector. The second is to use our analysis of the prevalence of BCW components to identify those which are perhaps under-used currently in HE (see Table 2). This includes identification of how the sector might usefully target the emotional factors that act as a barrier to student engagement. It also identifies a potential larger role for the use of modelling, which is currently underspecified in HE student engagement guidance.

The research has exposed some outstanding issues with the BCW and recommends that those designing student engagement programmes use it alongside HE sector insights such as those reviewed earlier in this article on important contextual features, for example *when* to run an intervention (e.g. Morgan 2012). We believe that with the provisos we have identified, there is potential for university activity around student engagement to be conceptualised as behaviour change activity and that the benefit to HE would be more effective engagement programmes at the university and course level.

The main limitation of this work is that it does not trial the BCW in practice, but we would argue that, given the pre-existance of engagement guidance from within the HE sector, a *prima facie* analysis as conducted in this work is an essential precursor step to justify its use. A recommend next step is to use the BCW in the planning, monitoring and evaluation of a student engagement programme, using insights about its strengths and limitations highlighted in this article. Another

limitation is the largely UK focus of this work, with examples and literature most pertinent to a HE environment where students pay for their tuition. We recommend similar analysis be conducted using HE engagement guidance emanating from other continents and contexts. Finally, future work could consider further why some features were under-represented in this review, and the extent to which that may identify avenues for a more holistic response to addressing student engagement.

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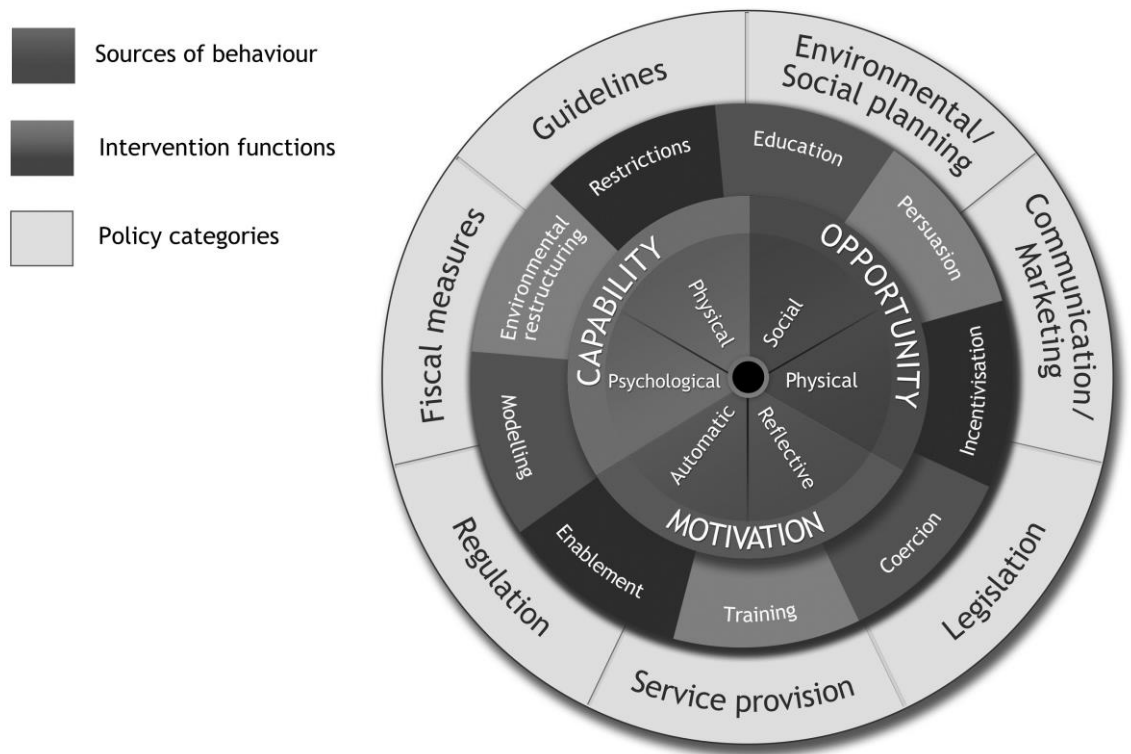doi:10.1080/07294360.2015.1024635.

Figure 1. The Behaviour Change Wheel by [Michie et al. (2011)](#) is licensed under the [Creative Commons Attribution License 2.0](#).

Table 1. Original definitions and examples of BCW determinants, intervention functions and policy categories, with additional examples from other behaviour change frameworks and higher education documents.

Determinants	Original BCW Definition	Constructs and examples from other BCW analysis or frameworks	Higher Education examples
Capability	*The individual's physical and psychological capacity to engage in the activity concerned. It includes having the necessary knowledge and skills[1]*		
Physical capability	• Physical skill, strength or stamina	• *Competence[2]* • *Practice[2]*	• *Skills to use e-learning tools* • *Literature search skills* • *Practice-based skills*
Psychological capability	• Knowledge or psychological skills, strength or stamina to engage in the necessary mental processes • Capacity to engage in the necessary thought processes–comprehension, reasoning *et al.*[1]	• Memory, attention, decision processes; behavioural regulation[3]	• *Time and effort devoted to studies* • *Problem-solving skills* • *Active engagement with learning tasks* • *Ability to cope with a developing curriculum* • *Critical thinking skills*
Opportunity	*All factors that lie outside the individual that make the behaviour possible or prompt it[1]*		

Physical opportunity	• Opportunity afforded by the environment involving time, resources, locations, cues.	• Environmental context & resources[3]
		 • Infrastructure; objects; time & schedules[4]
		 • Restrictive – lack of physical opportunity afforded by the environment[5]
			• *Convenience of behaviour*
			 e.g. travel time to see tutor
			 • *Access to e-books or study space*
			 • *24 hour study support services*
			 Restrictive opportunity:
			   • *Large class sizes*
			   • *Excessive material in curriculum*
			   • *Poor access to feedback on progress*

Social opportunity	• Opportunity afforded by interpersonal influences, social cues and cultural norms that influence the way that we think about things	• Social influence[3]	• *Collaboration with peers* • *Contact with tutors* • *Social spaces, clubs and societies, students' union.*
Motivation	*All those brain processes that energize and direct behaviour, not just goals and conscious decision-making. It includes habitual processes, emotional responding, as well as analytical decision-making[1]*		
Automatic motivation	• Automatic processes involving emotional reactions, desires, impulses, inhibitions,	• Reinforcement; emotion[3] • Habit[4]	• *Students 'feeling' engaged* • *Feeling prepared*

Reflective motivation	drive states and reflex responses. • Emotions and impulses that arise from associative learning and/or innate dispositions[1] • Reflective processes involving plans and evaluations • Commitments • Engagement (defined as a state of mental willingness)	• Routine[5] • Trust[5] • Goals; intentions; professional/social role & identity; optimism; beliefs about consequences or capabilities[3] • Values; Attitudes; cost/benefits[4]	• *Enjoyment in learning and the subject.* • *Feeling part of something* *Negative impact:* • *Disappointed by provision or support* • *Sense of belonging* • *Sense of being a professional* • *Autonomous – developing responsibility for own learning* • *View themselves as active partners in their learning*
Interventions	**Original BCW Definition**	**Constructs and examples from other BCW analysis or frameworks**	**Higher Education examples**
Education	Increasing knowledge or understanding		• *Learning* • *Discipline-specific knowledge and practices*
Persuasion	Using communication to induce positive or negative feelings or stimulate action		• *Communication of high expectations* • *Communicate relevance of curriculum/skills development* • *Inspire students to aim high*
Incentivisation	• Creating an expectation of reward • *Creating an expectation of reduced cost*	• Feedback on behaviour[6] • Commitment[6] • Discrepancy between current behaviour & goal[6]	• *Timely feedback on progress* • *Enriching educational experiences* • *Fair assessment* • *Student prizes*
Coercion	Creating expectation of punishment or cost	• Feedback on behaviour[6] • Commitment[6] • Discrepancy between current behaviour & goal[6]	• *Attendance monitoring* • *Institutional monitoring of departments, and programmes with poor progression and completion numbers*
Training	Imparting skills	• Demonstration and instruction on how to perform a behaviour[6] • Feedback on behaviour[6]	• *The use of web and computer to support learning and access resources* • *Assessment technique*
Restriction	Using rules to reduce the opportunity to engage in the target behaviour		• *Submission deadlines, library fines* • *Measures to combat plagiarism*

Environmental restructuring	Changing the physical or social context	Adding objects to the environment[6]	• *Welcoming, well equipped study spaces* • *Real time displays of availability/app-enabled booking* • *Subsidies, loans, grants* • *Group learning opportunities*
Modelling	• Providing an example for people to aspire to or imitate	Demonstration of behaviour[6]	• *Dashboards allow students to compare with peers/average performances and set goals* • *Guest speakers from industry* • *Role models*
Enablement	Increasing means/reducing barriers to increase capability (beyond education and training) or opportunity (beyond environmental restructuring)	• Goal setting[6] • Problem solving[6] • Action planning[6] • Commitment[6] • Discrepancy between current behaviour & goal[6]	• *Loans, grants* • *Readily available study skills support* • *Establishment of a learning community* • *Regular opportunity for interaction between student and staff* • *A culture of trust between lecturer and student*
Policies	**Original BCW Definition**	**Constructs and examples from other BCW analysis or frameworks**	**Higher Education examples**
Communication/ marketing	Using print, electronic, telephonic or broadcast media	*Using media to achieve broad commitment for target behaviour[7]*	• *Communicating the institution's successes* • *Communicating that a focus on student learning is a primary institutional function* • *Publication of data on retention, completion and employment outcomes to inform student choice*
Guidelines	Creating documents that recommend or mandate practice.	Standards and voluntary agreements[5]	• *Governance; policies, strategic institutional objectives for learning and teaching* • *Recognising and rewarding excellent teaching*
Fiscal Measures	Using the tax system to reduce or increase the financial cost	*Financial support[7]*	• *Use of performance metrics to police funding increases.*
Regulation	Establishing rules or principles of behaviour or practice.	*Targets[7]*	
Legislation	Making or changing laws		• *Measures to opening the market to new providers, increasing competition as a means*

		to drive improvement
		• *Measures to reward universities extending participation*
		• *Measures to incentivise universities to raise teaching quality*
Environmental/ social planning	Designing and/or controlling the physical or social environment	• *Systems to recognise and reward good teaching*
		• *Institutional cultures which reward and recognise successful student engagement*
		• *Ensuring teaching staff have appropriate academic workload*
Service provision	Delivering a service	• *Training and development in teaching for academic staff*
		• *Pre-entry provision for students, which informs expectations; builds links with peers, current students and staff and begins to develop a sense of belonging.*

Note. All statements, except where otherwise stated, from Michie, Atkins & West (2014), Table 1.3 (p. 63), Table 2.1 (p. 111) and Table 2.7 (p.135)
1 Michie et al. 2011(2011), p. 4 & Table 1
2 Cane et al. (2012) Table 2, p. 13-14
3 Michie et al. 2014 (2014) Box 1.15, p. 94
4 Michie et al. 2014 (2014) Table 5.5, p. 226-231
5 Wilson and Marselle (2016) Table 1, p. 179-80
6 Michie et al. 2014 (2014) Table 3.3, p. 151-155
7 Hendriks et al. (2013, p.12)
Italics = examples added by current authors.

Table 2. Number of times BCW factors were coded in each of the three Higher Education guidance documents, and total number of occurrences across all documents.

	Bryson (2014)	Thomas (2012)	Ramsden (2013)	TOTAL
COM-B Determinants				
Psychological capability	29	18	19	66
Physical capability	6	0	3	9
Reflective motivation	53	43	30	126
Automatic motivation	12	7	2	21
Physical opportunity	8	4	5	17
Social opportunity	33	37	12	82
Intervention Functions				
Education	5	10	8	23
Persuasion	7	14	7	28
Incentivisation	5	4	8	17
Coercion	3	0	0	3
Training	1	13	4	18
Restriction	0	0	0	0
Environmental restructuring	21	30	23	74
Modelling	1	1	12	14
Enablement	6	8	4	18
Policy categories				
Communication/marketing	0	5	8	13
Guidelines	1	9	25	35
Fiscal	0	2	0	2
Regulation	0	4	5	9
Legislation	0	1	0	1
Service provision	2	8	15	25
Environmental /social planning	1	13	59	73

Electronic Supplementary Material

Additional File 1 - Applying the Behaviour Change Wheel to characterise intervention strategies: Coding Materials

1. Familiarise yourself with the definitions of the Determinant, Intervention and Policy categories. See Table 1 below.

2. Establish the target of the intervention strategy (whose behaviour is being changed).

3. For each intervention and policy, establish the agent of change (who is enacting it).

4. Statements of general exhortation that do not specify an Determinant, Intervention or Policy should be coded as U.

5. Code the Determinant first, followed by the Intervention, and then the Policy. Identify which Policies are (a) specified and (b) would be needed in order to enact the Interventions.

    a. Example: the strategy 'Remove tobacco products from display in shops' could only be enacted by the Policy of Legislation (even thought this is not stated)

    b. If it is unclear what policy is being proposed or if many could be used, code U.

6. Do not infer beyond what is directly implied.

    a. Example: a strategy which involves 'Encourage' would definitely involve 'Persuasion', but may not involve 'Education'.

7. Where a change or improvement is proposed to an existing Intervention or Policy, code for the original Intervention or Policy.

    a. Example: If an intervention strategy involves putting more resources into a given service provision to enable a behaviour, code as 'Enablement' and 'Service Provision'

Electronic Supplementary Material

Additional File 2: BCW classification of three HE Student Engagement Guidance Documents

Coding sheet for: Bryson (2015) Clarifying the concept of student engagement.

Coding Key:

Determinants: Psychological capability (C-Ps), Physical capability (C-Ph), Reflective motivation (M-Re), Automatic motivation (M-Au), Physical opportunity (O-Ph), Social opportunity (

O-So)

Interventions

Education E, Persuasion P, Incentivisation I, Coercion C, Training T, Restriction R, Environmental

restructuring V, Modelling M, Enablement/resources N, Unclassifiable U

Policies

Fiscal F, Communication/marketing C, Service provision S, Legislation L, Regulation R, Guidelines G,

Environmental/social planning E, Unclassifiable U

Agreement: The table shows the number of agreed determinants, intervention function(s) and policy category(ies), along with the number for which there was agreement and disagreement.

page	Activity description	Determinants	Intervention function	Policy category	Agreement (n)	Disagree (n)
2	The quantity and quality of effort expended by an individual student	C-Ps			**1**	**0**
	Investment by the students in both curricular and co-curricular activity	M-Re			1	0
	… more involvement resulted in better learning and development	M-Re			1	0
	… institutions and staff	M-Re			1	0

	should focus on the inducing of motivation and 'virtuous' behaviours in the student					
3	… the extent to which students engage being the determinant of their success	M-Re			1	0
	.. it is engagement across the piece by the individual that matters because it is mutually reinforcing. This is a powerful message to staff and management about ensuring that what they do to shape the whole experience of students …	M-Re	U[3]		1	0
	…seven principles to be adopted by staff to: • Ensure student/staff contact • Promote active learning • Develop cooperation and mutuality between students • Emphasize time on task • Give prompt feedback • Communicate high expectations • Respect diversity in talent and ways of learning	O-So, C-Ps , M-Re	V, P, I, M		7	0
	[what the student brings] .. environmental variables (social, cultural, practical, educational, behavioural…)	C-Ps, C-Ph, M-Re, M-Au, O-Ph, O-So			6	0
	[changes in the student]…development, success, satisfaction and	C-Ps, M-Re			2	0

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[3] U is used when an intervention is implied but not identifiable

	persistence					
3	… students are seen to be responsible for constructing their own knowledge	M-Re			1	0
3	… …learning is seen to depend on institutions and staff generating conditions that stimulate student involvement		V		1	0
4	…five benchmarks, all considered to be components which encourage student engagement. These were; • Level of academic challenge: extent to which expectations and assessments challenged students to learn • Enriching educational experiences: participating in broadening educational activities • Active and collaborative learning: students' efforts to actively construct their knowledge • Supportive campus environment: feeling of being legitimatized within the community • Student-faculty interaction: level and nature of students' contact with teaching staff		E, P, I, V		4	0
	[Factors important to good educational outcomes]: e.g. reflective and integrative learning, collaborative learning and such activities as study abroad and internships		V		1	0
	Engaging in collaborative projects, undergraduate-led research or peer-		V		1	0

	assisted learning					
5	[Student engagement manifests itself when students]: • Share the values and approaches to learning of their lecturers (academic orientation) • Spend sufficient time and energy on educationally meaningful tasks • Learn with others inside and outside the classroom • Actively explore ideas confidently with other people • Learn to value perspectives other than their own	M-Re, C-Ps, O-So	E		4	0
5	… learning is influenced by how an individual participates in educationally purposeful activities.	M-Re	U		1	1[4]
5	Conditions, opportunities and expectations to become involved	O-So	V		2	0

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[4] Coders disagreed over whether M-Re (reflective motivation) was directly implied (see instructions for coders)

| 6 | … seven scales of SE:
• Developing the capacity to manage one's time, study habits and strategies
• Developing knowledge in collaboration with peers
• Being challenged by the academy and challenging themselves
• The use of web and computer to support learning and access resources
• To promote independent and self-initiated learning
• [Students] To assist communicating and building community
• Students connecting with each other and the university community in activities beyond the classroom, both social and academic. | C-Ps, C-Ph, M-Re, M-Au, O-Ph, O-So | E, T, P | | 9 | 0 |

8	Influences on SE as identified by students: • Their [students'] aspirations; why they choose to come to university and their goals • Student expectations and perceptions about university • Balances between challenge and appropriate workload • Degrees of choice, autonomy, risk and opportunities for growth and employment • Trust relationships between the student and staff, and student and peers • Communication and discourse between student and others • A sense of belonging and community • The existence of supportive social networks • Opportunities for, and participation in, activities and roles which empowered the student and gave them a sense of ownership, self-assurance and self-efficacy	C-Ps, C-Ph, M-Re, M-Au, O-Ph, O-So	V		7	0
	…staff associated SE with virtuous behaviours (e.g. diligence on academic tasks) but ignored the emotional component of SE	C-Ps			1	0
	Conversely, students highlighted 'feeling engaged' as most important	M-Re, M-Au			2	0

9	… six domains of SE: • Motivation and agency: engaged students are intrinsically motivated and want to exercise their agency • Transactional engagement: students and teachers engage with each other • Transactional engagement: students engaging with peers • Institutional support: institutions provide an environment conducive to learning • Active citizenship: students and institutions work together to enable challenges to social beliefs and practices • Non-institutional support: students are supported by family and friends to engage in learning.	M-Re, M-Au, O-Ph, O-So	P, V	E	7	0
	The nature of the personal project: what is the purpose or outcome of their degree for them, i.e. why are they at university?	C-Ps, M-Re, M-Au, O-Ph			4	1[5]
	The degree of integration into university life	C-Ps, M-Re, M-Au, O-Ph, O-So			5	1[6]
	The level of intellectual engagement with the subject	C-Ps, M-Re			1	1[7]

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[5] One coder did not think physical opportunity was explicit

[6] One coder did not think physical opportunity was explicit

[7] One coder did not code C-Ps

9	Engaged in personal project	M-Re			1	0
10	Solomonides et al. (2012a) [emphasise] the ontological component of SE: • Sense of being a professional • Sense of discipline knowledge • Confident, happiness, imaginative, self-knowledge • Learning, understanding, thinking, self-knowledge • Sense of engagement	C-Ps, M-Re			2	0
	[the model emphasises- how students develop a sense of self	C-Ps, M-Re			2	0
	HE is about 'becoming', not 'having'	C-Ps, M-Re			2	0
11	Barnett (2007) [introduces] the concept of the 'will to learn': 'The student's being, her will to learn, her strong self, her willingness to be authentic…'	M-Re				
	… her efforts to know and act	C-Ps			1	0
	A student's sense of engagement with their experience is enhanced by feeling part of something; belonging, affiliating and feeling integrated	M-Re, M-Au			2	0
	The 'academic' experience…progress, performance and the impression gained of the commitment from teaching staff to that student	M-Re, O-So			2	0
	The 'social experience'… self-esteem and quality of relationships with peers	M-Re, O-So			2	0

	and staff					
	This sense of belonging links with … involvement, connectedness and the salience of relationships as well as sense of being.	M-Re, O-So			2	0
12	… the establishment of learning communities are crucial	O-Ph, O-So	V, N	S	5	0
	… engagement is enriched to a significant degree by establishing a sense of community in the educational setting	M-Re	V, N	S	4	0
	[for students] the most important support seemed to derive from a special sense of community … from reciprocal acts of recognition and confirmation	M-Re, O-So	V, P, I		5	0
	There would appear to be a strong potential for SE if students perceive they are part of one or more communities of practice in which they feel competent and which accord with… their 'learning trajectory'	M-Re			2	0
	A sense of belonging is created through a responsive interaction between the student and other members of the university community.	M-Re	N		2	1[8]
	Trust relationships between all parties are important	M-Au			1	0
	How the students related	M-Re, O-Ph,			2	1[9]

	to the campus and 'spaces' within that (outside the classroom) influences sense of belonging	O-So				
	… in addition to the salience of students' relationships with studies, classmates and lecturers that those with broader university life, career and those [dimensions] were as important	M-Re, O-So			2	0
	Becoming also requires transformation, and this infers transformative and powerful learning, the sort of learning that engages successfully, with threshold concepts and dealing with 'troublesome knowledge'	C-Ps			1	0
	… the notion of intellectual and ethical development [of the student] is useful…	C-Ps, M-Re			2	0
13	…'ways of knowing' requires students to transform their thinking about others, themselves and how they see the world	M-Re, C-Ps			2	0
	Transforming… requires movement out of the comfort zones, taking risks and embracing uncertainty	C-Ps, M-Re			2	0
	More advanced and sophisticated ways of knowing imply an open-mindedness, academic self-confidence, reflexivity and an ability to relate to others which infer that the individual both wishes to	C-Ps, M-Re			2	0

[9] One coder did not think relatedness and 'interaction with' we easily relatable to any of the determinants in the model

	engage and is already engaged					
	The student's journey to being a graduate can be seen as an 'identity project'	C-Ps, M-Re			1	1[10]
	Social and cultural capital…. also impacts considerably on student's transition and success	O-So			1	0
	The relational model of SE also includes professional formation and developing disciplinary knowledge … engagement with the subject of study	C-Ps, M-Re			2	0
	… to enhance students' 'willingness to engage', they needed to perceive they were undertaking 'authentic learning experiences'	C-Ps, M-Re			2	0
	.. authenticity is engaging, through the sense the student has of relevance an alignment to their own aspirations, in her example, 'becoming a scientist'	M-Re			1	0
14	…social practices to create more or less opportunity for a sense of authenticity to be perceived	C-Ph, M-Re, O-So	I, N, P, C		5	2[11]

[10] One coder did not agree C-Ps was explicit

[11] One coder disagreed that incentive and enablement should be coded when the context was clearly negative. The purpose of intentional interventions in a social marketing context are always socially positive (might need a citation here)

	Barriers to engagement include… • Too much focus on performativity and functional serving of capitalist society; overemphasis on getting a 'useful degree' and employability • Academic discourses which constrain student identities • Students are estranged and disorientated by being 'outsiders in a foreign land'; they are entering unfamiliar culture with different values and beliefs which they are forced to adopt to be successful • Teachers exert disciplinary power over the student (e.g. through assessment) • Students have little control or choice over the learning process					
	[There can also be] pressure on the individual student to conform to codes of 'good student' behaviour		C		1	0
	[Communications and norms can create] ... cultural practices that bind teacher and learners to an alienating social order	O-So	C		2	0
15	…'for some students engagement with the university experience is like engaging in a battle, a conflict…the culture of the institution is foreign… alienating and uninviting'	C-Ph, O-So	V		3	0
	…. Creating the opportunity for students to bring and share their own experiences and	O-So, M-Re	V		3	0

	perceptions into the classroom					
16	'Improving the motivation of students to engage in learning and to learn independently	M-Re	U		1	0
	The participation of students in quality enhancement and quality assurance processes	O-So	V		2	0
	The collective role of students and their opportunities to influence the broader student experience through representation and involvement in governance and decision-making	O-So, M-Re			2	0
	… engagement with their own learning and that of other students	O-So, M-Re			2	0
	… engagement in quality assurance and enhancement processes	O-So, M-Re	V			
	… engagement in strategy development	O-So, M-Re	V	G	3	1[12]
16	We can note that student involvement and empowerment can create opportunities to foster student engagement	O-So			1	0
	… the merging and growing phenomenon of 'students as partners' [has] potential to integrate individual and collective student engagement.	O-So	V		2	0
	Engagement is socially constructed and	O-So	V		2	0

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[12] One coder wanted to reflect that engagement (M-Re) was present as a result of participation. The other coder was unsure this was explicit

	reconstructed by the student and through the interaction they have with others and the environment.				
17	SE is much more than just about *doing*. Being and becoming are critical.	C-Ps		1	0
	Transformative learning	C-Ps		1	0
17	Student engagement is about what a student brings to Higher Education in term of goals, aspirations, values and beliefs and how these are shaped and mediated by their experience whilst a student	M-Re, M-Au		1	1[13]
	SE is constructed and reconstructed through the lenses of the perceptions and identities held by students and the meaning and sense a student makes of their experiences and interactions.	M-Re, M-Au, O-So		2	1
	…educators need to foster educationally purposeful SE to support and enable students to learn in constructive and powerful ways		N, I	1	1[14]
	… definition of SE is dualistic… [It is] what both students *and* institutions do	O-So	V	1	1[15]
18	Engaging students… is about what the staff and		V	1	0

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[13] One coder coded this as reflecting automatic motivation (M-Au), the other disagreed.

[14] Incentive in this text not explicit to one coder.

[15] O-So not explicit

	other parties offer in Creating opportunities for students to engage in purposeful ways – to 'become' and develop transformatively.					
	[… offering a repertoire of approaches is as important as [innovative] ideas … We should: • Foster student's willingness and readiness to engage by enhancing their self-belief. • Embrace the point that students have diverse backgrounds, expectations, orientations and aspirations – thus different 'ways of being a student', and to welcome, respect and accommodate all of these in an inclusive way. • Enable and facilitate trust relationships (between staff:students and students:students) in order to develop a discourse with each and all students and to show solidarity with them. • Create opportunities for learning (in its broadest sense) communities so that students can develop a sense of competence and belonging within these communities. • Teach in ways to make learning participatory, dialogic, collaborative, authentic, active and critical. • Foster autonomy and creativity, and offer choice and opportunities for	C-Ph, M-Re, M-Au, O-So	P, V, E, N		8	0

	growth and enriching experiences in a low risk and safe setting. • Recognise the impact on learning of non-institutional influences and value positive influences and accommodate or mitigate negative influences. • Design and implement assessment for learning with the aim to enable students to develop their ability to evaluate critically the quality and impact of their own work. • Work in partnership with students at every opportunity by seeking to negotiate and reach a mutual consensus with students on managing workload, challenge, curriculum and assessment for their educational enrichment –without diluting high expectations and educational attainment, by developing mechanisms for all students to democratically participate in all aspects of the university that impacts directly or indirectly on them. • Enable students to become active citizens and develop their social and cultural capital.					
	The focus on being, becoming and transformation is a great contribution to conceptualising SE	C-Ps, M-Re			2	0

20	…four distinct approaches to understanding engagement can be identified in the literature: • The behavioural perspective, which focuses on teaching practice and student behaviour • The psychological perspective, which views engagement as an internal individual process • The socio-cultural perspective, which considers the critical role of sociocultural context • And finally a holistic perspective, which strives to draw the strands together	C-Ps, M-Re, O-So	E		4	0
	Conceptual framework locates all the issues; Structural influences (external to the student) Psycho-social influences (university, relationships and student variable) The state of engagement (affect, cognition and behaviour) Proximal consequences (academic and social) Distal consequences (more indirect academic and social)	C-Ps, O-So	U		3	

Coding sheet for: Thomas (2012) Building Student Engagement And Belonging In Higher Education At A Time Of Change. *What Works? Student Retention & Success*

(Based on Additional file 8 of Michie et al, 2011)

Coding Key:

Determinants: Psychological capability (C-Ps), Physical capability (C-Ph), Reflective motivation (M-Re), Automatic motivation (M-Au), Physical opportunity (O-Ph), Social opportunity (

O-So)

Interventions

Education E, Persuasion P, Incentivisation I, Coercion C, Training T, Restriction R, Environmental

restructuring V, Modelling M, Enablement/resources N, Unclassifiable U

Policies

Fiscal F, Communication/marketing C, Service provision S, Legislation L, Regulation R, Guidelines G,

Environmental/social planning E, Unclassifiable U

Agreement: The table shows the number of agreed determinants, intervention function(s) and policy category(ies), along with the number for which there was agreement and disagreement.

page	Activity description	Determinants	Intervention function	Policy category	Agreement (n)	Disagree (n)
4	The … White Paper Students at the Heart of the System (Department for Business, Innovation & Skills, 2011) aims to use student choice … as a major driver in shaping HE provision, and puts the quality of the student experience centre stage. In order to do this, students will have greater information about universities, including data on retention, completion and employment outcomes ... The policy changes shift			L, F, C	3	0

	responsibility for funding higher education away from the taxpayer towards students directly …					
5	… students will develop a stronger consumer mindset and expectations will increase, changing the focus of their attention to what demonstrates 'value for money' including the number of contact hours with tutors …[AND] 'even higher expectations of their experience at university' as a result of a rise in fees. Further possible consequences of increased student fees may include more students choosing to continue to live in the family home rather than with their student peers; more students combining part-time study with employment; and students postponing entering HE and thus studying as mature students. … all of these factors make it more difficult for student to fully participate, integrate and feel like they belong in HE, which can impact on their retention and success.	M-Re, O-Ph, O-So			3	0
5	In the UK two measures of student retention are commonly used in respect of full-time undergraduates: … the completion rate… [and] continuation rate… The two measures… [are] published for each institution on an annual basis.			E, C	2	0
7	…when a student leaves an institution before completion of their target award in England this represents lost income for the institution, which cannot easily be replaced			F	1	0
8	The primary purpose of the			G	1	0

	[What Works] programme was to generate evidence-based analysis and evaluation about the most effective practices to ensure high continuation and completion rates					
10	In higher education, belonging is critical to student retention and success.	M-Re			1	0
11	Where strategies are employed to boost student engagement, they are often focused on narrow groups of students, and situated outside of the academic domain, thus failing to meet the needs of the much larger number of students that … may be at risk of withdrawal or underachievement.	O-So			1	0
11	This report, and the summary report, are complemented by the seven project reports and associated tools… a two-day conference … other workshops, seminars and briefings.			G, C	2	o
12	Students identify a range of reasons why they have thought about leaving HE	M-Re			1	0
12	Academic issues, feelings of isolation and /or not fitting in and concern about achieving future aspirations	M-Re, C-Ps, M-Au			3	0
12	students who think about leaving are less satisfied with their university experience and appear to be less engaged with their peers and their institution; students who did not think about leaving appeared to have a better understanding of the university processes and were more likely to report a positive relationship with	O-So, M-Re, C-Ps, M-Au			4	0

	staff and students.					
12	Students who withdrew had the lowest rates of satisfaction with their higher education experience in general, and their academic experience in particular	M-Re			1	0
12	The evidence from across the seven What Works? projects firmly points to the importance of students having a strong sense of belonging in HE, which is the result of engagement, and that this is most effectively nurtured through mainstream activities with an overt academic purpose that all students participate in.	O-So, M-Re			2	0
12	'Belonging' has emerged as a key idea in this research programme, and is closely aligned with the concepts of academic and social engagement.	O-So, M-Re			2	0
12-13	At the individual level 'belonging' recognises students' subjective feelings of relatedness or connectedness to the institution. This "involves feeling connected (or feeling that one belongs in a social milieu)" (Vallerand, 1997, p. 300). It may relate "the extent to which students feel personally accepted, 13 Building engagement and belonging respected, included, and supported by others in the [school] social environment" (Goodenow, 1993a, p. 80). Belonging may be characterised by regular contact and the perception that interpersonal relationships have stability, affective concern, and are ongoing (Baumeister and Leary, 1995). Thus interpersonal relations are	O-So, M-Re	P		3	0

	essential for satisfying the need to belong. Goodenow (1993b) described sense of belonging in educational environments as the following: 'Students' sense of being accepted, valued, included and encouraged by others (teachers and peers) in the academic classroom setting and of feeling oneself to be an important part of the life and activity of the class. More than simple perceived liking or warmth, it also involves support and respect for personal autonomy and for the student as an individual'					
13	'Cultural capital' incorporates ways of speaking, behaving and interacting, which are learned through interactions with family and social institutions such as home and schools (McLaren, 1989; Meadmore, 1999) and is, therefore, class-related. 'Habitus' is the disposition to act in certain ways determined by cultural capital and is the embodiment of cultural capital. Educational institutions have an identifiable habitus (Reay, David and Ball, 2001), which incorporates practices that mutually shape and reshape the institutions with their students, their communities and the wider socio-economic cultures of their catchment areas (Reay, David and Ball, 2001, para 1.3). Students whose habitus is at odds with that of their higher education institution may feel that they do not fit in, that their social and cultural practices are	O-So, M-Au, M-Re			3	0

	inappropriate and that their tacit knowledge is undervalued, and they may be more inclined to withdraw early (Thomas, 2002).					
13	Engagement develops relationships with others and promotes connectedness, but as Kelly (2001) points out, some people with a lower need to belong may be satisfied by few contacts, while others with greater need to belong may need many such contacts. Kuh (2009, p. 683) has defined student engagement as "the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities". Trowler (2010) provides a more in-depth analysis of the term, drawing on international literature.	M-Re, O-So	U		2	0
13-14	Based on an extensive review of the literature, Osterman (2000) indicates that satisfaction of the need for belonging in educational environments is significantly associated with students' academic engagement. This is supported by much literature from the US and Australia (Trowler and Trowler, 2010). Chickering and Gamson (1987) summarised the evidence into seven effective practices in undergraduate teaching and learning: • student-staff contact; • active learning; • prompt feedback; • time on task; • high expectations; • respect for diverse learning styles; • co-operation among students.	O-So, M-Re, O-So, M-Re	P, M, V		7	0

14	Krause (2011) extends the notion of engagement in the academic sphere by arguing that "learning occurs in a range of settings, both within and beyond the formal curriculum. It involves developing connections within the university as well as building on prior learning, along with learning that takes place in the workplace and community settings". Academic engagement is related to 'effective learning', and may be synonymous with, or necessary for 'deep' (as opposed to surface) learning (Ramsden, 2003, p. 97).	M-Re, O-So	U		2	0
14	Social engagement can be seen to create a sense of belonging and offer informal support through interaction with friends and peers. Social engagement takes place in the social sphere of the institution, including social spaces, clubs and societies, the students' union, in student accommodation and through shared living arrangements. Engagement in the professional service sphere includes participation in academic, pastoral and professional development services. These services often contribute to developing students' capacities to engage and belong in higher education and beyond.	O-So, M-Re	U		2	0
14	As well as being engaged in different spheres of the institution (academic, social and professional service), students can be engaged at different levels, from engagement in their	M-Re			1	0

	own learning to engagement in institutional and national policy making7.					
14-15	…student belonging is achieved through: • supportive peer relations; • meaningful interaction between staff and students; • developing knowledge, confidence and identity as successful HE learners; • an HE experience that is relevant to interests and future goals.	C-Ps, O-So, M-Re	V		4	0
15	…effective interventions are situated in the academic sphere.		U		0	
15	Effective interventions start pre-entry, and have an emphasis on engagement and an overt academic purpose. They develop peer networks and friendships, create links with academic members of staff, provide key information, shape realistic expectations, improve academic skills, develop students' confidence, demonstrate future relevance and nurture belonging.	O-So, M-Re, C-Ps	N,E,P,T,I, V	E	10	0
15	This complements Tinto's (1993) student integration model, which identifies academic and social integration and institutional and goal commitment as key variables contributing to students' decisions about withdrawing. Similarly, Astin's theory of student involvement (1984) found that student persistence is often related to levels of student activity and contact with the institution and peers.	M-Re, C-Ps	V		3	0
	Staff capacity building		T	S	2	0

	Institutional management and coordination		V	S	2	0
16	Student capacity building (in early engagement extends into HE and beyond graph)	C-Ps	T		2	0
16	Early engagement: engagement to promote belonging must begin early and continue across the student life cycle. (This is represented by the arrow underneath the diagram.)	O-So, M-Re	U		2	0
17	Engagement in the academic sphere: engagement and belonging can be nurtured throughout the institution (academic, social and professional services), but the academic sphere is of primary importance to ensure all students benefit. (This is represented by the overlapping coloured circles, the academic sphere being the largest.)	O-So	V		2	0
17	Developing the capacity of staff and students to engage: the capacity of students to engage and staff to offer an engaging experience must be developed, thus a partnership approach in which everyone is responsible for improving student belonging, retention and success is required.	M-Re, C-Ps	T		3	0
17	Institutional management and co-ordination: at the senior level the institution must take responsibility for nurturing a culture of belonging and creating the	O-So	V	E	3	0

	necessary infrastructure to promote student engagement, retention and success. This includes the use of data to underpin student retention and success. (This is represented by the largest blue ring, labelled institutional management and co-ordination.)					
17	The process of engaging students should begin early and extend throughout the student life cycle. It is essential that engagement begins early with institutional outreach interventions and that it extends throughout the process of preparing for and entering HE. Pre-entry and induction activities should have a range of functions, but in particular they should facilitate students to build social relationships with current and new students and members of staff, and engage students with information that will enable them to assess whether the course is relevant to their current interests and future aspirations. A fuller discussion about early engagement through pre-entry interventions and induction is available in the 'Practical implications' section of this report. Engagement, however, must continue throughout the student life cycle to avoid increased rates of withdrawal and diminished success at subsequent phases of the student journey.	M-Re, O-Ph, O-So	V, N	E	6	0
17	The evidence from the What Works? programme identifies the importance of engagement in activities with an overt academic purpose, through high quality student-centred	O-So, O-Ph	E, N		4	0

	learning and teaching strategies. Such approaches facilitate staff and student interaction, which enables students to develop academically and staff to develop a better understanding of their students. These learning approaches also promote peer interaction and the development of longlasting friendships.					
18	The What Works? evidence reinforces the vital role of friendship to many students,	O-So			1	0
18	…the academic sphere can play a central role in facilitating students to develop these friendships, especially for those who spend less time on campus because they live at home and/or have work and family commitments		V		1	0
18	…technology has been successfully used to facilitate social networking between students, especially those who are not based on campus		V		1	0
18	…professional services make an important contribution to the development of some students' knowledge, confidence and identity as successful HE learners,	C-Ps, M-Re	U		2	0
18	This includes, for example, enabling students to make informed choices about institutions, subjects and courses, and to have realistic expectations of HE study. Many students, however, are not aware of the services and/or do not use them. Professional services can be particularly effective when they are delivered via the academic sphere, rather	C-Ps, O-So	N, V		4	0

	than relying on students accessing these services autonomously,					
18	This is exemplified in relation to employability: increasingly institutions are embedding activities designed to increase graduate employability into the core curriculum in partnership with careers professionals, rather than delivering services separately through a central careers centre (see Thomas et al., 2010).		V		1	0
18	…students do not always recognise the value of engagement, or have the ability to engage. This suggests that institutions should work with students to develop their capacity to engage effectively in their HE experience. This includes developing students' knowledge and understanding about the benefits of engaging across the different institutional spheres, and expanding their skills to do so.	C-Ps	E,T		3	0
18	…part-time, mature and local students found a highly instrumental approach to HE, which corresponds with a devaluing of social aspects of an HE experience, reflected in comments about 'not needing more friends'	O-So			1	0
18	This implies that students need to be educated about the value of widespread engagement in their HE experience, and encouraged and facilitated to engage in appropriate opportunities, and given the necessary skills. This may, for example, include the provision of capacity-building modules in the	O-So, C-Ps	E,V,T,N		6	0

	core academic curriculum, or via the induction process. It should of course be recognised that individuals need different levels of engagement, and prefer to engage in different ways and in different spheres to achieve success on their own terms. This requires institutions to provide a range of opportunities for engagement …					
19	A uniform approach to encouraging engagement may create pressure for conformity and result in alienation and disengagement	M-Re	P		2	0
19	The notion of engagement should be embedded into the institutional vision and reflected in key policy documents,			G	1	0
19	Thus, the institution must consider how policies and procedures can ensure staff responsibility, through recognition, support and development and reward, to enable all staff to engage and be engaging. This may include reviewing staff recruitment (e.g. to ensure that responsibility for providing opportunities for engagement are embedded into job descriptions and selection processes); updating induction and training for new staff and continuing professional development; providing resources, guidance and other support; ensuring that institutional procedures require staff to engage with students (e.g. through validation processes) and that staff performance and impact are monitored and reviewed (e.g. through the annual review process); and providing mechanisms		I,N,V,T	G,S,E,R	8	0

	to recognise and reward staff who excel at engaging students and offer them appropriate progression opportunities. In the empirical research, some staff report that colleagues undertaking research resulting in publication receive much greater recognition and reward within the institution that those who make efforts to improve the student experience.					
19	At the senior level the institution must take responsibility for managing and promoting student engagement to enhance engagement, belonging, retention and success. This includes:	O-So, M-Re			2	0
19	…building student engagement, belonging, retention and success into the corporate mission, vision and plan and aligning institutional policies towards this priority;	O-So, M-Re	V	G, E	5	0
19	…providing leadership that explicitly values student engagement and belonging throughout the whole institution and across the student life cycle and promotes whole staff responsibility for engagement and nurturing a culture of belonging;	M-Re	P	G	3	0
19	…the development of a co-ordinated, evidence-informed strategy, underpinned by the monitoring of programmes and of student behaviour and with explicit indicators and measures of success.			G,E	2	0
20	Our analysis finds that the exact type of intervention or approach is less important than the way it is	O-So, M-Re, C-Ps	V		4	0

	delivered and its intended outcomes. All interventions or activities should aim to nurture a culture of belonging through supportive peer relations, meaningful interaction between staff and students, developing students' knowledge, confidence and identity as successful HE learners and an HE experience that is relevant to interests and future goals					
20	…interventions and approaches to improve student retention and success should as far as possible be embedded into mainstream provision to ensure all students participate and benefit from them	O-So	V	E	3	0
20	…activities should proactively seek to engage students, rather than waiting for a crisis to occur, or the more motivated students to take up opportunities. Students who most need support are the least likely to come forward voluntarily If students have to opt in it is important to making it transparent how students can and should engage, and why.	M-Re	V	S	3	0
20	…activities need to be informative, useful and relevant to students' current interests and future aspirations; the potential benefits of engaging should be explicit to students.	M-Re, CPs, O-So	I, P		5	0
20	…early engagement is essential, other information may be better delivered at a later date or via an alternative media as students needs will differ from each other and over time. Some activities	M-Re, O-So	V, P		4	0

	benefit from taking place over time, rather than one-off opportunities.					
20	…activities should encourage collaboration and engagement with fellow students and members of staff.	O-So, M-Re	V		3	0
21	…the extent and quality of students' engagement should be monitored, and where there is evidence of low levels of engagement follow-up action should be taken.	M-Re	V		2	0
21	Effective pre-entry interventions include social interaction with peers and current students and engagement with staff from academic departments and professional services. They provide information, develop realistic expectations and hone academic skills.	O-So, M-Re	E,V,P		5	0
21	…providing information, knowledge and skills to improve pre-entry decision making and retention; b) developing expectations and academic preparation pre-entry to enhance transition, retention and success; c) fostering early engagement to promote integration and social capital.		E,V,P,T		4	0
21	Poor institutional and course choice can impact on the extent to which a student develops a sense of belonging to their programme and institution.	O-So			1	0
21	Students have insufficient information about: HE in general; different institutions; disciplines and specific courses. Pre-entry information and preparation for higher		E,P		2	0

	education includes the provision of information to inform choice and shape expectations about higher education, the institution and the course to improve retention					
21	Many students feel underprepared for higher education, and find that their academic experience is not as they expected it to be, and this may lead to early withdrawal	C-Ps, M-Au			2	0
21	…survey respondents who had withdrawn reported being 'disappointed by the amount of teaching and contact hours with staff provided on my course',	M-Re, M-Au			2	0
21-22	…students often have unrealistic expectations, and it is important for staff to make expectations explicit. Unrealistic expectations tend to relate to the academic experience, assuming it will be the same as school or college and being underprepared to be autonomous learners with responsibility for organising and structuring study. Challenges also relate to lecture format, size of classes and the impersonal nature of HE study, and not knowing what is expected in assessments, especially as they receive less support and feedback with assessments than they were used to.	C-Ps, M-Re M-Au	E,P,V,T		7	0
22	Students valued meeting staff and students from institutions to provide them with information about the institution and the learning experience prior to entry. Students at one university talked about the benefits of student ambassadors as they were perceived to	C-Ps, O-So M-Re	P,T,V		6	0

	provide more genuine insights into the HE experience, having recently been new students themselves.					
22	…the most effective pre-entry interventions combine the following roles: a) providing information; b) informing expectations; c) developing academic skills; d) building social capital (links with peers, current students and staff); e) nurturing a sense of belonging.	C-Ps, O-So, M-Re, M-Au	E,P,T, V	S	9	0
(a series of case studies followed which are not coded as they do not offer explicit 'guidance'. Example xx is used in Table 4,5,6)						
69	The central finding from this programme of work is not to identify one or two specific interventions that will significantly improve student retention and success, but rather to recognise the importance of nurturing a culture of belonging. Particularly important is engaging students in the academic sphere through student-centred learning and teaching and co-curricular opportunities, which enable all students to maximise their success.	M-Re, C-Ps, O-So, O-Ph[16]	V, N	E	3	4
	This has a number of strategic implications for institutions:					
	1. The commitment to a culture of belonging should be explicit through	M-Re[17]		C, G	2	1

[16] One coder disagree with inclusion of CPs, OSo and OPh, the other disagreed with E

[17] One coder disagreed with coding of MRe

	institutional leadership in internal and external discourses and documentation such as the strategic plan, website, prospectus and all policies.					
	2. Nurturing belonging and improving retention and success should be a priority for all staff as a significant minority of students think about leaving, and changes need to be mainstreamed to maximise the success of all students.	M-Re[18]	U	U	0	1
	3. Staff capacity to nurture a culture of belonging needs to be developed. Staff-related policies need to be developed to ensure:					
	• staff accountability for retention and success in their areas; • recognition of staff professionalism and contributions to improve • retention and success in relation to time and expertise; • access to support and development resources as necessary; • appropriate reward for engaging and retaining students in higher education and maximising the success of all students.		V,I[19],T, E, N	G,E,S	7	1

[18] One coder disagreed with coding of MRe

[19] One coder disagreed with coding of I (target is not explicitly student)

	4. Student capacity to engage and belong must be developed early through:					
	• clear expectations, purpose and value of engaging and belonging; • development of skills to engage; • providing opportunities for interaction and engagement that all can participate in.	C-Ps, M-Re, O-So	P,T,V		6	0
	5. High quality institutional data should be available and used to identify departments, programmes and modules with higher rates of withdrawal, non-progression and non-completion.		V	E,S, R, C	2	3[20]
	6. Systems need to be in place to monitor student behaviour, particularly participation and performance, to identify students at risk of withdrawing, rather than relying on entry qualifications or other student entry characteristics. Action must be taken when 'at risk' behaviour is observed.		U	R,E	2	0
70	7. There needs to be partnership between staff and students to review	O-So, M-Re		S,R,E[21]	3	2

[20] One coder coded availability of data as a service (S), the other saw it as regulation (R), or 'establishing rules or principles of behaviour'. One coder thought Communication (C) was not explicit.

[21] One coder coded systems to review data as a service (S), the other saw it as regulation (R)

	data and to understand the students' experiences of belonging, retention and success. Change across the student life cycle and throughout the institution at all levels should be agreed and implemented and the impact evaluated.					

Coding sheet for: Ramsden (2013) *Leadership for a better student experience : what do senior executives need to know?*

(Based on Additional file 8 of Michie et al, 2011)

Coding Key:

Determinants: Psychological capability (C-Ps), Physical capability (C-Ph), Reflective motivation (M-Re), Automatic motivation (M-Au), Physical opportunity (O-Ph), Social opportunity (O-So)

Interventions

Education E, Persuasion P, Incentivisation I, Coercion C, Training T, Restriction R, Environmental

restructuring V, Modelling M, Enablement/resources N, Unclassifiable U

Policies

Fiscal F, Communication/marketing C, Service provision S, Legislation L, Regulation R, Guidelines G,

Environmental/social planning E, Unclassifiable U

Agreement: The table shows the number of agreed determinants, intervention function(s) and policy category(ies), along with the number for which there was agreement and disagreement.

page	Activity description	Determinants	Intervention function	Policy category	Agreement (n)	Disagree (n)
6	Academic success and successful learning outcomes – including facility with complex concepts, thorough knowledge of specifics, an interest in learning more and the capacity to think for oneself- depend on the quality of a student's engagement with academic subject matter.	C-Ps, M-Re			**2**	**0**
6	The student is focused on acquiring a grouping of	M-Re			1	0

	dissimilar pieces of knowledge, often with an eye to succeeding assessments with minimal effort.					
6	Success is becoming a graduate who can reason and act for oneself, and apply theory to practical problems- precisely the skills that both academics and graduate employers want to see- depends on assiduous attention both to the detail and the broad reach of a subject.	C-Ps			1	0
6	This is called a 'deep approach': it generates high quality, well-structured, complex outcomes, and produces a sense of enjoyment in learning and commitment to the subject.	C-Ps, M-Re, M-Au			3	0
6	… the approach used is a critical factor in explaining the quality of the outcomes of learning they achieve.	U			0	
7	Good teaching … implies engaging students in ways that encourage the use of deep approaches to studying.	C-Ps, M-Re			2	0
7	It means specifying desired outcomes in terms not only of content, but also in terms of the level of understanding we want students to achieve.		E, T,M		3	0
7	Setting up an environment that maximises the likelihood students will engage in	O-Ph, O-So	V		3	0
7	It means choosing assessment tasks that tell us how well students have attained these outcomes	O-Ph	I		2	0

| | | Surface approaches are encouraged by:
• Assessment methods emphasising recall or trivial procedural knowledge
• Assessment methods that create anxiety
• Cynical or conflicting messages about rewards
• An excessive amount of material in the curriculum
• Poor or absent feedback on progress
• Lack of independence in studying
• Lack of interest in and background knowledge of the subject matter
• Previous experiences of educational settings that encourage these approaches | C-Ps,

M-Re (-),

M-Au (-) | P (-), M (-) | | 5 | 0 |

	Deep approaches are encouraged by: • Teaching and assessment methods, alongside a well-structured and stimulating curriculum, that foster vigorous and long-term engagement with learning tasks • Stimulating teaching, especially teaching which demonstrates an academic's personal commitment to the subject matter and stresses its meaning and relevance to students • High, clearly stated academic expectations • Assessment criteria that are aligned with the objectives of the curriculum • Opportunities to exercise responsible choice in the method and content of study • Interest in and background knowledge of the subject matter • Previous experiences of educational settings that encourage these approaches	M-Re, O-Ph, C-Ps	M		4	0
8	From working on learning tasks with other students, through the design of learning spaces and the effective use of e-learning, to the nature of the curriculum itself.	O-So, O-Ph	E, V		4	0
8	Good teaching and a learning environment that provides the opportunity for student activity and close attention to understanding are not, of course, enough to deliver	O-So, O-Ph	E, V		4	0

	high-quality outcomes.					
8	Another important input is the resolve of the students themselves.	C-Ps, M-Re			2	0
8	Students have to use effort to convert the opportunity into the outcome.	M-Re,C-Ps	V, E , P	S	6	0
8	When lecturers perceive their class sizes to be appropriate, the are more likely to report using an approach to teaching aimed at making learning possible through a focus on changing students understanding. When class sizes are perceived as being too large, academics are more likely to use a teacher-centred approach and use a strategy of transmitting information.					
8	Lecturers report greater use of an approach to teaching that is student-focussed and aimed at conceptual change when they experience control over the content being taught, when their department provides support for teaching, when they have an appropriate academic workload, and when they perceive that the characteristics of the students, such as language skills and prior knowledge of the subject matter, are conducive to effective learning.		V(-)	S(-)	2	0
8	In adopting a conceptual change/ student-focused approach, lecturers focus their attention on the students and monitor their perceptions, activity and understanding.	C-Ps, M-Re, O-So	N		4	0
8	Academics using this approach assume that students build their own	C-Ps, M-Re	E		3	0

	knowledge; the lecturer's task is to challenge students' existing ideas through questions,					
8-9	Teachers …explain the differences in students' outcomes of learning through relations between students and contextual factors (including the role of the teacher).	O-So	P		2	0
9	An information transmission/teacher-focused approach to teaching is qualitatively different…teachers focus their attention only on what they do (their forward planning, good management skills, use of armoury of teaching competencies, ability to use information and communication technology). They attempt to transmit information related to the curriculum and assume that this will be sufficient for student learning.	M-Re	E[22]		1	1
9	The student experience is increasingly understood as the outcome of 'negotiated engagement', with universities recognising that students, especially in the digital age, are integral to the formation of the experience, and potentially active partners and change agents in supporting institutional improvement.	C-Ps, M-Re			2	0
9	The single most important	C-Ps, C-Ph,	V[23]	S	5	1

[22] One coder did not agree with the coding of E (education)

[23] One coder did not agree with coding of V (environmental restructuring)

	determinate of student success at university is the amount of time and effort they put into their studies and their involvement in the academic, interpersonal and extracurricular offerings.	M-Re, O-So				
9	Executive leaders focus on the ethos, policies and programmes of the university and examine ways in which academic, interpersonal and extracurricular offerings can be shaped to encourage student engagement.			G	1	0
10	The more students engage both in academic work and the broader academic experience the better their knowledge acquisition and general cognitive growth.	M-Re			1	0
10	A high level of engagement also increases student's openness to ideas, sense of autonomy and intellectual orientation.	C-Ph			1	0
10	Engagement aimed at increasing dynamic learning- foster both cognitive and psycho-social growth.	M-Re, O-So			2	0
10	Purposefully provide for challenge and integration, for example, where students are required to integrate learning from separate courses around a central theme.	U	V		2	0
10	The two most salient dimensions to teacher behaviours that make a difference to student learning outcomes are the skills they show and the nature of the course structure organisation.		M, T, V		3	0
10	The ability to provide clear		M		1	0

	explanations, demonstrating enthusiasm about the subject, being organised and prepared, and being available to talk with students about their subjects.					
10	The core elements of good practice in undergraduate education most commonly cited include encouraging active engagement with learning tasks, providing prompt feedback, emphasising time on task, respecting diverse talents and ways learning and communicating high expectations. They also include encouraging contact between students and teachers, and supporting cooperation among students.	M-Re, C-Ph, O-So	V		4	0
10	The quality of the course structure and how well the course is organised deserve close consideration by senior executives in		V	S	2	0
10	Particularly in relation to quality assurance systems. Organising courses to enable studying with other students adds value to learning outcomes. Engagement occurs where students fell they are part of a group of students and academics committed to learning, and where learning outside the classroom is considered as important as the timetabled and structured experience. The extent of informal and incidental contact with peers and academics is positively linked with perceptions of intellectual growth, increases in intellectual orientation, growth in autonomy and independence, and attainment.	M-Re, O-So, C-Ps	V	G	5	0

10	Students' sense of being part of a learning community has a strong positive impact on their perceptions of personal outcomes, such as improved communication and problem-solving skills, the acquisition of discipline knowledge and skills, and ethical and social sensitivity. The sense of the university as a learning community also directly influences students' satisfaction with their experience.	O-So, C-Ps, M-Re			3	0
11	However, when assessment is closely aligned to teaching it supports learning. If students see it as an integral part of learning, providing useful feedback on what has been understood and what areas need further work- and fairly testing achievement- it encourages them to use approaches to achieve higher quality learning outcomes.	M-Re	M		2	0
11	Feedback on learning is usually called formative assessment and it is a fundamental part of good teaching. The significance of helpful comments students' progress in any discussion of effective assessment cannot be overstated.		M		1	0
11	More imaginative approaches to formative assessment, it has been suggested, would involve considering evidence about staff and students expectations and the importance of feedback as a part of learning.		M		1	0
11	This evidence reveals that	C-Ps, M-Re			2	0

	students are often unaware of what feedback consists of and how it relates to learning and teaching; their expectations are frequently not aligned with those of academics. It also shows that student generation of feedback, student involvement in understanding assessment criteria, and the development of focused, systematic reflection can serve as a means for speeding up learning in higher education.					
12	Developing students' capacities for learning continually and their ability to evaluate their own learning.	C-Ps, M-Re	E, M		4	0
12	It has been argued that new models of the curriculum are needed: ones that ae multi-disciplinary, that extend students to their limits, that develop skills of inquiry and research, and that are imbued with international perspectives.	C-Ps, M-Re	E, M		4	0
12	According to this view, a student that is fit for the future will develop in students' qualities of flexibility and confidence and a sense of obligation to the wider community.	C-Ps, M-Re	V		3	0
13	Whether they can harness the positive aspects of the relationships through practices such as undergraduate research projects, involvement in graduate teaching, and systems for recognising and rewarding good undergraduate teaching by senior researchers.	M-Re	P, I	E	4	0
14	Deans and heads may not lead in a way that puts		U	G	2	0

	teaching on the same footing as research.					
14	That formal institutional process (especially promotion) and a leadership culture that values teaching both contribute to recognising this importance.		V	E	2	0
14	Many academics feel that the status of teaching is low in comparison with research… The results suggest that schemes such as teaching awards, although valuable, cannot replace more fundamental changes to promotion processes and institutional cultures.		V	E, G	3	0
14	Practical mechanisms that can be put in place to underlie the importance of teaching. These include visible and committed leadership but the executive team- leadership that reiterates the significance of the student experience to the university's competitiveness and links the quality of that experience to good teaching.		V	G, S	3	0
14	It is important to devise systems for assessing teaching that are based on rigorous standards and are coherent with the ways research performance is assessed. Good practice in promotion and appointment procedures involves clear, evidence-based criteria for assessing teaching performance in higher education. These robust criteria work best when they are aligned with those used for teaching awards. They may usually be accompanied by training			G, R	2	0

	for members or promotions committees in hoe to use them for evaluating teaching.				
14	Requirements for training and development in teaching for academic staff, and credible arrangements for developing such support, play a corresponding role in transmitting messages about the importance of teaching.			G, E, S	3	0
14	Systems that have proved effective include various forms of incentive and recognition for innovation and the application of good practice in curriculum, teaching and assessment at programmes and faculty level.		I	E, S	3	0
15	That inspiring, change-focused (or 'transformational') leadership (as seen by the teaching staff themselves) influenced how they went about teaching. University teachers who reported collaborative and transformational forms of leadership taught in ways that enhanced the student learning experience			E	1	0
	Leadership ... factors… [that] enabled an effective student experience:					
15	• Transformational leadership; a value driven form of strategic leadership which provides academics with a sense of ownership and commitment to change (through vision, inspiration, exemplary practice, collaboration and trust).	U			0	
15	• Clear goals and contingent reward: providing clear		I	G, E	3	0

	expectations and rewards in exchange for effort and loyalty.					
15	• Teacher involvement: a course or departmental environment where staff freely share ideas and discuss their ideas for improvement needs in an atmosphere of 'no blame'.			E	1	0
15	• Collaborative management: staff perceptions of an environment that is open and empowering-one in which they feel in control.			E	1	0
15	The results showed that there was a link between academics' approaches to teaching, their experiences of leadership and the broader context of the department. In particular, a collegial commitment to providing an outstanding learning experience and a focus on enabling effective learning outcomes was associated with more stimulating and collaborative forms of leadership.			E	1	0
15	Nine 'clusters' of leadership activity associated with excellent teaching environments:					
15	• Establishing credibility and trust.			E	1	0
15	• Identifying teaching problems and turning them into opportunities.			E	1	0
15	• Articulating a convincing rationale for change (strategic leadership).			E	1	0
16	• Devolving or distributing leadership			E	1	0
16	• Building a community of practice			E	1	0
16	• Recognising and rewarding excellent teaching and teaching			G	1	0

	development effort.					
16	• Marketing the department as a teaching success.		P	C	2	0
16	• Supporting change and innovation.			E	1	0
16	• Involving students.	M-Re		E	2	0
16	Their emphasis on the students' experience of studying in a continually developing curriculum, rather than on the teaching of discipline-specific knowledge and practices.		N		1	0
16	A focus on the student experience and on a changing curriculum			E	1	0
16	Identification of recognition and reward for excellent teaching		I	G	2	0
16	• Distributed (shared) leadership.		U	U	0	
16	• Transformational leadership.		U	U	0	
16	• Leadership focused on encouraging improvement; promoting teacher learning and development		P	E	2	0
16	• Oversight of teaching programmes by the principle and leadership that establishes clear goals for instruction.			R,G	2	0
16	• Collaborative leadership			E	1	0
16	• A shared sense of organisational direction			E	1	0
16	• A focus on creating a positive academic culture		V	E	2	0
16	Operating through the climate or culture of the school and the approaches of teachers		U	E	2	0

16	The significance of building an institutional climate or environment where teaching is valued and in which appropriate structures for emphasising its importance and assessing progress towards better student experiences are put in place.			G,E	2	0
17	Use of evidence to drive policy, embedded visionary goals and evaluate outcomes.			G	1	0
17	• Shaping the institutional context as well as engaging people in change; aligning people and systems.			E	1	0
17	• The involvement of students in quality processes and curriculum development.	M-Re[24], O-So	V		2	1
17	• Understanding and valuing a collegial working environment (an aspect of collaborative and 'distributed' leadership).			E	1	0
17	• Developing staff- encouraging and supporting them to improve their teaching and their students' learning experiences.		T		1	0
17	• Successful implementation of new initiatives, including producing significant improvements in learning and teaching			S, E[25]	1	1

[24] One coder did not agree with coding M-Re (Reflective motivation)

[25] One coder did not agree with coding E (Environmental/social planning)

	quality.					
17	• Creditability as an educator and personal commitment to high-quality student experience and outcomes.			E	1	0
17	• Constantly reconceptualising the leadership of teaching (e.g. to meet needs for curriculum renewal of different forms of future learning).			E	1	0
17	The importance of clear vision statements for each institution that address the needs of students			E	1	0
17	Statements of priorities for each unit of the institution that specifically sustain the vision; a focus on students learning and development are a primary institutional function; evidence and knowledge based decision-making; understanding of the process needed to achieve the vision for the institution; and the need to deliver professional development that will enable staff to support change.			E, C, S	3	0
18	Their capacity to develop and articulate a vision for the future of the student experience in their institution.			C,G	2	0
18	Conceptualising what a good student learning environment should be like, what made it distinctive in their university, and then expressing this vision clearly to their colleagues.			C,E	2	0
18	A focus on students and learning, based on knowledge of what one executive called 'the content of the job - what			E	1	0

	kind of teaching and assessment produces better learning'- is crucial for these executives. A capacity to anticipate future trends in curricula and pedagogy… It requires a broad understanding of global developments					
18	Movements towards increasing the involvement of students in shaping their own learning experiences.	C-Ps, M-Re	N, M	E	5	0
18	Case study institutions to establish mechanisms to involve students in quality enhancement and assurance across a wide range of curricular and support activities; to review whole institution systems for encouraging student engagement		M[26]	S,E, G	3	1
18	To seek student advice through their participation in advisory groups and strategic committees		N, V	E	3	0
18	To provide incentives for faculties and departments to involve, students in decision-making about the student experience	M-Re		E	2	0
18	In establishing the ;learning community and creating what one		V	E	2	0
18	As a 'culture of participation'			E	1	0
18	Encourage and inspire heads and deans to identify and share good practice at this level.		P	C, E	3	0

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[26] One coder disagreed with the coding of M (Modelling)

19	Integrating service and academic functions through building student input into the change process (using mechanisms such as liaising groups and student-led change projects) would seem to be critical in ensuring an excellent student experience.			E, S	2	0
19	A long standing commitment to a comprehensive student experience that linked academic scholarship to stimulating teaching			E	1	0
19	Setting unambiguous strategic objectives			G, T, R[27]	2	1
19	Encouraging change through prudent reference to external pressures			C	1	0
19	Restating scholarly values such as the need for a positive nexus between research and teaching			G	1	0
19	Making use of an academic development unit to guide priorities for improvement and growth; fostering a culture of support rather than blame; and high-profile recognition of contributions to enhancing the student experience.			E, S, G	3	0
19	A positive student experience across the whole institution depends on a well-established ad vigorous academic culture.			E	1	0

[27] One coder disagreed with the coding of R (Regulation)

19	• Promoting a focus on the student experience vision for excellence with: Rewards for teaching. The development of student-focused teaching skills. A research based approach. The application of a scholarly, evidence informed approach.		I, T, V	E	4	0
20	• Allocating resources to incentivise faculties and improve the student experience in innovative ways.		V, I	E, S	4	0
20	• Linking faculty teaching and learning plans to university's overall strategy. Aligning collegial processes (such as quality reviews driven through the Academic board) with senior executive management initiatives (such as performance-based funding).			G, R	2	0
20	• Aligning criteria for promotion so that teaching and research were coherently related.			E	1	0
20	• Developing an evidence base concerning the student experience (including measures of retention and employment as well as student survey results) to assess impact, make comparisons with other research-intensive universities, and inform decisions about teaching and assessment as faculty and university levels.			U	0	
20	• Making strategic use of the university's academic development unit to deliver compulsory			E, G	2	0

20	training I teaching and to analyse and publish data about the student experience.					
20	• Focusing on both academic and academic support functions, and their evaluation, as joint enterprises designed to complement each other in improving the student experience.			S	1	0
20	Strategic leadership provided room for the modification of institutional policy faculties and schools so that it made sense at the local level.			G	1	0
20	Robust emphasis on developing staff as teachers; a stress on how to improve rather than identifying fault, a focus on collegial dialogue and support as a means of improvement.			C, S, E	3	0
20	Inspirational and engaged leadership: personal commitment to innovative curricula and teaching by the dean; credible leadership of teaching.			E	1	0
20	A scholarly, evidence-based approach to changing the student experience which resonates with academic values.			E	1	0
20	Strategic leadership; a clear and sustainable vision for the future of veterinary education, vigorously implemented through a focus of interdisciplinary study.			E	1	0
20	Highly distributed (shared) leadership a culture of personal responsibility for better student learning and an improved experience supported by a	M-Re		E	2	0

	collaborative environment which all staff are expected to engage.					
	Strong concentration on recognition of teaching and contributions to student learning.		I	E	2	0
20	Active student involvement and joint engagement in quality processes, with student being seen as future colleagues. The development of graduate attributes organised through student societies.	M-Re, O-So	V	E	4	0
20	The use of external drivers (professional body, benchmarks with other schools, university requirements) to stimulate change.			G, R	2	0
20	A focus on changing the faculty culture and systems, as well as on the leaderships of people.			E	1	0
21	Devolved leadership, at all levels, for generation wide ownership and the commitment anc engagement of all staff and students			E	1	0
21	Different faculties and disciplines should be free to exercise discretion in how they deliver the vision			U	0	
21	Strategic assessment of the effectiveness of faculties and departments in achieving institutional objectives for learning and teaching. These required good performance measures that were aligned with national and international indicators and, usually, with data from benchmark institutions.		V	G,E	3	0
22	They also created measures and monitoring			G,E	2	0

	processes directly relevant to the mission and context of the institution, establishing a strong evidence base from locally developed performance measures.					
22	Seeking instead to limit the amount of data collected and distributed to departments		U	U	0	
22	Student's evaluations as a means of developing collective responsibility for improvement, communicating finding in a clear style that emphasised specific. Support for change was built into the process.			C, G	2	0
22	These leaders were able to point to particular actions they took, based on convincing evidence that led to desired outcomes.			U	0	