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Embedding social innovation and social impact across the disciplines: Identifying “Changemaker” attributes

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Abstract

Purpose—This paper proposes an attributes framework for embedding “Changemaker”—a university initiative for promoting social innovation and social impact—across the disciplines at the University of Northampton.

Design/methodology/approach—The study is based on the authors’ (2014) phenomenographic study that proposed five different conceptions of Changemaker held by academic staff: 1) Changemaker as institutional strategy; 2) Changemaker as critical thinking, perspective shifting and problem solving; 3) Changemaker as employability; 4) Changemaker as social betterment and 5) Changemaker as personal transformation. The present study explores pedagogic literature to identify skills, behaviours and attributes associated with each of these five categories.

Findings—Findings from this literature review inform a taxonomy of Changemaker attributes, which offers a catalogue of skills and behaviours associated with the five conceptions of Changemaker.

Research limitations/implications—The conceptions of Changemaker, that form the basis of the Changemaker attributes, represent the beliefs of teaching staff at the University of Northampton. Despite inherent limitations, the approach of using practice-based empirical findings to develop pedagogical tools may be of direct benefit to other education providers as they develop their own models for teaching and learning.

Practical implications—The Changemaker attributes will be used by the University of Northampton during the design, approval and review of courses to ensure that social innovation and social impact is embedded across the disciplines. Academic staff can refer these attributes when designing assessments and for inspiration toward innovative teaching practice.

Originality/value—The findings of this study will provide a point of reference for other higher education institutions as they look for guidance on embedding social innovation and social impact into their curriculum.

Keywords Changemaker attributes, social innovation, social entrepreneurship, phenomenography, conceptions, pedagogy, learning design, employability, problem solving, transformative learning

Paper type Research paper

Background

The University of Northampton is proud of its recent designation as an AshokaU¹ “Changemaker Campus”. AshokaU has the “ultimate goal of making everyone a Changemaker” by helping individuals embrace the “unifying principles” of social innovation and social impact listed in Table 1.

Table 1: Unifying principles for “everyone a Changemaker” (adapted from Curtis, 2013)

-
1. Believe in a responsibility to make positive changes in society.
 2. Have the power and resources to make a difference (tangible and intangible).
 3. Take initiative to bring about innovative change, local and systemic.
 4. Work with others to maximise impact, working in groups and networks.
 5. Know and live authentically according to one’s values.
 6. Practice empathy by engaging in another person’s world without judgement.
-

A challenge for the University is how to embed “everyone a Changemaker” across the disciplines and different levels of study. The goal is not to provide students with a selection of pre-defined opportunities to engage with social innovation and social impact. Rather, the aim is to incorporate the principles of Changemaker into all programmes leading to an academic

¹ AshokaU is a global network of social entrepreneurs that works to nurture cultures of social innovation across university campuses. See AshokaU.org for more information.

award. To this end, there are myriad implications for embedding Changemaker across the disciplines and levels of learning. These include issues related to course design and approval, learning and teaching practice, and academic development.

Two distinct complexities exist in addressing this particular challenge. First, although the University has developed its own discourse around social innovation and what it means to be a Changemaker, there is no shared definition across the institution. Second, despite several poignant examples and well-meaning initiatives, there is no interdisciplinary point of reference for how academic staff can embed Changemaker principles into their teaching practice.

To address the lack of a shared definition of Changemaker, a phenomenographic study was carried out with 30 academic staff in April 2014 to understand the different ways of conceptualising Changemaker. Five different conceptions of Changemaker were found: 1) Changemaker as university strategy; 2) Changemaker as critical thinking, perspective shifting and problem solving; 3) Changemaker as enhancing employability; 4) Changemaker as social betterment and 5) Changemaker as personal transformation. Considering these understandings of Changemaker against the paradigm implied by the “everyone a Changemaker” campaign, the researchers proposed the conceptual outcome space shown in Figure 1 (see Alden Rivers, Nie and Armellini, 2014, for a full report).

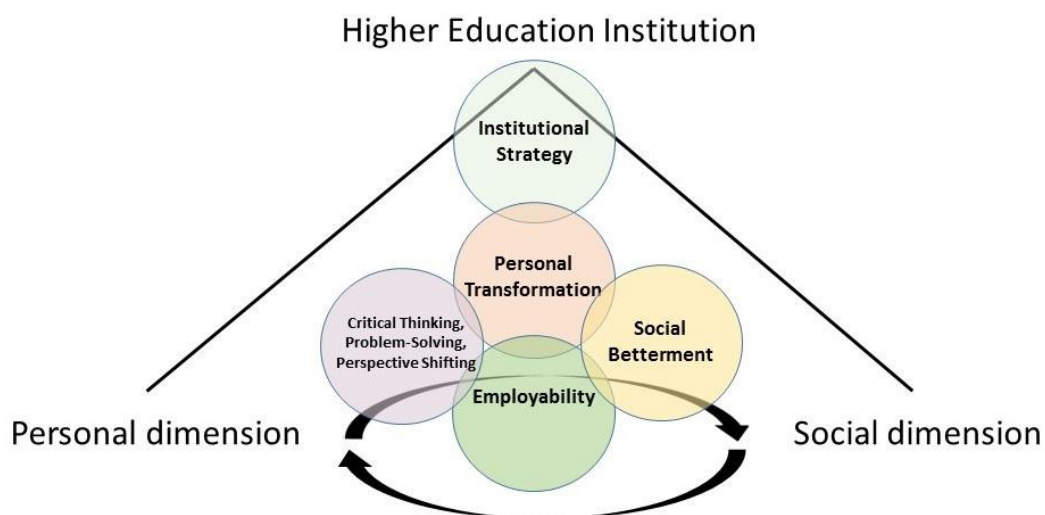


Fig 1. A possible outcome space for teachers’ conceptions of Changemaker

The present paper reports on the second phase of work that seeks to establish a point of reference for embedding Changemaker in the curriculum. Drawing on literature that suggests teachers’ underlying beliefs about phenomena will have implications for learning and teaching (Kember, 1997; Trigwell, Prosser & Waterhouse, 1999), it seemed sensible to use the outcome space shown in Figure 1 as a starting point in developing a reference tool.

More specifically, this paper explores the question: *What skills and behaviours are associated with each conception of Changemaker?* Answers to this question will inform a set of Changemaker attributes. These attributes will be used by the University of Northampton during the design, approval and review of courses to ensure that students’ capacities for social innovation and social impact are addressed and developed across the disciplines. Academic staff will be able to refer to the Changemaker attributes when designing assessments and for inspiration toward innovative practice.

Education for social innovation and social impact

As themes such as entrepreneurship, enterprise and intrapreneurship have become increasingly popular in higher education, various approaches for teaching these subjects have been discussed in the literature. Recent work by the UK's Quality Assurance Agency (QAA) (2014) proposed a skills framework for entrepreneurship education, which focuses on building students' capacities for igniting change "in the context of setting up a new venture or business" (p. 2). Underpinning entrepreneurship education is the notion of developing students' mindset toward 'enterprise'. Enterprise education, in this sense, is similar to the Changemaker principles because it:

aims to produce graduates with the mindset and skills to come up with original ideas in response to identified needs and shortfalls, and the ability to act on them. (QAA, 2012, p. 8)

Literature suggests that enterprise education has an established foothold in UK higher education but focuses primarily on enhancing employability and developing links with industry (see Jones & Iredale, 2010). Furthermore, the model of entrepreneurship and enterprise education, as proposed by the QAA, seems to suggest that enterprise education leads to entrepreneurship education. Although very closely related, the notion of social innovation and social impact seems to sit outside this definition because developing students' capacities for positive social change does not necessarily need to be done within a context of a social venture or business.

Intrapreneurship education, as described in the literature, is about "developing and implementing novel solutions to organisational problems often in a bottom-up way" (Probst et al., 2013, p. 25). Studies such as Hallam, Leffel & Womack (2008) and Kansikas and Murphy (2010) discuss organisational prerequisites, students' perceptions and approaches to teaching intrapreneurial skills. Heriot et al.'s (2008) study, which used student consulting projects as the basis for an active learning pedagogy for problem solving, is an example of how a particular course was designed to develop students as agents of organisational change. Indeed, this field offers many similarities when considering education for social innovation and social impact. However, intrapreneurship education deals with developing capacities for organisational change, rather than for positive social change.

Most closely aligned to Changemaker principles is the QAA's (2014) definition of "education for sustainable development", which is defined as

The process of equipping students with the knowledge and understanding, skills and attributes needed to work and live in a way that safeguards environmental, social and economic wellbeing, both in the present and for future generations. (QAA, 2014, p. 5)

Yet, there is no definitive taxonomy of skills and behaviours associated with such a multi-faceted, and more general, field of "change-making" in the sense of positive social change and impact.

Method

The rest of this paper offers a brief summary of each conception of Changemaker, as reported fully in Alden Rivers et al. (2014), and a synopsis of related literature on skills, behaviours and attributes associated with each conception. Using a thematic literature review approach, this study identifies key ideas in the literature that can be used to catalogue associated skills and behaviours for each conceptual category. The thematic literature review included three stages: 1) selecting a set of literature related to skills, behaviour and attributes for each conception of Changemaker; 2) identifying recurring themes within the literature and 3) aggregating themes to produce a set of attributes for Changemaker (see Ward, House and Hamer, 2009 for a similar approach).

Conception 1—Changemaker as institutional strategy

As reported in Alden Rivers et al. (2014), academic staff with this conception of Changemaker talked about it as a catalyst for the University. There appeared to be two ways of looking at Changemaker as institutional strategy. For some participants, Changemaker is a “status” or “badge” that reflects the work that the University has already been doing. For example, one teacher remarked that:

The Changemaker label is brilliant but I think it’s giving a label to something that already existed, so I think that’s a great strength of the University. (Stuart, Social Sciences)

For other participants with this conception, Changemaker is an aspiration toward something still to be achieved. Inherent in this belief is the drive to embrace the opportunity to *deserve* the Changemaker status. This idea is expressed in this teacher’s comment:

I suppose it’s about signing up to a set of values, beliefs, or principles that are consistent with the other Changemaker campuses. So at the moment it’s an ideology rather than something in practice. (Nelson, Social Sciences)

Teachers with this conception of Changemaker hold a positive view of the University’s mission and understand this recent designation as a source of pride and momentum for the Institution.

What skills and behaviours are associated with institutional strategy?

Since this view of Changemaker relates to the University’s strategy, it is challenging to address it in terms of skills for learning and teaching. However, it is plausible to suggest that this ‘mind-set’ toward organisational strategy can be extended to learning and teaching activities. Developing students’ understandings and applications of concepts around the notion of organisational strategy offers transferrable skills for use in other contexts. Furthermore, it is plausible to propose that by enhancing students’ awareness of the role of strategy in the University’s development, students will have a better understanding of the wider context of higher education.

The literature points to two ways of considering skills and behaviours associated with institutional strategy: 1) as developing visionary leaders and 2) as nurturing strategic organisational thinkers. Millett (2011) claimed that skills for developing visionary leadership can be taught. He described true change agents as “visionary leaders and managers who recognise possibilities beyond the familiar and act upon them” (p. 56). It is unclear in the academic literature whether there is a commonly accepted set of attributes for visionary leaders. Anecdotally, however, there are many examples where such skills have been described. For example, de Jong referred to visionary leadership as a two-step process involving: 1) “seeing things early” and 2) “connecting the dots” (Wharton School, 2013). Clarke’s (2009) study suggested that students who develop a visionary approach will have a career trajectory that is flexible and mobile, and will be able to self-manage their employability.

The literature is somewhat clearer regarding skills and behaviours associated with nurturing strategic thinking (as opposed to visionary leadership). Neumann and Neumann (1999) outlined a set of three strategic thinking skills and abilities—1) visioning, 2) focusing and 3) implementing. These skills are corroborated to some extent by Kabacoff (2009), who offered a more detailed account. Strategic thinking, according to Kabacoff involves:

- 1) taking a broad, long-range approach to problem-solving, through objective analysis, thinking ahead and planning,

- 2) engaging regular planning sessions to address and review: goals, plans, implications, future issues, strategic position, analysis of action, and
- 3) continuously articulating and refining the vision and communicating this to others.

Common across each of the two ways of considering skills and behaviours for institutional strategy is the notion of identifying opportunities for change, making a plan and doing something about it. Fundamentally, this is the process that underpins “enterprise education”, which was mentioned earlier in this paper. Enterprise education is defined as “the process of equipping students (or graduates) with an enhanced capacity to generate ideas and the skills to make them happen” and is proposed as the underpinning mindset toward entrepreneurship capability (QAA, 2012, pp. 2-8). Table 2 summarises the QAA’s description of enterprising skills, behaviours and attributes that are linked to graduate outcomes.

Table 2: Enterprising skills, behaviours and attributes (adapted from QAA, 2012, pp. 16-17)

Skills	Behaviours	Attributes
Innovation and creativity	Opportunity recognition	Goals and ambitions
Persuasion and negotiation	Problem solving	Self-confidence
Approach to management	Taking action	Perseverance
Decision making	Managing autonomously	Internal locus of control
Networking	Personal awareness	Action orientation
Opportunity recognition	Networking and communication	Innovation and creativity
Financial and business literacy		

Category of description 2—Changemaker as critical thinking, perspective shifting and problem solving

As reported in Alden Rivers et al. (2014), teachers with this conception of Changemaker talked about it in terms of gaining new perspectives and inspiring critical thinking. For example, Daniel from the Education Department commented that:

Our students should be able to go off after university and think critically, find problems and solutions, develop stuff. All universities and especially schools of education should be able to do that.

This particular conception of Changemaker is rooted in the notion that students need to be able to evaluate evidence within a given context (critical thinking), which often requires them to look at situations from multiple angles (perspective shifting), in order to find solutions to problems (problem solving).

What skills and behaviours are associated with critical thinking, perspective shifting and problem solving?

Critical thinking refers to a broad set of cognitive ‘skills or strategies’ that increase the likelihood of a desired outcome (Halpern, 1999, p. 70). Critical thinking is the type of activity that helps to solve ill-structured problems and make decisions based on complex evidence. As such, critical thinking moves a student through processes of reasoning, problem solving and learning. Pascarella & Terenzini (1991) described critical thinking skills as:

1. identifying issues and assumptions in an argument,
2. recognising important relationships,
3. making correct inferences from data,
4. deducing conclusions from information or data provided,
5. interpreting whether conclusions are warranted on the basis of data given and
6. evaluating evidence or authority.

Perspective shifting, in this sense, refers to looking at problems from different angles. Importantly, Brookfield's (1987) model for critical thinking includes a stage of 'developing alternative perspectives' (pp. 26-28) and such activities are central to solving complex problems (see Mumford et al., 2000). In this way, critical thinking, perspective shifting and problem solving appear to be inextricable: the notion of considering multiple perspectives overlaps with the processes involved in critical thinking, and these activities relate to the processes involved in problem solving.

Another way to consider perspective shifting relates to AshokaU's Changemaker principle of *practicing empathy* (see Table 1). Attributes associated with empathy involve: 1) the ability to imagine others' perspectives; 2) the motivation to see other perspectives; 3) the intellectual ability to identify and understand others' perspectives and 4) the ability to convey one's understanding of those perspectives (see Stepien & Baernstein, 2006).

Common across each of these processes is the role of reflection and metacognition. Reflection is the catalyst for transforming a concrete experience into theories to be tested in another lived experience (see Kolb, 1984). Critical reflection underpins critical thinking and professional judgement (Facione, Facione & Giancarlo, 1997; Lucas & Tan, 2013). Reflection, according to Dewey (1910) is a way of dealing with cognitive conflict—the mismatch between one's existing mental framework and different viewpoints. Dewey explained that conflicting viewpoints cause us to question our existing frameworks in order to arrive at new ways of understanding a situation. Flavell (1979), when theorising about cognitive monitoring, explained the importance of 'metacognitive experiences', such as puzzlement, problem solving and critical thinking, in helping us develop our existing knowledge (p. 908). In these ways, reflection and the ability to engage in critical reflective thinking are central to the skills associated with critical thinking, problem solving and perspective shifting.

The Key Skills curriculum in the UK supports students' development of problem solving skills. At Level 4 (year 1 of university-level study), students can achieve a Key Skills qualification in problem solving by demonstrating they can 'know how' to do the following (Edexcel, 2014):

1. Develop a strategy for problem solving
2. Monitor progress and adapt a strategy for solving the problem
3. Evaluate the strategy and present the outcomes of your problem solving skills

In light of the literature related to this conception of Changemaker, it is plausible that a fuller set of skills related to critical thinking, perspective shifting and problem solving could be summarised as shown in Table 3.

Table 3: Summary of skills, behaviours and related attributes for critical thinking, perspective shifting and problem solving

Skills and behaviours	References	Related attribute
1. Ability to engage in sound processes of argumentative reasoning by evaluating evidence within its context	Pascarella & Terenzini (1991)	<ul style="list-style-type: none"> • Critical thinker with an awareness of context • Motivated and skilled to locate, interpret and evaluate a range of evidence
2. Capacity to explore other perspectives, the ability to imagine how others may view the situation and the aptitude to consider and articulate one's own perspective	Stepian & Baernstein (2006)	<ul style="list-style-type: none"> • Possessing the motivation and aptitude to practice empathy • Having an understanding of knowledge as uncertain and contextual • Confidence in having and sharing one's point of view
3. The ability to actively engage in critical reflection and metacognitive activities to theorise, test and evaluate new ideas	Flavell (1979); Kolb (1984)	<ul style="list-style-type: none"> • Motivated to engage in active reflection as a means of problem solving • The resilience to engage in ill-structured tasks and the confidence to challenge existing assumptions
4. The capacity to develop a plan for solving a problem and to monitor one's progress toward the plan	Edexcel (2014)	<ul style="list-style-type: none"> • Systematic in approaching problem-solving • Self-regulated in monitoring progress against a plan
5. The ability to evaluate the plan itself and to articulate outcomes of the problem solving process	Edexcel (2014)	<ul style="list-style-type: none"> • Evaluative of methods for problem-solving • Clear communicator, able to share findings

Category of description 3—Changemaker as enhancing employability

Alden Rivers et al. (2014) proposed that participants with this conception of Changemaker talked about it as a way to help students align themselves with industry for the purposes of gaining employment. In all cases, participants with this conception talked about how the University is working with the community to enhance employability. Laura, from the Business School, commented that Changemaker:

links to the idea of employability being very important and I think it is a spin-off from that. So developing links and encouraging students to be more employable.

What skills and behaviours are associated with employability?

Grice (2005), in referring to the Dearing Report, summarised seven employability skills and Jackson (2014) provided a more detailed set of skills under ten different headings. Yorke and Knight (2006) provide a set of 39 aspects of employability that cover 'personal qualities', 'core skills' and 'process skills'. These are summarised in Table 4.

Table 4: Summary of skills, behaviours and related attributes for employability

Skills and behaviours	References	Related attributes
1. Problem solving, including creativity	Grice (2005); Yorke & Knight (2006); Jackson (2014)	<ul style="list-style-type: none">• See Table 3• Possessing ability to be original and inventive and to apply lateral thinking
2. Communication	Grice (2005); Yorke & Knight (2006); Jackson (2014)	<ul style="list-style-type: none">• Possessing high level of literacy, numeracy and digital literacy• Having confidence in sharing view and talking to others• Developing awareness of communication and language across other cultures
3. Analytical skills, including data analysis	Grice (2005); Yorke & Knight (2006); Jackson (2014)	<ul style="list-style-type: none">• Motivated and skilled to locate, interpret and evaluate a range of evidence, using tools where appropriate
4. Critical thinking skills	Grice (2005); Yorke & Knight (2006); Jackson (2014)	<ul style="list-style-type: none">• See Table 3
5. Self-management (including time management)	Grice (2005); Jackson (2014)	<ul style="list-style-type: none">• Confidence to deal with challenges as they arise• Ability to adapt in positive ways to changing circumstances• Tolerance to stress and ambiguity• Ability to work in a self-directed way, without supervision
6. Team working skills	Grice (2005); Jackson (2014)	<ul style="list-style-type: none">• Emotional intelligence• Influencer, negotiator, persuader
7. Self-awareness skills	Yorke & Knight (2006); Jackson (2014)	<ul style="list-style-type: none">• Awareness of own strengths and weaknesses, aims and values• Belief that personal attributes are not fixed and can be developed• Reflectiveness
8. Initiative and enterprise	Jackson (2014); Yorke & Knight (2006)	<ul style="list-style-type: none">• Ability to take action unprompted• Ability to recognise problems• Leader
9. Social responsibility	Jackson (2014)	<ul style="list-style-type: none">• Ethical• Values-driven• Socially aware
10. Professionalism	Jackson (2014)	<ul style="list-style-type: none">• Willingness to continue to learn and develop• Networker

Category of description 4—Changemaker as social betterment

Participants with this belief of Changemaker talked about it as making a positive change to a social situation. Some talked about their beliefs in terms of society as the *bigger picture* to which we need to contribute. For example, Karl, from the Business School, that Changemaker was:

another way of building culture, building community, a collective identity of working for finding improvements around us.

Others with this conception talked about Changemaker in terms of doing something meaningful for someone else.

The term Changemaker or the process of being a Changemaker, just means making a difference. So, whether that is something small or whether that is

huge and life-changing, it is a philosophy of doing something useful and not just for yourself. (Martha, Business)

What skills and behaviours are associated with social betterment?

This conception of Changemaker seems to address the fundamental *raison d'être* for the AshokaU campaign. Social betterment—or what AshokaU refers to as “social entrepreneurship”—is when individuals apply “innovative solutions to society’s most pressing social problems” (AshokaU, 2014b). Sherman (2011) outlined seven competencies of successful social entrepreneurs that he suggested could be developed over time and with practice.

1. Leadership
2. Optimism
3. Grit
4. Resilience in the face of adversities, obstacles, challenges and failures
5. Creativity and innovation
6. Empathy
7. Emotional and social intelligence

As previously noted, the QAA (2014) offers guidance for higher education institutions to develop curricula toward “sustainable development”. The skills and attributes for sustainable development contribute to: 1) global citizenship, 2) environmental stewardship, 3) social justice, ethics and wellbeing and 4) future thinking.

Category of description 5—Changemaker as personal transformation

This category of description is different from the other categories because it describes Changemaker in terms of changing one’s personal trajectory, taking control of one’s life and developing as an individual. In Alden Rivers et al.’s study, some participants with this conception talked about it as a way to take control of one’s coursework and/or professional life.

... to take charge of their professional identify and decide who they want to be... So it’s actually forcing people to ask themselves: who do I want to be.
(Carla, Education)

Other participants with this conception talked about Changemaker in terms of seizing opportunities to change one’s life.

I see education, in particular higher education, as a way of not so much as teaching people but as empowering and guiding people, allowing people to meet their individual potentials and I think on that basis, HE is about inspiring change in individuals. (Michael, Social Sciences)

What skills and attributes are associated with personal transformation?

Personal transformation, in this sense, can be explored in two different ways. First there is the notion of taking control of one’s epistemological development. Baxter Magolda (1998) wrote about the need to develop students’ “self-authorship” as a way to develop one’s own perspective of knowledge and knowing. Self-authoring is a process of “making meaning of one’s experience” (p. 41) and it requires questioning assumptions, evaluating evidence and co-constructing meaning with others. In the same vein, Mezirow’s (2000) theory of transformational learning suggest that “one’s values, beliefs and assumptions compose the

lens through which personal experience is mediated and made sense of” (Merriam, 2004, p. 61).

Second, there is the idea of personal development planning, where students actively employ methods and tools for advancing along a particular trajectory. The QAA (2009) defined personal development planning as:

a structured and supported process undertaken by an individual to reflect upon their own learning, performance and/or achievement and to plan for their personal, educational and career development. (p. 2)

In their systematic literature review of personal development planning, Gough et al. (2003) listed the features of personal development planning that appear most frequently in the literature. These features have been summarised as a set of skills:

1. Ability to engage in action planning
2. The ability to set goals
3. The capacity to work independently
4. The use of learning logs, journals or diaries
5. An understanding of one’s learning style
6. Collecting and maintaining up to date records of achievement
7. The ability to engage in reflective practice
8. The capacity to engage in self-assessment
9. Self-awareness
10. Self-direction
11. Self-regulation
12. The ability to engage in cooperative learning between students and teachers

Changemaker attributes for social innovation and social impact

This paper explored skills, behaviours and attributes associated with each of the five conceptions of Changemaker that were discovered through the authors’ previous research. The aim of this literature review was to identify a set of Changemaker attributes, and for these attributes to inform the development of a reference tool for designing and reviewing university courses. In this way, academic staff, course designers and quality assurance teams can embed social innovation and social impact across the curriculum by developing learning outcomes and activities for developing these attributes.

Having outlined skills, behaviours and attributes related to each of the conceptions: 1) institutional strategy, 2) critical thinking, problem solving and perspective shifting, 3) enhancing employability, 4) social betterment and 5) personal transformation, it is clear that there is significant overlap across the domains. For example, skills associated with problem solving not only address Conception 2, but also overlap with Conceptions 1, 3 and 4. Skills related to problem identification are addressed in the literature dealing with Conceptions 1, 2, 3 and 4. The role of reflection in one’s personal transformation pervades all of these conceptions to some extent.

Through this thematic literature review, an amalgamated set of attributes for social innovation and social impact emerged—one that embodies the multi-faceted ways that teachers conceptualise Changemaker. Table 5 depicts these attributes and pays reference to the literature where these skills and behaviours for social innovation and social impact are located.

Table 5: Changemaker attributes for social innovation and social impact

Attributes	Relationship to Changemaker	Reference to literature
1. Self-confidence	<ul style="list-style-type: none"> • in having and sharing one's point of view • in challenging others' assumptions • in being able to instigate change • to deal with issues when they arise • to work with others 	Flavell (1979); Kolb (1984); Baxter Magolda (1998); Grice (2005); Stepian & Baernstein (2006); Yorke & Knight (2006); QAA (2012); Jackson (2014)
2. Perseverance	<ul style="list-style-type: none"> • be optimistic • have resilience to engage in ill-structured tasks • adapt in positive ways to changing circumstances • practice tolerance to stress and ambiguity • have grit • work to thrive in the face of adversity 	Grice (2005); Sherman (2011); QAA (2012); Jackson (2014)
3. Internal locus of control	<ul style="list-style-type: none"> • be self-regulated in monitoring progress against a plan • work in a self-directed way, without supervision • collect and maintain up to date records of achievement 	Gough (2003); Grice (2005); QAA (2012); Edexcel (2014)
4. Self-awareness	<ul style="list-style-type: none"> • have awareness of own strengths and weaknesses, aims and values • believe that personal attributes are not fixed and can be developed • be independent • be willing to learn and develop • have an understanding of one's learning style • be a "self-author" 	Baxter Magolda (1998); Gough (2003); Yorke & Knight (2006); Jackson (2014)
5. Action orientation	<ul style="list-style-type: none"> • take action unprompted • engage in action planning • set goals • have ambition 	Gough (2003); Yorke & Knight (2006); QAA (2012); Jackson (2014)
6. Innovation and creativity	<ul style="list-style-type: none"> • be original and inventive and to apply lateral thinking • be a future-thinker 	Grice (2005); Yorke & Knight (2006); Sherman (2011); QAA (2012); Jackson (2014); QAA (2014)
7. Critical thinking	<ul style="list-style-type: none"> • be motivated and skilled to locate, interpret and evaluate a range of evidence, using tools where appropriate • understand knowledge as uncertain and contextual • evaluate methods for problem-solving • question assumptions 	Brookfield (1987); Pascarella & Terenzini (1991); Baxter Magolda (1998); Mezirow (2000); Grice (2005); Stepian & Baernstein (2006); Yorke & Knight (2006); Edexcel (2014); Jackson (2014)
8. Empathy	<ul style="list-style-type: none"> • be motivated to consider others' perspectives • develop an aptitude for understanding another's perspective 	Stepian & Baernstein (2006); Sherman (2011)
9. Reflective	<ul style="list-style-type: none"> • be motivated to engage in active reflection as a means of problem solving • work as a reflective practitioner • use learning logs, journals, blogs or diaries 	Flavell (1979); Kolb (1984); Mezirow (2000); Gough (2003); Yorke & Knight (2006); Jackson (2014)
10. Communication	<ul style="list-style-type: none"> • possess high level of literacy, numeracy and digital literacy • share findings and good practice with others • have awareness of communication and language across other cultures • influence, persuade and negotiate to positive ends • be a networker • co-construct meaning with others • learn cooperatively 	Baxter Magolda (1998); Mezirow (2000); Gough (2003); Grice (2005); Yorke & Knight (2006); Edexcel (2014); Jackson (2014)
11. Emotional intelligence and social intelligence	<ul style="list-style-type: none"> • be socially aware • understand the role of emotions when working with others • use emotion in positive ways 	Grice (2005); Sherman (2011); Jackson (2014)
12. Problem solving	<ul style="list-style-type: none"> • recognise problems • develop a strategy for problem solving • evaluate the strategy for problem solving 	Jackson (2014); Yorke & Knight (2006)
13. Leader	<ul style="list-style-type: none"> • inspire others and secure commitment • make decisions • look for the big picture • articulate your vision • implement change 	Neumann & Neumann (1999); Yorke & Knight (2006); Kabacoff (2009); Sherman (2011); Wharton School (2013); Jackson (2014);
14. Values-driven	<ul style="list-style-type: none"> • be ethical • be a global citizen • be an environmental steward • be an advocate for social justice and wellbeing 	Jackson (2014); QAA (2014)

Toward a developmental skills framework

This paper drew on the authors' previous work that identified a set of teachers' conceptions of "Changemaker"—a University initiative to embed social innovation and social impact into the curriculum. The present study used these conceptions of Changemaker as the basis of a thematic literature review to explore the skills, behaviours and attributes of students in relation to each conceptual category. Through this process, it became clear that many of the personal attributes within each category also were present in other categories. An iterative grouping process was carried out to create *Changemaker Attributes for Social Innovation and Social Impact*, shown in Table 7.

As a set of 14 attributes, these attributes now will be able to inform curriculum development and serve as the basis for developing: programme aims and objectives, learning outcomes and assessment criteria. Despite the focus on "the curriculum", there is scope to explore how extra-curricular activities could enhance students' Changemaker attributes. Importantly, with the significant overlap between attributes for social innovation and employability, the University can consider how to nurture a discourse around social innovation and social impact that encompasses its existing employability model.

The next phase of this project seeks to do two things: 1) to explore a developmental model of education for social innovation and social impact and 2) to evaluate the use of the Changemaker attributes in the design, development and review of academic programmes. Considering the range of ways students engage with and understand the notion of positive social change, it is sensible to create a developmental tool that recognises the levelness and diversity of university students. However, in order to move forward, the attributes proposed in Table 7 need to be validated by those who will rely on this framework as a tool for embedding social innovation and social impact into their teaching and learning activities.

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