



Using theory and evidence to explore impact on student outcomes

#ChangeBusters

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1. Introduction

1.1 Background

An integrative literature review, funded by Advance HE (Austen et.al. 2021), explored evidence of what is working to enhance student outcomes (access into Higher Education, retention and attainment whilst studying, and progression to employment or further study - ARAP). It found that impact reporting could be improved. Whilst some studies were evaluating impact of their interventions on short or medium term outcomes – such as learning gain or development of skills or behaviours – there was a lack of further evidence on longer term student outcomes. The review team recommended providing support for those designing interventions and evaluating impact.

1.2 Problem and Solution

Higher Education Providers (HEPs) and sector organisation need to focus activity on improving student outcomes. The ARAP review showed that efforts to improve student outcomes are not always accompanied by robust evidence of impact. Therefore, we cannot say with certainty what works.

The review highlighted an opportunity to improve student outcomes by focusing on the 'missing middle', the intermediary connections between activity and outcomes

The authors of the literature review were asked to explore the design and creation of a resource which could be used to support better intervention design, evidence gathering, and impact on student outcomes. The objectives were:

- To create additional resources to support activity that delivers member benefits, is aligned with the Advance HE programme and events portfolio and/or supports bespoke consultancy of the Advance HE Student Success Framework series
- To employ pedagogic principles in the design of an activity which will support users to complete a logical connection between evidence informed intervention design and intervention outcomes.

2. Pre-Game: evidence, theory, and design

2.1 The Evidence Base

The ARAP review explore evidence of demonstrable impact on the following student outcomes (HEA 2015, Webb et al, 2017, Austen et al 2021):

- Access to HE 'the extent to which groups can gain entrance to different types of higher education institution'
- Retention (participants' likelihood of continuing or withdrawing from study)
- Attainment (the extent to which students are enabled to fulfil their potential; sometimes discussed in terms of achieving a 2.1 or first class degree)
- Progression (successful transitions within the programme of study and afterwards to employment or further study)

A range of evidence was presented within each distinct outcome area in the 2021 ARAP review. Overall, the findings related to the concept of ‘mattering’, the idea that ‘the university’ cares – a sense of which became evident from several studies across all the areas reviewed. The findings also suggested clear relationships between each area in terms of intervention design and holistic impact on more than one outcome measure. Pertinent examples of holistic interventions included: early interventions delivered pre-entry and during transition and induction; interventions which provide financial aid or assistance to students pre and post entry; interventions which were designed purposively to align with the student’s curriculum; interventions which provided personal support and guidance for students; and the use of learner analytics to support identification of student need, intervention design and evaluation of subsequent impact.

The report specifically challenged sector stakeholders to fix the ‘leaky pipeline’ of impact evidence so that research and evaluation can explore short, medium and, particularly, long-term outcomes of interventions, enhance the outcomes evidence base, and improve student outcomes.

“We know that the issues impacting on student success are broad and complex, this review helps further the discussion by providing a shared point of reference to discuss, shape and review policy, process and practice. The review itself forms part of Advance HE Wider work on the review and updates to the Essential Frameworks for Enhancing Student Success and should be seen as a catalyst in progressing these debates.”

Stuart Norton, Senior Adviser (Learning and Teaching), Advance HE

2.2 Theory of Change

A ‘Theory of Change’ which is a commonly used framework used by evaluators in higher education. A Theory of Change (ToC) is “essentially a comprehensive description and illustration of how and why a desired change is expected to happen in a particular context. It is focused in particular on mapping out or “filling in” what has been described as the “missing middle” between what a programme or change initiative does (its activities or interventions) and how these lead to desired goals being achieved. (The Centre for Theory of Change, 2021). The review identified a need to support users to find ARAP evidence that might work in their context, inform the design of enhancement activities, and draft short, medium and long term outcomes.

“Change Busters” represents an ongoing mission to make evaluation accessible and relevant to all staff in higher education so as a sector will can establish what works to help all our students succeed and achieve their goals.”

Nathaniel Pickering, Senior Lecturer in Student Engagement, Evaluation & Research

2.3 Game Design

The design and delivery of this game emerged over a number of months. A design team from within Sheffield Hallam University was assembled to utilise the collective expertise of designers and evaluators. Design sessions were facilitated by James Corazzo, Teaching and Learning Portfolio Lead – Art & Design and Principal Lecturer Graphic Design.

The content and scope of the game was led by members of the original ARAP review team: Liz Austen, Head of Evaluation and Research, Nathaniel Pickering, Caroline Heaton and Jill Dickinson, Senior Lecturers in Research, Evaluation and Student Engagement.

Jason Ruffell and Sam Smith, Learning Technology Advisors were also involved in the scoping of digital designs. Catie Varley and Sarah Graham, graduates from SHU Graphic Design, were employed as designers leading the development of the prototypes with Catie delivering the final product design. Design sessions scoped potential users, product ideas, tensions and challenges and alignment to the brief via a problem statement. A Miro Board captured our emerging designs and decisions.

The game design moved through various iterations and settled on a puzzle-based activity using hexagonal playing cards. The hexagonal shape was adopted with a pedagogical purpose. As change is not always linear and can be complex, the hexagons can be placed in any order or pattern decided by the players. The hexagon shape encourages multi-faceted connections between the stages of a Theory of Change. There is no right answer; the conversations about placement and order are the most important to aid learning.

‘I really enjoyed working on the design of the ChangeBusters game, particularly exploring the ways that illustration and design can help people to think about new approaches to education in an engaging way. I think that an interactive game is a great way to break down more challenging and complex concepts.’

Catie Varley, Graphic Design student, Sheffield Hallam University

3. The Game: ChangeBusters

3.1 Aims of the Game

The ChangeBusters game constructs a ‘Theory of Change’ based on evidence from within the ARAP integrative literature review. This game aims to support users to understand the stages of a Theory of Change, build confidence, explore evaluative questions, and extend learning through application to their own context. The goal is better intervention design and evaluation which in turn should lead to better student outcomes.

The intended outcomes of the activity are as follows:

- Game-players understand the AHE ARAP literature review evidence.
- Game-players are supported to understand the stages of a Theory of Change.
- Game-players build confidence with theorising change by using pre-determined scenarios.
- Game-players extend their learning through application to their own context.

On completion of the game, it is envisaged that game-players will be able to:

- Apply the AHE ARAP literature review evidence through innovation in their own contexts.
- Effectively design and evaluate interventions to improve student outcomes.

3.2 Contents of the Game

One scenario pack of the ChangeBusters game contains:

- One 'Scenario' card
- One 'Theory of Change' menu
- One set of 17 hexagonal cards with text on both sides (side A: 'Intervention', side B: 'Evaluation')
- Five blank hexagonal cards
- A set of instructions
- Team card
- Whiteboard pen
- Packaging for storage and transporting



There are three scenarios to choose from:

1. A Financial Support Bursary

This scenario is the standard ChangeBusters Game and helps game-players to understand the process and outcomes of providing financial support to students, complemented by a package of pastoral support. This intervention has been shown to impact on retention and attainment outcomes (Austen et al. 2021).

2. A Peer Mentoring Scheme

3. A Course-based Undergraduate Research Experience

These scenarios are extension packs to the standard game. They support game players to understand the process and outcomes of peer mentoring support (outside the course) and embedded research experiences (within the course). Peer mentoring has been shown to impact on retention and attainment outcomes. Research experiences have been shown to impact on retention, attainment and progression outcomes

3.3 Intended Game Players

A Theory of Change should always be discussed and critiqued by a group of people. This game works best in groups of 4 or more but can be played by between 2 and 8 players.

Primary game-players are academic and professional service staff in higher education institutions who are designing and implementing interventions in all areas of the student lifecycle. This might include a course or module leader designing an approach to teaching, an outreach practitioner designing pre-entry summer schools, or a careers advisor designing a mentoring programme. Game players could be existing teams who would like to develop their evaluative literacy or a range of players from different context who can bring diverse perspectives to the theorising of change.

Secondary game-players are institutional leaders who have responsibility for designing and funding interventions and evaluators who are tasked with supporting practitioners to build an evaluative mindset and/or doing the evaluating. This might include the Head of Access Development, the Dean of Students, or the Data and Evaluation leads.

Potential game-players could include students – as part of a co-designed or student led project – and teachers of research and evaluation methods.



4. More than a game: facilitating change through evaluative literacy

4.1 Pre-game preparation

Firstly, it is important that the facilitator has a good working knowledge of the purpose and process of a Theory of Change.

You should then identify suitable players and the time and space to play the game. Suggestions include:

- A range of stakeholders can be players in this game. They may have different or similar levels of evaluative experience. Collaboration and support in developing evaluative literacy is an important aspect of the game.
- 1 hour to play the game. This works best as one activity of many within a scheduled workshop.
- A table which enables the game cards to be reachable by all players and space to assemble the hexagon cards in a large shape. Test the space needed.
- A clear purpose to the game, using the guidance in the pre-game section of this pack (evidence, theory, and design)
- Negotiation of your role as facilitator. This could be on a continuum of silent observer, to supportive mediator to active game player.

4.2 In-game facilitation

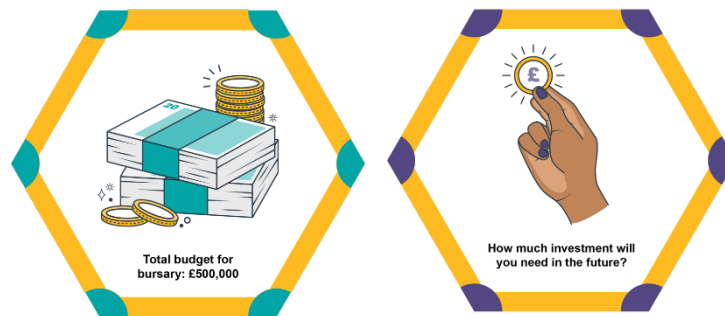
Encourage the game players to nominate someone to read the instructions aloud. The instructions are as follows, with prompts to aid facilitation:

1. **Open the pack of hexagons and place them in the middle of the table so all players can see them. Place them on your table so Side A (Intervention) is facing upwards.**

PROMPT

The intervention side is teal blue, and the evaluation side is purple.

Do not encourage game players to turn over the cards at this stage as it might confuse them.



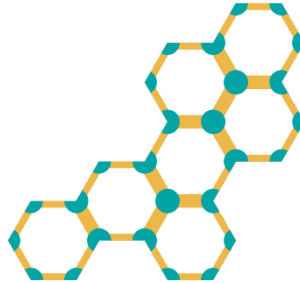
2. **Read aloud the ‘Scenario’ card and the ‘Theory of Change Menu’. They should be accessible to all players during the game.**

The scenario outlines a hypothetical situation within a higher education institution. It builds on the evidence in the ARAP literature review to provide context for decisions about enhancing student outcomes. When this has been read aloud, the reverse outlines the process of a Theory of Change. Game players should refer to all information during the game.

PROMPT

A Theory of Change should outline the context, assumptions, evidence before exploring the intervention design (inputs, activities, outputs, outcomes). All stages are connected and should be equally important.

3. **As a group, discuss each hexagon and decide whether the cards represent an outcome (short, medium and long term), and activity, an input or an output.**



Game players will approach this in different ways and this is to be encouraged. They might either discuss each card in turn or identifying a stage in the Theory of Change and look for aligned hexagons.

PROMPT

A Theory of Change usually starts with the long term outcome and works backwards. This could be suggested if game players are struggling with where to start.

4. **By moving and placing the hexagons, map a connection from outcomes to activity, considering the associated inputs and outputs.**

There is no right ways to connect the hexagons. The most important learning comes from discussing how they are connected.

PROMPT

Encourage game players to refer to the Scenario Card and Theory of Change card to guide their decisions. They may also find it useful to record their decisions as they make them.

5. **Use the blank hexagons to add any important omissions or space for unintended consequences.**

There will be information missing from the Theory of Change that the game player will articulate. The hexagons are wipeable so any edits to existing cards, or additions on blank cards can be added to the game.

PROMPT

If the blank cards have not been used during game play, ask the players to pause and reflect on what might be missing. Maybe they can bring in information from their own experiences?

6. **As a group, discuss the assumptions, evidence, barriers, and enablers underpinning your decisions.**

It is important to be critical of your intervention design and intended outcomes to ensure that it will be success.

PROMPT

Ask game players to challenge their own decisions, and those presented in the Scenario Card. Focus on what will enable this intervention to be successful and what might prevent it from being a success. This might include environmental aspects such as global pandemics!

7. **Congratulations, you have created a Theory of Change!**

If all hexagons are logically connected the game players should celebrate their good work! However, this is not the end of the game....

PROMPT

Game players may ask you for the 'right' answer or to verify their decisions. They may look to you to provide an answer or affirm that their decisions are correct. If so, ask the game players to explain their decisions and discuss alternatives. Common misunderstandings can arise between outputs and activities. Reiterate that outputs are what results from completed activities. Use the suggested 'answers' below for guidance.

8. **One you are happy with your Theory of Change, turn each hexagon over to reveal Side B (Evaluation)**

Remember, the intervention side is teal blue and the evaluation side is purple.

9. **As a group, discuss each evaluative question and how you would plan an accompanying evaluation for this intervention.**

A Theory of Change is the first step in an evaluative approach. It ensures that intervention design is evidence informed and a logical connection from activity to outcomes is formed. The next stage is to plan an evaluation, which should be done before an intervention is implemented.

PROMPT

Game players may decide to turn over one card at a time. Encourage them to be reflective and challenge what evidence they might need to show that the intervention has been a success. You may need to provide some guidance on type of method and data gathering at this point in the game. Encourage players to consider existing data sources, before exploring new methods of data collection.

10. **Discuss how this approach would be useful for your own work and consider any follow up activities.**

The game players have now designed an intervention and started to think about how to evaluate it. This game should finish with a discussion of how this learning will inform their own practice.

PROMPT

Encourage players to note how they will apply their learning. It may be useful to identify an intervention or project idea from within the group to explore next. Finish the game with a firm commitment to this further exploration.

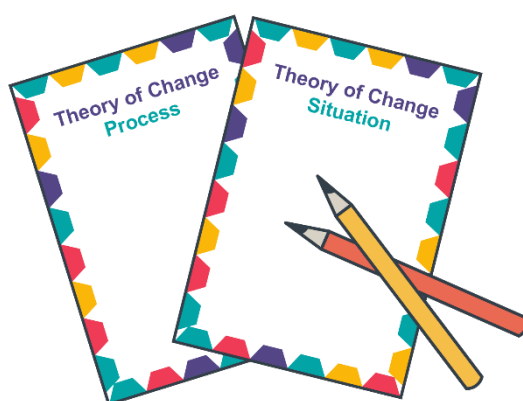
The players may look to you to provide answers, or confirmation of the correct stage of the Theory of Change. Whilst there is no correct way of connecting the hexagons, there are suggestions for the stages of the Theory of Change. These are provided in the Appendix. However, these are debateable! Game-players are welcome to dispute these suggestions and provide their own conclusions.

4.3 Follow-on activities

Once game-players have built confidence in theorising change, you may want to encourage them to discuss an intervention in their own context.

As a follow on activity, use the structure of the 'ChangeBusters' game to support game players to map their own Theory of Change. A Theory of Change requires a critique of a current scenario AND an informed intervention design:

- a) Use the headings of the Scenario Card to discuss the context in which they want to make a change: what is their Situation, Aim, Rationale, Evidence and Assumptions?
- b) Now use the headings of the Theory of Change Process Card to draft the stages of change: Inputs, Activities, Outputs, Short-Medium-Long Term Outcomes
- c) Use the evaluative questions on the hexagons as prompts to simultaneously plan the evaluation.



4.4 Post-game reflections

A Theory of Change can be difficult to envisage, but this game should enable supported learning which can then be applied to the game players own contexts. Remember to provide an opportunity for collecting reflections and feedback on the ChangeBusters game. Game players could be asked these questions related to the aims and outcomes of the game:

On completion of the game do you:

- understand the AHE ARAP literature review evidence?
- understand the stages of a Theory of Change?
- feel confident with theorising change in the game scenario/s?
- feel able to extend your learning through application to your own context?

Would you now be able to:

- Apply the AHE ARAP literature review evidence through innovation in your own contexts?
- Effectively design and evaluate interventions to improve student outcomes?

4.5 Online access to electronic resources

ChangeBusters is available as a hard copy game (for Advance HE and Sheffield Hallam University) or a downloadable online resource. The downloadable resource is designed to enable facilitators or game players to print the documents and re-create the game by cutting and assembling the game pieces. Instructions are included.

Advance HE own the IPR of the ChangeBusters game and the associated copyright:
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Sheffield Hallam University have the right to use ChangeBusters game with a perpetual, irrevocable, non-exclusive licence to reproduce (without amendment or adaptation, unless otherwise agreed by Advance HE in writing) the Intellectual Property Rights assigned to Advance HE.

Digital access to the downloadable resource is available through Advance HE Member Benefits.

“I hope that this ChangeBusters game is transformative for the design and evaluation of interventions which seek to enhance student outcomes. Evaluation is not easy and requires demystifying through support and confidence building. If others use this game, we would love to hear about it!”
Liz Austen, Head of Evaluation & Research, Sheffield Hallam University

5. Appendix

5.6 Financial Support Bursary – the answers!

Inputs

Total budget for bursary (£500,000)

1/2 day per week of staff time

Activities

Design a Financial Support Bursary Scheme

Financial payments for students who can evidence financial disadvantage

Pastoral support sessions with trained advisors are provided for students who evidence financial disadvantage

Communication of financial support bursary scheme to the student body

Outputs

15,000 students are reached via communications and are aware of the Scheme

243 students receive financial support payments

£51,000 is spent on living costs by students

95 support sessions are delivered

Short Term Outcomes

Students experiencing financial disadvantage understand their own financial context

Students feel supported to address financial barriers to their success

Medium Term Outcomes

Students feel like they matter and the university values them

Students feel motivated to engage in their studies

Long Term Outcomes

Students who have received financial support complete their year of study

Students who have received financial support obtain end of year grades which are the same or better than those who did not

Evidence of impact secures positive regulatory feedback from OFS on the APP

5.7 Peer Mentoring Scheme – the answers!

Inputs

£5000 budget for payment of Student Mentors

1/2 day per week of staff time

Activities

Design a Peer Mentoring Programme for students

Recruitment of Mentors and Mentees

Using theory and evidence to explore impact on student outcomes

Liz Austen

Training of Student Mentors

Scheduled mentoring sessions during the academic year provide practical, emotional, and psychological support

Communication of the Peer Mentoring Programme to students

Outputs

100 students apply to be part of the Peer Mentoring Programme

50 students participate in the Peer Mentoring Programme

A 'How to' Online Peer Mentoring Toolkit is created

Short Term Outcomes

Mentors develop the skills and knowledge to support their peers

Mentees have knowledge of university processes and how to access support

Medium Term Outcomes

Mentees feel supported and motivated to engage with their course

Mentees experience an increased sense of belonging

Long Term Outcomes

Mentees are less likely to withdraw from their course

Mentees obtain end of year grades which are better or the same as those who did not participate in the Programme

Evidence of impact secures positive regulatory feedback from OFS via the TEF

5.8 Course-based Undergraduate Research Experience – the answers!

Inputs

20 hours of staff time for course re-design

8 hours staff time for data analysis (targeting of courses and reporting)

120 hours of work loaded teaching hours for facilitation and support

A Learning & Teaching Strategy which supports the implementation of inclusive pedagogies

Activities

Design a course based undergraduate research experience (CURE)

Make modifications to course documentation (student facing and quality assurance)

Timetable the CURE at an appropriate point in the academic year and with an appropriate learning space

Design and implement an assessment approach to capture learning gain

Outputs

Updated course/module documentation (student facing and quality assurance)

350 first and second year students on 2 courses participate in a CURE

312 assessments are submitted

35 students are selected to present their research at the University Research Conference

Short Term Outcomes

Students understand the CURE and the expectations of their engagement

Students feel supported to engage in the CURE

Medium Term Outcomes

Students who engage in the CURE develop their skills and confidence in conducting research

Students who engage in the CURE develop their personal self-efficacy and ability to work in a team

Long Term Outcomes

Students who complete the CURE obtain end of year grades which are better or the same as those who did not

Students are more likely to progress to highly skill employment or further research-based study

The institutional research culture is a place where students of colour feel like they belong

Evidence of impact on the awarding gap secures positive regulatory feedback from OFS

6. References

AUSTEN, Liz, HODGSON, Rebecca, HEATON, Caroline, PICKERING Nathaniel, DICKINSON, Jill (2021) Access, retention, attainment, progression – an integrative literature review, AdvanceHE, available at <https://www.advance-he.ac.uk/news-and-views/access-retention-attainment-progression-integrative-literature-review>

7. About the Sheffield Hallam Project Team

Dr Liz Austen

Liz Austen leads institutional and sector wide research and evaluation in higher education as the Head of Evaluation and Research at Sheffield Hallam University and as an independent HE consultant. She is well known for her work on using evidence for enhancement of student outcomes and exploring methods of hearing student voices, specifically championing creative approaches and ethical practices.

Nathaniel Pickering

Nathaniel Pickering is a Senior Lecturer in Student Engagement, Evaluation and Research at Sheffield Hallam University. His role includes externally funded research within higher education and institutional research and evaluation focused on improving student experiences and outcomes. This research focuses on access in to higher education, social justice in education, and educational policy discourse.

James Corazzo

James Corazzo is an educator, designer, and researcher. His design practice focuses on publication work for a range cultural sector clients. He is a Principal Lecturer in Graphic Design and the Department of Art and Design Lead for learning, teaching and assessment. James is currently undertaking a PhD in educational research on the role and importance of the studio in design education.

Catie Varley

Catie Varley is a graphic designer and illustrator focusing on design education at a university level. Her design style is very bright, energetic and colourful. She uses illustrations and artwork to tell the narratives of the people involved in her projects, and ensures accessibility and sustainability are always considered within her work.

Jason Ruffell

Jason Ruffell was a Learning Technology Adviser in the Digital Learning Team at Sheffield Hallam University and now works at the University of Durham.

Caroline Heaton

Caroline Heaton is a Senior Lecturer in Student Engagement, Evaluation and Research at Sheffield Hallam University. Caroline has a particular interest in student engagement activities, including student representation and postgraduate student experiences.

Jill Dickinson

Dr Jill Dickinson was on secondment as a Senior Lecturer with the Student Engagement Evaluation and Research team at Sheffield Hallam University. She now works as an Associate Professor of Law at the University of Leeds

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