Metrics for Engagement and Impact

DCU Centre for Engaged Research
19th November 2020
Overview

● THE ISSUES AND EXAMPLES (12.00 - 12.30)
  ○ Ronnie Munck, Office of Civic Engagement
  ○ Aoibhéann Bird, Insight Centre
  ○ Eilish McLoughlin, CASTeL & School of Physical Sciences
  ○ Sarahjane Belton, School of Health & Human Performance
  ○ Caitriona Mordan, Adapt Centre

● SHARING OF PRACTICES (Breakout Rooms, 12.30 - 13.00)

● REPORTING BACK and CONCLUSIONS (13.00 - 13.30)
Metrics for Engagement and Impact

Ronnie Munck
• Monitoring and evaluation of engaged research is not an easy task
• The creative aspect of engagement means that using standardised metrics to measure impact is not always possible
• Just measure outputs (direct, measurable results) of activities undertaken not enough (e.g., attendance)
• Need to capture the learning that occurred as a result of the event (the outcome) and the impact the event has had (i.e., if the audience learnt anything)
• The quality of impact cannot be read in a binary way (e.g., an increase/decrease in learning) but from people’s experience.
• Think about how you can measure what is important, rather than making things that are easy to measure sound important
• Broaden research metrics to recognise and reward the impact of engagement in realising societal benefits
Quantitative Data

- Numeric data, figures, percentages, proportions
- Monetary amounts, funds, budgets
- Targets, projections, estimations
- Comparisons, benchmarks
- Data analytics
- Grants, awards
- Participant, audience, visitor involvement
- Test/exam results
- Workload/time allocation
- Attitudinal surveys
Qualitative Data

- Case studies, including impact
- Contextual information: what, where, why, who and how of engagement
- Demographic details: communities and audiences
- Institutional documentation: strategies, plans, policies, reports
- Partnership agreements/guidelines/compacts
- Resources/materials/toolkits/websites/templates
- Stories of impact from students, staff and communities
- Measures of Esteem/Feedback: Evaluations from students, staff, communities
- Attitudinal surveys
- Interviews/focus groups
- Blogs, video, audio, podcasts
- Awards, Reports, Process details and charts
- Participant stories and narratives, Reflective writings
Principles - Engaged research is/should be:

- **collaborative**: a quadruple helix approach where research takes place with the community as a full participant in shaping the research question, analysing the data and developing effective knowledge dissemination strategies.

- **change-oriented**: it seeks to empower communities and local stakeholders through knowledge and to promote democratic values for positive social transformation in the way it conducts its research and manages its community and industry partnerships.

- **inclusive**: it reflects the various types of knowledge, including experiential forms that are essential for a socially inclusive model of research, engaging citizens in research and innovation decision-making.

- **creative**: it seeks to improve the interactions between the quadruple helix stakeholders by promoting public engagement with research to identify societal challenges, sharing expertise and research methodologies, disseminating knowledge in an inclusive, transdisciplinary manner.

- **and**: Metrics need to be meaningful - not a blunt instrument.
Wellcome Trust
Public Engagement
Onion

Aoibhéann Bird
Audit of Centre PIs & FIs Oct 2019

Framework of Public Engagement

- **9** Participatory Action Research
- **21** Shared-Decision Making
- **131** Consultation

Based on Wellcome Trust Public Engagement ‘Onion’
SFI tools to measure STEM engagement

Eilish McLoughlin
Guiding Questions

1. What metrics are measured?

2. Why are the metrics being measured?

3. How do the metrics measure engagement?

4. How do the metrics measure impact?

5. What are the challenges in measuring impact?
Current levels of knowledge in the country about STEM and STEM research
Science Foundation Ireland’s role in this area
Level of public trust in science and science related issues
What value the public places on the role of science
Comparative questions - based on previous international research both in the EU (Eurobarometer, 2013) and New Zealand (Neilson, 2014).

Science in Ireland Barometer
2015, 2020

- perception of the general public.
- interest in and information/knowledge of STEM.
- role of STEM and Science Foundation Ireland.
- current concerns of STEM in society
- understanding of the scientific process, ethics in research, trust of scientists and scientific results, etc.
- sources of information on STEM.
- Explore understanding, experiences and perceptions of STEM education and careers.
Science in Ireland Barometer 2015, 2020

How?

Quantitative Survey

- Adults aged 15+
- All interviews were conducted face-to-face in the respondents own homes in March 2015.
- Quotas set on Gender, Age, Social Class and Region.

Qualitative Interviews, N=1008

Focus Groups, N=8

- Focus groups to understand further the public’s perceptions and understanding of science.
- Conducted throughout Ireland with a strong representation across social class groups, gender and region.
- The focus group interviews were held in Dublin, Cork, Galway, Waterford, Portlaoise and Sligo.

1. **Numbers** of direct/indirect participants, activities/events
2. **School Profiles** – pre/post (quantitative)
3. **Student Physics Identity** - surveys (quantitative)
4. **Teacher beliefs** – pre/post surveys (quantitative)
5. **Teacher learning** - (posters, reflections, lesson plans) (qualitative)
6. **School Impact** - Teacher/Principal 1:1 Interviews (qualitative, conducted by independent)
Programme Objectives (2017-2019)

- Deepen science **teachers’ confidence and content knowledge** for teaching physics.
- **Build confidence and resilience** for students, particularly girls, to continue with Physics.
- Adopt a whole school approach to **addressing unconscious bias and gender stereotyping**
- Increase **awareness of STEM** and careers in STEM.
1568 second level teachers engaged in unconscious bias workshops.

132 science teachers participated in unconscious bias and multiple science workshops.

240 second level teachers attending national conferences

300 second level students participating in unconscious workshops.

273 researchers and teachers at teacher education conferences
Students/teachers awareness of unconscious bias and resilience building.

Student voice recognised and promoted in changing school culture.

School management value and lead changes in school culture.

Teachers’ confidence and competence in teaching physics at Junior Cycle.

Teacher collaboration and professional learning.

National teacher education providers adopt programme learnings.

National awareness of gender equity and inclusion in STEM Education.
What are the challenges in measuring impact?
‘LifeLab’
A current example of challenges and opportunities

Sarahjane Belton
Emma is 14.

Emma believes that if you want to be healthy and happy with yourself, you need friends to talk to. Her favourite thing to do is go out with the girls. They love going for food and looking around the shops. It’s good because without even realizing it, they actually walk a lot.

Emma loves it when all her friends come around to her house because her Mam always order Dominos for them, and then they can go to McDonalds for a McFlurry after. Emma knows that if your parents are working all day and they’re coming home late, they’re wrecked so they don’t always have time to cook. She doesn’t mind, she loves pizza and ice cream. She loved the chipper around the corner where they used to live, but they had to move house and her Dad won’t drive to get it after he’s had a drink in the evening.

Step 1
9 Vignettes, informed by cross sectional research, and developed with students and teachers from DEIS school to represent ‘Typical’ teenagers that they know.

Step 2
Workshops held with students and teachers to consider the health issues faced by adolescents portrayed in the vignettes, and identify strategies which we could use to help these students.
Step 3
Health issues identified by students and teachers mapped by research team, across vignette characters
1. Station Introduction
- Station explained to students
- Recap on school-based learning

**Tech Solutions:** Short custom-made videos

2. Vignette Discussion
- Major issues with vignettes lifestyle are highlighted e.g. Luke/Lauren – Smoking/Vaping.
- Students keep these issues in mind while completing each section

**Tech Solutions:** Short videos of vignette to highlight lifestyle issues we want to explore at station – rather than story boards – more engaging

3a. Lung capacity test
**Task:**
- Students carry out the lung function test and compare their score to the vignette’s/chronic smokers.
- Normative values will be displayed on a chart/graph

**Key Learning:**
- How poor lifestyle behaviors (smoking) decreases the lung’s ability to function

**Tech Solutions:**
- While carrying out the test, students can see what is happening within the lungs on a screen (e.g. the lungs fill and expand as they inhale) – will make the test easier to carry out and a more tangible experience.

3b. Straw exercise test – Mimic COPD
**Task:**
- Students complete a short burst of exercise with a straw in their mouth and nose clip on, mimicking how it feels to have COPD. They then carry out the same exercise test with no restrictions to compare the difference.

**Key Learning:**
- How damaging your lungs limits your ability to exercise and to carry out daily activities

**Tech Solutions:**
- Fun exergame. Short 30 second game on an Xbox Kinect. Carry out game with and without straw/nose clip. Compare scores achieved and difficulty experienced.

3c. Ingredients of an (e)-cigarette
**Task:**
- Students observe on a poster the ingredients contained within both forms of cigarettes, and the alternative uses for the chemicals (e.g. Ammonia – toilet cleaner)
- Samples of products would be in front of them

**Key Learning:**
- The harmful chemicals contained in both cigarettes and e-cigarettes

**Tech Solutions:**
- Touchscreen to allow students to open the (e)-cigarette and look at the various harmful chemicals and the alternative uses for these.

3d. Smoker Face App – Appearance
**Task:**
- Students use the face morphing app to see what they might look like in years to come if they were to smoke.

**Key Learning:**
- How smoking can impact your appearance

3e. Marketing strategies of e-cigarette companies
**Task:**
- Students look at vape adverts and highlight the major issues associated – i.e. Flavors, colorful packaging, celebrity endorsement etc.

**Key Learning:**
- Highlight that youths are being targeted and the dangers associated
How to capture this engagement and impact?

1. What metrics are you measuring?
2. Why are measuring this metric?
3. How do your metrics measure engagement?
4. How do your metrics measure impact?
5. What are your challenges in measuring impact?
How to capture this engagement?

• Number participants attending ideas generation workshops?
• Qualitative comments (teachers and students)
• Questionnaire data?
• Feedback on outcomes (vignettes)?
How to capture future engagement?

<table>
<thead>
<tr>
<th></th>
<th>Really not engaged (1)</th>
<th>Slightly not engaged (2)</th>
<th>Slightly engaged (3)</th>
<th>Really engaged (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Task Engagement Behaviours</strong> (frequency of eye contact with teacher or task, posture, time on task)</td>
<td>No activity related to task Refuses to do task Pushes task away No eye contact with teacher Deliberately tries to disturb class a Rude to others a</td>
<td>On task rarely Reluctantly complies with instructions Primary behaviour unrelated to task Looking towards teacher or activity, but not to engage</td>
<td>On task some of the time Complies with some instructions but gets distracted, fidgety Does not perform task readily Eyes frequently on teacher or activity</td>
<td>On task most of the time Performs task quickly and readily without interrupting Predominantly watching teacher activity Concentrating</td>
</tr>
<tr>
<td><strong>Affective Engagement Behaviours</strong> (facial expressions, showing emotion, persistence)</td>
<td>Sad, angry, frustrated Not enjoying self No attempt to complete focus activity when persistence required</td>
<td>Not upset, but lacks real interest Bored, expressionless Made some effort to complete focus activity with assistance when persistence required</td>
<td>Shows some momentary intense interest Smiling, looking pleased</td>
<td>Shows sustained intense interest Laughing appropriately Looking to interact with teacher Looking to be part of the group Persisted with activity independently Interested a Feels integrated with group a Asks relevant questions a</td>
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- Numbers or schools and students participating?
- Observation tools?
- Questionnaire?
- Qualitative comments?
  - Co-design workshops
  - Focus groups
How to capture this engagement and impact?

1. **What metrics are you measuring?** Participation (numbers), enjoyment, acceptability. Range - qual and quant measures

2. **Why are you measuring this metric?** Needs to work for both research and engagement - difficult to disassociate the two

3. **How do your metrics measure engagement?**
   Variety of ways, captures active interest, participation and relevance

4. **How do your metrics measure impact?**
   Haven’t gotten there yet! - study timeline - likely qualitative

5. **What are your challenges in measuring impact?**
   Challenge will be making sure that impact is measured, but impact measurement doesn’t get in the way of organic co-design process
Assessing RRI
Institutional Change

Caitriona Mordan
Why are we measuring RRI Institutional Change?

Responsible Research and Innovation is an inclusive approach to R&I. It means that societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes, with the values

Source: RRItools project
What are we measuring?

**Changes in structures, policies, initiatives related to RRI Dimensions**

Examples of institutional changes

- Organisational structures or functions
- New norms, procedures, guidelines, agreements
- Trainings, protocols, funds, incentives

**Changes in institutional culture in support of RRI practices**

Examples of culture change

- Understanding, attitudes, behaviours
- Changes in mindset
- Perceived relevance/value of engaged research
- Increased levels of engaged research projects
- Engagement levels of multi-actor research projects
How are we measuring change?

Formative and Summative Evaluation

Monitor & Evaluate
- Ongoing data collection related to planned interventions
- Interim assessment
- Reapplication of baseline audit with recommendations for sustainability

Conduct RRI Baseline Audit
Understanding of current gaps in RRI practices and procedures, barriers and challenges for engaging externally with stakeholders in research

Assessing RRI Institutional Change

- List of 73 interventions, cross-cutting with RRI pillars
- 6 main intervention groups

Indicators with data collection tool/expected evidence

Interventions, Actimon Plans, Indicators

Mutual Learning
- Stakeholder engagement
How do these metrics measure impact?

Institutions will have:

- **demonstrated progress** in RRI Baseline Level,
- **systematic, co-created policies, practices and initiatives** for implementing RRI that is **sustained** beyond the lifespan of the project
- established structures to **facilitate, promote and maximise engagement** with societal stakeholders in the research process
- established a community to **support the continuance** of shared learning
Challenges: Assessing impact of RRI institutional change

- Institutional Culture Change takes time.....it is a journey...no one size fits all
- Existing evidence base on assessing impacts on RRI institutional change is still in its infancy
- Creative integrated approach to data collection and strategic implementation needed
Breakout Session
Guiding Questions

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