



scottish universities insight institute

mobilising knowledge for a better Scotland

Changing Lives Through STEM Engagement – Session 2

Dundee, 4th April 2017

Addressing Child Poverty and Inequality

Discussion 2 – Challenges

- Null Hypothesis – STEM engagement does not help with poverty and inequality
 - How do we evidence that an intervention has an impact?
 - How do we truly co-produce (upstream engagement – ask the audience what their challenges are) Any intervention with a community audience; mutual listening and understanding. BEFORE, solution/intervention development; sustainable and resilient = empower people. Simplicity and not overcomplicating
- Language and perception
 - Communities (access and Engagement)
 - Audiences – knowledge level
 - Underlying social stresses
 - Parental knowledge – careers
- Where does this fit into University/funders agendas (conflicting/overlapping)?
 - Targeting/sustaining resources - workloads, limited staff
 - Target population without positive or negative discrimination (including families)
1. Reaching beyond the already engaged
 2. Creating an enabling environment
 3. Building confidence in STEM activities and learning – raising confidence; permission to make mistakes (resilience); raising awareness of opportunities

Parents

- Improving opportunity for parental involvement; Barriers include working e.g. zero contract hours; age restrictions (of children); awareness of opportunities

Teachers

- How to identify good resources
- Teacher confidence in teaching STEM

Children

- Groups beyond the 'usual'
- Groups/communities of interest
- Evolving techniques through age ranges to address resilience or confidence

- Mindset – teachers, parents, pupils, industry, society
- Opportunities – pathways, careers, awareness (uni; apprenticeships, college, direct employment)
- Gender – conscious/unconscious; stereotypes for girls and boys; positive role models
- Resources – staffing, money, time; consistency of message; sustainability

- Changing societal perceptions of STEM
- Focus on skills not subjects
- Benefit of a diverse workforce for society and STEM (need a diverse way of looking at problems for industry etc)
- How do we talk about non-traditional careers and pathways?
- How do we build around experiences?

- Engaging with high impact audiences
- Parental perception of STEM
- How to you measure impact
- Funding sustainable

Language and perception

- Exclusive vs. inclusive
- "Science/STEM is not for me"
- Different audiences – parents/pupils/teachers/men/women/academic vs. non-academic
- STEM only leads to more STEM
- Future proofing

Communities and Audiences

- Access to unengaged communities – once they're through the door we don't want them
- Commercial audiences vs. engaged comms.
- Different needs - how to meet them all
- Who is the decision maker?

Underlying Social Stresses

- Can't engage if uncertain about: food, rent, time, knowledge

- How to address – can we feed into policy?
- Don't want to alienate affected groups
- Two-way dialogue – treat them as equals

Discussion 3 - focussing on the big challenges

Co-production with audiences

Tools

- Invite feedback and ideas through different routes (online, paper)
- Bang the table online engagement tool/hub
- Participatory budgeting
- STEM bags – Early years activities to take home from school
- Empower audience to tell their own story

Locations

- Deliver STEM engagement events at not usual events
- Go to places your audiences hang out
- Identify places in communities where people congregate
- Go to community spaces – Ikea, shopping centres
- Go to unexpected places and be willing to travel

Tips

- Think practically – time slots; childcare/family; food
- Understand and reflect on power structures and privilege
- See them as the experts on what they want/need
- How to we select the non-engaged people?
- Power in tea and biscuits
- Identify those not engaged
- Start with what people need/value/care about they're more likely to engage and find it useful
- Work together to identify barriers to participation

Community brokers

- Learn from youth groups and community development
- Contact groups that already work with your audience – don't reinvent the wheel
- An accent like mine
- Work with teachers and their learners to discuss possibilities for workshops etc.

- Partnership with non-STEM community groups/organisations
- Speak to charities
- Find people that the community trust/respect
- Find community brokers – trusted members of community
- Credibility
- Use community groups
- Role models
- Contact advocacy organisations
- Engage with early years
- Work with specific interest groups e.g. health groups

Funding

- Co-applications for funding
- Network of engagers
- Ask what would make them engage
- Partnerships
- Informal 'steering' groups
- Focus groups at funding application stage

Methods

- Creative writing/book group - Sci-Fi session
- Find relevant contexts for outreach by asking
- Use the research to plan, and get proper feedback
- It doesn't have to begin with STEM
- Microfund/support – small pots of funding can go a long way
- Use the arts and art networks
- Ideas to involve parents and families in STEM activities
- Skate park science
- Challenge sessions – problem solving activities
- Explain what science can develop – link to skills and careers
- Ask parents what they struggle with
- Art/science collaborations – artistic responses to science concepts
- Theatre/dance of science concepts
- Stories/narratives
- Use pictures instead of words to communicate to identify utopia
- Don't use the word 'science'
- Focus on communities of interest
- Creative collaboration – allow responses and take them on board

What are we trying to address?

- Not just early years – adolescents, adults fail to engage due to pressures and stresses, homelessness, imprisonment, mental illnesses
- Health and wellbeing aspect – STEM can help

How can STEM engagement fit into this?

- Critical thinking
- Creativity
- Resilience
- STEM has a lot more to offer
- STEM engagement not just about flash-bang – can convey collaboration skills, critical thinking
- IT skills – skills for work and life

How can we engage in a meaningful way?

- Give people the information they need
- Accessibility is key – opportunities are open to all
- Pay for what you can e.g. travel, food
- Don't undervalue individual experiences
- Co-production

Engaging hard-to-reach audiences

Secondary schools

- Engagement with STEM industries; develop a young workforce
- Career support – careers advisors, science teachers (convey the breadth of diversity)

Primary schools

- Careers week – STEM focus
- STEM ambassadors
- Working parents

Parents

- Transition including careers events (primary school → secondary school)
- Exam years – parents not engaged
- Make every event for families
- Awareness e.g. SDS WoW website

Interdisciplinary learning

- Real life case studies

- Show industry links
- Working life – daily work

Resources

- Teachers to engage with industry
- Time
- Transport
- Contacts

Evaluation/Measuring Impact

- Control groups
- Creating a narrative
- Baseline
- Focus groups
- Long term
- Cluster monitored
- Qualitative discussion based
- What to measure
- Value for effort
- Realistic evaluation
- Increased uptake of STEM subjects at school
- Tracking pupils

Mind-set/perceptions

- I feel staff in nursery need more training regarding STEM
- Staff are fearful and unsure of experiences to introduce to children under 5 years old
- Gender – girls in STEM, boys in healthcare
- Curriculum for Excellence encourages the curriculum to be relevant event at 3-4 we are encouraged to relate what we are learning to a kind of job
- Confidence building
- Exposing whole families to STEM via young people
- Cultural saturation
- Higher order skills from STEM
- Growth mind-sets “can do”
- Are we asking the right questions?
- Is an ongoing intervention required?
- STEM skills vs life skills
- Impacts on STEM on Government and policy
- Can subjective opinion be brought into STEM conversations?
- Remove labels of what is and isn't science – everything is

- Eastenders?
- Stereotypes
- STEAMM – arts and science collaborations
- Parental perceptions
- Family community units
- Whole person – not just their job