TEESNet Annual Conference, 21st September 2016
‘Measuring what’s valuable or valuing what’s measurable: Monitoring and evaluation in Education for Sustainable Development and Global Citizenship’

Liverpool Hope University

‘Results, results, results: seeking spaces for learning in a global learning and STEM project’

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Make the link
Teaching resources (9-14 years)

- **Beat the flood** – a hands on STEM challenge where pupils design, build and test a model flood-proof house.

- **Make the Link** – 24 lessons around water, climate change, energy and food preservation.

- **Plastics challenge** – STEM challenge that focuses on reuse and recycling of plastics

- **Power for the World** – activity around energy access where pupils build a model wind turbine.

    - [makethelink.ec](https://makethelink.ec) (Cyprus)
    - [makethelink.org.uk](https://makethelink.org.uk) (UK)
    - [ceo.org.pl/globalna](https://ceo.org.pl/globalna) (Poland)
    - [practicalaction.org/schools](https://practicalaction.org/schools) (UK)
    - [edu.oxfam.it/en/node/1221/public](https://edu.oxfam.it/en/node/1221/public) (Italy)
Why monitoring, evaluation and learning?

- Results as outputs and results as an ongoing learning process (e.g. Improve It Framework, 2008, Bond, 2012)

- Monitoring as accountability and as project management – the transparency agenda (O’Donnell, 2016)

- Dissemination of evaluation findings limited – lost learning? (Cooke, 2015)

- Change over time - Transformative learning (DEEEP, 2015)

- Who needs to know - project, partners, funders
Overall objectives
To raise awareness of development issues among young people
To integrate development issues/global learning methodologies into STEM curricula, policy and practice in 4 countries

Make the Link
- To measure progress against objectives and results
- To manage project well
- To capture educational resource developments and learning

EC reporting
- To measure progress against objectives
- To measure progress against results
- To monitor financial and project management
MEL Plan January 2013

- EC logframe
- Monitoring and evaluation framework, included
  - project statistics against results (webstats)
  - log of dissemination activities – conferences, trade press - at different local, national, European levels e.g. Scientix
- Partners meetings
- 3 monthly partner reports including Teacher Qs following training
- Mid-term and final reviews
- EC Reporting including Annual and Final narrative reports
- ROM Visit – relevance, efficiency, effectiveness, sustainability - recommendations
Mid Term Review January 2015

- **Theme:** Measuring progress and identifying successes and challenges

- **Methods**
  - Desk based research (project metrics and reports from participating countries)
  - Interviews with 18 stakeholders
  - Observations of sessions at one primary and one secondary school in England
  - Focus group discussions with primary and secondary students
Final Review January 2016

- Theme: Identifying impact, consider lessons learned and to celebrate success

- Methods
  - Case studies provided by 6 partners
  - Interviews with project partners
  - Participatory evaluation workshop
  - ‘Global learning’ Seminar to celebrate learning
Reporting to and feedback from EC

- Annual and final narrative and financial reports ... quantitative and qualitative results
- Lead partners’ meetings
- ROM Visit 13 Sept to 5th Oct 2015
- ROM report 3rd January 2016
  - Relevance – green for good/very good
  - Efficiency – green for good/very good
  - Effectiveness – green for good/very good
  - Sustainability – green for good/very good

End of project 31st January 2016!!!
It really works in our schools and helps to have high quality videos, scenarios and resources from development. We have gone on to develop our own materials based on real stories from across the globe. Stakeholder
It’s given me a context to talk about an experiment with different fuels. As a teacher who is trying to inspire others it has certainly changed my approach.

Teacher

- 18,200 teachers have downloaded materials.
- 1368 teachers engaged in training. Six months later 93% of teachers said they were likely to incorporate global learning in their planning.
- Teachers as influencers - a multiplier effect – teach meets, social media, subject associations and networks, related publications etc.

We create connections with the subjects the students are studying in class. Students link their lives to what is happening globally.

Teacher
Today has been amazing. I really didn’t know that when you see people in the third world on the tele they rely on scientists and engineers to help them... I really want to do this when I am older.

Tom...age 12

Students

- Estimated 1,026,000 students aged 7-19 via teachers access to materials

- Evidence of:
  - understanding of relevance of sciences and technology in tackling global issues
  - interest in global debates on development issues (inequalities, access to resources)
  - feelings of empathy
  - interest in STEM careers

Findings
Case study: Beat the Flood

You never know when the weather will change. The climate is changing due to global warming. A flood proof house would help because if there was extreme weather, this would stand it. Primary students ...age 10

- Global context for science and technology learning
- Consequences of climate change – local experience
- Contribution of design and technology in building flood proof homes
I’ve learnt that bamboo isn’t very absorbent – so we have used it to make our house.

Helen, primary student …age 10
Inclusive design

I have built my house so that all people can use it. It has a ramp so anyone in a wheelchair can get up to safety if the water comes over.

Kieran, primary student ... age 9
Implications for practice?

*That’s part of the tension*, to bring the rich context of global development and global issues, and at the same time cover the science required in a conceptually sensible way.

Stakeholder

- **Scientific literacy?**
  - Pure science knowledge
  - Science as education for global citizenship *(Dillon & Maguire, 2011)*

- **Build confidence to connect science learning with development issues** *(Pitt and Lubben, 2009; Lee et al. 2013)*
  - Access to authentic resources
  - Challenging ‘west is best’ ethnocentrism

- **Consider role and contribution of development organisations in STEM education**
  - Global contexts for learning in European curricula *(Osbourne and Dillon, 2010)*
  - Bridge between real world and classroom based learning *(Lloyd, 2011; Barton et al. 2005)*
Developing research questions and future ideas

- How do students’ engage in debates on controversial issues – including global south/north perspectives on role of science and technology in development?

- What can educators in the global north learn from educators in the global south?

- In what ways can teachers and development education/NGOs work together?

Possibilities?
- Participatory research with teachers and students?
- Teachers’ action research to support teachers as influencers?
- Global south/global north partnership project on technology justice in STEM?
Post project reflection – what worked well in Monitoring Evaluation and Learning

- Managing the project
  Good M&E systems from the start
- Learning from project activities
  Feedback from teachers on training, that led us to improve training and practice
- MEL - planning and unexpected outcomes
  Flexible enough to take advantage of opportunities that were not in the ‘plan’ e.g. attending Scientix conference, delivering academic paper at European Science Education Research Association Conference

*Spaces for learning?*
Accessing technical support e.g. from BOND, external evaluator
Participatory learning e.g. workshops, themed skype sharing, engaging with social media and science education research community
Post project reflection – challenges in Monitoring Evaluation and Learning

- Managing the project
  Working with multiple partners with different expectations and cultures – time to get to know each other with limited face to face contact

- Learning from the project activities
  Ensuring global learning methodologies are embedded in materials intended for STEM pupils – pure science

- MEL – Results Only Monitoring visit from EC late in project
  Two way learning with EC? – despite providing rich reports and organising ROM visits with teachers and partners, late for project learning

**Spaces for Learning?**
Move from a knowledge transfer model to a knowledge exchange model; ensure engagement in MEL from the start
Find ways to share rich data with key audiences as project progresses
Post project reflection – Opportunities for Monitoring Evaluation and Learning

- Managing the project
  Good practices taken forward – more of a focus on building relationships as part of M&E processes

- Learning from the project activities
  Raised profile in STEM community and successful activities enabled us to work with partners on another EC funded project

- MEL knowledge translated to Monitoring and Evaluation of future projects
  Wide ranging dissemination plan: including audiences in STEM/global learning sectors, use of social media, development of academic papers for STEM educators

What would we do differently?
- Be more collaborative in developing robust M&E systems
- Ensure sufficient space/time to reflect and learn
- Be brave – ask for EC support
- Expect the unexpected – be proactive!
References

- Institute of Physics (2010) *Science, Technology and Innovation for Poverty Reduction: Report on Seminar highlighting how scientific applications are improving the lives of people in the world’s poorest countries*. London: Institute of Physics