



Equity in informal science learning

A practice–research brief

About the project

This briefing paper reports findings from the Youth Access & Equity in Informal Science Learning (ISL) project, a UK-US researcher-practitioner partnership funded by the Science Learning+ scheme.

Our project focuses on young people aged 11-14 primarily from under-served and non-dominant communities and includes researchers and practitioners from a range of ISL settings: designed spaces (eg museums, zoos), community-based (eg after school clubs) and everyday science spaces (eg science media).

The project involves research partners from King's College London, University College London, Michigan State University and Oregon State University. Our practice partners include informal science learning organisations across the UK and US such as At-Bristol science centre, STEMNET, Zoological Society of London, Open University media, American Museum of Natural History, Community Science Workshop Network, and KQED Public Media for Northern CA.

Science Learning+ is an international initiative established in partnership between the Wellcome Trust in the UK, the US-based National Science Foundation and the UK-based Economic and Social Research Council, and in collaboration with the Gordon and Betty Moore Foundation, the MacArthur Foundation and the Noyce Foundation, all in the US.



© Aurlhko | Dreamstime.com - Science Museum Photo



A practice–research brief for equity in informal science learning (ISL)

‘Why are you saying equity instead of equality? Equality is a perfectly good word!’ This challenge was made by John¹, a practitioner participant at one of the workshops² that we ran for this project. In this brief we try to answer John’s question – we also explain why equity is such an important concern for ISL and set out a research-practice agenda for ISL, that is, a framework of ideas that were generated through the workshops, for how practice and research might usefully address equity issues within informal science learning (ISL).

Equity vs equality from the social justice literature

The key differences between the concepts of equity and equality are discussed in the social justice literature. Equality is a term associated with distributive models of social justice, developed by people like John Rawls (1971), while the term equity is used in relational models of social justice, developed by people like Iris Young (1990).

The distributive model focuses on how to distribute resources and opportunities (eg access to healthcare, political voice, money, ISL) equally between different social groups. Justice, in this model, is about making sure everyone is treated in the same ways and can access the same resources (such as science museums, after-school science clubs, etc). Put simply, in this model, equality means providing everyone with the same (equal) sized ‘piece of cake’.

The relational model of social justice emerged to contrast and extend the distributive model, building on civil rights movements around the world. People like Iris Young (1990) argued that since people are not all the same, they may not need, or want, the same amount of ‘cake’.

This model takes a needs-based approach, paying attention to difference. So rather than treating everyone in the same way, the model argues that people’s needs must be taken into account in relation to who they are and what their lives are like. In this model, differences are valued and seen as positive aspects of our society, to be recognised and respected.

Justice, in this model, is about recognising needs as well as respecting and representing difference – for instance, representing community languages, knowledges and concerns in ISL programmes, or co-developing ISL activities with youth. Yet, as Nancy Fraser and Axel Honneth (2003) point out, equity vs equality is a false dichotomy, there is no either/or situation - both aspects are important. We draw on this dual focus to frame what we mean by equity. Justice, in our model, is about making sure people can access ISL resources that recognise, respect and value differences between people, that empower people and seek to disrupt, rather than reproduce, injustice.

1. All workshop participants have been anonymised.

2. We ran seven workshops exploring equity issues in ISL within the project, four in the UK and three in the US. The workshops were: Community Spaces (including after-school science clubs, community clubs), Everyday Science (including mass

media, online and gaming) and Designed Spaces (which was split in the UK between zoos and aquaria in one workshop and museums and science centres in the other, these were combined in the US).

Participants were invited because of their work on equity issues in ISL either as practitioners or researchers.

3. We use the terms science and STEM here because both were used during the workshops.

Equity is not the same

We've all got different chances and choices

Each teaching us how to navigate

Thru our space, different spaces, even once-bounded places

Our culture, our attitudes, our identity-integral in shaping our path

Mine - Mex I CAN

We all need access, we must gain access

To resources, to mentors, to networks, to depth, to breadth

All to gain clarity in purpose

This is about freedom – free choice, free voice, free human

This is not just... it's about justice

GINA C IN THE US COMMUNITY SPACES WORKSHOP

What does equity mean for the field of informal science learning?

ISL is a field characterised by a wide range of different practices as described in a report commissioned by the Wellcome Trust (Falk, Dierking, Osborne, Wenger, Dawson & Wong, 2015). Unfortunately, while some activities, institutions or practices might be more accessible, more empowering for participants or more equitable, the field-wide situation appears less positive. We don't have data to tell us exactly who is included and excluded in community science spaces or everyday science activities, but we do know that designed spaces are inaccessible in ways that are marked by class, 'race'/ethnicity, gender, language and where you live (Dawson, 2014). We also know that practitioners in designed spaces face competing logics about how to address issues of equity and equality and work in environments that are competitive, expensive to run and hard to change (Feinstein, 2015). Under these circumstances we believe that equity is the most important challenge facing ISL today.

Practice-research visions of equity in ISL

We recorded and analysed the discussions that took place across the seven practice-research workshops that we convened, relating these discussions to different views of social justice. Equity concerns (eg issues of recognition, empowerment, valuing difference, starting from a youth-centred approach) were foregrounded more in the US workshops than the UK workshops, with the latter focusing more on equality issues (eg focusing on access, perceived barriers to participation – such as interest or cost – and resource distribution). Workshop participants used a variety of terms to discuss equity, ranging from the more general 'diversity' and 'inclusion', to the more specific such as 'community engagement', and 'corporate social responsibility'.

Workshop discussions revealed the limitations in equity framing and action taking. In the UK Everyday Science workshop, for instance, the discussion focused on access to ISL in the context of television viewing figures. Viewing figures were understood as the main criteria for judging the success of equity work, with a bigger share of viewers meaning that more people from disadvantaged groups are engaging with and accessing ISL. In contrast, during the US Everyday Science workshop participants talked at length about creating responsive, relevant STEM³ experiences for young people, with one person stating that it was crucial to actively value and represent 'communities that have historically been under-recognised for their everyday science performances'. While both sets of issues are important, there is a need to develop a more comprehensive, situated view of equity within ISL.

A practice-research agenda for equity in informal science learning

We used the workshop discussions to create a practice-research agenda for equity in ISL.

A key question we considered was: *to what extent can we change patterns of ISL access and participation if equity issues (such as recognition, empowerment and valuing difference to transform 'core' practices) are not considered at the same time?*

Although workshops varied in their focus on equity or equality, both themes were present in every workshop and, we argue, are both required for inclusive ISL research and practice.

The agenda detailed on the right is based on the input of the 111 US and UK ISL practitioners/researchers, representing designed, community and everyday ISL spaces, who took part in our workshops.



1. Access (unequal patterns of participation, distribution of resources)

Who does ISL struggle to reach? Key audiences identified were:

Youth from minority-ethnic backgrounds, minority-language backgrounds, girls, youth in rural and urban areas, youth from socio-economically disadvantaged backgrounds, youth with learning difficulties, disabled youth, youth in social care and prison systems, youth with limited access to quality science instruction in schools, youth who do not identify with science, whether at school, on television or in ISL. We recognise that these issues vary from one setting to the next and between countries.

How could we reach them? We must build relationships with youth and their communities through groups, schools, families and existing community services. These relationships need to be long term and need to develop mutual trust. Co-developing and co-delivering ISL activities with those we wish to work alongside is a valuable approach. Key gatekeepers include parents, peers and teachers.

Changing unequal patterns of participation: We recognise an urgent need to change who ISL is for, by, with and about. A focus on sustained engagement and repeat engagement was highlighted as central to shifting patterns of participation.

2. Equity (representation, valuing difference, empowering youth, transforming practices, lives and society)

Equity as a process and an outcome: Equity is about how we work with youth to change our selves, our institutions, youth and their opportunities, both in ISL, science/STEM and beyond.

Recognition, representation and transformation: We must recognise that not all youth feel at home around science, particularly those from communities that have been historically excluded from science. We need to support youth feeling more comfortable with science/STEM, to feel able to take ownership of science and participation in ISL. That work involves changing who is represented in science, how they are recognised and represented. It also involves how science itself is represented in the ISL experience. We want to create ISL opportunities capable of transforming youth's lives, our practices and institutions, as well as our societies.

Youth agency, voice and choice: Equity is about empowerment, taking a youth-centred approach, starting with their needs and providing them with choices that enrich their lives. We want to value the differences among youth and recognise the rich resources they bring with them towards engaging meaningfully in science.

3. Criteria for success

Moving beyond narrow definitions of success: There was agreement that success in ISL needs to be broadly framed. Participants respected and valued improved achievement in science/STEM for youth as well as opening up STEM careers. But they also valued other outcomes, including how ISL can transform their lives through and beyond science, such as through supporting identity development. Successful equitable ISL practices empower young people, transform historic patterns of disadvantage and take a youth-centred approach.

4. Challenges

Fears about alienating 'core' audiences through changing the 'core' offer: Changing our practices feels scary, what if our established audiences leave as a result? Will we be able to make equitable ISL commercially viable? If we change our practices, what are we left with? We recognise these fears risk limiting the possibility of change and seek ways to challenge and move through these fears.

New language, new practices: Some of us are very unfamiliar (and sometimes uncomfortable) with the language, concepts and practices associated with equity in ISL.

A need for examples of best practice: We struggled to find many examples of best practice to build from. We want to develop safe spaces to experiment with equity work in ISL, to develop capacity, share our experiences and grow.

The pipeline: Moving away from a narrow focus on the STEM pipeline is difficult because it's a widely upheld rationale for equity in ISL, and is often tied to funding, yet the pipeline metaphor is largely unhelpful in the context of equity work.

4. Staff training and organisational change

Staff training: We value our colleagues, staff and volunteers but recognise that they/we need support to do better, more equitable work, and to build the relationships needed to support diverse, disadvantaged youth through ISL practices.

Staff recruitment: Across some of our sectors, words like 'diversity' and 'inclusion' are seen as human resources language concerned with recruiting staff. We recognise that our staff, management committees or trustees do not always represent the diversity of users we hope to welcome in our practices.

Organisational change: We recognise a need for capacity building at all levels of our organisations, from directors and trustees, to floor-staff and those at reception desks. Organisational change is needed to support changes to 'core' practices, programmes, exhibits, web sites and media, partnerships and our various audiences.

5. Research needs

Building a knowledge base: We need to know more about patterns of access within and across ISL sectors: how does the ISL ecosystem work from a youth perspective? How can it become more equitable for disadvantaged youth? We need to further articulate what equitable ISL looks like, in practical and conceptual terms.

Using existing knowledge from practice and research: We know there are useful examples of best practice out there as well as useful research papers, books and concepts. We need to find mutually beneficial ways of opening up those practices and knowledges, from inside and outside ISL, so that we can build from them.

Experimental practices: We want to experiment, test, succeed and fail in developing equitable ISL practices. We want to do so with support from other practitioners and researchers, to share what we learn and to support staff and organisational development in working towards more equitable ISL practices.

Practice-based resources

- Inspiring Interactions project from At Bristol: www.at-bristol.org.uk/inspiringinteractionsvideo.html
- Our Museum, a Paul Hamlyn Foundation Special Initiative: ourmuseum.ning.com
- The Inluseum blog: inluseum.com
- The Museum 2.0 blog from Nina Simon: museumtwo.blogspot.co.uk

References

- Dawson, Emily (2014). *Equity in informal science education: developing an access and equity framework for science museums and science centres*. *Studies in Science Education*, 50(2), 209-247.
- Falk, JH, Dierking, LD, Osborne, J, Wenger, M, Dawson, E & Wong, B (2015). *Analysing science education in the UK: Taking a system-wide approach*. *Science Education*. 99(1): 145-173.
- Feinstein, Noah Weeth (2015). *Education, communication, and science in the public sphere*. *Journal of Research in Science Teaching*, 52(2), 145-163. doi: 10.1002/tea.21192
- Fraser, Nancy, & Honneth, Axel (2003). *Redistribution or recognition? A political-philosophical exchange*. London and New York: Verso.
- Rawls, John (1971). *A Theory of Justice*. Cambridge, MA: Harvard University Press.
- Young, IM (1990). *Justice and the politics of difference*. Princeton: Princeton University Press.

Contact us

For inquiries about the project, please contact Amy Seakins

King's College London
Franklin-Wilkins Building
(Waterloo Bridge Wing)
Waterloo Road
London SE1 9NH

Tel +44 (0)20 7848 3088

Further information

For more information about our project and to find our other project publications and outputs, please see www.kcl.ac.uk/sspp/departments/education/research/crestem/Research/Current-Projects/YAERPA/Home.aspx

Acknowledgements

The brief was written by Emily Dawson, Amy Seakins, Louise Archer, Angela Calabrese Barton and Lynn Dierking.

Special thanks to Jo Bryant from At Bristol science centre for her feedback on an earlier draft.

A partnership of

wellcometrust



In collaboration with



MacArthur
Foundation

NOYCE
FOUNDATION