




Key reflective questions for practitioners

This table summarises ideas for developing equitable, inclusive practice. It draws on insights from three partner makerspaces. The final column also includes links to further useful resources that can help practitioners to develop and embed equitable practice in their spaces.

 Idea	Why?	Key Reflective Questions		Useful resources/ links
		 INITIATING equitable practice	 EXTENDING equitable practice	
1: Develop a social justice mindset and culture.	The equitable potential of your practice will be shaped by the mind-set and values that practitioners and leaders adopt.	How can we ensure that all staff develop a shared, deep understanding of equity and social justice issues?	How do we ensure and know that an inclusive organisational culture is embedded, owned and sustained across all areas and levels of our organisation?	Use the YESTEM Equity Compass to guide reflection and discussion. ¹ Check out Active Impact's resources for inclusive practice with disabled young people. ² Find ideas for equity-focused activities and approaches from MakerED . ³ Explore Diversci resources that support practitioners to embed a culture of equity in their organisations. ⁴
		How are we creating and sustaining an organisational culture that values and practices critical professional reflection?	Does everyone have sufficient time, resource and commitment to be inclusive in their practice?	
2: Create safe, welcoming, inclusive spaces.	Young people need to feel safe, welcome and included for successful engagement and outcomes.	How are we developing and growing meaningful relationships over time?	How do we identify, monitor and address instances when young people may not feel safe, welcome, included?	Find out about humanising approaches to virtual learning . ⁵ Learn from libraries about creating safe, welcoming and inclusive places. ⁶ Be inspired by this makerspace that will be located in an affordable housing complex. ⁷
		How do we find out and address what makes different young people feel safe, welcome and included in our setting?	Is there a particular area that might benefit from a 'deep dive' to help inform further development?	
3: Work in participatory ways with young people.	Participatory approaches help challenge unequal power relations, support young people's agency and promote inclusive organisational cultures.	Who can we partner with to learn more from about how to develop participatory approaches?	To what extent is co-design and co-production embedded across our organization?	Learn how to set up an equitable youth board . ¹ Gain inspiration for using participatory, youth-led approaches from the Science Museum of Minnesota . ⁸ Find out more about sharing authority with young people ¹ and about techniques aligned with a participatory approach . ⁵
		How can we be sensitive to power dynamics and ensure that privileged staff and participants do not set the agenda and control the narrative?	To what extent do young people and local communities have a meaningful role in governance?	
4: Foster caring pedagogies and relationships.	Caring approaches are important for supporting young people's wellbeing, engagement and outcomes.	What do we need to know and do in order to really care for particular young people in our setting?	To what extent are different forms of care embedded across all our provision?	Reflect on how pedagogical approaches can signal caring . ⁵ Consider how caring and supportive relationships can strengthen young people's programmes at science centres . ⁹
		What do caring relationships look like in our setting? How do we extend and build on these further?	To what extent are our caring approaches reactive or proactive?	
5: Support young people's agency and social action through making.	Social action making can support young people's agency, outcomes and impact.	How can/do we use consultation with young people to integrate social action themes into making sessions?	How can/do we amplify young people's voices and provide a platform for their social action making more widely, beyond the setting and programme?	Check out the STEM Justice Toolkit created by young people at the Science Museum of Minnesota . ⁸ Discover practices that support ethical sense-making . ⁵ Learn about how DIVAS for Social Justice supports young people to make change in their communities. ¹⁰
		How do we make sure that social making is tailored to young people's interests and issues that they care about?	How can we support young people to use their making as a springboard for developing their impact and/or leadership?	
6: Build capital, skills and progression.	Building capital, skills and pathways to progression benefits young people's development, options and outcomes.	How do we ask about and act on what broader forms of support young people want/ need for their lives and progression?	To what extent is the support we provide delivered through one-off vs. embedded, longer-term provision?	Reflect on use of body language in interactions to support building skills . ⁵ Discover how 'career ladder' programmes, at places like NYSci and Museum of Science and Industry , support young people's STEM skills and progression. ⁹
		What do we and/or young people count as 'success' in terms of progression and outcomes?	How do we support and capture impact?	

Further Details

Useful Projects and Resources

- ¹ The international **YESTEM (Youth Equity + STEM) project** addresses equity issues in informal STEM learning. Their **website** contains a number of useful resources applicable to makerspaces including the Equity Compass, professional development opportunities, recommendations for setting up an equitable youth board, and guides to equitable practices such as co-designing and authority sharing.
- ² **Active Impact** is a project based in Gloucestershire, UK. They have a **bank of resources** to help guide inclusive practice with disabled young people, and also offer professional development workshops on developing inclusive practices in community organisations. See: <https://www.activeimpact.org.uk/support-and-guidance-for-inclusion/>
- ³ **Maker Education Initiative (MakerED)** is based in California, USA. They focus on providing training and resources to those wanting to integrate making into learning environments. Their **website** contains a wealth of ideas for equity-focused activities, approaches, pedagogies and more.
- ⁴ The **Diversci framework** (diversci.eu) was developed by the Equity@Ecsite group (now called Diversci) to support science centres and other science engagement organisations to move towards a culture supportive of diversity, equity and inclusion. The **website** includes resources and recommendations to support practitioners at all levels across an organisation and provides links to an associated community of practice.
- ⁵ **The Blue Dandelion pedagogical zines** blend collaborative research and art to create freely available resources that support socially just educational practice, within and beyond the classroom. Designed by and for educators, the zines contain insights and ideas relevant to makerspace practice including:
 - Humanising approaches to virtual learning (creating safe and inclusive spaces online)
 - Intergenerational teaching and learning (techniques aligned with participatory approaches)
 - How aspects of pedagogy such as use of language and supporting learners emotionally and cognitively can signal caring ('Teach, Play, Code')
 - Use of body language in interactions in making environments and the impact this has on building skills
 - How to support 'ethical sense-making and expansive STEAM learning'

Inspiring places and programmes

- ⁶ Where makerspaces are situated can send powerful messages about who is welcome. Libraries are often perceived as safe, welcoming and inclusive places. The **Idea website** and **this government page** contain lists of libraries hosting makerspaces in the UK.
- ⁷ A new project is developing a truly accessible, multi-generational and community-based **makerspace located in an affordable housing complex** located in the Northeast of the USA.
- ⁸ The **Kitty Anderson Youth Science Center (KAYSC)** at the Science Museum of Minnesota has the mission of empowering youth through science, using participatory, youth-led approaches to do so. The KAYSC also places a strong emphasis on supporting youth agency and encourages young people to create projects about issues they care about. Their STEM Justice Toolkit is one example of such activity.
- ⁹ 'Career ladder' programmes, in which young people from the community are trained to deliver activities in science centres and museums, build skills and support young people's progression in and through STEM. Two such programmes are the **NYSi Science Career Ladder** in Queens, NY and the Museum of Science and Industry's **Science Minors and Achievers** programme (in Chicago). Evaluation of these programmes has identified not only the way in which they support skills and progression but also that caring and supportive relationships are key to their success.
- ¹⁰ Forward is a social justice makerspace co-created with the local community in Brooklyn, NY and run by **DIVAS for Social Justice**, whose focus is on supporting youth and adults to make change in their communities.

