Tinkering EU: Addressing the Adults

Exploring Tinkering with adult learners: What we learned

A guide for museums and other informal learning and science engagement organizations

Exploring Tinkering with adult learners: What we learned

The project

Tinkering EU: Addressing the Adults explores the potential of the Tinkering approach when working *with* and *for* adults in vulnerable situations. It aims to increase engagement with science, especially amongst those who believe that "Science is not for me"; and to build on the Science Capital and the 21st century skills of adult learners. To do so, the project focuses on ***Equity and Inclusion*** and uses Tinkering as an inclusive learning approach to STEM engagement. We have embraced the concept of 'allyship' whereby partners sought to create meaningful experiences with and for the participants. A key part was working in partnership with local community development organisations who helped us actively listen to, learn from, and become more representative of the participants, increasing the potential impact of each local project in relation to social inclusion. Tinkering activity design and facilitation methods were tweaked to create personally meaningful, inspiring and engaging learning experiences to help develop individuals' engagement and confidence with STEM.
http://www.museoscienza.it/tinkering-eu3/

Tinkering with tinkering

This project has come a long way, it is the third in a row: we started with **Tinkering: Contemporary Education for Innovators of Tomorrow** (2014-2017) by exploring Tinkering as pedagogy to discover the power of "becoming one with what I am doing"[1]; moved on **Tinkering EU: Building Science Capital for ALL** (2017-2020) that connected Tinkering with Science Capital as a way to address and engage all learners; while **Tinkering EU: Addressing the adults**, being true to the pedagogy, wants to support adults to develop a tinkering mindset – both learners and those who are responsible for someone else's thinking and learning experience. We often found ourselves exploring and reflecting on the intersection of 'Tinkering' (with capital T) – that is, the set of activities designed by the Tinkering Studio and the first Tinkering EU project, which built on the Learning Dimensions – and 'tinkering' as an attitude characterizing a whole range of experiences that promote open-ended creative explorations as a way to create what Edith Ackermann called "a conversation with the material"[2], to build one's own relationship to learning itself, and one's own meaning from the engagement with STEM.

The resource: what it is and how to navigate

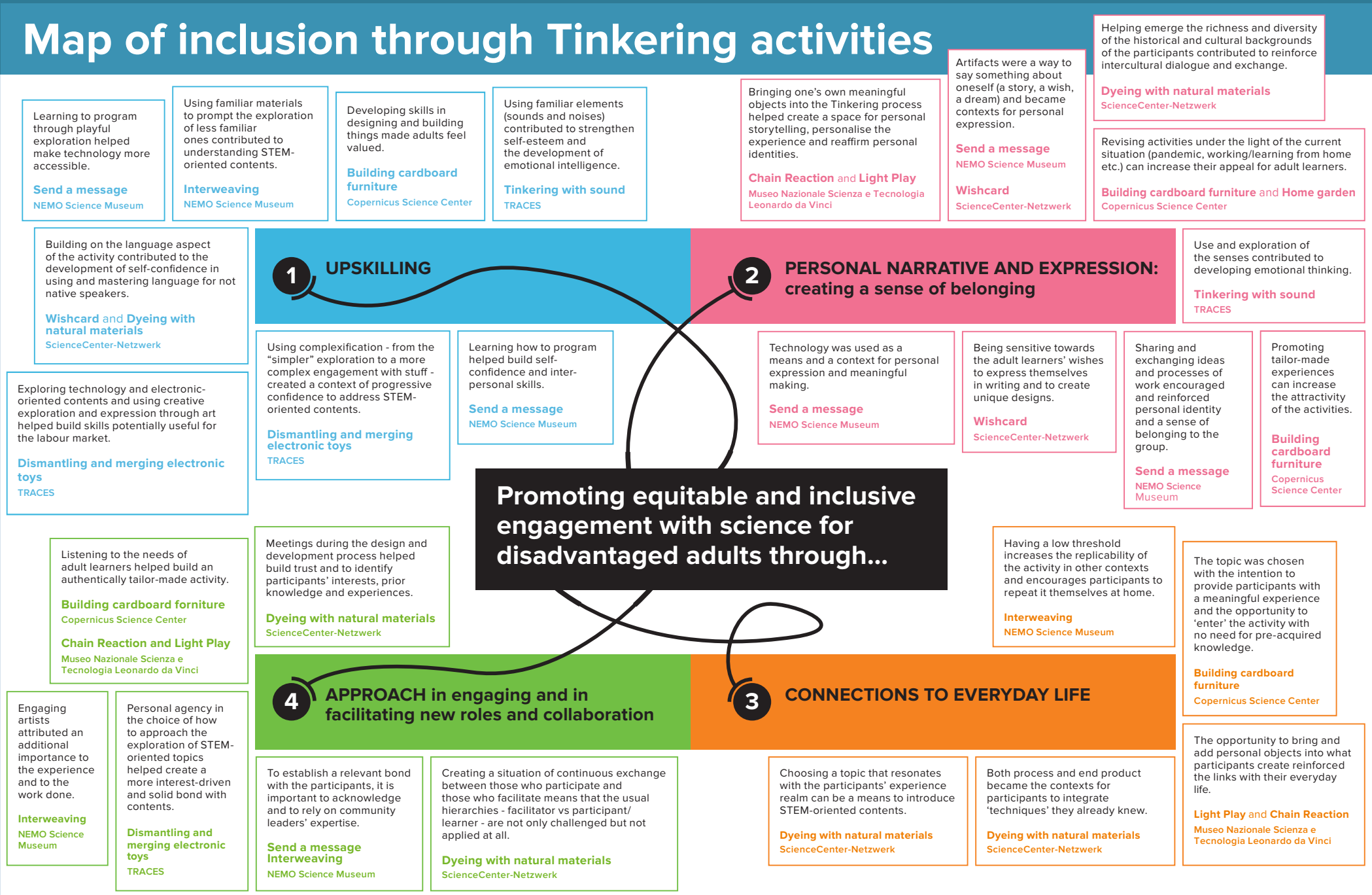
This document gathers the ultimate reflections from the project partners. It comprises an agile tool for those interested in exploring the potential of Tinkering for inclusive learning and engagement. It presents lessons learned about:

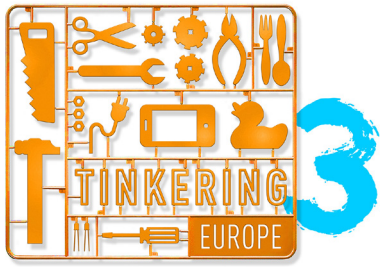
- co-design and development of activities with local communities as a way to create equitable and inclusive spaces and experiences
- the core elements that helped shape the relationship with the communities (from knowing each other, to co-designing, to testing and implementation)
- the contribution of the project to institutional change at wider level through the reflective cases.

The 'Map of Equity and Inclusion through Tinkering Activities' summarises the ways the activities can be considered equitable and inclusive under four themes: *Upskilling, Personal Narrative and Expression, Connections to Everyday Life* and *Approach*. Each box contains reflections on the activities designed by different partners. In addition, links to additional resources, accessible and usable independently one from the other, facilitate deeper dives into the different concepts and processes. By clicking on the partner's name, you can access reflections from the partners about creating longer term impact and institutional change; by clicking on the activity title, you can access the process undertaken by each partner for the development of the activity (from the beginning of the collaboration to production) that supports Equity and Inclusion. These materials are based on interviews carried out with the museum practitioners who tinkered with Tinkering. They summarise theoretical and practical learning emerging from each community-based project that is cascading into wider organisational practice. We hope these practical examples and reflections provide insights and inspiration for science centre and museum practitioners who are considering developing these sorts of approaches to help create more equitable STEM experiences for adult learners in their own organisations.

1 Papert, S., (2000), *'What's the big idea? Toward a pedagogy of idea power'*, IBM Systems Journal, 39(3-4) 720-729.
2 Ackermann, E., (2011) 'The craftman, the trickster and the poet. Re-souling the rational mind', MIT. https://mit.academia.edu/EdithAckermann

Map of inclusion through Tinkering activities





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All considerations reported here emerge from 3-year work engaging nine different community associations locally placed in six European countries and approximately 600 adult learners. They are to be considered as lessons learned from an experience that took place in a very specific framework and are not to be intended as research results.

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