MAKE IT OPEN

WP1 Service Design

Deliverable 1.1

Set of user centered delivery templates

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1. Executive Summary

Make it Open is a project which prioritises widening participation through bringing maker culture, citizen science and open schooling cultures to science education. In this context Work Package 1 uses Service Design tools and approaches to develop a set of user-friendly delivery templates or 'formulas' for open schooling.

This work builds on two equally important foundations. The first is the idea of 'user friendliness' which we define as being accessible, desirable and effective, and is grounded in teachers, learners and stakeholders experiences of open schooling. The second is the template or formula as a tool which codifies an open schooling project or programme from a 'service delivery' point of view i.e. how potential learning environments, roles, tools, media, platforms and any other components or qualities can combine in different ways.

Work Package 1, Service Design, uses insights into open schooling users experiences in combination with an examination of popular models of STEM open schooling to identify and prioritise the content of the templates. The templates then work like blueprints for an open schooling project programme. The templates, and their component parts, are the first deliverable for WP1 and also form the basis for later work on content and activity (WP2 Learning Scenarios) and co-design processes and tools for adoption and adaptation by teachers and schools (WP3 Open Schooling Navigator).

Two processes were undertaken as the first stage of this work, termed 'mapping':

1. **Multiple stakeholder workshops** were conducted, led by 5 project partners. This generated insights into the users and stakeholders first hand experiences of open schooling, and captured their ideas, ambitions for the future and barriers to entry.
2. **Desktop research** was undertaken to capture current practice in STEM related open schooling, understand common propositions and offers to schools and partners and break them down into their component parts.

From this initial research different open schooling dimensions were identified and explored, and by way of a creative development process were used as the basis for the **user centered delivery templates**.

This development process is the main focus of this report. It is important to note that this is the start of the project and the user centered design delivery templates will be updated throughout the life of the Make it Open project, based on their usefulness to other work packages and the results of the pilots and feedback from partner schools. The updating will continue until the templates are robust enough to be used as an open resource for others.

2. Introduction

The goal of Make it Open is to develop a sustainable infrastructure of open schooling in Europe based on the approach, pedagogy, content, processes and tools of the maker movement. Make it Open will stimulate innovative STEAM activities and support schools and local communities to develop new partnerships around science learning.

Involving 12 countries, 7 partners and 6 Third Parties, by the end of the three years Make it Open will create open schooling hubs in 10 European countries and involve more than 150 schools in running open schooling activities where children will solve local societal challenges.

Make it Open explicitly aims to expand opportunities for different groups in society to learn, be aware and engage with science through open schooling. This relies on a wider range of schools, learners and partners being able to understand the possibilities of open schooling, to be motivated to adopt it and to have the skills to deliver it.

User centered delivery templates are intended as the starting point for Make it Open's proposed toolkit to achieve this. They can help teachers and stakeholders understand options, communicate with others, and create tailored objectives which match their own school needs and resources.

They are a foundation for further planned work, specifically the co-design processes conceived as part of the proposed open schooling Navigator under WP3. The Navigator, the last deliverable of the project, is a digital open resource tool which will be available for teachers and schools to develop their own open schooling activities independently (D3.2-D3.4).

This document sets out the development process of the user centred delivery templates. It is structured as follows:

- **Section 3 - Task 1.1 Mapping**
    - This section shares the mapping processes used to gather insights and information.
    - Workshops mapped users experiences of and ambitions for open schooling and desktop research identified the different dimensions of open schooling.
    - The outputs of these tasks not only form the basis for the user centered delivery templates, but will additionally be used to inform the pilots and proof of concept (WP2 & WP5) and the Navigator (WP3) further along the project.

- **Section 4 - Task 1.2 Creative development of the user centred templates**
    - This section shares the methods used to build on the mapping processes insights and information to bring them into use as templates.
    - In order to develop the templates, a framework breaking down the dimensions of open schooling was built. This output may have value in its own right.
    - The templates currently show illustrative examples of accessible open schooling models; these will help inform the pilots and Navigator and may change later in the project depending on user feedback.

- **Section 5 - Annexes**
    - Annexes 1 and 2 include the full methods and results for Task 1.1 Mapping, and the work which led to the open schooling templates.
    - Annex 3 sets out the under centred delivery template as a form
    - Annex 4 attaches the WP1 summary powerpoint presentation.

3. Initial research: Task 1.1 Mapping

3.1. Background and objectives

During the bid process it was found that the term *open schooling* lacks definition. It is widely used, but can describe remote and distance learning, those using flexible approaches, self-led approaches and those centring student wellbeing. References to open schooling point to a wide range of examples and it can be challenging to grasp the connections between them.

In the Make it Open bid a set of open schooling 'dimensions' was proposed which set an agreed definition for the purposes of our bid. These dimensions, while meaningful, are broad, with the result that our frame of reference is expansive. The result is potential for confusion; as we enter into co-design processes with our partner schools it is critical that we have a shared vocabulary. Likewise if our project is to reach its objective of widening participation with mainstream schools, clarity is essential. The lack of definition risks making open schooling inaccessible, failing one of our criteria for being user friendly.

A mapping exercise, in which experiences of open schooling, ambitions for open schooling and widely available open schooling programmes in our field, could be examined was our first step in narrowing our frame of reference to resolve this.

The mapping exercise aimed to:

1) map users experiences of open schooling in the past (in terms of setting, roles, resources and activities)
2) discuss the users ambitions for open schooling in the future (in terms of setting, roles, resources and activities)
3) crowdsource a timeline of the open schooling delivery process (in terms of planning, delivery and evaluation of the project)
4) to better understand the parameters and components of (STEM) open schooling projects currently available

Overall, this would help narrow our frame of reference to something more relevant, and target the most appealing and useful forms of open schooling for use in the development of the user centered delivery templates.

The mapping information was gathered using:

1) **Workshops** (convened by 5 partner organisations - FixEd, BSMJ, Waag, EUN and Copernicus; in 5 countries - UK, Israel, Netherlands, Belgium and Poland, respectively) to capture experiences and ambitions of their networks in relation to open schooling, (including barriers to entry), and
2) **Desktop research** to identify the defining qualities and components which make up an open schooling project or programme.

This work collectively formed the foundation for the Service Design of the user centered delivery templates (see section 4 for Development work). The full methods and analysis of both the workshop and desktop research are given in Annex 1: full mapping methods.

3.2. Key findings

3.2.1. Workshops key findings

Workshop attendees generally had similar and positive experiences of open schooling in the past and wanted similar open schooling formats for the future (in terms of setting, roles, resources and activities). This reflected attendees generally positive predisposition toward open schooling (only one UK group self- identified as resistant to open schooling). The finding suggests that open schooling components which will be developed will likely be applicable to any of the partner schools we will be working with across different countries. It raises the question if experiences are similar because the possibilities of open schooling have been explored and the more successful ones mainstreamed, or if there is unexplored territory which participants are blind to.

Some minor differences between the partner organisation networks were evident. Workshops run by the Waag showed a broader range of open schooling formats in terms of settings, roles, resources and activities. The differences are likely to be explained by Waag's

network which includes schools which are actively involved in open schooling, experienced and confident. This raises the question if the user centered delivery templates, which are a useful tool for schools with little experience in open schooling projects, can be as useful for more experienced schools.

Differences arose in the attitude toward parents and families as participants in open schooling. They were identified as an open schooling resource in Waag, BSMJ and Copernicus workshops, and attendees also identified parents as potential expert teaching roles or advocates for open schooling. In FixEd and EUN workshops, parents and families were less prominent and were perceived often as adding complexity (e.g. consents, control). These differences about parents and families potential as partners to open schooling may affect the pilots and Navigator, and should be taken into account.

In terms of attendees' concerns, the majority related to the initiation and planning stage of open schooling activities, and issues throughout the planning process created clear barriers to adoption of open schooling. This finding was consistent across all workshops. This included initiating and supporting open schooling projects as well as timing and consent by school authorities and parents (Table 1). This highlighted the need for user centered delivery templates to be simple and informative, to help guide teachers at the beginning stage of an open schooling project.

Time and timing were themes which overlap with planning; the duration of a programme, the time available for planning and other tasks (e.g. fundraising), the compatibility between school and partner organisation planning cycles and even the possibility of spending significant time off the school site were all interlinked and all capable of enabling or limiting activity and/or partnership opportunities. This highlighted time as a critical dimension to consider on the user templates and the co-design processes.

Table 1. A ranked list of the concerns that attendees noted relating to their open schooling experiences

Task	Problems/ concerns	Solutions (discussed during workshops)
Project planning	Need guidance	- Ask experts for advice - Start with creating a clear objective/ theme

		- Plan with project partners
Developing project team and roles/ Identify what is needed from a partner	How to create and maintain partner relationships	- Make sure to have a shared agenda - Regularly update the team on project (weekly) - Find like minded colleagues who can collaborate and assist with the project - Participation should be voluntary (parents, helpers and partners) - Show the benefits of partner participation - Have localised partners which can advocate and support the project - Have mixed people from different backgrounds to represent the local community
	Avoiding uneven workloads	- For schools, recruit a group of teachers which divide and agree on responsibilities - Make sure to have resilient, dedicated and passionate teachers to maintain motivation and completion of project
Project consent	Changing perceptions of school culture, learning and traditions by teachers, principles, community, parents and students	- Parents: engage if the goal and the product are related to future opportunities for children - Teachers: engage when projects offers opportunities on their CV - Principle: engage if sees the value of open schooling. Show how this will not impact Ofsted - All: engage when given good examples of open schooling and its outputs - Students: need routine and structure so will engage after open schooling is more established
Project practicalities / risk assessment	Need to relate to the curriculum	N/A
Project funding	Partner relationationships can affect funding success (one host had funding turned down because they and their partner had a new relationship and the funder wanted a deeper, longer relationship with the activity co-created)	- Use existing networks
	Timing between funding rounds and timetables	N/A

Project timeline/ time frame	Students busy with regular lessons	N/A
Workshop materials	Unsure what counts as 'open schooling'	N/A

It is important to note that workshop outputs show a small sample of views from stakeholders (school staff, potential partners and parents) who were mostly predisposed toward open schooling. The full range of concerns related to open schooling in less positively minded schools will not have been fully captured. The full methods and results of the workshop analysis are given in Annexes 1 and 2.

3.2.2. Desktop research key findings

The desktop research, which catalogued 100 STEM related open schooling projects and programmes, presented a broad range of variations with few patterns or recognisable models. An attempt to jump to a typology using the conventions by which they referred to themselves (e.g. kit, competition, excursion) was not successful as the overlaps were too significant (e.g. a competition which came in the form of a kit and offered excursions).

The dimensions of open schooling as set out in our bid were not adequate to characterise the programmes in a meaningful way - they missed significant details (see Annex 1 for full methods). To do this we added the dimensions:

- components - the tangible products and services which support an open schooling programme (e.g. competition, teacher training, briefs, curriculum development etc)
- qualities - the features and benefits the open schooling programme can deliver (e.g. mentored by students, for underserved learners, hands on)
- time - used to capture 2 x temporal characteristics: whether the project happened within or outside the school day, and whether the project was long term (e.g. a year long programme) or short term (e.g. a one off event)

Certain components were frequent features of programmes but told us little about the nature of the programme e.g. downloadable resources. While we found some affinities between components and qualities, we did not find repeating patterns which might suggest types.

The most popular qualities by a significant distance were Agency, Embodied learning and Relationships and networks. These could be interpreted as the motivating factors in embarking on an open schooling programme.

An unexpected finding was the number of open schooling programmes which happen both inside the school day and on the school site (against the number which happen more flexibly, outside the school day and off site). The latter is seen as the open schooling convention; in reality there are equal numbers in the former, which use components like visits in, tools and technology or digital experiences to open the learning experience.

There was some evidence which suggested a correlation between the scale of commitment (small scale or large scale), time commitment (short-term or long-term) and the types of providers. In general large scale providers with a higher profile can command larger scale and longer term commitments. Less known providers were more likely to offer customisable, less committed programmes; one possible explanation is that their lower profile (and perhaps status) results in lower trust and lowered appeal.

A further linked observation relates to teaching responsibility and where it is located in the open schooling project, specifically does it stay with the teacher or is it delegated, either to another individual who takes the role of teacher, or split between multiple others (mentors, peers, self-directed etc). Again this is tied up in questions of trust, control, quality and safeguarding.

Parents and home options were almost absent in the programmes we examined; there was no evidence of programmes built around parental involvement, and few which featured parents involvement centrally.

It should be noted that this exercise did not examine the content (subjects/topics/themes) of programmes, nor did it examine popularity, adoption patterns, usability, effectiveness. It was focused on identifying issues relevant to the design process and/or groupings or types which

might make the landscape more accessible, desirable and effective. The full methods and results of the desktop research are given in Annexes 1 and 2.

4. Developing user centered delivery templates

4.1. Background

Both elements of the mapping process (workshops and desktop research; see section 3) were used as foundations to develop user centered delivery templates.

Findings from the stakeholder workshops underlined the need to support schools and partners to devise, shape and plan their open schooling projects, particularly those making their first steps into open schooling. It identified a range of issues which either are or could be barriers to open schooling and located them within the timeline of the open schooling project. This process underlined the need for a range of tools, including templates, and highlighted the challenges and issues that the tools need to resolve.

The desktop research generated a framework for understanding and describing open schooling as it currently is presented by a range of providers. By examining associations between dimensions, it also identified relevant issues and suggested grouping of dimensions to consider when developing user centered delivery templates. The inclusion of this should help to make the open schooling landscape more accessible to those who are new to open schooling.

4.2. Methods

4.2.1. Identifying the most useful dimensions

Initial work on developing the user centered delivery templates focused on the desktop research. As described in section 3.2.2 above a number of additional fields were brought into our analysis in order to better describe the characteristics of the programmes being examined:

- Components - the tangible products and services which support an open schooling programme (e.g. competition, teacher training, briefs, curriculum development etc)
- Qualities - the features and benefits the open schooling programme can deliver (e.g. mentored by students, for underserved learners, hands on)

- Timing (scheduling and duration): time - used to capture 2 x temporal characteristics: whether the project happened within or outside the school day, and whether the project was long term (e.g. a year long programme) or short term (e.g. a one off event)
- Approach - It became apparent that the programmes examined varied in their approach toward service delivery e.g. some were a 'full service' which could effectively be bought in, others were more of a partnership model, while others were 'DIY' where teachers and schools took the guidance and took full control of the process

Different techniques, from scoring to tagging, helped to capture detail under each dimension. A series of exercises helped to explore how useful each of the fields could be. Care was taken to ensure that each dimension was coherent, meaningful and distinct from the other dimensions.

The final list of useful dimensions of open schooling is as follows:

1)	*Qualities*	The features and benefits of the open schooling project
2)	*Location*	Whether the project happens: (1) on the school site or (2) on school hours
3)	*Components*	The tangible elements which make up the open schooling project and enable it to happen
4)	*Roles*	Relating to roles played in the learning/open schooling experience
5)	*Timing*	Capturing detail about both scheduling (in the school day or outside the school day) and whether the project is long or short term. This links to the depth and openness of a project (e.g. long term or one off visit)
6)	*Approach*	The nature of different provider types

4.2.3. Simplifying the ‘tags’

Most of the dimensions, specifically Components, Qualities and Roles, captured long lists of elements; for example Components initially listed (or ‘tagged’) over 40 different items. In order for these to be usable and useful, they needed to be rationalised.

Through a set of clustering exercises, the tags in each dimension were grouped to generate a shorter set of tighter descriptors that were less overlapped and gave more coherence to the data, without losing detail.

This resulted in a set of 9 qualities, 10 components and 7 roles; see Figures 1, 2 and 3.

4.2.4. Identifying patterns or affinities

Taking the now rationalised data, patterns or affinities which might suggest open schooling models or types were searched for, for example exploring frequency of tags and correlation between tags. Exercises mapping dimensions against each other and prioritising the dimensions according to frequency of use drove further attempts to understand relationships between dimensions and tags and identify models or types.

No typology was established through these exercises, and no prominent delivery models of open schooling were extracted from the study. In fact the study was notable because of the diversity of combinations captured. The field is varied and the formulas for delivery not repeated. In this sense open schooling can be seen as a culture with a vocabulary rather than a model which can be picked up. This finding could explain the tension seen in the workshop findings around initiation and adoption of open schooling; the diversity of options can be confusing and daunting to the user.

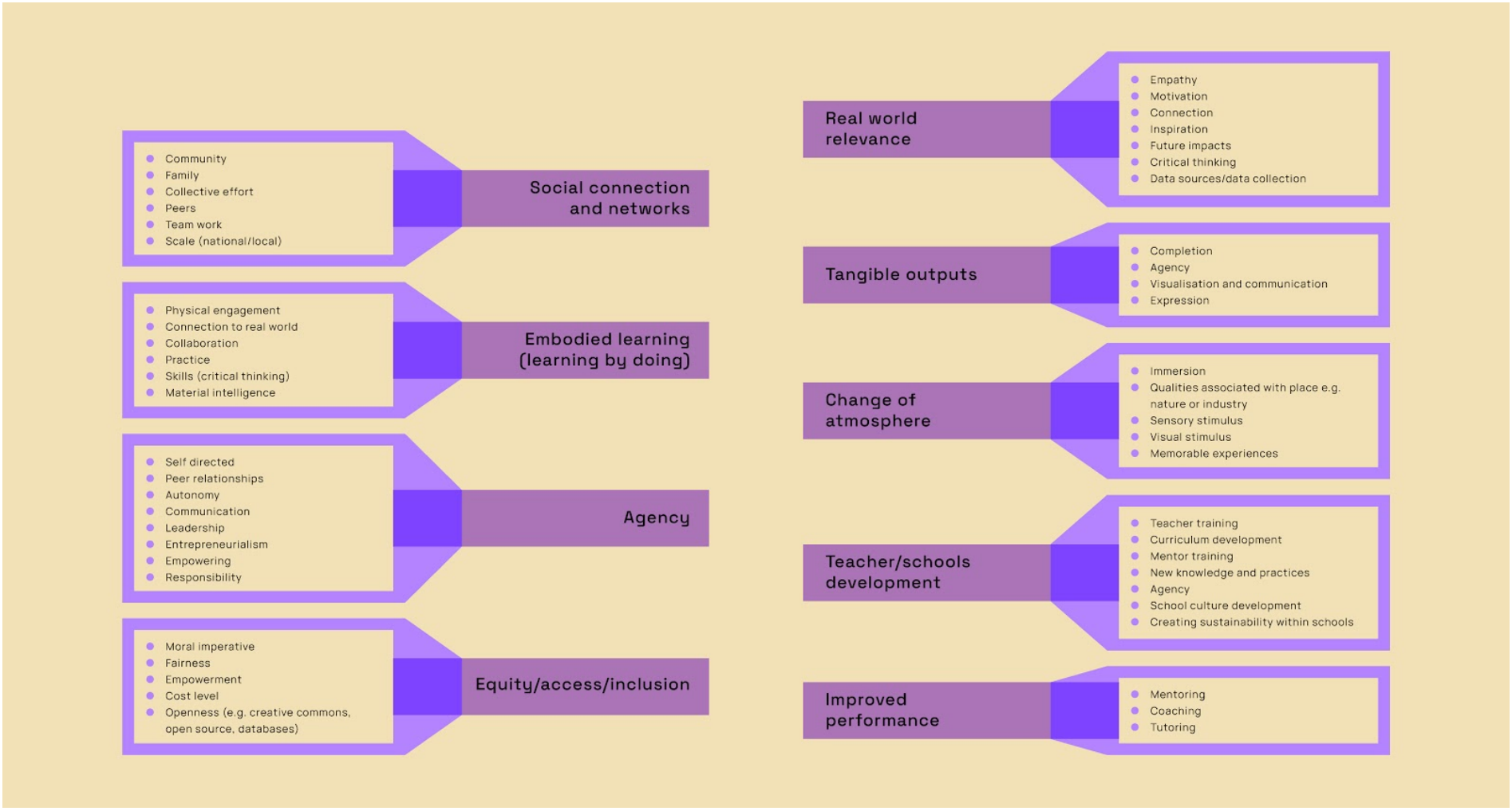


Figure 1. Grouped headings for the dimension 'qualities'

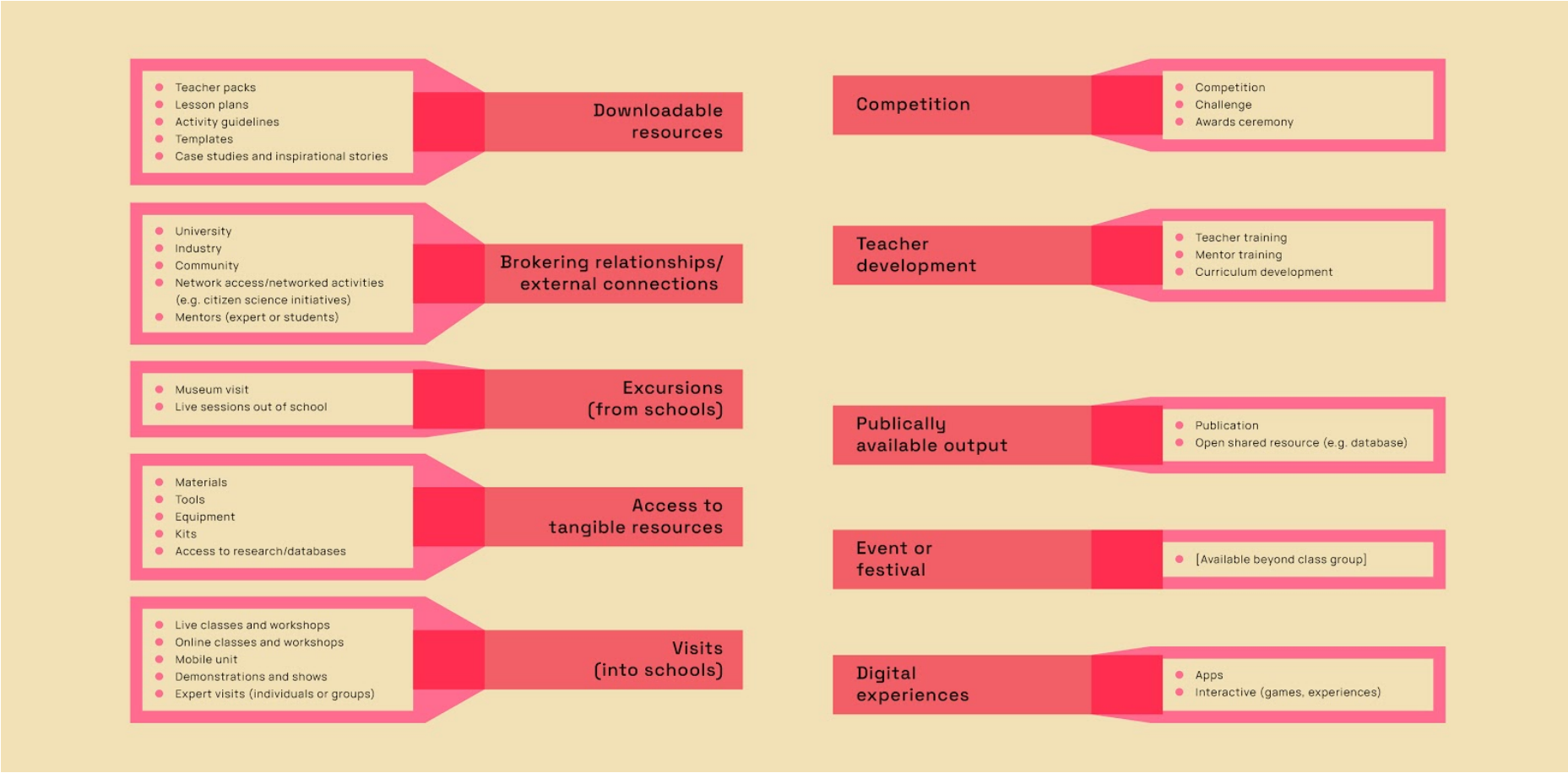


Figure 2. Grouped headings for the dimension 'components'

Figure 3. Grouped headings for the dimension 'roles'

4.2.5. Creating a framework for open schooling service delivery

Workshops with the extended Make it Open Team, specifically the Bloomfield Science Museum team, served to discuss our findings and test different approaches to making the findings useful and usable.

During the meetings, the value of the dimensions and their clustered lists was recognised. Rather than simply being part of the process to produce the templates, in combination they become an informal taxonomy, which describes a way of thinking about open schooling. This was recognised as being of value in its own right. The dimensions and lists were reconsidered as a framework, refined and elevated as a stand alone deliverable of this stage of the Work Package (Figure 4).

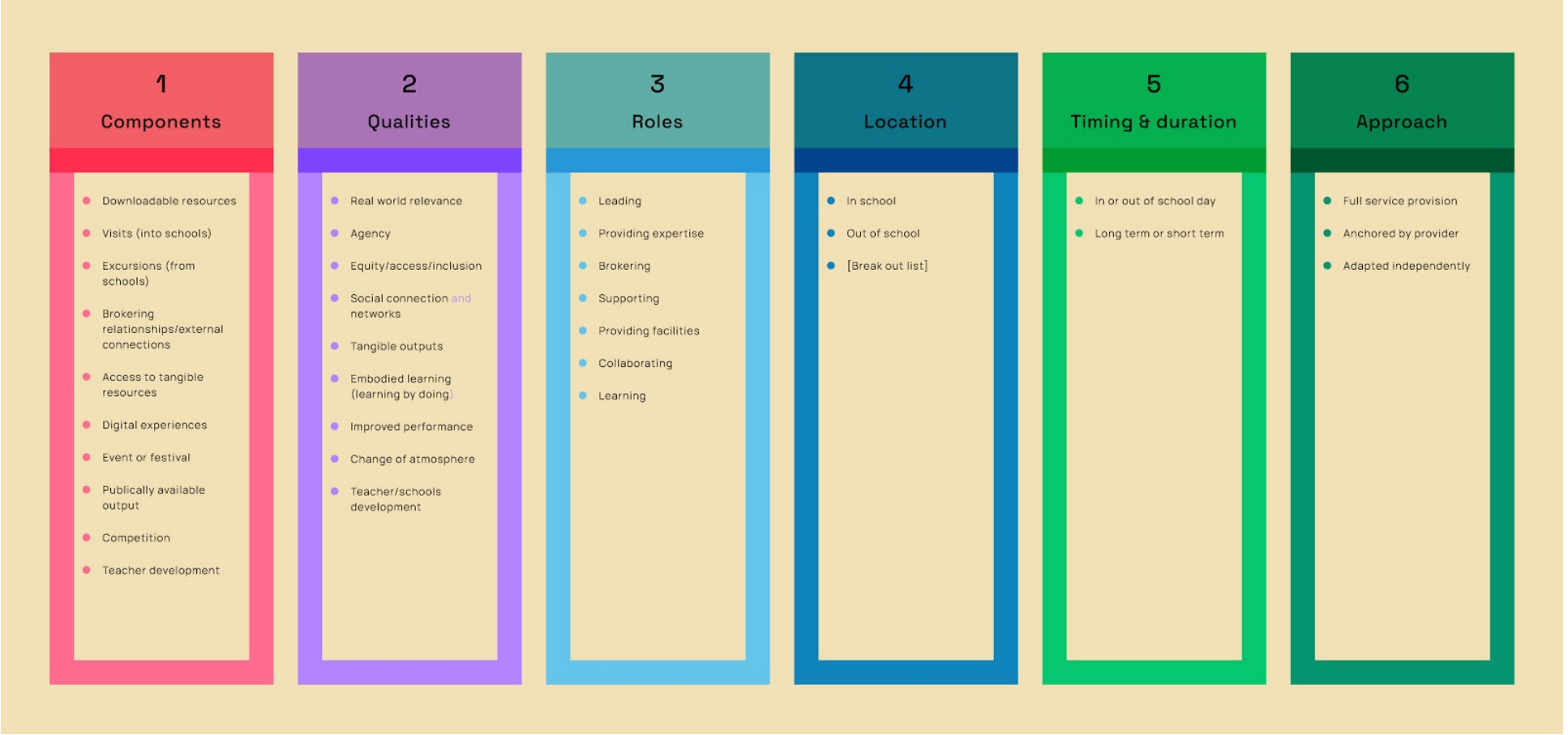


Figure 4. List of lists describing open schooling dimensions

4.3. User centered delivery templates

User centered delivery templates provide a blueprint of an open schooling project and can be used as a shortcut for users to adapt. They are tools to help teachers and stakeholders understand options, communicate with others, and create tailored objectives which match their own school needs and resources.

The intention had been to build a small set of templates around the most relevant and appealing open schooling models or types. No models or types emerged from our research process, so a question arose of how to focus the open schooling templates.

Evaluating possible approaches, it was decided that the simplest route is to anchor the templates in components, as the most recognisable (and therefore accessible, appealing and effective) factor. This would create templates based on for example the excursion, the school visit, or the competition. The question of what detail to include in the template was resolved by focusing on 'use cases' i.e. considering what starting position a user might approach a template from. Use cases were categorised as either strategic, opportunistic, or content driven; a further workshop captured examples of each category from across the wider team (Table 2)

It is proposed that a set of 4-6 templates should be sufficient to describe a range of options for a user (Figures 5 and 6).

The template itself is structured around the open schooling framework, adding detail to acknowledge findings from the research process:

- First steps to accommodate entry points to open schooling activity
- Long term goals to recognise the journey of schools from open schooling projects to open schooling confidence and finally a culture of open schooling
- Planning tips to engage with the practicalities
- Content and curriculum pointers and MiO scenarios to support teachers search for relevance.

Table 2: Examples from partner organisations of potential use cases for user centered delivery templates

Strategic use cases	Opportunistic use cases	Content or experience driven use cases
I want to test open schooling's potential value to our school	There's a funding pot to encourage working with the community	I need to teach a unit on pollution and would like to bring it to life
To get parents more involved with the learning experience	There's a partner who is interested in deepening their involvement with the school	To strengthen [mathematics] skills
To strengthen the connection of the schoolchildren with their community	There's a parent who's a scientist who's keen to get involved	To connect our classroom to the professional world of work
To raise the profile of the school in the area and increase student recruitment	There is an event in the community calendar that the school can connect into	To change the atmosphere and get out of the confines of a classroom
Empowering students to be part of lifting the neighbourhood	National or municipal funding for projects such a "space week"	To get access to tools and equipment
Growing the self esteem in the students (towards a more positive self-image)	Companies approaching the school with an assignment	Provides learning opportunities for different topics in the curriculum
Build relationship with parents to support instances of increased learning at home	A competition	Students identifying problems [in the neighborhood] and fixing it
	Covid means more of the learning happens remotely, and with social distancing conditions - how can open schooling help?	Students identifying and fixing their own problems
	To connect with other schools	

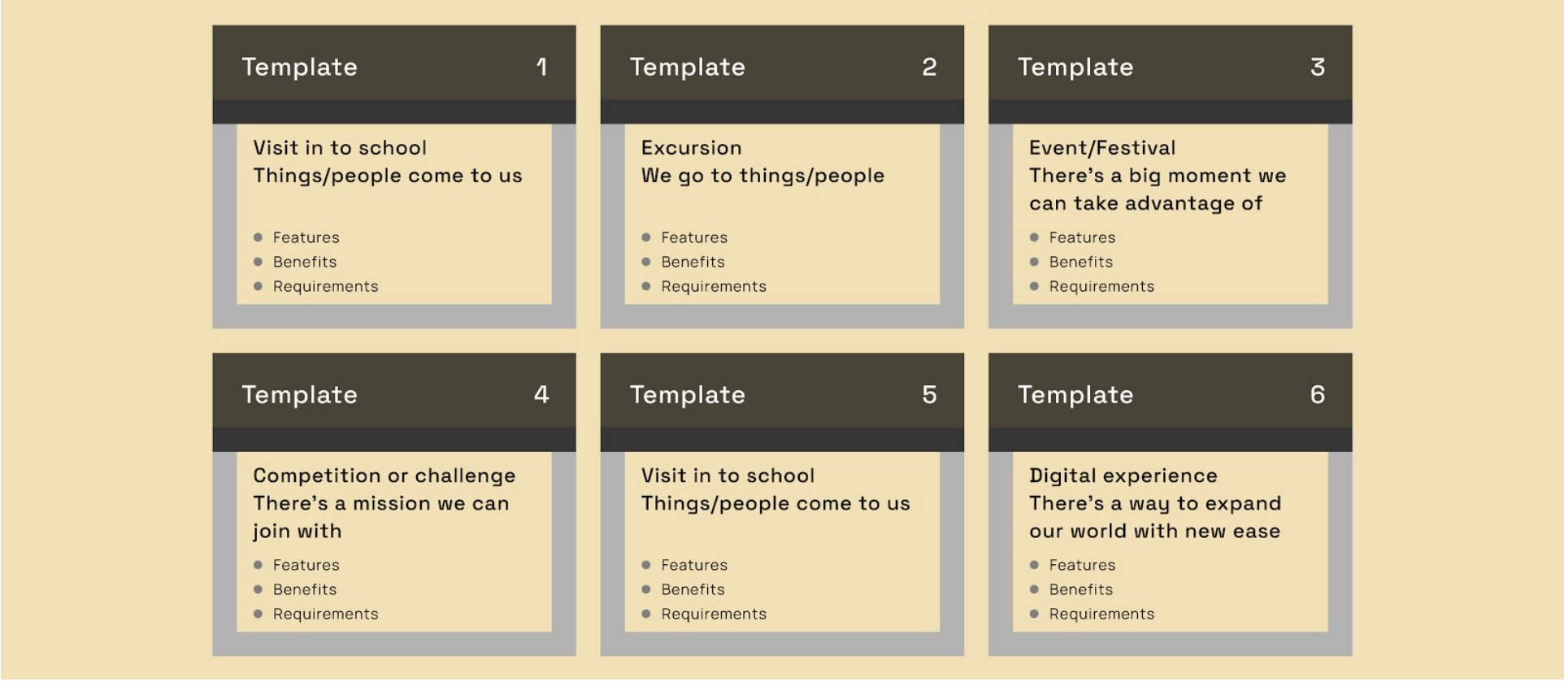


Figure 5. A set of 4-6 templates will describe a range of open schooling options for a user

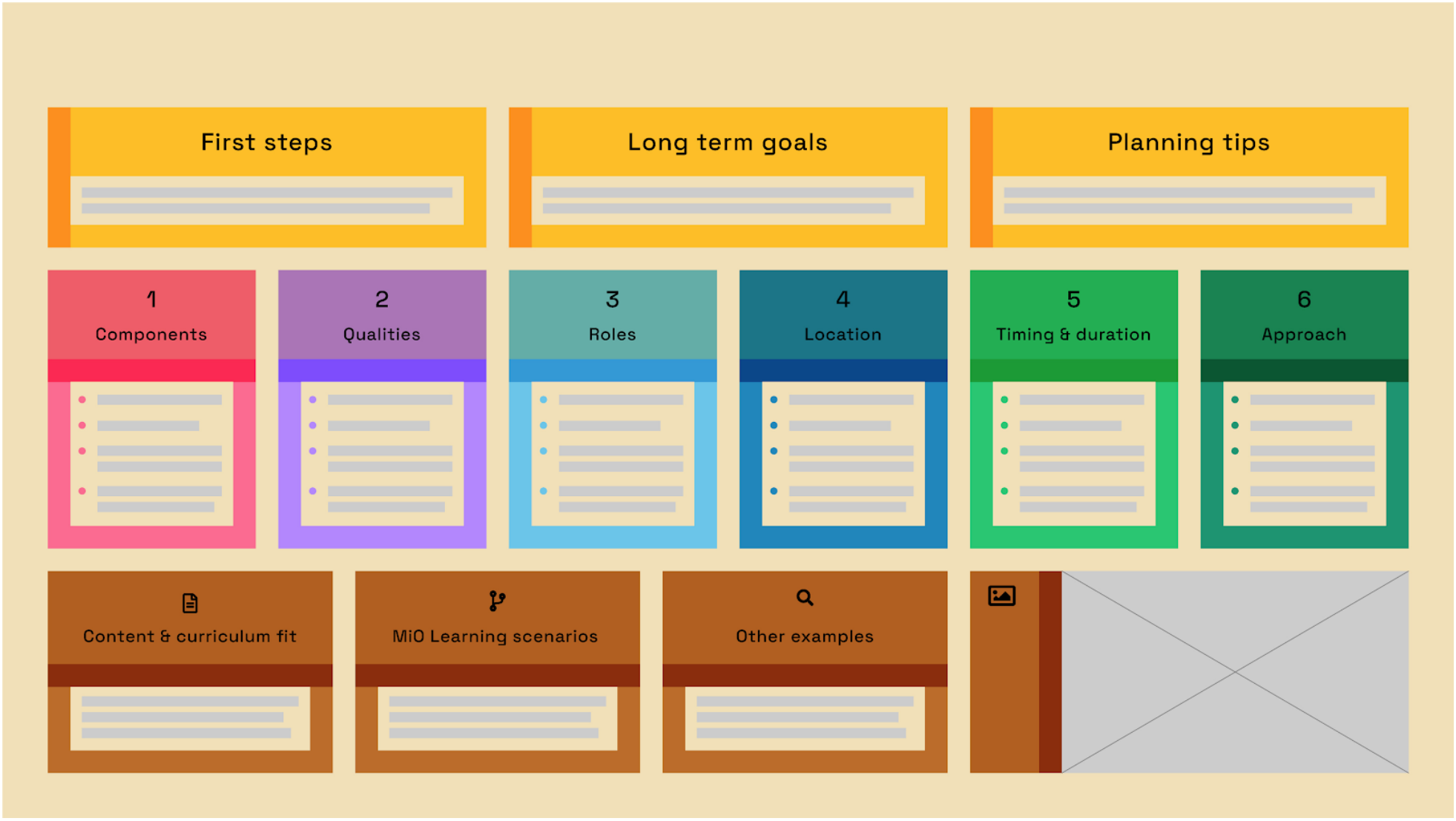


Figure 6. Example open schooling template as a graphic

4.4. Future use and development

The user centered delivery template formed for this deliverable can be used in a number of ways:

- to support communication, as an illustration or case study as an entry point to the options available within open schooling with teachers and stakeholders
- to support decision making, by exploring the practical commitments and potential benefits brought by different open schooling options
- to support planning, through use as a blueprint for tailoring specific open schooling projects.

Since the templates acknowledge the process, timeline and barriers to delivering an open schooling programme (all related to the planning stage of open schooling projects; a major concern and barrier of workshop attendees - see section 3.2.1), the templates will be a particularly useful tool for teachers and stakeholders who are less confident in creating open schooling projects.

Given the close integration between Work Packages 1, 2 and 3, the user centered delivery templates will be adopted, inform or be incorporated into integrated approaches later in the Make it Open project. Elements of the template are very likely to form the basis for the downloadable materials (guidelines, checklists, worksheets or other similar documents) accessed via the digital tool for teachers, the Open Schooling Navigator (WP3).

5. Annexes

Annex 1: full mapping methods

Workshops

Workshops were designed to capture: (1) what open schooling currently looks like and what direction it may take in the future, and (2) what an outline of an open schooling project would look like in the future. Workshops were comprised of:

Mini-survey	Attendees were asked the location of where they last learnt something, who taught them, and what they learnt. This was used as an ice breaker and though interesting not included in later analysis.
Padlet boards	Attendees listed and detailed open settings, roles, resources and activities which they have previously used, and would likely use in the future (Figure 7)
Jamboard	Attendees were asked to map a timeline of tasks which needed to be done for any open schooling project. Each workshop group agreed a user perspective to work from, that of teacher, subject coordinator (STEM or other) or partner organisation (Figure 8)
Summary/ feedback	Facilitators gave their perspectives, including detail about the makeup of each workshop group: the number of attendees, roles of attendees, their initial response to open schooling, key issues, problems and barriers to open schooling discussed, other users/ roles needed to make open schooling successful, and any additional discussions within the workshops not reflected in the activities.

Overall, 11 workshops were conducted by FixEd, EUN, Waag, BSMJ and Copernicus (3, 2, 2, 3, 1 workshops, respectively) which were comprised of 5-12 attendees. The majority of the workshop participants were school centred (teachers and school leadership: 72.7% and 54.5% respectively) and potential partners that would aid in any future open schooling projects (potential content partners, potential settings/ host partners: 54.5% and 45.5%). Parents, which attendees highlighted to be another user which is central in open schooling, formed 45.5% of workshop attendees. It is important to note that attendees were allowed to choose more than one role.

Figure 7: Padlet board example from one of the FixEd workshops

Figure 8. Jamboard example from one of the FixEd workshops

After the workshops were done, the data was analysed as follows:

Padlet The number and type of what attendees had done previously, and what attendees wanted to see in the future for open settings, roles, resources and activities, was counted per workshop. Counts for each open settings, roles, resources and activities for each partner workshop was also done to see any cultural differences/ differences between partner networks. No data was found on what attendees had done previously for the Copernicus workshop, and also on what attendees wanted for the future in the third FixEd workshop. There was not enough data to analyse what attendees did not want in the future (the majority of data was from the one workshop run by Copernicus).

Jamboard Notes were clustered under headings for each of the planning stages:

- Planning stage: project planning, developing project team and roles, project consent, project practicalities/ risk assessment, project funding, project timeline/ time frame, supportive training for the project, promo materials, workshop materials, project setting/location, designing evaluation, and identify what is needed from a partner
- Delivery stage: support delivering workshops, workshop materials, maintain communication, documentation, project setting/ location, workshop timeline/timeframe, workshop practicalities, project funding, and workshop planning
- Evaluation stage: sharing knowledge for the future, workshop outputs, seeing impacts, informing stakeholders, developing networks, types of evaluation, project legacy, and promo materials

The number of times the headings were mentioned across workshops were then counted and ranked in ascending order from most to least mentioned, for each of the planning stages.

Summary/ feedback Most of the outputs from the feedback were created directly from Google Forms. For the long answer questions related to problems, barriers and issues, comments by facilitators were grouped into the themes: changing perceptions, time and project planning, commitments, partners, funding, school dependencies, limitations, and positives/ambitions/motivations. Most of the comments related to the planning stage of the project and so were put into the context of the planning stage headings created for the Jamboard analysis.

Desktop research

Desktop research was undertaken to better understand the parameters of open learning and open schooling projects. Through taking a representative sample of projects and mapping their components and characteristics relative to each other it would be possible to log the tools and

common approaches of open schooling programmes, identifying patterns and models, interesting outliers and evidence of innovation (Figure 9).

This exercise targeted 100 STEM or STEM related publicly available programmes as a sample and is intended as a fast creative exercise to provoke insights and drive ideas rather than a reliable quantitative research piece.

Sources:

- Awards programmes e.g. Royal Academy of Engineering Ingenious Awards
- Research awards e.g. Horizon 2020
- Aggregators for teaching resources e.g. STEM Learning

Structure/field names:

- Type e.g. Event, Project, Programme
- Components or what is provided within the open schooling project e.g. Teacher training, Activity guidelines
- Characteristics or what happens within the open schooling project e.g. creating something, working outdoors, working with disadvantaged learners
- Scoring against openness on a range of dimensions

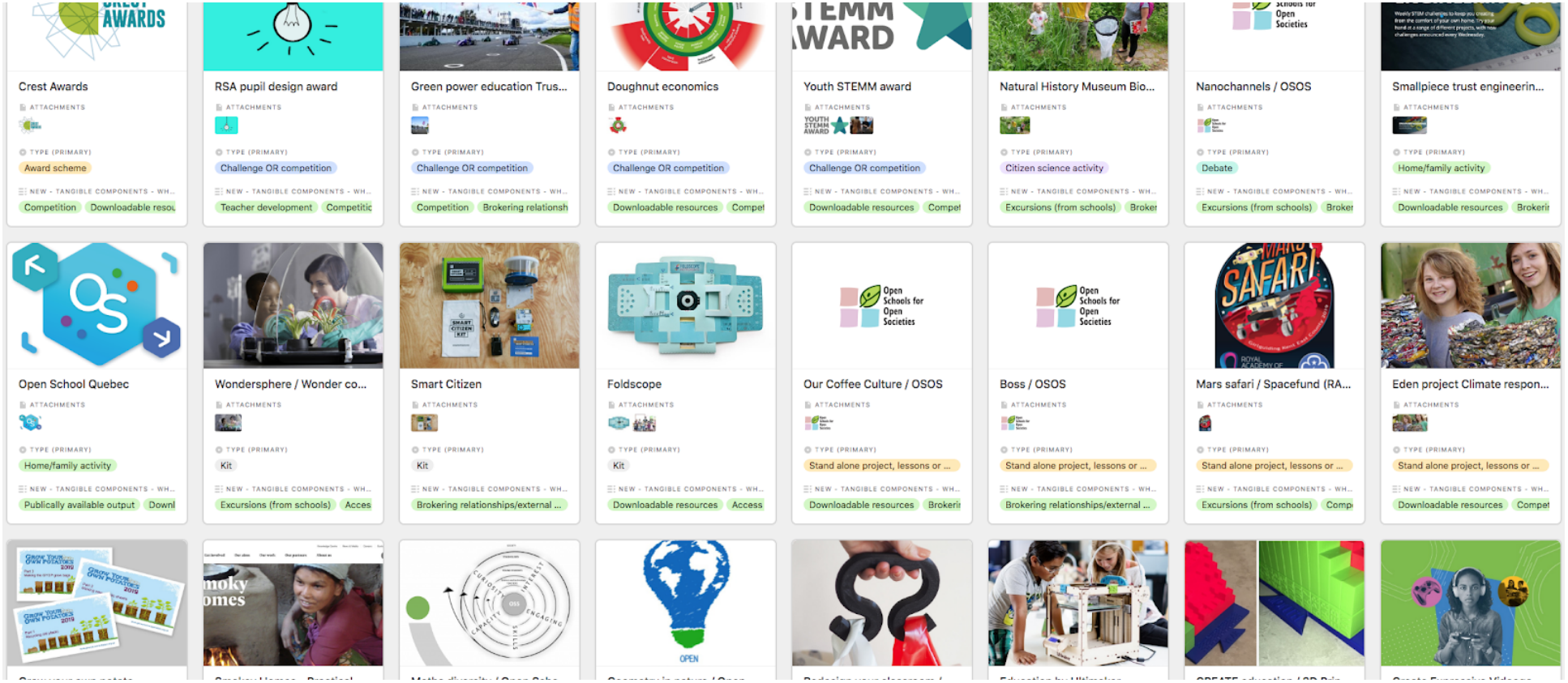


Figure 9. Screenshot of part of the database created as part of the desktop research

Scoring each project against openness — details of dimensions used

Each project was scored against dimensions which were developed and evolved during the process of the study. Rooted in 1) the open schooling dimensions used in the Make it Open bid and 2) the responses to the simpler characteristics used for the Padlet exercise in the workshop sessions, some elaboration and refinement was required in response to the data capture.

This resulted in a final set of 5 dimensions as below. The original dimensions, as set out in the Make it Open bid, are noted in italics.

1. LOCATION (*physical*): extending the learning environment beyond the school walls
2. ROLES (*teaching*): others taking on the teaching role
3. RESOURCES (*learning*): learning initiated and/or supported through other means
4. ENGAGEMENT (*well-being*): creating opportunities and purpose through engagement with the wider world
5. TIME: Happens inside or outside of school hours; also noted long term vs short term commitments

Two dimensions included in the original bid were not included:

- Curriculum was not included as this exercise is focused on the delivery format rather than the content.
- Community was not included as it was felt that for this level of analysis there is significant overlap with Engagement/Wellbeing.

The scoring exercise undertaken did not become central to the study but was a useful evaluation exercise. The scoring criteria are detailed in Table 3.

Further notes on the desktop research approach

Project/programme examples were limited to those published to the public domain. This excluded those initiated by teachers and schools (perhaps the most common forms) and so are likely to reflect the interests of providers (e.g. independent providers, advocacy groups, institutions, sector bodies or corporations).

The desktop research was not a statistical analysis. We did not follow a fixed protocol of finding available open schooling projects, and so our sample is unlikely to fairly reflect the range of open schooling projects available. The database cannot therefore be used as insight into what open schooling formats are currently out there or which are most used. Our analysis focused on capturing the key components and qualities of the projects and programmes in order to understand their vocabulary. This helped us deepen our understanding of the open schooling formats, and how we could compare them non-statistically.

Table 3. Scoring criteria for open schooling dimensions

No.	Openness in setting	Openness in roles*	Openness in sources and resources**	Openness in engagement (wellbeing)	Openness in time
1	Activity in classroom (or class work at remote learning setting)	Learning only from teachers	Regular classroom resources	Classroom - limited to people in school community	Set school hours (could be remote)
2	Some activity outside classroom in school		External lesson plans	School wide	
3	Some activity outside school		Resources from or outside school	Reliant on relationships outside school	Could happen in or out of school timetable
4	A fixed destination outside school		Reliance on significant resources outside school / special venue or platform, format	Deeply involved directly with communities	
5	Open settings outside school (e.g. self directed)	Self-directed learning	Asking learners to create sources (self directed)	Involved with broader issues	Self set or no timetable or out of school timetable

*Degree of responsibility, leadership or guidance offered against a traditional model)
** Measured by richness and location of source (e.g. only available outside/authenticity/directness/proximity)
*** Engagement might not translate to direct relationships; could be built through experiences or atmospheres

Scoring high on the openness dimensions did not translate to the value or quality of the open schooling programme. It is tempting to think that within open schooling, the more open the programme the better. In fact if all dimensions are very open the programme loses definition, and

risks lowering quality. Consequently a high score on openness does not indicate anything in particular.

Annex 2: full mapping results

Workshops

Outputs bias and key users of open schooling

Most workshops had the majority of attendees being evangelists (72.7%) and willing followers (18.2%) to open schooling, therefore outputs are biased towards open schooling advocates. There was however one workshop from the UK where most attendees were reluctant about open schooling (9.1%), implying that there are still some barriers to overcome in terms of making open schooling accessible (Figure 10).

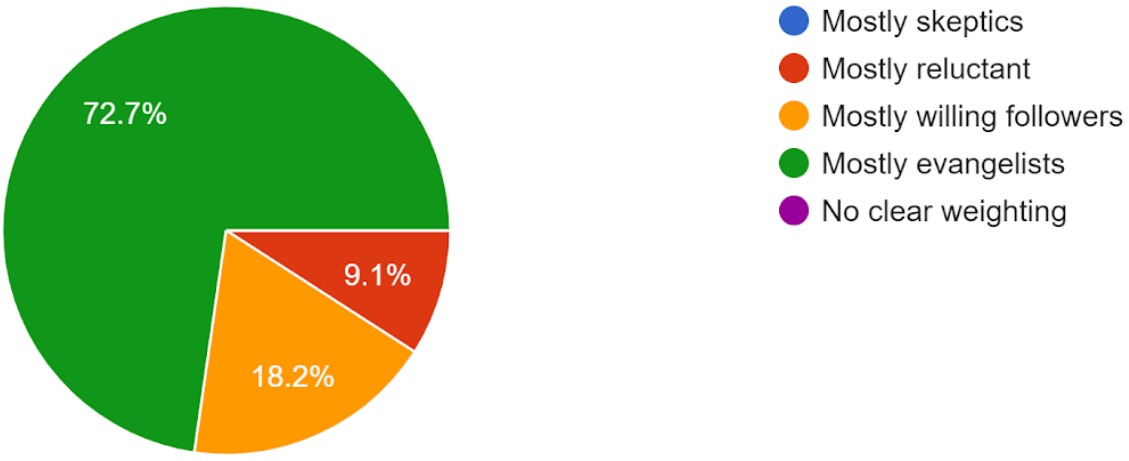


Figure 10. Initial view of open schooling per workshop

In the workshops, attendees also identified other key users needed for open schooling to be successful:

- Critical to have: school leadership/ governance, local partners (institutions, spaces, businesses)
- Central to have: parents
- Nice to have: sponsor/ funder, municipality/ local authorities
- Overall good to have learners

Differences in partner organisation networks

For what attendees wanted in the future, open schooling settings, roles, resources and activities were similar across countries (Figure 11), implying that navigator and workshop prototypes should be applicable and feasible in all countries. Interestingly, what attendees wanted in the future was overall very similar to what they had done in the past (Figure 11-15) or because what they have done previously was proven successful. Of all the workshops, attendees from Copernicus workshops had the most views on what they did not want to use for open schooling in the future (although this could be because they were more open or confident in doing so), whilst attendees from other partner organisations had no strong opinions on what not to use.

In terms of what attendees had done in the past, attendees from EUN, BSMJ and the FixEd workshops had previously done similar open schooling settings, roles, resources and activities. Attendees from the Waag workshops, however, had distinctly different answers for what they had previously done for all 4 open schooling themes (Figure 12-15). The differences are likely because Waag's network consists of schools which are actively involved in open schooling. Differences could also be due to different terminologies used.

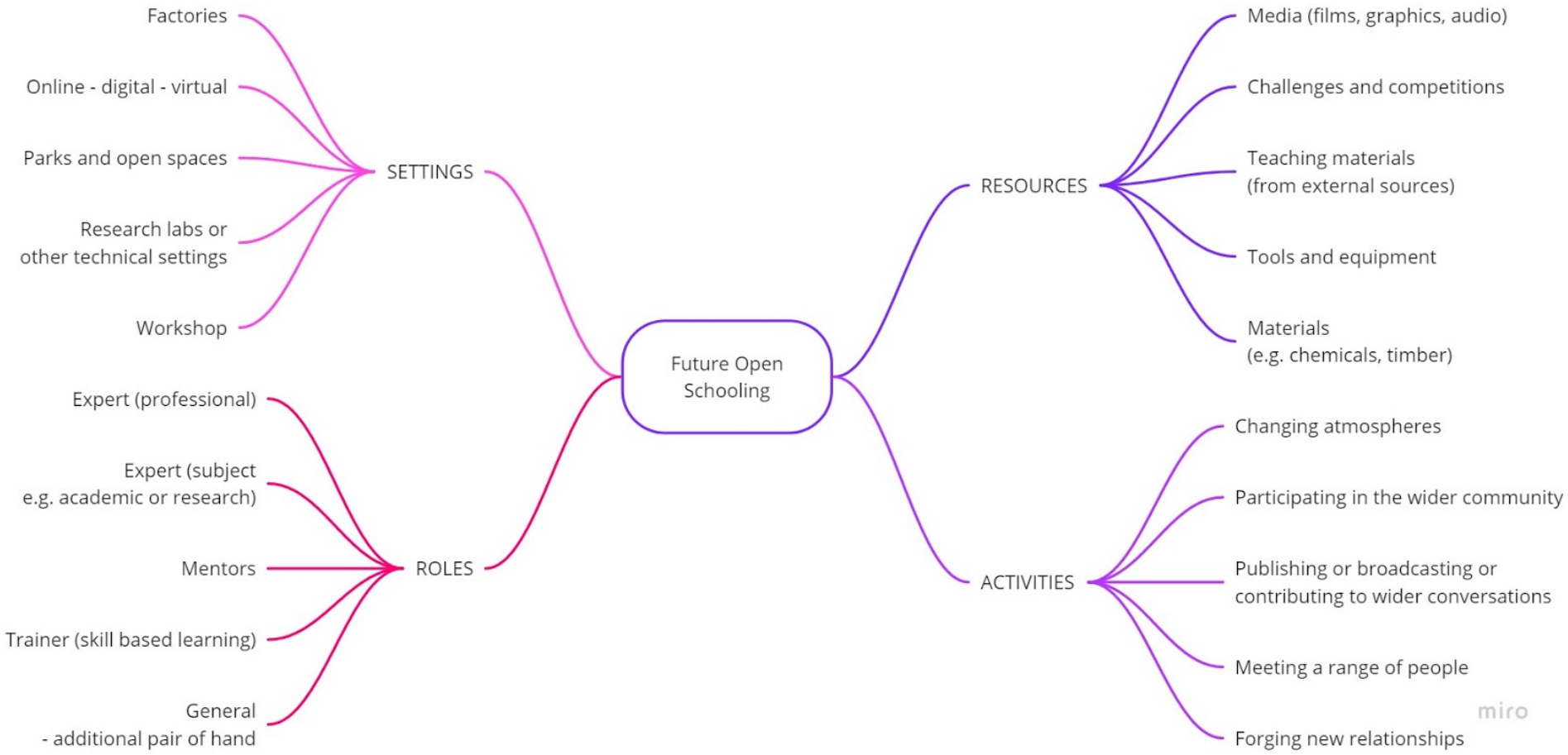


Figure 11. Top 5 Openness settings, roles, resources and activities attendees across the workshops wanted to use in the future

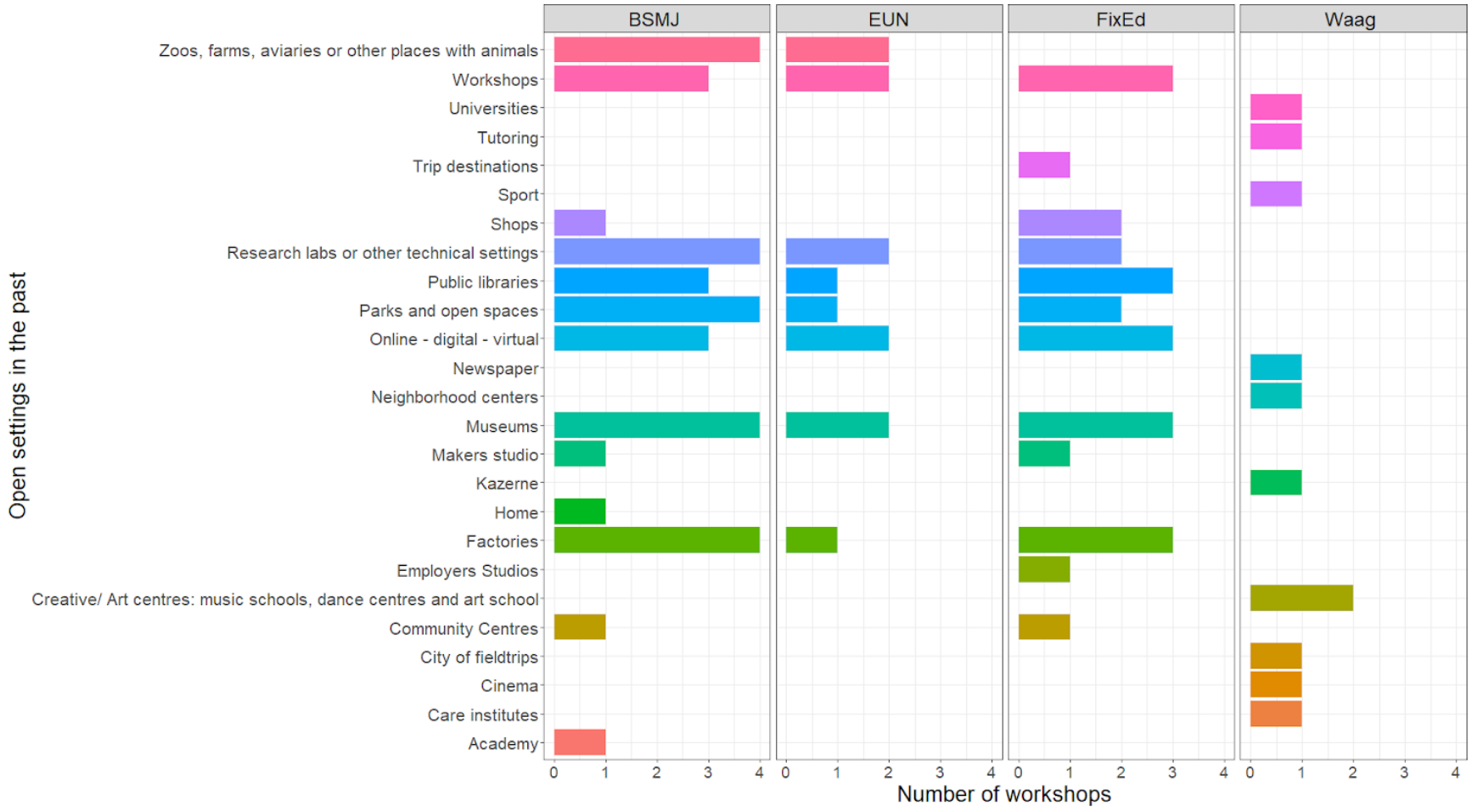


Figure 12. Open settings which have been done in the past by at least one attendee of each workshop. N = 2, 3, 2, 3 workshops for EUN, BSMJ, Waag and FixEd respectively.

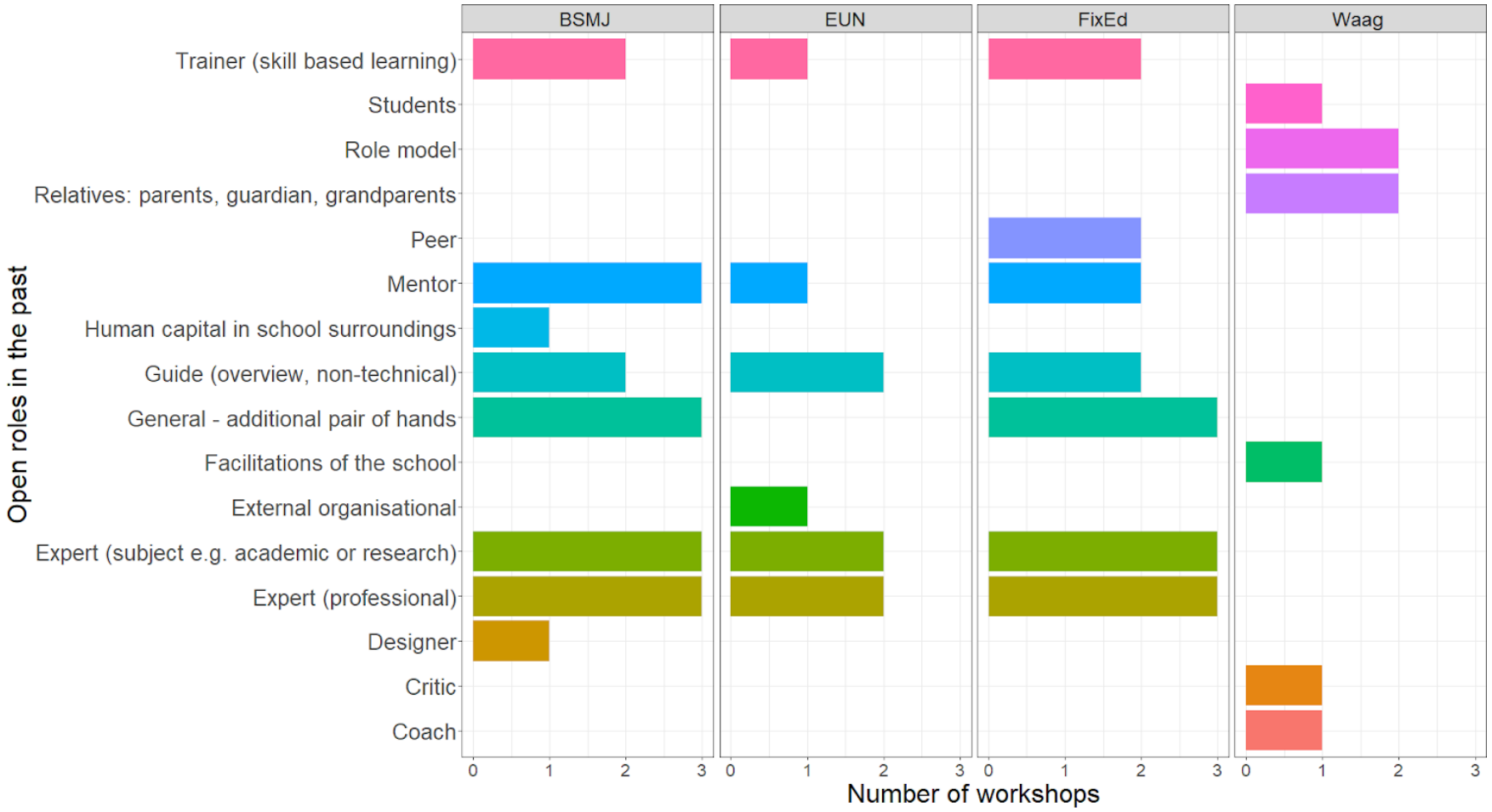


Figure 13. *Open roles which have been done in the past by at least one attendee of each workshop. N = 2, 3, 2, 3 workshops for EUN, BSMJ, Waag and FixEd respectively.*

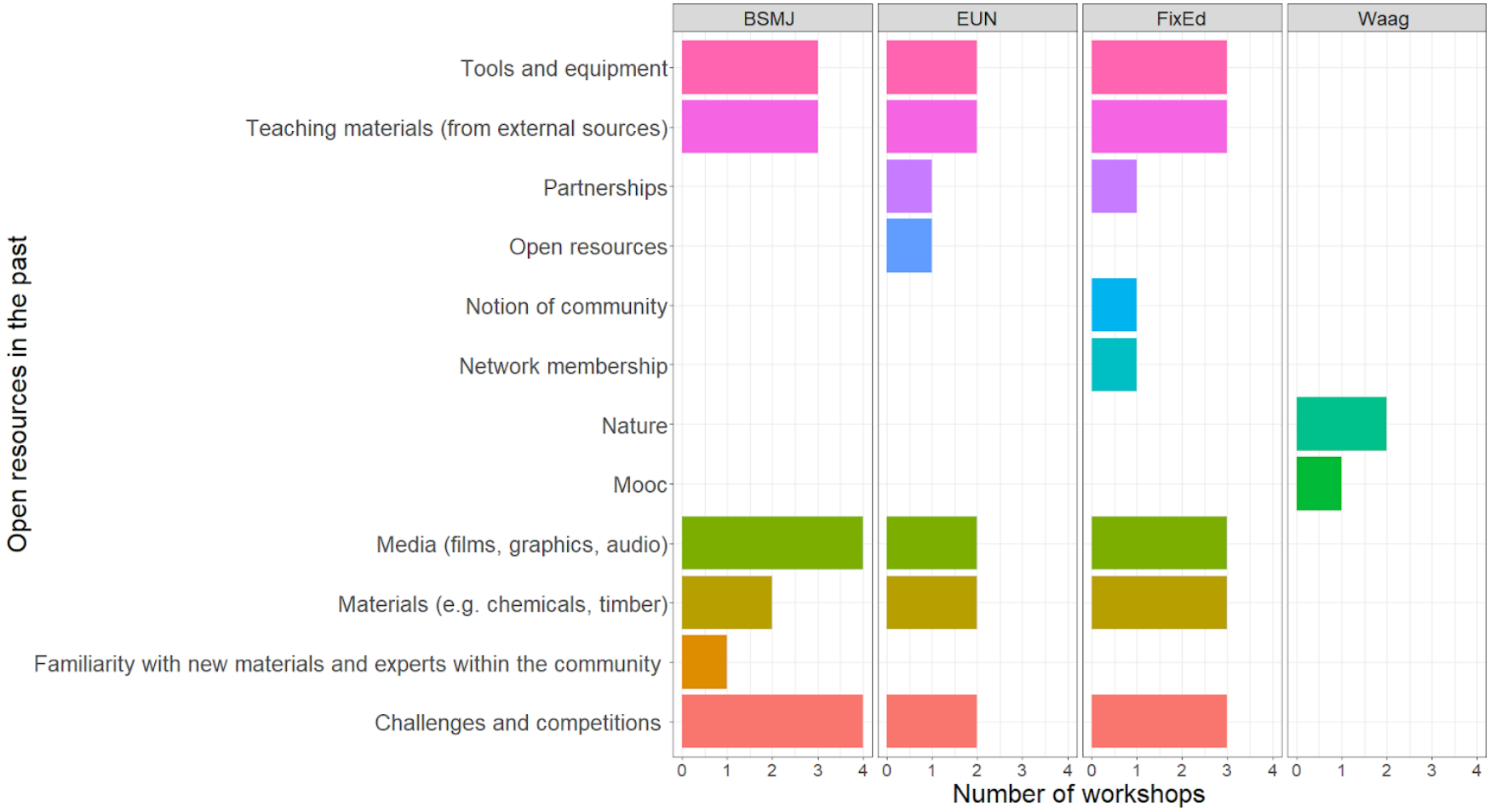


Figure 14. Open resources which have been done in the past by at least one attendee of each workshop. N = 2, 3, 2, 3 workshops for EUN, BSMJ, Waag and FixEd respectively.

Figure 15. *Open activities which have been done in the past by at least one attendee of each workshop. N = 2, 3, 2, 3 workshops for EUN, BSMJ, Waag and FixEd respectively.*

Open schooling concerns/ barriers

When responding to the Jamboard/User journey exercise (Figure 8) attendees from all workshops had the most comments on the planning stage of the open schooling projects, and regarded it to be the most time consuming stage, regardless if were following a user journey of a teacher, coordinator or partner in the project (Figure 16).

When attendees were assigned the role of 'partner organisations', the delivery stage had less details on the Jamboard. This could indicate that the delivery stage is seen as less important and/ or attendees had little knowledge about the delivery stage. On the other hand, EUN partner teachers gave a lot of detail to the delivery stage, implying its importance for teachers.

For attendees in the FixEd and Waag workshops, the evaluation stage also had a lot of detail (important) compared to attendees from the EUN, BSMJ and Copernicus workshops who gave little or no detail (less important/ attendees had little knowledge; Figure 16). It is important to note that tasks in the lowest rank may need more guidance for users, and are not necessarily the least important task.

In terms of tasks at each stage of the project, some were assigned to more than one stage such as deciding the project setting/ location and when to develop the workshop materials (Table 4). For the planning stage, identifying what is needed from a partner was a new task raised by one workshop group. Despite this being a valid point which was discussed amongst attendees throughout workshops (Table 1), it was ranked the lowest as it was not included in other workshop Jamboards. Interestingly, attendees from the Copernicus workshop included promotional materials in the evaluation stage; likely put there to help promote future projects.

Despite concerns, attendees also highlighted the positives, and motivations of using open schooling:

- mixing with people from different backgrounds
- understanding industry more
- students gaining experience of professional careers
- providing quality learning experiences for students
- making it healthy for students to learn from their mistakes

- how individual strengths and weaknesses are expressed in different environments, how different ideas can be seen differently in a different context
- building more structural partnerships and a real ecosystem in the neighbourhood

These points could therefore help change negative perceptions of open schooling in others.

Table 4. Ranking of tasks at each stage of the project, regardless of role and partner organisation, from most mentioned/ detailed (ranked as 1) to the least mentioned/ detailed (ranked as 3).

Ranking	Planning	Delivery	Evaluation
1	Project planning	Support delivering workshops	Sharing knowledge for the future
2	Developing project team and roles	Workshop materials	Workshop outputs
3	Project consent	Maintain communication	Seeing impacts
4	Project practicalities/ risk assessment	Documentation	Informing stakeholders
5	Project funding	Project setting/ location	Developing networks
6	Project timeline/ time frame	Workshop timeline/timeframe	Types of evaluation
7	Supportive training for the project	Workshop practicalities	Project legacy
8	Promo materials	Project funding	Promo materials
9	Workshop materials	Workshop planning	
10	Project setting/location		
11	Designing evaluation		
12	Identify what is needed from a partner		

Figure 16. Ranking of each stage of the project. Rankings are based on the Jamboard exercises, taking both the number of comments and the amount of detail included as indicators.

Facilitators also found that attendees agreed on the following themes:

- Barriers: funding, timing between funding rounds and timetables, labour intensive (some work needs to be a service rather than co-created), recognition of labour and shortage of teachers
- Sharing lessons learnt through documents
- Importance of planning earlier on in the project

Attendees from all workshops also agreed with the Padlet exercise Open settings, roles, resources and activities themes originally on the Padlet, and also additional themes added by attendees.

Desktop research

Once the key dimensions were fixed, and the tags clustered into a tighter set, the tags under each dimension were ranked by frequency. The top tags identified for the 3 complex dimensions were:

- Qualities: Social connections and networks, Embodied learning (learning by doing), and Agency
- Location and time: flexibility in hours and location (Open open) and open schooling on school grounds and time (Closed open)
- Components: Downloadable resources, Brokering relationships/external connections, and Excursions (from schools)

For qualities, the top grouped heading was Social connection and networks, which appeared most frequently and had the most combinations than any other quality. Social connections and networks, Embodied learning, and Agency (the top 3 grouped headings) appeared in over 60% of reviewed programmes, and were therefore the top qualities by a significant margin. They were also the most frequently occurring combinations, with almost 30% of programmes having all 3 as qualities. Teacher/school development and Improved performance were the lowest occurring qualities, each occurring in less than 10% of the reviewed programmes

Downloadable resources was the most frequent heading for components, being seen in over 60% of propositions. The component in itself occurs in almost any type of programme, and is therefore not a useful component for understanding the nature of open schooling programmes - its a basic part of the offer. The second most frequently seen component was Brokering relationships/external connections, highlighting the primary ‘service’ that is offered in over half of the programmes

reviewed (56%). Furthermore, Brokering relationships/external connections was seen in both programmes which were located in and out of school.

As per the findings, no combinations or affinities of components or qualities were found which would suggest predominant models or types of open schooling programme. The exercise of analysing for frequency and affinity gave us insight into what is popular (and therefore appealing)in open schooling, insights which can be used in the construction of the delivery templates.

Annex 3: user centred delivery template as a form

Figure 6 illustrates a user centred delivery template as a graphic. Should the project focus on the template as a key tool for devising and designing open schooling projects and programmes the templates will develop further in this direction.

Equally the template could be delivered as a form; the example below (Figure 17) sets out how the same content might be presented as a series of options and links to guidance.

It is more likely that parts of the template will be used in an integrated way in tools and guidance provided to support the co-design process of adopting open schooling which will be devised as part of WP3 Open Schooling Navigator.

Open Schooling Planning Template

Planning a visit based programme

Use this form when you're initiating the process to make decisions about the form of your open schooling project or programme. Fill it in with your stakeholders.

1. Why are you interested in open schooling? What are your priorities?

(e.g. I want to test Open Schooling's potential value to our school; There's a funding pot to encourage working with the community; I need to teach a unit on pollution and would like to bring it to life)

I want to test Open Schooling's potential value to our school.

First steps? Start here
- Links to guidance

Already confidently open schooling? Start here
- Links to guidance

What components do you want to include? (Tick all that apply)

(the tangible products and services which support an open schooling programme)

- ❏ Downloadable resources
- ❏ Visits (into schools)
- ❏ Excursions (from schools)
- ❏ Brokering relationships/external connections
- ❏ Access to tangible resources
- ❏ Digital experiences

- ❏ Event or festival
- ❏ Publically available output
- ❏ Competition
- ❏ Teacher development

3. What qualities do you want to include? (Tick all that apply)

(the features and benefits the Open Schooling programme can deliver)

- ❏ Real world relevance
- ❏ Agency
- ❏ Equity/access/inclusion
- ❏ Social connection and networks
- ❏ Tangible outputs
- ❏ Embodied learning (learning by doing)
- ❏ Improved performance
- ❏ Change of atmosphere
- ❏ Teacher/schools development

4. Who will be involved and what roles will they play?

(the identities and job titles who will be involved in the students' learning experience)

- ❏ Leading
- ❏ Providing expertise
- ❏ Brokering
- ❏ Supporting
- ❏ Providing facilities
- ❏ Collaborating
- ❏ Learning

5. What is the ideal location of your open schooling programme? (Tick one)

- ❏ In school
- ❏ Out of school

6. What is the ideal time and duration of your open schooling programme? (Circle 1 option for each row)

- In **or** out of school day
- Long term **or** short term

7. What is the ideal approach of your open schooling programme? (Tick one)

❏ Full service provision
❏ Anchored by provider
❏ Adapted independently

Make it Open Learning Scenarios based on a visits

Example providers and programmes that focus on visits into schools

Inspiration

Figure 17. Example template form for teachers

Annex 4: WP1 D1.1 End stage sharing Powerpoint Presentation

MAKE IT OPEN

WP1 Service Design

End stage report — summary findings

31.01.2021

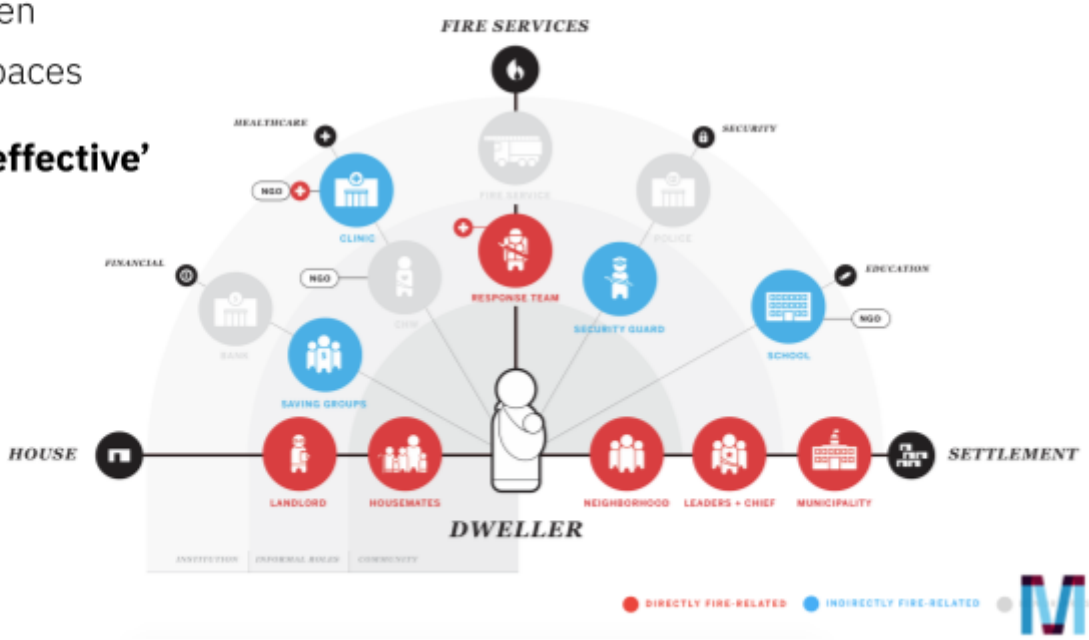
contents

service design & MiO

service design as a tool

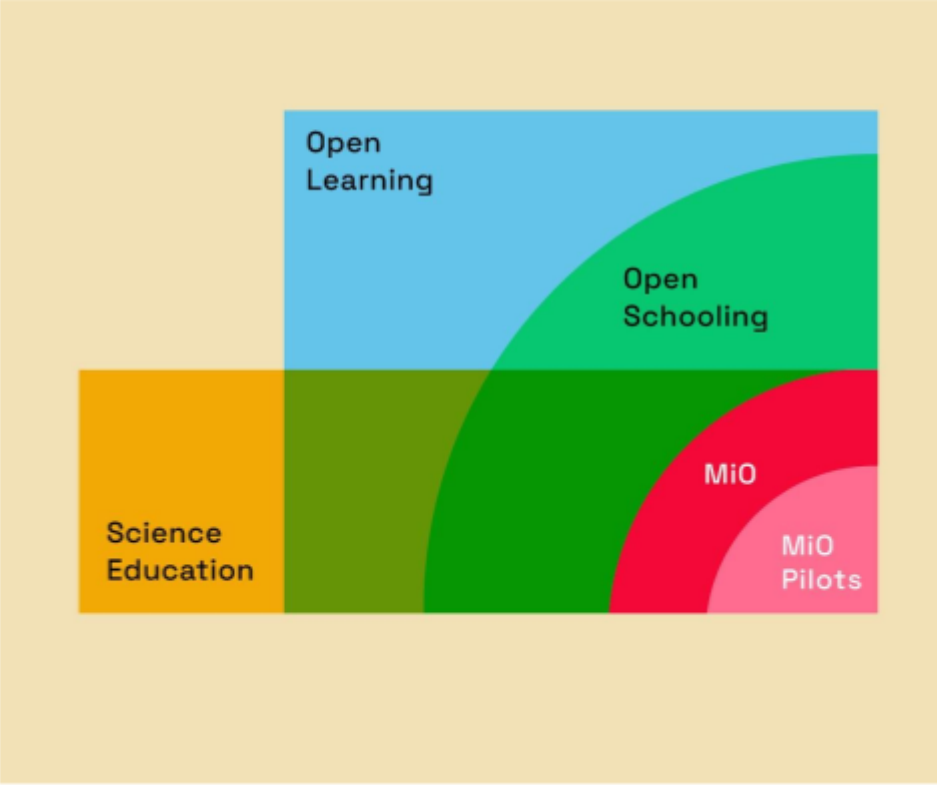
Service Design is a set of design methods which are:

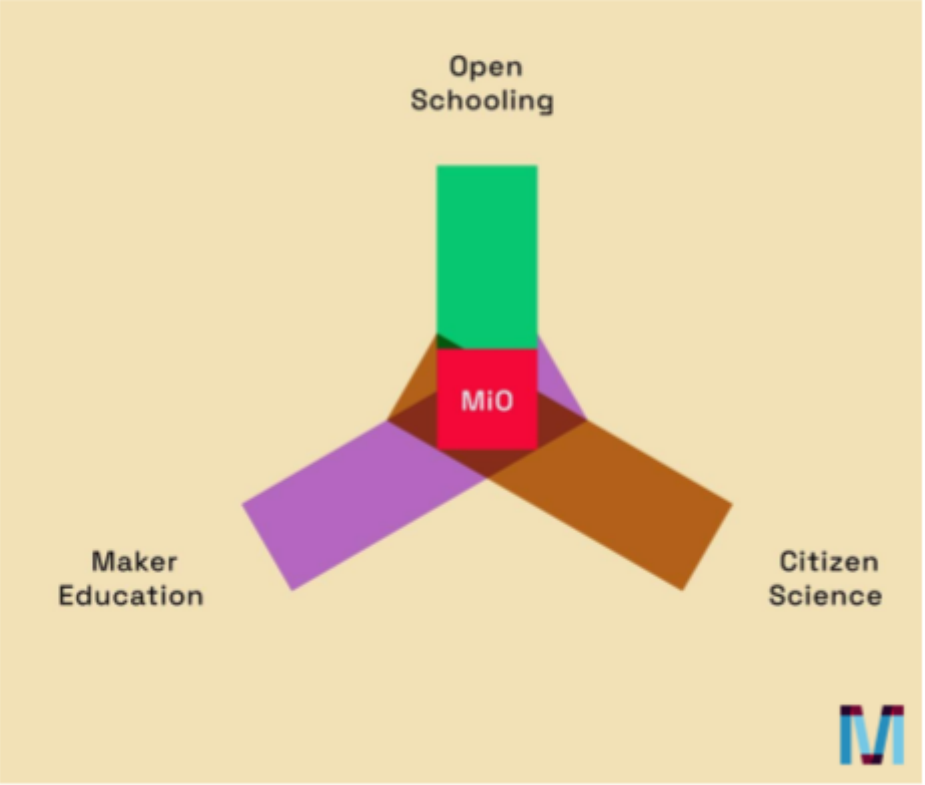
- user-centred and systems focused
- applied to complex interactions between people, information, technology and spaces
- making them **‘usable, desirable and effective’**



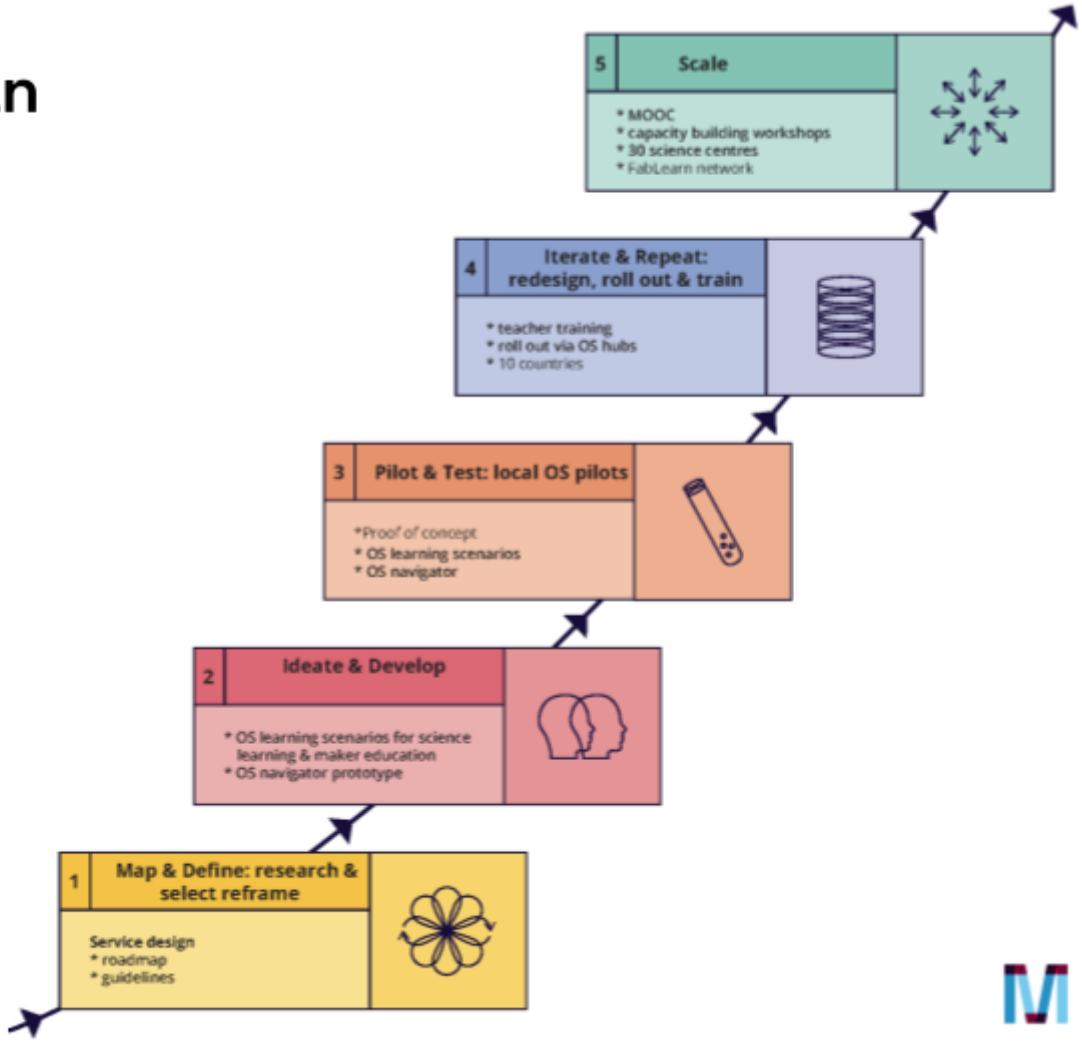
Ecosystem map example by Frog Design
Source: servicedesigntools.org

make it open project foundations





make it open project plan



WP1 service design

work package 1 objectives

- Identify and formulate a set of **user-friendly delivery templates** or ‘formulas’ for open schooling:
  - combining different potential learning environments, roles, tools, media and platforms, and
  - developing the most successful/workable combinations into understandable models and templates for adoption and adaptation by teachers and schools.

work package 1 relationships

- **WP2 Learning Scenarios**
  - Questions of content and activity are interconnected with potential learning environments, roles, tools, media and platforms
- **WP3 Navigator**
  - The co-design processes and tools enabled by WP3 Navigator interconnects with the ‘user friendly templates to adopt and adapt to deliver these formulas’

work package 1 structure

Task 1.1 Mapping	**Workshops** were convened by 5 partners in 5 countries aiming to capture experiences and ambitions relating to Open Schooling, including barriers to entry
	Desktop research captured 70+ examples of STEM related open schooling. This work identified the defining characteristics and components which make up an open schooling project or programme
Task 1.2 Creative Development	Using the insights generated through mapping and using service design methods to create a set of **user friendly delivery templates**

mapping: workshops

workshops


Romain Meunier
Deborah Davidson
Wajid Riaz
Chanida
Ask to Unmute
Cristina Plant (Derby Museums)
Lea Jagendorf
Minnie - Fixperts

workshops key findings

- Small (and positively inclined) sample
- Broad consensus around the ‘shape’ of open schooling; future ambitions are similar to past experiences
- Differences apparent between schools at different stages of their open schooling journeys
- Splits between groups that saw parents and families as resources (as anything from experts to advocates) and those who saw parental involvement as a complication
- Planning was identified as a significant hurdle for Open Schooling across all stakeholders
- Initiation, support, decision-making, timings and consents were among many barriers mentioned

workshops key findings

workshops key findings

	Planning	Delivery	Evaluation
1	Project planning	Support delivering workshops	Sharing knowledge for the future
2	Developing project team and roles	Workshop materials	Workshop outputs
3	Project consent	Maintain communication	Seeing impacts
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11	Designing evaluation		
12	Identify what is needed from a partner		

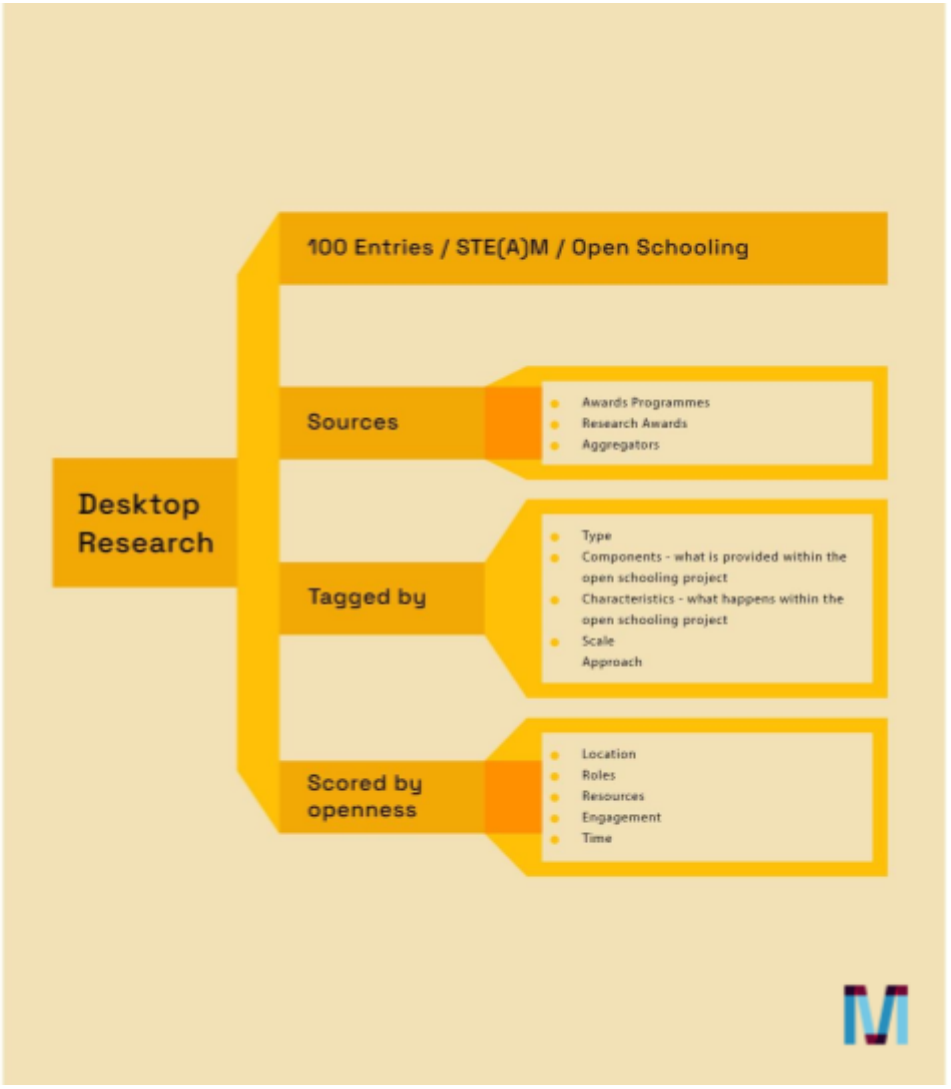
Ranking of issues at each stage of the project, regardless of role and country

mapping: desktop research

desktop research: scope

- Aiming to establish consistent and meaningful ways to describe the programmes
- Looking for affinities or associations between dimensions to:
  - Identify issues relevant to our development
  - Suggest groupings or types which make the landscape more accessible
- *Not reviewing* content (subjects/topics/themes/curriculum)
- *Not examining* popularity, adoption patterns, usability, effectiveness

desktop research: scope



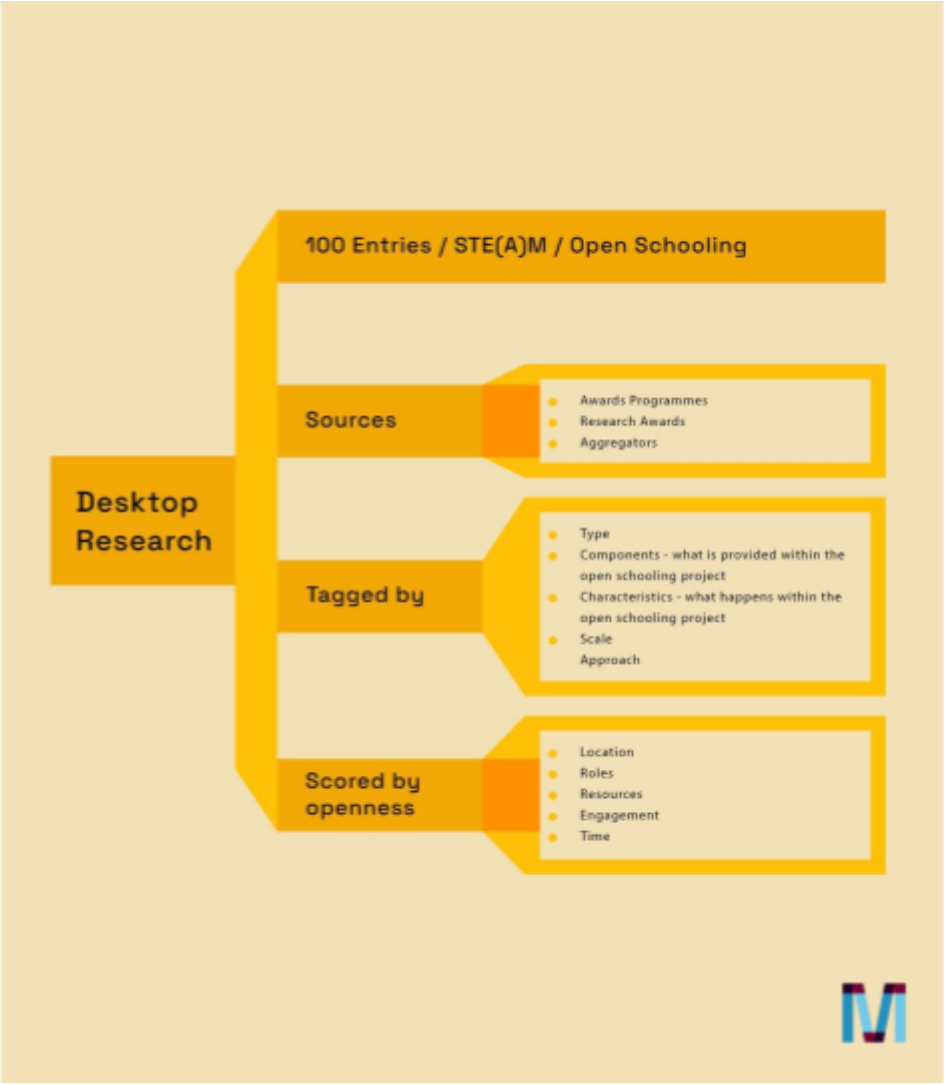
desktop research: scope

- Location
- Roles
- Resources
- Engagement (community & well-being)

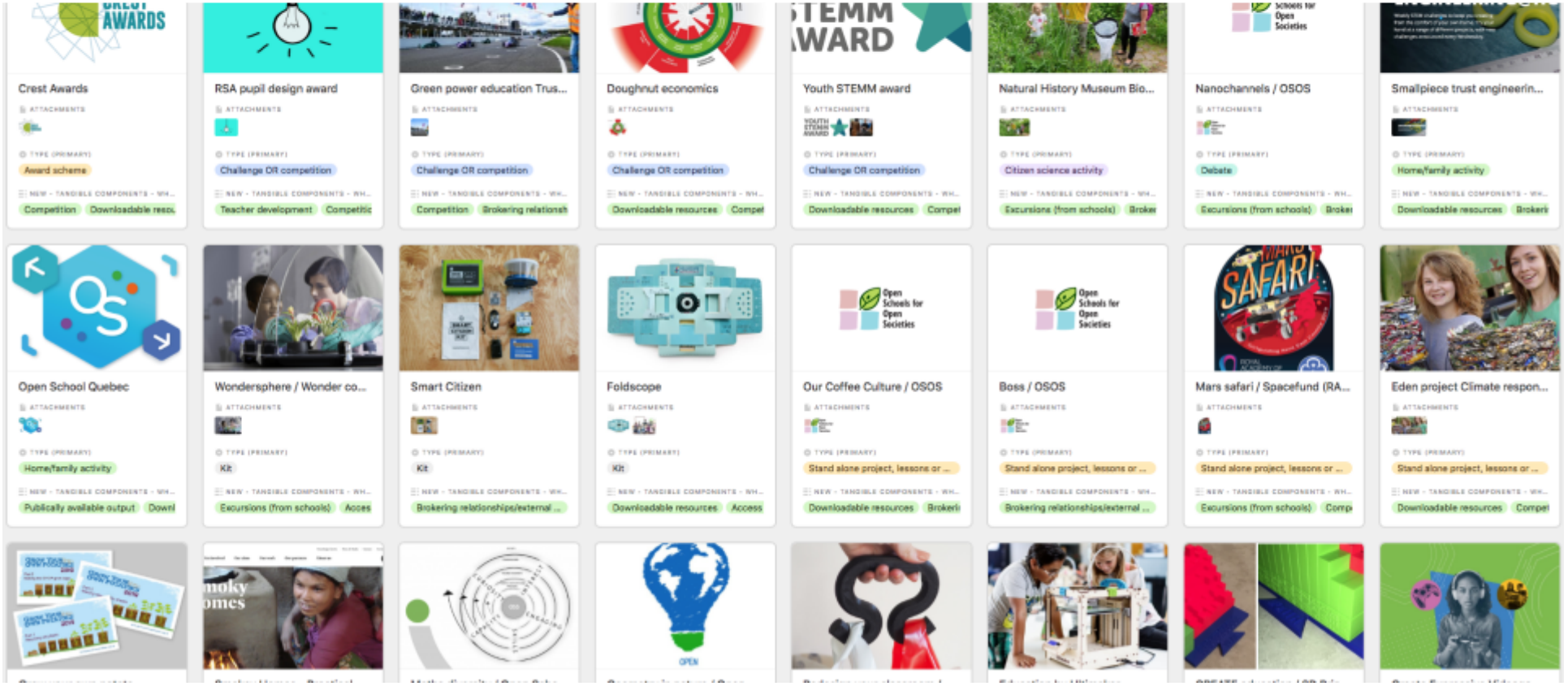
+ Time - both timing and duration

+ Components - tangible elements to enable the programme e.g. a visit, an app

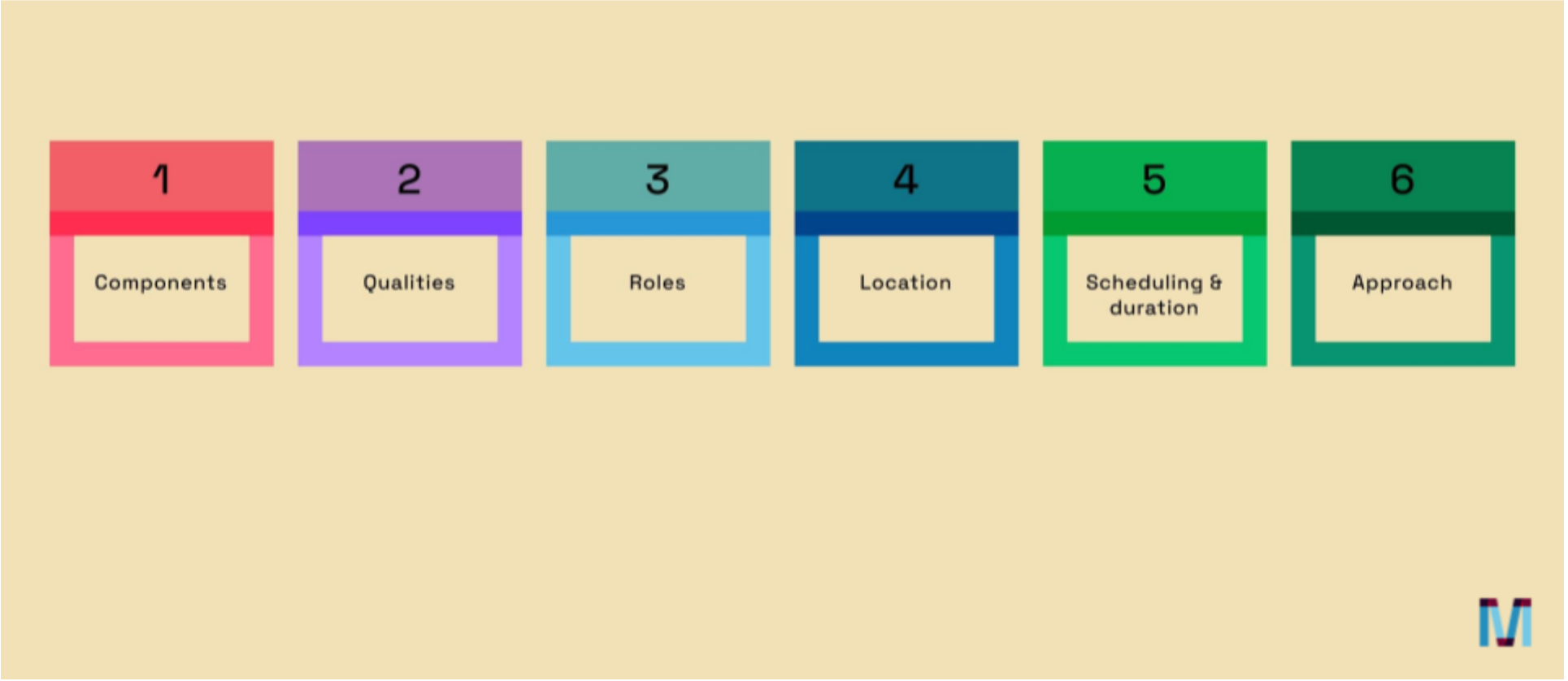
+ Characteristics - what happens/is targeted within the activity e.g. agency, learning by doing



desktop research: database



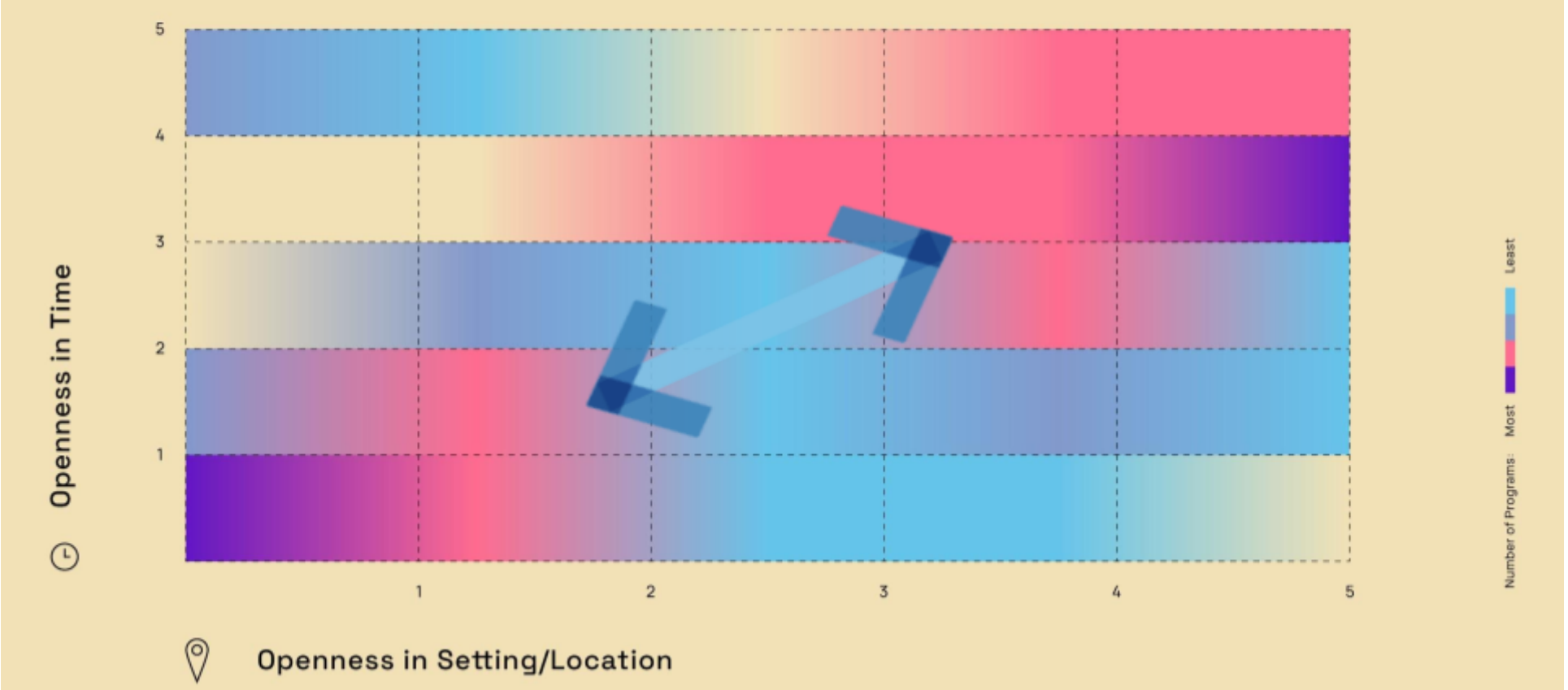
desktop research: the dimensions



desktop research: key findings

- The scale of the provider influences the nature of the offer and the popularity:
  - ‘Full service’ vs ‘anchored’ vs independent
  - Short vs long duration
  - Trust to delegate teaching responsibility
- Teaching responsibility is a question in it’s own right, presenting questions about control, quality and safeguarding
- Parents and home options were almost absent from selection
- Kits had a high visibility but were a poor indicator of anything else about the project
- Likewise downloadable resources
- Location and timing had an interesting correlation, with 2 distinct types suggested:
  - open location and open timing - off site/outside the school day
  - a closed version - on site and inside the school day

open open vs closed open



mapping: summary conclusions

summary conclusions

- The beginning of the process of Open Schooling is the most challenging: scoping, decision making, communications and forward planning are all issues; it can be daunting and labour intensive
- There was no evidence of consistent shared language or recognisable models in publically available projects and programmes
- The reality of open schooling is often very different from the aspiration
- These issues are linked:
  - Teachers and stakeholders must understand the possibilities of Open Schooling in order to access it
  - With that understanding they are additionally equipped to find or create a programme which matches their needs and resources

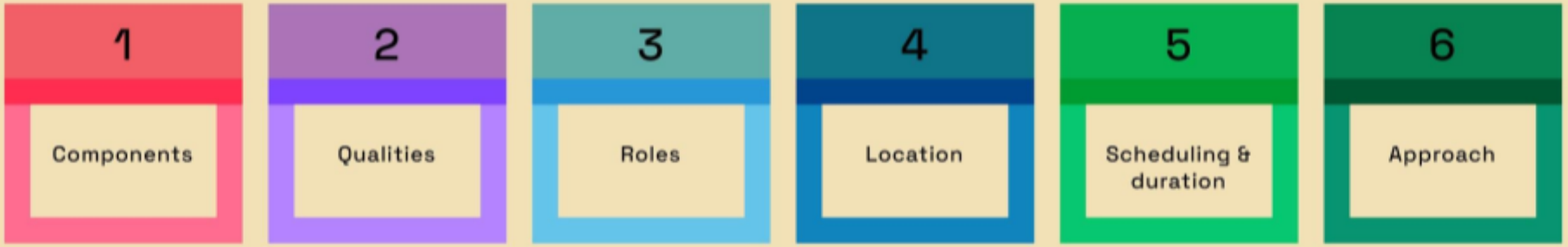
outputs

a framework for understanding open schooling

an informal taxonomy

- The dimensions were used to capture a wide range of information about the examples, using descriptors or tags
- A clustering exercise grouped the tags into a tight and meaningful set
- The resulting lists have potential to be useful in the design and co-design process: communicating options and ensuring that creative and practical options are considered

the dimensions



The tangible elements provided which enable the delivery of the open schooling project
e.g. kits and guidelines

The features and benefits which often motivate teachers and learners to participate
e.g. embodied learning

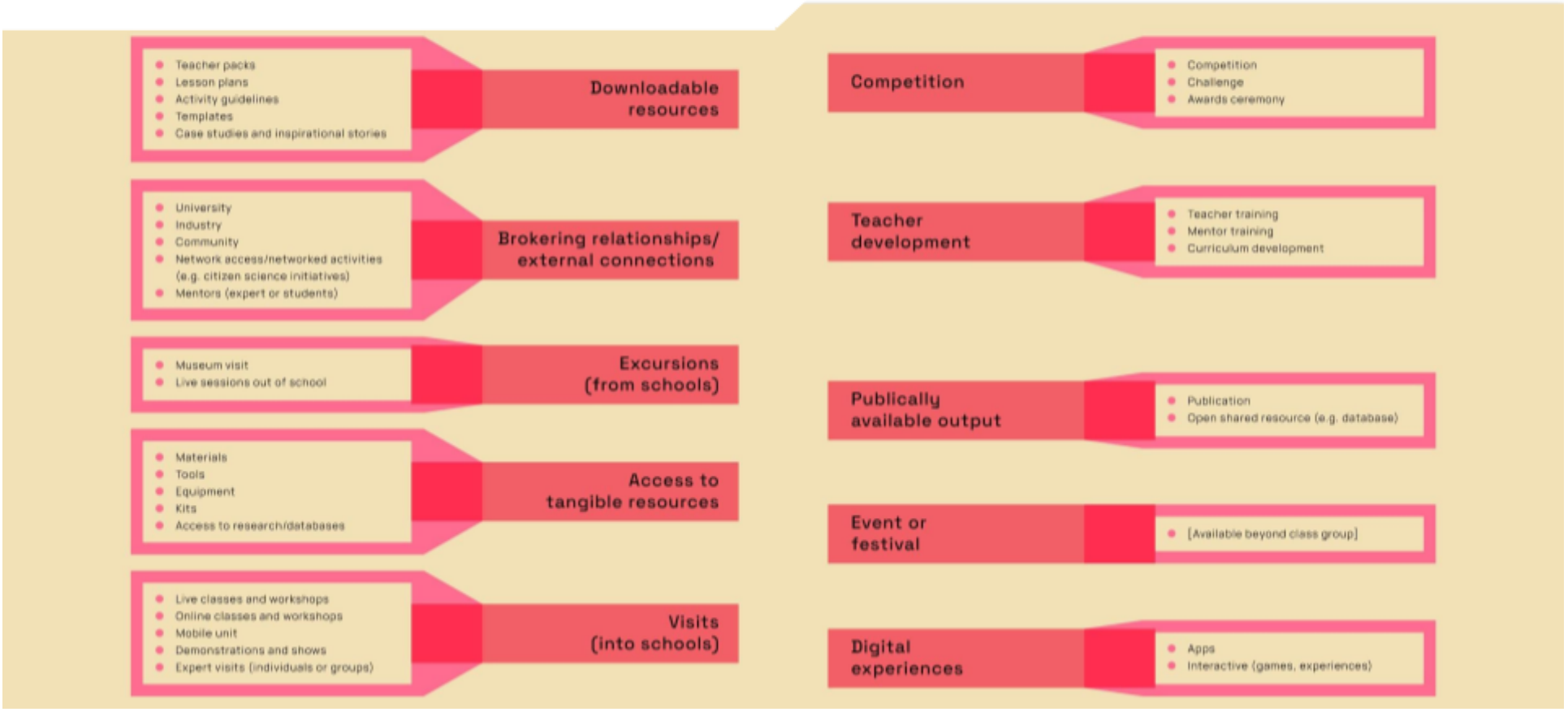
The roles that are played during the learning experience, (not always job titles)
e.g. providing expertise

The setting in which the learning experience happens. This can be crudely split into *inside or outside the school*

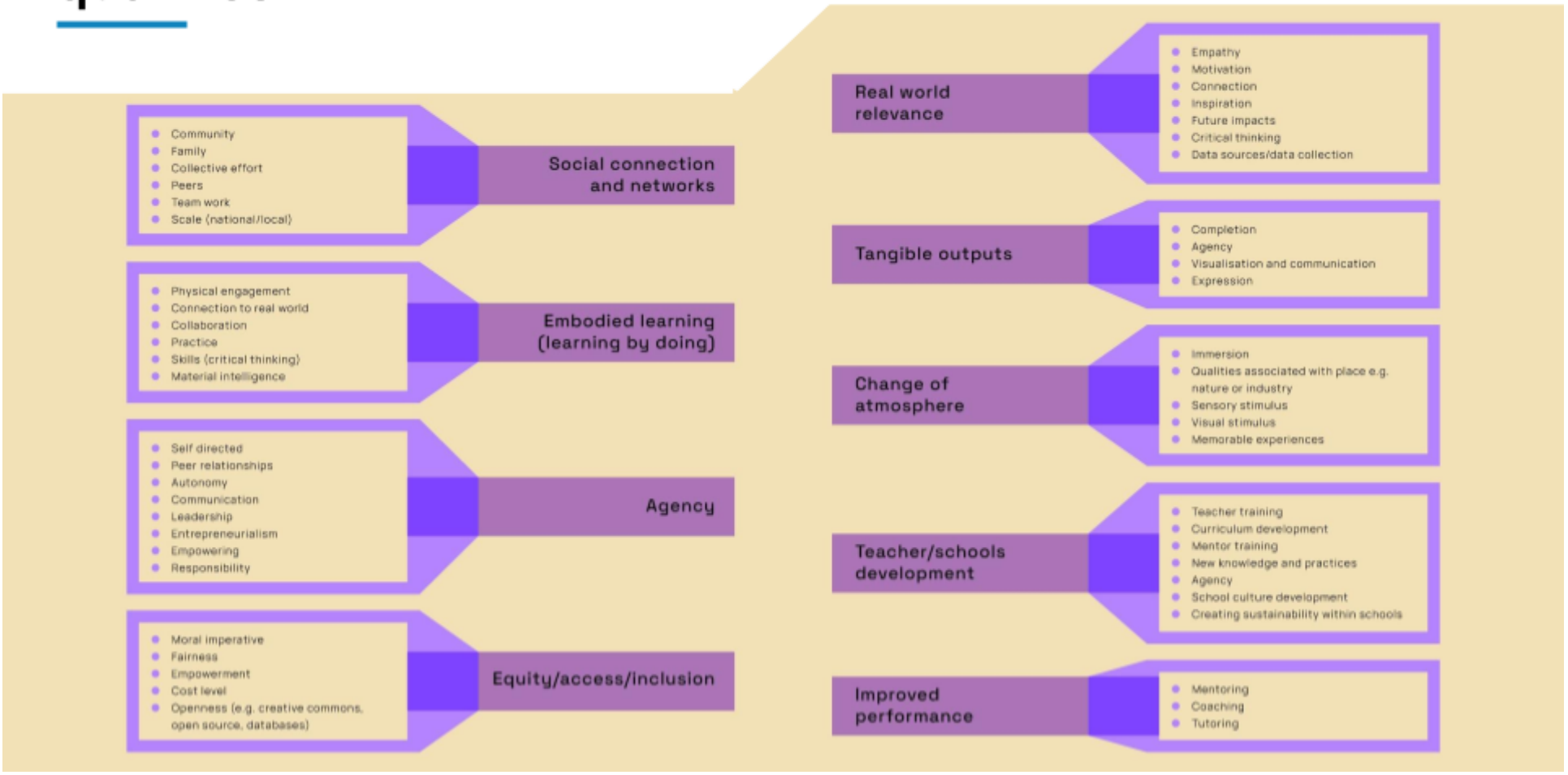
Both scheduling (*when a learning experience happens*), and duration, (*how long it lasts*), are critical parameters

Open schooling can be delivered by a provider as a service, co-created with partners or authored

components


Teacher packs
Lesson plans
Activity guidelines
Templates
Case studies and inspirational stories
Downloadable resources
University
Industry
Community
Network access/networked activities (e.g. citizen science initiatives)
Mentors (expert or students)
Brokering relationships/ external connections
Museum visit
Live sessions out of school
Excursions (from schools)
Materials
Tools
Equipment
Kits
Access to research/databases
Access to tangible resources
Live classes and workshops
Online classes and workshops
Mobile unit
Demonstrations and shows
Expert visits (individuals or groups)
Visits (into schools)
Competition
Competition
Challenge
Awards ceremony
Teacher development
Teacher training
Mentor training
Curriculum development
Publically available output
Publication
Open shared resource (e.g. database)
Event or festival
[Available beyond class group]
Digital experiences
Apps
Interactive (games, experiences)

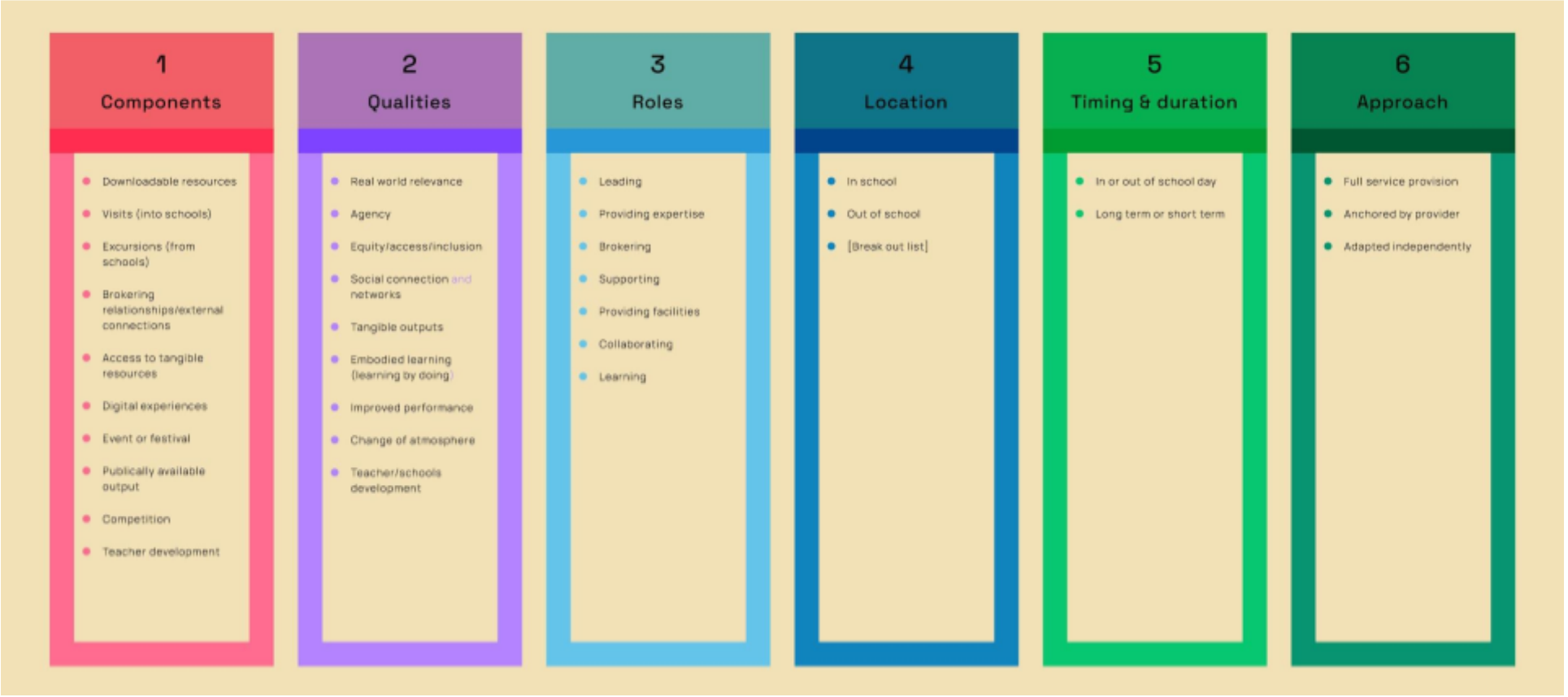
qualities


Social connection and networks
Community
Family
Collective effort
Peers
Team work
Scale (national/local)
Embodied learning (learning by doing)
Physical engagement
Connection to real world
Collaboration
Practice
Skills (critical thinking)
Material intelligence
Agency
Self directed
Peer relationships
Autonomy
Communication
Leadership
Entrepreneurialism
Empowering
Responsibility
Equity/access/inclusion
Moral imperative
Fairness
Empowerment
Cost level
Openness (e.g. creative commons, open source, databases)
Real world relevance
Empathy
Motivation
Connection
Inspiration
Future impacts
Critical thinking
Data sources/data collection
Tangible outputs
Completion
Agency
Visualisation and communication
Expression
Change of atmosphere
Immersion
Qualities associated with place e.g. nature or industry
Sensory stimulus
Visual stimulus
Memorable experiences
Teacher/schools development
Teacher training
Curriculum development
Mentor training
New knowledge and practices
Agency
School culture development
Creating sustainability within schools
Improved performance
Mentoring
Coaching
Tutoring

roles


Learner / pupil
Peer
Subject tutor
Partner Organisation
Teacher Assistant
School teacher
School leadership
Administrator
Librarian
Technician
Expert
Host / venue staff
Caretaker / site manager / janitor
Peer mentor
Parent/ Carer
Providing facilities
Leading
Providing expertise
Collaborating
Brokering
Learning
Supporting

the framework



uses of the framework

- A set of prompts to consider in the pilot projects Learning Scenario co-design process
- The building blocks of the templates
- As prompts within the co-design process as a complete template, or broken down as:
  - checklists
  - within guidelines
  - worksheets
  - options/filters directly within the Navigator tool

user centred templates

the user centred template

- A template provides an example, as an entry point *or* short cut to the options available:
  - it can work like a case study, to communicate the possibilities Open Schooling, or
  - an editable template can help with the planning process
- It's particularly good for less confident users and stakeholders

-

- The template might form the basis for guidelines, checklists, worksheets or other similar documents to help the initiation and planning processes

the user centred template in use

- **Understanding and access:** “I understand the types and possibilities of open schooling and what benefit it can bring to my situation”
- **Prioritisation and targeting:** “I can see what this project will require and can identify issues and opportunities relevant to my situation”
- **Tailoring and elaboration:** “I can use this as a template and adapt it to my own needs”

a menu of templates based on components

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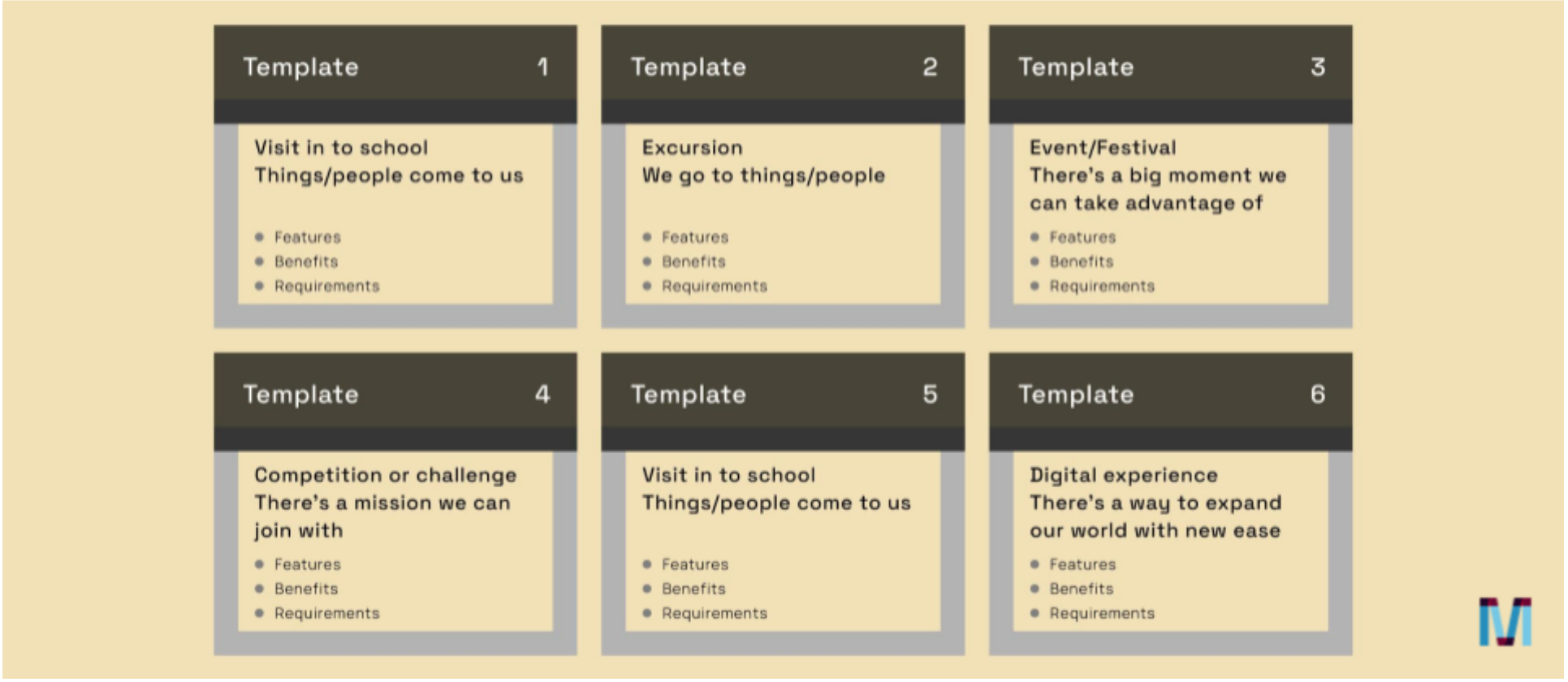

example template 1: visit

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First steps

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Long term goals

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Planning tips

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1 Components

- Downloadable resources
- Visits (into schools)
- Brokering relationship/ external connections
- Access to tangible relationship/

2 Qualities

- Downloadable resources
- Visits (into schools)
- Brokering relationship/ external connections
- Access to tangible relationship/

3 Roles

- Downloadable resources
- Visits (into schools)
- Brokering relationship/ external connections
- Access to tangible relationship/

4 Location

- Downloadable resources
- Visits (into schools)
- Brokering relationship/ external connections
- Access to tangible relationship/

5 Timing & duration

- Downloadable resources
- Visits (into schools)
- Brokering relationship/ external connections
- Access to tangible relationship/

6 Approach

- Downloadable resources
- Visits (into schools)
- Brokering relationship/ external connections
- Access to tangible relationship/

Content & curriculum fit

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MiO Learning scenarios

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Other examples

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thank you