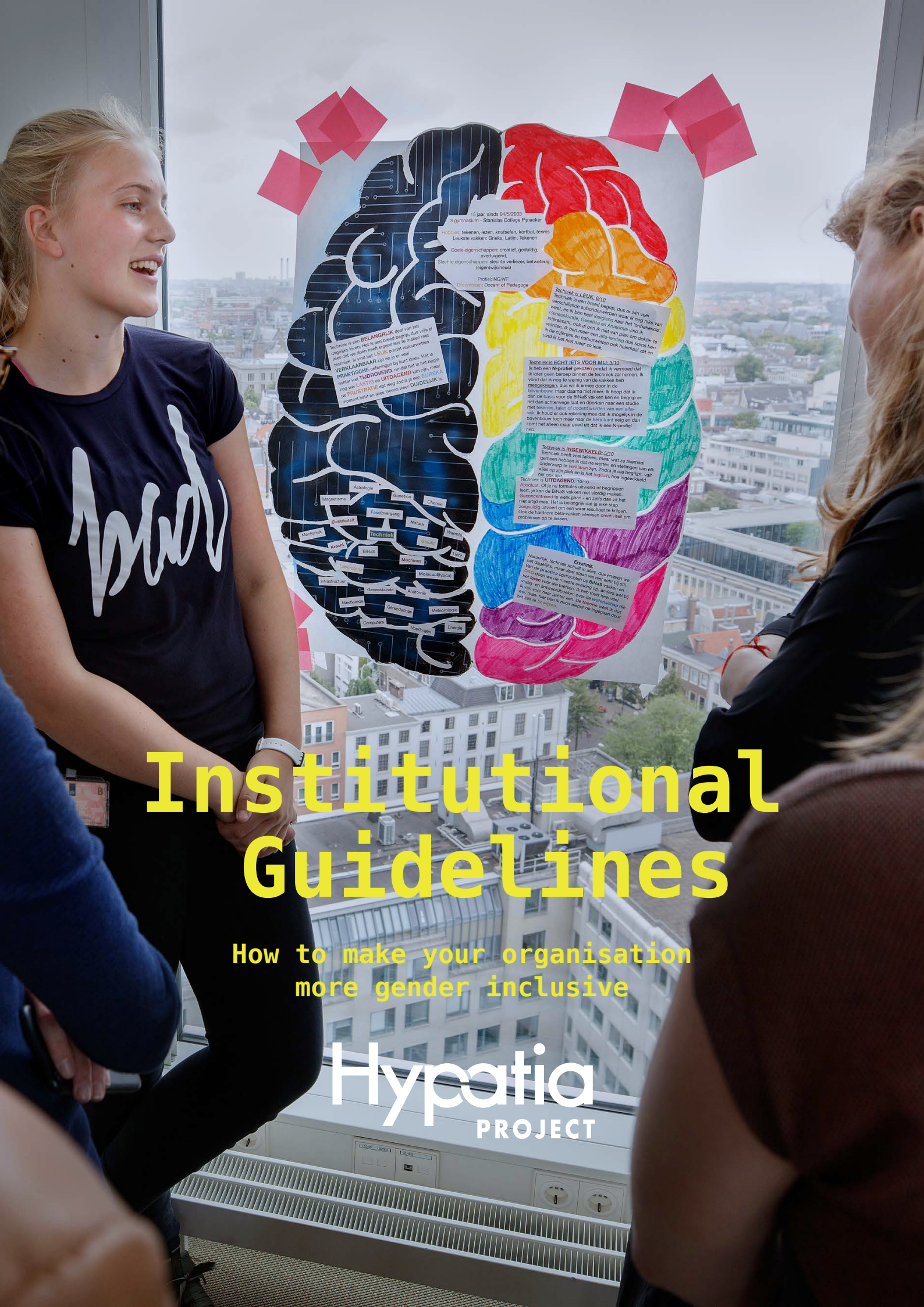

Institutional Guidelines

How to make your organisation more gender inclusive

Hypatia PROJECT

Institutional Guidelines

How to make your organisation more gender inclusive

Author: Marianne Achiam, University of Copenhagen
Contributors: Hypatia partners, third parties, Advisory Board and Gender Panel.

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1. SUMMARY

In addition to contributing to social justice, the inclusion of a broader diversity of women and men in science will give Europe an important competitive advantage. However, research shows that many institutions involved in science, technology, engineering and mathematics (STEM) education have built-in gender excluding mechanisms. This means that attempts to increase girls' and women's participation in STEM requires a transformation in the cultures and capacities of STEM institutions.

Institutional transformation can take place through the gradual development of the institution's capacity to develop, realise, and evaluate gender-inclusive activities. This development involves the institution's internal organisation as well as its external activities. Building gender inclusion capacity involves action at the individual, interactional, and institutional levels, and can be constructively supported by external actors.

The project Hypatia is based in this four-tier conception of institutional capacity. The present document draws on the collective experiences of Hypatia partners, third parties, Advisory Board and Gender Panel as well as on recent research on institutional change, gender inclusion, and STEM education to formulate a set of concrete guidelines to guide the transformation of STEM institutions towards gender inclusion. It targets two main audiences:

- Staff members, educators and managers of schools, science centres and museums, industry and research institutions who are involved in STEM education
- Decision-makers and stakeholders in STEM education at the local, regional, national or international level

In the following, we give concrete suggestions for building institutional capacity for gender inclusion, directed towards these target audiences.

How to use this document

The Introduction – **Section 2** – offers readers who are unfamiliar with Hypatia a brief rationale for the project and for the need for institutional change.

For readers interested in the Hypatia Model for gender inclusion in institutions, **Section 3** discusses the four-tier perspective used in Hypatia. This section focuses especially on Hypatia's National Hubs, an innovation that served to coordinate, support and guide the gender inclusion initiatives in the project.

For readers who wish to directly access suggestions for how to transform an institution's gender inclusion capacity, **Section 4** offers concrete suggestions to institutions at the level of individual staff members, staff teams, management, and external stakeholders.

Section 5 offers suggestions for affirmative actions that can be taken by individuals to affect an institution's capacity for gender inclusion from the bottom up.

For readers interested in a more in-depth discussion of the research that informs the present document, **Section 6** provides a detailed and referenced discussion of gender, institutions, and science education.

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2. INTRODUCTION

The most important rationale for achieving equity in science, technology, engineering and mathematics is that of social justice. However, a number of other reasons can be given as well, e.g. those related to the environment, to empowerment, to economic issues, and to diversity in science (Achiam & Holmegaard 2015). Particularly with respect to diversity and economy, research shows that the inclusion of a broader diversity of women and men in science will give Europe an important competitive advantage. More diversity will strengthen the scientific endeavour through a more effective utilisation of the human capital.

However, unequal power relations and male-centred notions of science remain commonplace in science education institutions (Ash & Lombana, 2013; Feinstein & Meshoulam, 2014; Waylen, 2014; Weiner & MacRae, 2014). This results in an on-going exclusion of girls and women from science, technology, engineering, and mathematics (STEM). And even if STEM education activities are changed to become more gender inclusive, attempts to increase girls' and women's participation in STEM will not be successful if science education institutions themselves do not change (European Institute of Gender Equity [EIGE], 2016; Šidlauskienė & Butašova, 2013). For this reason, the present document focuses on transforming institutions, rather than just targeting education activities.

Institutional transformation is not easy; however, it is possible. An institution can build its capacity to develop, realise, and evaluate gender-inclusive activities. This capacity-building involves both the institution's internal organisation and its external activities. It takes place through negotiations between the individual, interactional, and institutional levels, and with support from surrounding structures such as influential stakeholders or policy decisions (Šidlauskienė & Butašova, 2013; Verbiest & Erculj, 2006; Waylen, 2014).

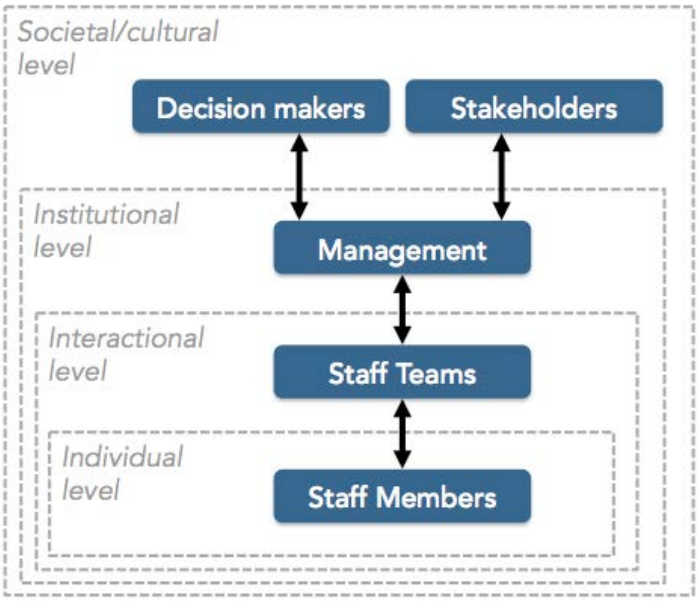

Figure 1
To be successful, efforts to transform institutions must permeate four levels. From the bottom: Staff members, in groups or individually, can initiate gender inclusion activities, but require the support of management. The management and the efforts of the institution as a whole can again be supported at the societal level by decision makers and stakeholders.

The project Hypatia is based on this four-tier conception of institutional change (Figure 1). The present document draws on the way gender inclusion capacities were built in Hypatia's participating institutions during the project, and it offers a set of concrete suggestions to guide and support similar processes in other institutions. We realise that all institutions are unique, and consequently there is no standardised blueprint for dealing with change (EIGE, 2016). Still, a broad range of research on institutions including schools, museums, research institutions and industry support the suggestions given here.
Finally, anyone who has attempted to make institutional change knows that there is no magic wand that can cause such change to occur overnight: Organisational change takes time and

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work. In other words, the present document cannot make a difference alone; it requires a sustained and concerted effort on the part of its readers to adapt its suggestions to the institutional reality they face and to follow them through.

Aim

The aim of the present text is to provide staff members, managers, and decision-makers in STEM education with concrete and operational guidelines on how to change the way science, technology, engineering, and mathematics is communicated. The guidelines target the **internal organisation** of STEM education institutions, their **external activities**, and their **overarching support systems** and networks. We address both those institutions whose primary objective it is to disseminate and communicate science (i.e. schools and museums) and those institutions whose secondary objective is to disseminate and communicate science (industry and research institutions). We draw on the knowledge generated in the Hypatia project as well as existing literature on institutions and gender, and on the insights and expertise of Hypatia's Gender Panel and its Advisory Board.

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3. THE HYPATIA MODEL

A key goal of the Hypatia project was to engage schools, museums, research institutions, and industry in more gender-inclusive ways of communicating STEM. Hypatia aimed to meet this goal in a sustainable way: Not only would the involved institutions continue their gender-inclusive practices after the conclusion of the project, but other institutions would take up the challenge, and implement gender inclusion throughout their practices as well. Among the innovations of Hypatia, and of central importance to the development and continuation of the project's gender inclusion initiatives are its National Hubs.

The National Hubs were created and coordinated by the project's museum partners and third parties. They consisted of a number of different stakeholders situated within the national discourse on science education and gender and included panels of teenagers who met regularly. As the Hypatia project progressed, the Hubs acted as links between the involved institutions (schools, museums, industry and research institutions) as well as disseminating Hypatia's gender inclusion insights through the collective networks of the Hub members. But perhaps most importantly, the Hubs functioned as critical actors by giving girls and boys a voice, mobilising institutions and their staff members for change, and offering external support for transformative gender inclusion initiatives. In Section 4, we give concrete examples of how the National Hubs supported institutional transformation in Hypatia.

As discussed in more detail in the **Background** section (Section 6) of this document, the role of critical actors can be decisive for building institutional capacity for gender inclusion. Thus, the innovation of the National Hubs may well represent the strongest contribution of Hypatia to transforming the way STEM subjects are communicated to girls and boys across Europe. The Hypatia Hubs were established in the 14 European countries who participated in Hypatia and are designed to be sustainable after the completion of Hypatia (Oron & Halevy, 2018). We suggest that in other countries, the role played by the National Hub as a critical actor may well be incorporated into the activities of existing national STEM education networks (see examples in Table 1) to support gender inclusion transformation.

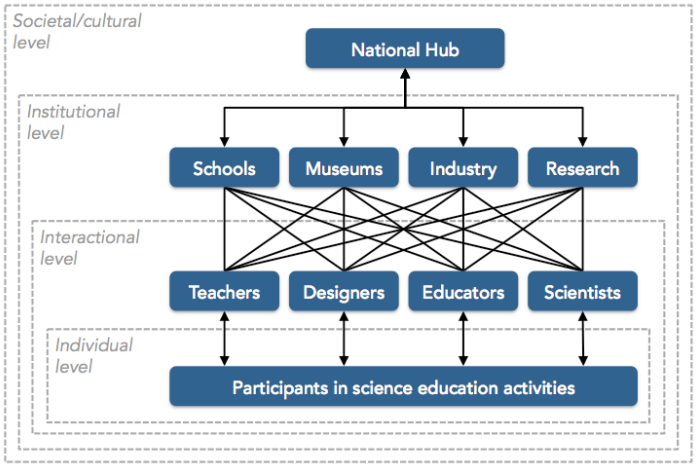

Figure 2
The organisational structure of the Hypatia model. National Hubs in the project's 14 participating countries connect and share information across the participating schools, museums, industries, and research institutions.

National networks may take many forms but are often non-profit organisations with partial funding from the government. Examples include the Portuguese national agency Ciencia Viva, which promotes new ways of teaching science in schools and supports national science

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communication campaigns as well as a national network of science centres and museums of science and technology. Another example is Naturfagsenteret, which supports science education in Norway by offering funding for teacher-driven initiatives to improve science teaching, organising annual conferences for science teachers, offering online teaching materials, and holding science competitions for children. Further examples of national networks are shown in Table 1.

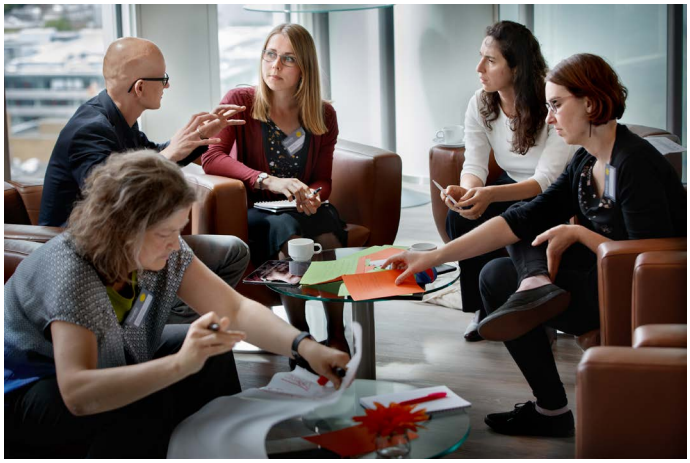

Table 1
Examples of national science education networks or portals that could help sustain Hypatia's existing National Hubs, or function as the nucleus for new Hubs, supporting the development of gender inclusion capacity in schools, museums, and industry.

Czech Republic	Metodický Portál: Inspirace a Zkušenosti učitelů [Methodical Portal: Teachers' Inspiration and Experience]	https://rvp.cz/
Denmark	Astra	www.astra.dk
Finland	LUMA Centre Finland	www.luma.fi
Norway	Naturfagsenteret [The Science Education Centre]	www.naturfagsenteret.no
Norway	Museumsseksjonen in Kulturrådet [The Museum Section in the Cultural Committee]	www.kulturradet.no/museum
Europe	Promoting Women in Science	www.informatics-europe.org/news/297-women-in-science.html
Portugal	Ciência Viva - National Agency for Scientific and Technological Culture	http://www.cienciaviva.pt/
Poland	Centrum Edukacji Przyrodniczej Uniwersytetu Jagiellońskiego [Center for Nature Education, The Jagiellonian University]	http://www.mzuj.uj.edu.pl
Italy	Donne & Scienza	http://ws.cab.unipd.it/
Israel	National council for the promotion of women in science	-

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4. TRANSFORMING INSTITUTIONS FOR GENDER INCLUSION

The following section presents concrete suggestions for transforming the capacity of institutions to provide gender inclusive education experiences. Depending on an institution's phase of development (whether it is at the beginning or advanced stages of building its gender inclusion capacity) and depending on the specific circumstances and possibilities of that institution, the following suggestions or guidelines may be more or less applicable. In other words, it is not possible to give definitive answers to how to develop an institution's gender inclusion capacity. It is always up to the local actors – educators, scientists, designers, managers, decision makers – to evaluate the suggestions and decide on the best course of action for their institution, bearing the societal and cultural setting in mind.

The proffered suggestions target institutional transformation. This means that they seek to change gender exclusion practices by restructuring the institution that generated them. Accordingly, the suggestions are directed towards the level of institutional management, and external stakeholders because it is at these levels that capacity-building can most efficiently be initiated, facilitated, and sustained (Figure 3). However, as discussed in the **Background** (Section 6), capacity-building must involve individuals at all levels of the organisation to be effective. The main role of management and external stakeholders is thus to support capacity-building at these multiple levels, in both top-down and bottom-up processes.

> The director, senior staff and trustees - or equivalent governing body - all need to be active champions for change
>
> Our Museum 2016:21

Even so, Section 5 offers suggestions for affirmative actions. Affirmative actions are suggestions aimed at generating gender inclusive practices and activities without disturbing the underlying institutional framework (see Section 6 for a further discussion of the differences between transformative and affirmative actions). We acknowledge that it is not always possible or desirable to initiate institution-wide transformation; in these cases, change can sometimes be very gradually brought about by the actions of individuals through bottom-up processes. Accordingly, the suggestions offered in Section 5 are targeted towards staff members as individuals or in groups.

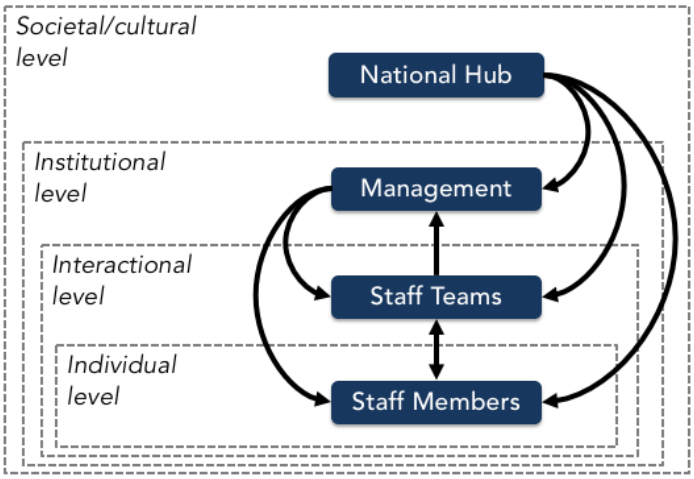

Figure 3
Institutional transformation can be driven by initiatives at the institutional level (i.e. management) that permeate the interactional (staff team) and individual (staff member) levels. These transformations can be critically supported by stakeholders and decision-makers (National Hubs) at the societal and cultural level. Bottom-up processes contribute to the transformation process.

The suggestions are accumulated from the Hypatia project, its Advisory Board and Gender

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Panel, and from the following publications about transforming schools (Choi et al., 2017; Verbiest & Erculj, 2006), museums (Bienkowski, 2016; Cacace, Colonnello, & Olmi, 2011; Dasgupta & Asgari, 2004; Feinstein & Meshoulam, 2014; Hein, 2010; McCreedy & Dierking, 2013; Munley, 2013), research institutions/industry (Choi et al., 2017; Hill, Corbett, & Rose, 2010; Salminen-Karlsson et al., 2016; Šidlauskienė & Butašova, 2013), and institutions in the public and private sectors (EIGE, 2016; Elam & Terjesen, 2010; The Delegation for Equity in Working Life, 2015)

Transforming gender inclusion capacity at the institutional level

The institutional level corresponds to the decision-making level of the organisation in question. This level is all-important for a successful transformation: If the leadership of the institution is not only supportive of initiatives to build gender inclusion capacity, but also demands that such initiatives take place, institutional capacity for gender inclusion can be effectively built. The following suggestions may be employed by management to help build capacity for gender inclusion at the institutional level.

Phase of development	Management can act by...
Beginning	• Assessing the institution's overall inclusion status* • Setting up a team to coordinate gender inclusion initiatives • Appointing a staff member as Gender Inclusion Ambassador and giving them responsibility for disseminating information about gender inclusion • Mapping the institution's community of learners: Who are they, what are their needs, what can the institution offer them?
Intermediate	• Providing opportunities for staff professional development on gender inclusion • Facilitating set-up of middle-management teams to guide gender inclusion initiatives across the institution • Organising educators, communicators, designers and other staff members involved in dissemination and education in teams for peer-feedback and collaboration on gender inclusion • Implementing and enforcing gender inclusive practices in both formal and informal rules** • Facilitating frequent opportunities for dialogue among girls and boys, educators, designers, and management • Not having a few special one-off events that target gender, but rather establishing an on-going dialogue with a diversity of girls and boys and incorporate their voices into institutional practices
Advanced	• Actively seeking out partnerships with members of local communities to bring new expertise and knowledge into institution • Providing opportunities for rotating staff members' roles and responsibilities within teams • Ensuring that gender inclusion is at the heart of the institutional business model, and that everyone knows it*** • Ensuring that mentoring is available for all staff members, female and male, to support their advancement

* For instance, tools such as the free on-line tool Of, By, For All (www.ofbyforall.org/vision/) can help management assess the inclusion status of their institution

** For instance, the science centre Exploratorium in the US developed a set of gender guidelines for exhibition design that are implemented in all new exhibitions (Dancstep & Sindorf, 2016)

*** For instance, the French science centre Universcience has implemented staff recruitment, reception and training procedures to prevent the risk of discrimination and enhance diversity.

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Transforming gender inclusion capacity at the interactional level

Changing an institution's capacity to be gender inclusive also entails work at the interactional level, that is, working to build the collective gender inclusion capacity of educators, leaders, and other staff members. Building capacity at the interactional level means establishing a shared vision of gender equity and sharing norms and practices about teaching and learning. The following suggestions may be employed by the institutional management to help build capacity for gender inclusion at the interactional level, that is, collectively among staff members.

Phase of development	Management can act by...
Beginning	• Not assuming all staff have the same understanding of gender inclusion, nor that they are aware of their own presumptions about gender • Encouraging staff to share knowledge and build common understanding* • Investing in trust, caring relationships and respect • Conducting field visits to gender inclusive institutions • Reading and distributing literature about gender inclusion
Intermediate	• Planning team meetings to promote the exchange of experiences between teams, and promote gender inclusion dialogue** • Celebrating gender inclusion successes • Introducing the concept of a 'critical friend' - a colleague dedicated to providing personalised feedback on activities - which can help build a shared understanding of inclusion and equity • Formulating gender inclusion guidelines and including them in all new projects and initiatives • Organizing initiatives proposing positive and balanced gender equity stories involving young female and male researchers***
Advanced	• Leading innovative gender inclusion projects • Promoting gender inclusion as a core value

* For instance, the team involved in the Hypatia project at the Science Gallery in Ireland regularly updated the rest of their colleagues on the project, resulting in formal and very informal conversations about gender, gender initiatives, and female representation in STEM.

** For instance, staff members at the Greek science centre Noesis schedule and prioritise regular discussions of gender inclusivity during their annual staff meetings to help maintain attention to inclusion and equity.

*** For instance, at the Science Gallery in Ireland, the events team devotes time to researching and reaching out to speakers to ensure a more equal gender balance at public events.

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Transforming gender inclusion capacity at the individual level

Changing an institution's capacity to be gender inclusive entails developing the personal, individual capacity of educators or staff members. This individual development can happen when management offers staff members opportunities to actively, critically, and reflectively construct and re-construct knowledge about gender and gender inclusion. When staff members and educators examine their own practices and carefully assess their notions about gender in these practices, their capacity for being gender inclusive is built. The following suggestions may be employed by institutional management to help build capacity for gender inclusion among individual staff members.

Phase of development	Management can act by...
Beginning	• Initiating conversations with individuals about what gender inclusion is, how to know if education activities are inclusive, and what to do if attempts to be gender inclusive fail • Initiating conversations with individuals about hidden or difficult-to-see exclusion mechanisms • Providing staff members with gender inclusion resources (reports, web sites, journals, and activities)* • Stimulating and rewarding staff members who take gender inclusion initiatives (e.g. professional development) • Inviting staff members to share their thoughts about gender and inclusion in staff meetings • Providing staff members with opportunities to visit other institutions or work in external networks that specifically address gender inclusion
Intermediate	• Providing individuals with training opportunities about gender inclusion in science education**
Advanced	• Developing a professional development programme for individual staff members, connected to the vision and policy of the institution

* For instance, the Hypatia Toolkit (www.expecteverything.eu/hypatia/toolkit/) offers a wide range of ready-to-use activities aimed at teenagers, and contains gender and facilitation guidelines for implementation by teachers, informal learning organisations, researchers and industry.

** For instance, the science centre Experimentarium (Denmark) developed a Teacher Professional Development activity that targets gender awareness in teaching. This activity (Gender Inclusiveness in your Science Teaching, see www.expecteverything.eu/hypatia/toolkit/) is easily adaptable to educators in other settings as well.

** For instance, the science museum NEMO in the Netherlands offers staff members a workshop on awareness of gender-inclusion and the development of more gender-inclusive programmes (e.g. workshops, teaching materials and exhibitions). The explainers are similarly trained on how to facilitate in a more gender-inclusive way.

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Supporting the transformation of gender inclusion capacity from the 'outside'

The society and culture within which an institution exists is a strong determining factor of what that institution can do. Stakeholders in society can positively influence institutional change by exposing the institution to new kinds of knowledge and expertise and broadening the circle of knowledge-producers, thereby creating a new distributed model of knowledge production. The following suggestions target the actions of so-called critical actors, that is, external stakeholders or groups of stakeholders who are committed to supporting institutional transformation. As mentioned, in Hypatia the National Hubs were established to fulfil this role (see Section 3), but in countries that were not part of Hypatia, existing national networks could function in a similar way (see Table 1).

Phase of development	National Hubs or critical actors can act by...
Beginning	• Directing attention to issues of inequity and gender exclusion in STEM education • Providing access to target audience (girls and boys) and gives them a voice* • Facilitating dialogue and exchange of ideas about gender inclusion across institutions
Intermediate	• Supporting initiatives that address identified gender inclusion issues, including local 'satellite programmes'** • Sharing up-to-date knowledge on research, related programmes and events
Advanced	• Acting as ambassadors in their own institutions, disseminating insights and visions • Providing advocacy for gender inclusion policy at the local, regional and national levels*** • Contributing to holding institutions accountable for changing gender exclusion practices

* For example, Hypatia's National Hubs established Youth Panels in each participating country. These Youth Panels gave staff members and management direct access to the target audience of Hypatia and gave youth a strong voice in each institution's gender inclusion initiatives.

** For example, the Institute of Physics offers to train dedicated staff members, Gender Champions, in schools across the UK. These Gender Champions work with educators, management, and students to tackle gender bias locally (Institute of Physics, n.d.).

*** For example, in Hypatia the French Hub served provided access to specific types of key targets such as the annual meeting of the French national association of museums or the French society of physics.

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5. AFFIRMATIVE ACTIONS FOR GENDER INCLUSION

Although Hypatia advocates for actions that can transform the gender inclusion capabilities of institutions (suggestions in section 4), we acknowledge that institutional transformation may not always be immediately achievable. In such cases, the implementation of gender inclusion practices and initiatives by individuals – even without a shared vision of gender equity – may gradually lead to changes in the formal rules of the institution. In the following, we offer suggestions for initiatives that can promote gender inclusion in STEM activities. These guidelines are directed at the level of the individual staff member or smaller groups of staff with some degree of autonomy.

As an individual staff member, you can make a difference in your institution by...

Paying attention to gender stereotypes in your practices	Think critically about whether and how (often hidden) ideas about gender influence your work and that of your colleagues, and call attention to these ideas
Making suggestions about how to introduce and implement gender inclusion	Give your colleagues and management concrete suggestions from your 'frontline' experiences on how to introduce and implement gender inclusion in STEM education and communication practices
Counteracting automatic gender beliefs and attitudes	Introduce colleagues to a variety of role models (female and male) in STEM careers, and point out the lack of gender difference in performance and proficiency across STEM subjects
Engaging your colleagues in discussions about gender, inclusion, and STEM	The gradual building of a shared conception of gender and inclusion among staff members can be the first step to changing institutional practices from the bottom up
Finding initial support from staff members in key positions	If you can find key actors in your institution who share your gender inclusion concerns and viewpoints, you can begin accumulate commitment that can eventually be taken up by management
Embed already-developed resources in your practice	Utilise the gender-inclusive activities presented and explained in the Hypatia Toolkit in your STEM education and dissemination activities http://www.expecteverything.eu/hypatia/toolkit/

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6. BACKGROUND

The following sections provide an in-depth orientation to the research that has informed the Hypatia project and specifically the suggestions presented in Section 4 of this document.

Gendered institutions

Gender is an inherent feature of institutions. It permeates the experiences of women and men within the institution, the relationship between the institution and its actors, and the outputs of the institution (Thomson, 2018; Weiner & MacRae, 2014). Institutions can be gendered in two ways: at face value, i.e. one gender dominates among the positions of power in the institution (Schwarzer, 2010) and in substance, i.e. they are governed by mechanisms that result in gender bias (Waylen, 2014). These mechanisms are often based on accepted ideas about femininity and masculinity, 'for example, associating masculinity with rationality, power, boundary setting and control, and conversely associating femininity with its opposite – passivity, care, emotion and irrationality' (Waylen, 2014, p. 215). Gender norms such as these often remain hidden, yet become gradually naturalised in institutional 'ways of doing' (Elam & Terjesen, 2010).

For institutions involved in science and science education, the situation may be exacerbated. This is because in spite of the perception science has of itself as objective and gender-neutral, a growing body of research points out how the roots of western science are deeply embedded in the symbolic masculine and how this relationship persists, hidden behind androcentric notions of scientific objectivity (Harding, 1986). This means that whether a science institution's educational 'output' is its primary (schools and museums) or secondary (industry and research institutions) raison d'être, the experiences of young science learners in that institution are most likely gendered as well. This again means that those learners (girls or boys) whose gender identities do not fit comfortably within narrowly defined 'scientific masculinity' are required to exchange major aspects of their gender identity for the masculine version, or face exclusion (Faulkner, 2000; Harding, 1986). Institutional action is thus required to ensure a greater diversity of youth, including a greater presence of girls, in STEM (Crasnow, Wylie, Bauchspies, & Potter, 2015; Šidlauskienė & Butašova, 2013).

If the goal is to change the ways science education institutions develop and implement science education activities, what form should these efforts take? Kinsley (2016) points out that while affirmative actions target the final product or outcome, transformative actions seek to correct inequitable outcomes by targeting the root causes. In other words, to change science education in a sustainable way, it is necessary to focus on the institutions themselves, not just their education activities.

Institutional transformation

Institutional transformation requires initiatives on more than one level. Verbiest and Erculj (2006) suggest that to transform schools, a four-tier approach is necessary, where the capacity for change is considered at the levels of the individual educators, the interactions between educators and leaders, the school organisation itself, and finally, the structures that surround the organisation. Comparable, multi-tiered model are presented by others (e.g. Bienkowski, 2016; Salminen-Karlsson et al., 2016; Šidlauskienė & Butašova, 2013; Waylen, 2014); indeed, these models align with the conceptualisation of gender in Hypatia as co-constituting, and being co-constituted by, conditions and constraints at the individual, interactional, institutional, and societal/cultural levels (Achiam & Holmegaard,

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2017). The effectiveness of considering all four levels or tiers in promoting institutional transformation is that the change is not just driven by external actors or enforced from a management level; rather, individuals throughout the organisation are empowered and encouraged to take leadership roles, and gradually come to share power, authority and responsibility (EIGE, 2016; Verbiest & Erculj, 2006).

At the **individual** level, the personal capacity of educators or staff members is developed through active, critical, and reflective (re) construction of knowledge (Verbiest & Erculj, 2006). Individual capacity for gender-inclusive teaching is built when educators critically examine their teaching practices and carefully assess their own notions about gender in these practices.

At the **interactional** level, the collective gender inclusion capacity shared by educators, leaders, and other staff members in an institution can be built by establishing a shared vision of gender equity, and sharing norms and practices about teaching and learning (Verbiest & Erculj, 2006). For example, studies show that museum staff members may have quite different ideas about what constitutes gender equity (Feinstein & Meshoulam, 2014; Tlili, 2008); unless these differences are reconciled and a shared vision established, it will be difficult to change the capacity of the institution for creating gender inclusive activities. On the other hand, research shows that the emergence of a shared vision of gender equity can drive the establishment of new ways of working that can gradually become informal rules for the institution in a bottom-up process (Ash & Lombana, 2013; Waylen, 2014).

At the **institutional** level, the capacity for gender inclusion can be developed through initiatives that affect the conditions for personal and interpersonal capacity

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building. In other words, if the leadership of the institution is not only supportive of initiatives to build gender inclusion capacity, but also demands that such initiatives take place, institutional capacity for gender inclusion can be built. However, leadership alone is not sufficient to ensure change. Studies show that even though new ways of working (with gender) are created and enforced by management, defenders of the status quo may use ambiguity and gaps in these procedures to resist change (Waylen, 2014). Accordingly, capacity building requires simultaneous bottom-up and top-down work (EIGE, 2016; Verbiest & Erculj, 2006).

Finally, the **society and culture** within which an institution exists is a strong determining factor of what that institution can do (Achiam & Marandino, 2014). Research shows that stakeholders in society can positively influence institutional change by playing the role of critical actors, that is, by initiating reforms and mobilising others for change (Childs & Krook, 2009; Thomson, 2018). Such external support can help realise institutional transformation (Verbiest & Erculj, 2006) by exposing the institution to new kinds of knowledge and expertise and broadening the circle of knowledge-producers, thereby creating a new distributed model of knowledge production (Bienkowski, 2016; Kinsley, 2016).

Affirmative versus transformative actions

In the preceding we have advocated for *transformative* rather than *affirmative* actions to promote gender inclusion and equity in institutions. This is because transformative actions seek to change inequitable outcomes (such as gender excluding education activities) by restructuring the institution that generated them; in contrast, affirmative actions are aimed at changing the inequitable outcomes without disturbing the underlying generative framework (Kinsley, 2016). However, causality can run both ways, meaning that the implementation of gender positive education practices and initiatives by individuals – even without a shared vision of gender equity – can gradually lead to changes in the formal rules of the institution (Ash & Lombana, 2013; Waylen, 2014). In summary, if institutional transformation is not immediately achievable, affirmative actions can be a way for individual educators to work for transformative change, provided these affirmative actions are 'radically and consistently pursued' (Fraser & Honneth, 2003, p. 78)

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I Hypatia participants include Austria, Denmark, Estonia, France, Greece, Ireland, Israel, Italy, the Netherlands, Poland, Serbia, Spain, Sweden, and the United Kingdom.

II The French science centre Universcience has been engaged for many years at the institutional level to promote gender equity both in internal (gender equity in human resources) and towards the public (programs for promoting gender equity in S&T). It was awarded « Equality Certification » by France's standardisation organisation Afnor last February.

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