Collaborative Design
and Museum Media Innovation

The 'To and From the Youth'-project
– Including Youth as Experts

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Introduction

Museums and science centres might be the cultural heritage institutions that are most influenced by changing technologies and changing modes of media usage. Media are at the core of all three fundamental museological domains: materiality, engagement, and representation (Welsh 2005). The range and variety of display forms, interactions, participation and engagement forms that new exhibition media bring to the museum, creates a whole field of new competencies to museum practices. The properties of particular media do open for specific audience relations and include aspects of genre, authority, attention-getting and authenticity that bring new representational forms to museums' mediated communication (Macdonald 2007). There is also an ongoing process to re-focus museum communication from transmission of knowledge to sharing their cultural authority (Lundgaard & Jensen 2013), and to focus educational activities on dialogue-based learning (Dyhste et al. 2013). The current development of digitization and integration of mobile and social media into museum communication represents a paradigm shift that includes not only questioning the fundamental museological domains of materiality, engagement and representation; the paradigm shift also includes a change of museum agency in contemporary society.

The media innovations in museums extend across media products as exhibition tools into including mediational processes as means of creating social relations between museums and society. For the museum, this includes a transfer from focusing on collections into becoming user-oriented and people-catered institutions. This may be well understood as the concept of the *new museum* (Weil 1999), introduced to shift the museums' attention to a concern with visitors' self-expression and self-recognition (Horta 1997, cited in Weil 1999). The new museum concept called for a re-focusing of museums as public service institutions, to 'provide the communities they serve with something of value beyond their mere existence' (Weil 2002: 4-5). Weil's main argument was for a public foundation museum, not as a cause but as an instrument for communities to have some choice to determine their use (Weil 2002,

cited in Graham et al. 2011). His vision for the new museum therefore included communities' decision-making and citizenship. This view has later been strengthened in discussions of museums as educational institutions, where for example, museums has been defined as places for shaping of identity, belonging and citizenship (Sandell & Nightingale 2012; Hooper-Greenhill 2008).

The museum consultant Nina Simon later proposed the concept of the *participatory museum* (Simon 2010), a term that widened the scope from communities to involve wider audiences and society as part of the public. The participatory museum has since then been intensely discussed with a focus on how audience contributions and performances are important parts of reception and interpretation of museum narratives, representations and objects. The participatory museum defines visitors as cultural participants, emphasizing that every participatory project has three stakeholders: the museum, its visitors and the participants (Simon 2010). Museums increasingly talk about users and publics instead of visitors (Bradburne 1998; Baggesen 2014). In this change of perspective, museums are expanding their concerns to consider their role as agents of social change by serving as public meeting spaces (Dodd & Jones 2013), and to have a socially responsible role (Davis 2008). This implies that museums focus on supporting actions rather than broadcasting facts, and that success is measured by repeated actions rather than the number of visits (Bradburne 1998). These principles of active participation are currently taken one step further from providing participatory activities into participatory practices of museum design. Numerous recent projects explore how participation can be expanded into collaborative methods, where audience groups are included in exhibition design processes (e.g. Bradburne 1998; Taxén 2005; Davies 2008; Giersing 2012; Modest 2013; Smith 2013; Mygind & Hällman 2015). Facilitating collaborative processes with audience participation involves museums rethinking who their stakeholders are, and how the museum could create relations with a diverse group of people (Modest 2013).

Many museums today also explore participation not only as an activity in museum exhibitions or on their online sites but as practices of public engagement. We have seen a growing interest in participatory approaches across museums and science centres – mainly focusing on including stakeholders in participatory exhibition development (see Graham, Mason & Nayling 2011 and Mygind et al. 2015 for extensive reviews). We also see numerous participatory initiatives, especially in art museums, where for example young people are engaged to translate electronic tour guides into the voices of young people (Hulshoff Pol 2014). In the UK, funding bodies under the New Labour government policy of social inclusion identified youth as a target group because they were a hard-to-reach group. As an outcome, numerous educational projects were aimed towards this group, and an increased interest in learning outside the classroom led to strategies for leisure-time opportunities for youth (Tzibazi 2013). These projects instigated participatory innovations, but have not resulted in any fundamental shift in museum practice. One example is Stories of the World, a London-based project related to the 2012 London Cultural Olympics which supported 59 museums to establish

partnerships with young people to participate in reforming their public services. After the Olympic games, these projects ended and the efforts to include youth came to an end. Despite these ground breaking and innovative projects, and the funding invested in public engagement and participation, public engagement work has not succeeded in shifting from the margins of project-based initiatives into museums core practices (Lynch 2011). Other studies show that the UK policy of social inclusion expects museums not only to eliminate barriers and attract underrepresented groups of users but also to make themselves relevant and to form relationships with communities (Tlili 2008).

For example, UK museums and galleries have created new cross-sector partnerships, careful community consultation and co-production, productive relations with local authorities and a focus on local community outcomes of museum participatory projects (Lynch 2011). However, while the expectation of socially engaged museums has grown over the past decades, there has been little attention to how museums develop the competencies and working environments required to support this emerging area of participatory practices (Davis 2008). This provides a background for the focus on methodological questions of how to reach audiences and communities in this chapter.

This chapter reports from an innovation project at the Norwegian Museum of Science and Technology, exploring how museums may conduct collaborative approaches as forms of public engagement beyond exhibition design. The project, called *To and From the Youth*, was based on collaboration with young users and aimed at gaining a better understanding of their media usage and how the museum's educational activities may respond better to these in their design of educational activities. The project involved design activities related to the highly awarded exhibition *Things – Technology & Democracy* (Rasch & Treimo 2014), and aimed at extending reflections on how Internet technology, with its weaknesses and strengths, introduces issues of democracy in young peoples' everyday lives. The project involved museum educators, Save The Children Norway and a group of eight youths. The co-design project ran at the Norwegian Museum of Science and Technology over one year, 2014–2015, and the learning programme that was an outcome of the process is now integrated in the school services of the museum.

The project explored how co-design methods may provide a 'good for all' version of participation (Graham et al. 2011; Lynch 2011) by benefitting the museum, the participants involved, and the public. This includes the museum having a better understanding of the benefits for young people of using the museum as a space for reflection, actively dealing with complex societal issues, and, also how digital media could actively support this. The project illustrates how handling the 'good for all' principle of participation requires museums to apply methodologies suitable for gaining a proper understanding of the digital media practices of young people today. As our project will show, the connective and social inclusive museum requires methodological innovations, which, in fact, introduce a new area of competence to the museum's core practices. We will here focus on how the adoption of collaborative design methods

challenged the beliefs and practices of the museum educators, and consider how the museum may approach media innovations on a methodological level.

Media innovations in museums

Media are, and have always been, key tools for a museum's work concerning audience engagement and democratization. Indeed, some consider museums *as* media and discuss how media theory can be used to theorize museum communication (Hooper-Greenhill 2004; Henning 2006). It is relevant here to make a distinction between the semiotic approaches to media and to materialist perspectives. For example, discussions of semiotic processes of media and museums emphasize the role of media in exhibitions as part of the museum's communication of messages for visitors to decode (Hall 1973; Hooper-Greenhill 2004). This differs from materialist theories of media that emphasize media as more than just means for transmission of messages, and focuses on how media shapes and is shaped by tangible, experiential and social aspects of media. The material properties of media are in this way defined as more than just a means of an interface and visual perception, and consider media's role for organising experiences in space and time, following theories of Innis, McLuhan, Williams and Kittler (Hennion 2006). In media studies, this perspective has been emphasized by a school of media scholars that focuses on the mutual relationships that media technologies bring. For example, media studies have lately included perspectives from science and technology studies (STS), emphasizing the politics of materiality that technology introduces to mediation (Gillespie et al. 2014). Another example is the non-media-centric and embodied perspective on media use, proposed by media anthropologists in order to focus on the mundane aspects of social practices, including media (e.g. Crossley 2001; Moores 2012; Pink 2012).

Museums' understanding of media involved the materialist approach because museums very quickly started to use media to both dematerialize and bring museum objects closer to the audience in exhibition reconstructions and simulations (Hennion 2006). For example, the mediatic museum of Otto Neurath, so influential for avant-garde thinking of the museum at the beginning of the nineteenth century, developed a whole language of icons or pictograms, the Isotypes, which aimed at using people's everyday-life knowledge and experiences for shaping museum language. The role of media in Neurath's mediated museum was essential for his concern with the museum's societal role.

Frank Oppenheimer, the founder of The Exploratorium in San Francisco in the 1960s, also understood interactive installations as explicit media, with the potential to facilitate reflection on how topics of science relate to personal lives (Hennion 2006). Oppenheimer's work was a reaction to the mysticism and extra-sensory perception of nature that, alongside sceptical views about science, flourished in San Francisco during the late 1960s. Oppenheimer's work with The Exploratorium was based on

an understanding of museums as educational institutions. The politics of education was in Oppenheimer's work closely related to ideals of interactive- and hands-on media in science museums. In this way, the early innovations of science museums were built on a fundamental understanding of the politics of media materials and the mediatized museum.

The mediatized museum has meanwhile also been recognized for its potential for social development and activism, and discussions of how museums may act as 'third spaces' (Bhabha 2004) that may facilitate historical, political and moral relationships (Pratt 1991; Clifford 1997) The mediatized museum has meanwhile also been recognized for its potential for social development and activism, and discussion of how the museum may act as 'third spaces' (Bhabha 2004), or contact zones that may facilitate historical, political and moral relationships (Pratt 1991; Clifford 1997). These potential social consequences of museum communication seriously address how media can provide the means and space for social practices. This goes far beyond the traditional communication of the collections into museums as social institutions. In addition to the innovators mentioned above in the history of museum, we should remember that the history of the modern museum coincides with the history of modern recording media (Hennion 2006). Museums quickly saw the potential of media technologies to develop both display and archiving modes. Also, with the contemporary social media, mobile and GPS-based simulations, mixed and augmented reality, we recognize an inherent interest from the museum to use these media to facilitate the participatory and democratic museum.

The concept of the *connected museum* (Drotner & Schrøder 2013) has been introduced to media studies to capture the central role digital media have for this development. Digital media bring an end to linear thinking in museum education and communication strategies (Din & Hecht 2008), and this brings new conditions to the ways museums take a role of meeting the societal challenges of mediated and participatory culture. The connected museum introduces new mediated practices that go beyond communication into acts of caring for and supporting communities. Recently, lots of attention has been given to how social media are decentering museum expertise on content production (Stuedahl 2011; Russo 2012), when, for example, the properties of imagery are used to create new relationships with online communities of interest (Colquhoun & Galani 2013). Social media enables the crowdsourcing actions of correcting, contextualizing, complementing, co-curating and finding of content (Oomen & Aroyo 2011), while they, at the same time, challenge museums to handle the new connections created. Inclusion of social media practices can be too ambiguous and may cause friction between social practices and the technological and institutional infrastructures in archives and museums, as amateur content may challenge an existing conception of quality, copyright and responsibilities of the museum (Holdgaard & Klastrup 2014; Van Passel & Rigole 2014). The dilemmas of museum connectedness are still to be explored, and the connective museum gives a contemporary example of how media act as a driving force for museum innovation.

From participation to collaborative design in museums
– methodological perspectives

There has long been a growing interest in hermeneutic approaches and action research methods for visitor research and for professional development (see e.g. Anderson 2012; Tal 2012), especially in science museums. While the use of action research methods has rested on an overall aim to bridge the gap between theory and practice in formal and informal science education (Ash & Lombana 2012), it is less focused on democratic practices of social inclusion. Meanwhile, the literature demonstrates how central principles of action research methodologies may feed the museum visitor's understanding and professional competence building. Through engaging participants in acts of creation (Freire 1970), participatory action research emphasizes that the participants' understanding of their practice develops in authentic contexts (Kemmis & McTaggart 2005). This is based on an understanding of participation as transformative, and of methods as tools to strengthen the participant's sense of agency in transformation processes (Fine & Torre 2004; Cahill 2007; Pratt et al. 2010). This ethical imperative for involvement and participation in museums goes beyond the boundaries of participation stated by policy and, Tzibazi (2013) argues, constitutes the real challenges for the inclusion of youth in museum practices. Application of participatory methods must overcome the preconceptions, boundaries and norms connected to existing understandings of participation.

Reporting from a longitudinal project that was based on participatory action research methods and included young people between 15 and 17 years of age, Tzibazi's conclusion was that to involve young people beyond the role of consultancy brings new practices and identities for the museum to handle. It also requires a move away from the traditional transmission model (Tzibazi 2013). The study shows how museums lack trust in the participants' abilities, which makes it difficult for museum professionals to meet the participants' needs, and Tzibazi calls for museums to re-conceptualize their role as responsible social institutions and base their participatory projects on ethical and reflexive educational groundings. This points towards a distinct reflection on the methods that participatory projects are based on, the aims and goals of the project, as well as the expected outcome for all partners.

Participatory design in the museum

In a recent review of participatory models and approaches to museum exhibition design, Mygind and Hällman (2015) conclude that participation has many of the same obstacles as participatory practices of development and research in engineering-related fields such as urban planning, health promotion, or technology development. It is about coordinating degrees of participation, the methods, the multiple rationales, obstacles and tensions caused by power relations and diverse rationales for participatory approaches. Mygind and Hällman point to the tradition of participatory design

(PD) as a relevant framework for advancing participation in exhibition design. This methodological tradition builds on action research principles for involving participants in concrete development projects, and has a long tradition, especially in technological development in the Scandinavian countries.

The core principles of PD are political and focus on how technological development processes need to equalize power relations, how practices may be democratized and how alternative visions of technology and society may be integrated and given a voice through participatory methods (Robertson & Wagner 2013). This ethical motivation to support and enhance people's engagement in technology development has been enshrined in techniques and models for handling power relations and mutual learning in participant involvement. The core principles of participatory design are based on pragmatic, theoretical or political rationales that frame involvement in decision-making as an issue of empowerment and as a democratic development aiming at better quality products. Participatory design methods have been used in research projects as methods for exhibition concept development and evaluation (Taxén 2005; Smith 2013) with both a quality and democracy argument about including children and young people in exhibition design. Meanwhile, the pragmatic findings from these research-driven projects have experienced the same challenges of participation as the participatory projects described earlier in policy-based projects and initiatives: namely, that the appropriation of participatory design as part of broader innovations of processes and practices involves new forms of relations with visitors and the public.

Thus, while participatory design may provide opportunities for methodological development on several levels in museum innovation, it would need to be framed more consistently as being a collaborative project. In participatory projects, the museum and the users need to be collaborating on an equal footing, and it is necessary that both take advantage of the collaboration. We define this as a *collaborative design* endeavour, and have focused on how collaborative formations may be about museums extending their methods for understanding users, about an ethical and educational grounding as well as about the professional development that is required for supporting social inclusion in museums. The extension from participation to collaboration includes ethical, analytical and practice-related aims, and includes situated and authentic actions, mutual learning and equalizing power relations as part of collaborative design. This builds the background for our pragmatic approach to conduct museum innovation through collaborative design.

Collaborative design of a learning programme on technology and democracy

To and From the Youth was a collaborative design project running at the Norwegian Museum of Science and Technology. The aim of the project was to design a learning activity where pupils engage in reflections on issues such as freedom of speech,

extreme opinions, inclusion and societal participation, and where the pupils express themselves through digital media production. The project was set up in partnership with the Norwegian Telecom Museum and Save the Children Norway's (STC) programme on safety for children on the Internet. The project ran from August 2014 and arranged five workshops throughout the autumn and winter 2014/15. Working in partnership with STC strengthened the collaborative process by virtue of the fact that STC has a long tradition of developing projects together with children and young people.

The project had as an overall goal to co-design a learning activity that connects issues of technology and democracy to young people's lived experiences of everyday handling of digital technologies, including freedom of speech, cyber-bullying, anonymity and information flow. To include young people in the very early stages may enhance young people's alternative interpretations. The project was especially aimed at exploring how the introduction of media production as a visitor activity may scaffold young people in connecting the issues of the exhibition to their own everyday digital practices and democratic experiences.

The learning programme was connected to a temporary exhibition, *Things – Technology & Democracy*, which explored the complicated relationship between technology and democracy, focusing on eight specific museum objects as starting points for the reflection. The exhibition has won several prizes for its interactive communication of complex scientific questions. The core activity in this exhibition was a round, multi-touch table, where eight technologies – the Internet, 3D printer, smartphone, solar panel, robot seal, DNA sequencer, drone and bucky ball – were up for discussion. The guiding tour, facilitated by a museum educator, had the form of a parliament where visitors vote on contemporary technology questions related to these technologies.

The design project focused on how young people could be engaged in learning activities as an extension of this parliament session that related the overall questions on specific technologies to their own life. The design aim was to form a participatory and production-based learning activity that furthers their reflections on technology and democracy to self-reflexive discussions with their peers. The project included student media production as tools for reflections on own practices and habits with digital media and with bigger issues of democracy. The core aim of the project was to define central questions that would engage young people in these reflections. The secondary question was how media production could be included as a means for young people to articulate their thoughts on complex issues.

The young participants, aged 16 to 18, were recruited by Save The Children's network from different high schools in and around Oslo. During the process, there was a core group of four, though at some workshops eight youngsters participated. Defining the youth as experts, their participation was paid for each time they attended a workshop. From both STC and the museum's perspective, this was experienced as taking seriously the work the youth carried out. It also recognized the knowledge and skills, and

especially the time, invested in the project. Between the five workshops, arranged at the museum after closing time, a closed Facebook group was used for discussions and appointments. The results from the workshops and the youths' digital productions were shared here. The intention of this was to establish continuity and supporting the overall aim; to support engagement in co-creation of a learning activity that would engage pupils of their own age.

The first meeting introduced the exhibition in focus, *Things – Technology & Democracy*; our aim for the project *To and From the Youth*, and our motivation for the co-creation process and the expected outcome of it. The young participants were asked to discuss the overall issues and help us to develop questions that could prompt other youth to make the same reflections:

- Where do young people draw the line for freedom of speech and cyberbullying?

- How can we handle extreme utterances online and in everyday life?

- What do we mean by democracy online?

The emphasis during this first meeting was on digital/tele communication, and we started with affinity mapping of the relation between these technologies and democracy. The youth wrote keywords such as 'Instagram', 'unsocial media', 'surveillance', 'filtered and unfiltered', 'Facebook', 'noise and information', 'screening and sharing', 'online debates', 'twitter', 'Internet trolls' on a shared brown paper roll. The session ended with a plenary session grouping the keywords and topics, and discussion of what issues of technology and democracy they pointed to.

A strong focus on involvement requires that one keeps in mind that the aim of the collaborative process is both the process and the product that the process is supposed to result in. Our partner from Save the Children was concerned that we could lose the overall objective for the collaborative process, and wrote a comprehensive notice emphasizing that the aim of the project was that the participants should reflect on issues of technology and democracy, and express themselves through digital stories. Another aim was to design a museum learning activity that recognizes that young people are experts on their own learning, and to take this principle into consideration in the design.

The second workshops focused on narrowing down the list of keywords, and to group them in thematic dichotomies. We ended up with five keyword pairs; 'social and unsocial media', 'noise and information', 'surveillance and safety', 'anonymity and transparency', 'new voices we wish to hear and not to hear'. These were the keywords found most relevant by the young people.

At the third workshop the youth tested the learning activity by producing digital stories, not an unknown concept for the group. The museum had earlier used iPads as tools for production of digital stories, and the youth were familiar with the genre from school. We then asked the youngsters to think about the keyword pairs that were defined in the former workshops and served as prompts for their production

Image 1. Design process

The collaborative design process in *To and From the Youth* involved methods as affinity mapping to capture youth central concerns about digital technology and democracy.

of digital stories. They could choose either working in groups or on their own. They had one hour to produce the stories, and were asked to actively use the exhibition as object and background for their productions. First, we had asked them not to use sound, thinking that this would take too much time. However, it is a good thing that young people do not always do as they are told. Sound proved to be essential for the presentation of the digital story to their peers, as without sound, those who had created the story needed to be present. The session ended with showing the stories produced, and with a plenary discussion of the way the digital stories enlightened the topics.

The youths' input for the design of the learning activity was essential. For example, the youths claimed that creating a digital story was a fairly complex and time-consuming activity for less engaged young people. The youth doubted that students with less interest would be able to see a digital story production through during a visit to the museum. As a solution, we found that focusing on the production of shorter digital utterances would lower the threshold.

Another important input was their recommendation that, when the learning programme was running, the brainstorming and concept mapping session and the keyword pairs should be a starting point. They argued that the five central topics were important for motivating students to engage in the task, and to prompt their reflection on the rather demanding topics. Also, they argued that starting the learning session with discussions on the role of smartphones will help the pupils to focus, and gives an entry point to the learning activity.

Discussion: Learning from participating youth

Museum innovations go beyond exhibition design, include re-thinking central concepts of museum communication and call for transforming educational and communicational practices. Within this shift lies the questioning of institutional authority and the role the museum may fill in future societies. This demands the formation of new, engaging interactions and relations with the public. The shift also requires that museum professionals handle the museum users' media practices and appropriation in interaction with museum objects, and the museum as a space for social knowledge activities. The shift, then, involves understanding the role of media from the users' perspective, and handling mediation processes in ways that are recognized by and engage users. Handling, understanding and designing with media is at the core of these endeavours.

We will here focus on three main findings from using collaborative design methods as a way to learn from youth, which have given insight into how media usage can be more motivating for young people's engagement with museum topics and how the museums can work innovatively to change their practices to meet with these forms of engagement. These three findings relate to understanding the role of the multimodality of media usage, understanding the scale of digital productions suitable for visits to physical museum exhibitions, and the role of collaborative methods for gaining deeper insight into the experiences of young people in museums. All of these outcomes were strongly related to the situated and authentic actions, mutual learning and equalizing power relations that are the core principles of collaborative design.

The role of multi-modality for youth engagement

The constant flow of social media applications, which each provide new properties that potentially open for new mediated user relations, constantly challenge the museum. Museums need to achieve an understanding of digital media usage to find the best ways to connect people, knowledge and objects across boundaries of communication onsite, online and beyond the museum walls. Thus, if museums want to continue being places for shaping identity (Hooper-Greenhill 2004), handling the new connectedness becomes central. The collaborative project focused on how a visit to the museum could spark reflection on being a young person in a digital world. To develop a learning programme that is experienced as creative and interesting about the abstract and complex topic of technology and democracy, it is important to give a memorable learning experience, as one pupil responded while producing a digital utterance. When museums develop learning programs for youths, a hard-to-reach group, it becomes central to include tools and techniques that are not used in formal schooling.

Originally, we had thought the use of affinity mapping to be a technique for the collaborative design process only. When, at our last workshop with the youth, we outlined how we would facilitate the learning activity with future school classes, we suggested

starting working with digital utterances without the concept mapping. However, the young people thought that affinity mapping was necessary for the mind-set of the task. They underlined that affinity mapping would be an engaging activity that would pave the way to deeper reflections on the topic of technology and democracy. One reason may be that, though the learning activity has young people's digital everyday life as a topic and is important on a youth-identity level, the theme still is abstract. When one is asked to use key words on Post-it notes to reflect on these topics, the young participants argued, it may lower the threshold for engagement.

In a group of people, there will always be some who are quiet and those who express themselves clearly and loudly. Affinity mapping gives all the participants the chance of writing down thoughts and ensures they get involved in the collaborative process. We also found that affinity mapping using Post-it notes was a simple way of sharing thoughts as well as a way to stay focused on the theme during the collaborative process. This multi-modal approach to the definition of the keyword pairs created an entrance to deeper reflections on the abstract topic of the museum exhibition. Meanwhile, it was clear that future school class visits to the exhibition starting with this open form of brainstorming was far too time-consuming. As a solution we agreed upon starting with the five-keyword pairs from the design process as a fixed departure point for the reflections school classes had to do before starting producing digital stories.

From digital storytelling to digital utterances

The exhibition *Things – Technology & Democracy* enabled for museum users to participate in a discussion with the aim of, among others, building competence in citizenship (Rasch & Treimo 2014). The creative activity designed in the project was appreciated, one participant remarked: 'It's very seldom we have the experience to create something in the Norwegian school'. Thus, we think that opening up for creative production as an informal learning form is one of the museum's strengths. The themes of technology and democracy are closely connected to political as well as ethical questions of how new media platforms challenge both individuals and society. The exhibition and the learning program enable the museum to be a meeting place with social functions of public dialogue on politics and ethical questions (Pratt 1991; Clifford 1997; Bhabha 2004). In this context, it was important to facilitate a learning program that supports public engagement forms such as articulation and collaborative reflection at the same time as the activity supplements the activities of parliamentary voting in the exhibition. The choice of digital storytelling as a production-based museum activity is based on the origins of digital storytelling as a means of 'giving a voice' to people in public spaces. The seven principles of digital storytelling relate to affective and personal reflections around a specific topic (Lundby 2008) and meet well with current discussions of student active learning in educational contexts. In our case, digital storytelling was used to give the youth a voice and to express their reflections on technology and democracy related to their everyday life on the Internet.

There will always be a discussion about whether the participants have any real influence over the collaborative process and it would be important to focus on the degrees of involvement and the power relations (Mygind & Hällmann 2015). In the *To and From the Youth*-project, our aim was to give the young participants influence equal to that of museum educators and researchers. Therefore, we listened closely when they suggested changes in the design, with the aim of a better quality of the learning programme (Taxén 2005; Smith 2013).

While we recognize that the youngsters are digitally literate, it was also our experience that not all of them were familiar with using tablets as tools for collaborative media production. Not all of them knew how to make a short film that contained sound, pictures, film and voice. The youth made us aware that digital storytelling production is time consuming, and not necessary for the reflections we wanted to achieve. Authoring a story as well as producing it took time; and we were reminded that the digital storytelling method often lasts over a period of two to three days. This made us decide that by taking away such elements as sound we would shorten the process of making the digital stories. However, the young people pointed out that sound was necessary, and a down-scaling of the story production would be more efficient. It also became clear that sound was central to trigger discussion. During the design process, the digital stories were published on the project's closed Facebook group, and this demonstrated that stories without sound did not properly carry the message. Stories published with a narrated voice invited more comments to be shared.

The youth also argued that photography would make the production and editing process simpler, and that photography would make it easier to approach the abstract themes of technology and democracy. They suggested using the five key-word pairs as a starting point and argued that a shorter genre of digital statements or utterances would serve as tool for giving voice and articulating reflections. The utterances were shorter in time and did not really effect on the experience and the outcome of the production. An utterance may contain a personal statement and differs from a whole story in that it does not have the shape of a narrative. As a result, the final learning activity of *To and From the Youth,* is based on a downscaled co-producing process. This downscaled production time, likewise in choice of media use and content, gave more time for discussions and collective reflections. We made this amendment after co-designing with the youth group; thus, it was a direct outcome of the collaborative design process.

One of the premises for the design process was that when it became part of the museum school program the pupils would have to create utterances in groups. This was based on earlier work in the museum with tablets, and the experience that production with tablets invites collaboration. However, some of the participants wished to work on their own rather than together. Creating a digital utterance, they argued, was something more personal and for some a more private activity. Also, creating statements was an important aspect of the exhibition *Things – Technology & Democracy*, where the parliament session was based on voting in accordance with given statements.

Thus, refocusing the digital production on private utterance and statements creates a better fit with the exhibition.

Collaborative design methods as tools for museum innovation

The co-design process in the *To and From the Youth*-project has given museum educators experience and insight in ways to take a user-centred perspective in museum design. The collaborative design process contributed to the exploration of how young visitors may like to share their reflections, and how the museums may use their space and collections to facilitate reflection rather than just transmitting knowledge (Hooper-Greenhill 2004; Lundgaard & Jensen 2013). The young people were invited to interpret the museum exhibition on their own terms, as an attempt to share the museum authority. Processes like this can contribute to museum professionals, curators and educators reflecting on how the museum could have an impact on the *usage* of museum content (Weil 2002). But it became central to make sure that the collaborative process was good for the participants as well as the public (Lynch 2011). This take on collaborative processes demands that the museum practitioner becomes a facilitator, who introduces the task of museum communication to the participants, and then mentors the collaborative process. This is a major difference from the guided tour that normally shapes museum activities and museum practices.

The collaborative design process emphasized authentic and situated actions where the young participants developed the learning activity and tested it in the natural setting of the museum. The aim of the collaboration was to explore the possibility of new media to enable museums to make knowledge accessible and contribute to a shift away from the transfer model towards a dialogic one (Dyhste et al. 2013). We conducted affinity mapping as a core method for involving young participants and the museum educators in collaboration on equal terms. For the museum, this resulted in adjusting pre-existing conceptions of the young people's usage of new media. At the same time, the equal dialogue resulted in the museums giving away some authority in the interpretation of the exhibition and its objects, gaining insights into how young people associate these objects. Collaborative processes like this, where the museum focuses on the youth population, strengthens knowledge about young people growing up today. In this particular project, an improved understanding of the young people's digital world was an essential outcome. A process like this also increases the ability to build relations that are flexible (Modest 2013) and suitable for a diverse group of youngsters.

In a collaborative process, there is also the potential for the museum professionals to reflect on their own practices, as well as exploring the scope for action that museums can offer to young people. For example, museum meetings arranged outside the museum has been suggested to contribute to altering the balance of power (Modest 2013). When asked if it would be better if the meeting place was arranged somewhere outside of the museum, one youth in the project said that being in the exhibition added more seriousness to the project. This demonstrates that *where* the museum meeting takes

place is not the most important; more important is *how* the media and participatory practices are used to extend visitor collaboration and how this has the potential to open up for reinterpretation of the museum's content. In this way, collaborative design methods have the potential of helping museum practitioners to establish other kinds of authority in the museum and give opportunity to get to know the age group better; to understand the diversity in interests and background between them.

In this project, the museum served as a facilitator throughout the process, and although we were careful to recognize the participants both as experts on being young and as learners, their work at the museum was given honorary status. Thus, the young participants were defined as professionals on equal terms with the museum professionals, and the honorary defined their participation as an important contribution. We could alternatively have let them use the museum space for designing an exhibition or shown the digital utterances in the exhibition space, without the collaborative process. But this would not have given the museum practitioners the insights reported above.

The project being externally funded may have been a weakness. The impact of external-funded projects on the museum's core practices has shown to decrease when the funding has ended (Lynch 2011). In our case, the collaborative design of new programs and exhibitions by including users may suffer the same fate. It is time-consuming and has the risk of uncertain outcomes. Meanwhile, we argue that the gained outcomes of collaborative processes are important sources for the professional development of the museum that are central for museum innovation to happen.

Conclusion

Current innovations in museums are in many ways mirroring the discussion of participatory culture (Jenkins et al. 2009) in other cultural and educational institutions. Changing media practices inform the transformation of cultural practices and expressions, affiliations, circulations and collaborative problem solving. These aspects are defined as central for participatory culture, and therefore also challenge the participatory museum. Meanwhile, the cultural consequences of participation, transparency and ethics of media innovation may bring bigger concerns to museums about power and authority than to other institutions. Media innovation in museums goes beyond questions of handling media for exhibitions and visitor relations. Media innovation also build the ground for furthering museums communication practices and role as democratic institutions in society.

Our project has shown how setting up workshops and bringing together young people from different geographic locations may also inspire museums to expand their school program to cover more than just pupil visits as part of their school education. An important qualification will be to identify the digital competence the youth groups possess and, from that, facilitate the usage of media. The science museum, which set the stage for this project, is principally aimed at children and young people. At the

same time, young people have few places in this museum, as in most other museums and in society in general, where they can express themselves and practice being a citizen. This neglect of young people collides with the aim of the museum to be a democratic institution that serve the society that they are part of (Modest 2013). The transformation required to fill this gap between intentions and practice of democratic ways of working built the overall background for the innovation explored in the *To and From the Youth*-project at the Norwegian Museum of Science and Technology.

The properties of media platforms open up new possibilities for museum users to re-frame the museum's collections and exhibitions and bring in new representations of the mediated communication (Macdonald 2007). This challenges museum practices of curation and education to set standards for new media practices entering the museum. One of the premises is that the pupils are using digital media to express themselves. New media also enable self-driven learning in other ways. In a museum context, where the object or the art is usually at the center of the visitor's reflection in guided sessions of 45 minutes, this project is different. The collaborative design project took departure from the fact that digital and social media are non-linear and invite content production and sharing (Din & Hecht 2008) beyond this scope of time.

The fact that museums are knowledge institutions, with the cultural authority to represent nations and cultures (Lundgaard & Jensen 2013), has led to discussions on how museums may work with democratic principles and, thus, how their position in society might change (Sandell & Nightingale 2012). Innovations in museum, therefore, also include thorough discussions of what participation means in the context of a democratic public institution, and several voices have asked for a clear agenda for democracy and to define the key concepts that underpin museum participation (Graham et al. 2011; Lynch 2011). We have, in this chapter, explored museum participation through the lens of collaborative design methods, not only to develop a service but also as a way of exploring how museums might position themselves in society and how museum practitioners may work to gain deeper knowledge about current and future audience groups. We argue that collaborative methods may serve as a new method for museums innovations that has the goal to include museums in society, and to open their space for participatory actions. Media becomes both a central means and goal for this innovation.

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