Co-designed Embroidery

Student Projects in Art and Design Education

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Abstract

This article studies three phases in a project with embroidery and pieces of textile involving students in a specialized teacher training programme in design, arts, and crafts at OsloMet – Oslo Metropolitan University (OsloMet). In an incremental research project spanning over a six-year period the project was developed and changed systematically in collaboration with the students.

The embroidery project phases demonstrate how students are included in action research and how research-based teaching is completed in the first year of teacher education. The observed results from the projects all use photographs as documentation to analyse the organisation of the education and seeks to reveal differences between the methods of cooperation and collaboration. The research question concerns how these practice-based experiences in embroidery can become empirical data for research. The empirical data underline the role of the lecturer as both artist, researcher, and teacher in influencing the dynamics of the groups but also trying to nurture artistic outcomes. Furthermore, the experiences become part of

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critical reflections on the art teacher's practice or perhaps in response to her professional development review.

Keywords: teacher education, action research, research-based teaching, cooperation, collaboration

Introduction

The article discusses how embroidery can contribute to a deeper understanding of teamwork in design, arts and crafts education and how practice-based projects may prepare students for the teaching profession. The embroideries produced in the one-year course and the students' experiences and comments along the way formed the basis for the practical measures taken by the lecturer to analyse and stimulate the learning outcomes and improve the education. The work on collecting the students' works began randomly, but the following research question gradually emerged: how can the collected material become empirical data for research? The empirical data consist of insight data about the crafts, methods, and experiences. The practice-based activities showed a development in design and craft thinking. The results were characterised by an improvement in embroidery techniques and competence. Embroidery competence is here understood as using the stitches variedly in contour lines and in texture on surfaces in the compositions. The students took part in conducting the research and served as informants by sharing their reflections and experiences. The empirical data stimulated the lecturer's interest in taking a more in-depth look at teamwork practice in exploiting practice as research. The role of the author of the present article in the process was threefold: as a textile artist, a teacher in design, arts, and crafts education, and as a researcher interested in analysing the projects. In this concern the term *a/r/tography* helped to raise awareness of the three roles of artist, researcher, and teacher (Irwin & Springgay, 2008). The term has not a standardized set of criteria, it is dynamic and fluid, and stimulates reflections and reflexive attitudes towards engagements, analysis, and learning (ibid). A/r/tography for me is an inquiring process, where the spaces between the roles engages me as artist and researcher in the teaching situations.

A research subquestion was how to turn these participatory experiences into research-based teaching and stimulate quality and diversity in higher education. The term *research-based teaching* is multifaceted, and the form it should take depends on

the subject area in which it is applied (Hyllseth, 2001). OsloMet's strategy for 2024[2] is to develop and stimulate interaction between education, research, professional practice, and innovation (Havnes, 2011). In this article the research is based on three phases of practical education in embroidery, on photo documentation, and on students as collaborative co-researchers in aesthetical learning processes. In accordance with McNiff (2013), we can summarise the goal as follows: to unite education and art-based research through interaction between thoughts, activities, reflections, and creation.

Student projects and aesthetic learning processes vary in content and method and have different methodological approaches. Kirstine Riis and Camilla Growth (2020) unite education and art-based research with practice-led research as a methodological approach within materials and crafts. Ann-Helen Lorvik Waterhouse, Lovise Søyland and Kari Carlsen (2019) underline this point of view in their student project about exploratory, experimental material work. Students and teachers worked exploratively with materials and digital media to open new practices in early childhood education (ECE). The transfer value is important for students for when they become teachers. Helene Illeris (2018) describes a project where master students are actors in artistic processes in a more open-action research method, where research, education and artistic practice are integrated. The ethical considerations that arise when students learn through participation in an artistic process are important to note. Tone Pernille Østern (2017) describes research with arts as 'meaning-seeking, productive and ethical methodological practice' and how 'art, aesthetic practices, and research methodologies are in a constant state of becoming and movement' (ibid, p. 1)

This article deals with both artistic, art-based, and practice-led research, where first-year students are active participants and informants in action research into embroidery in education. The article sheds light on how practice-based activities in embroidery can be the subject of artistic research methods, and how these methods may stimulate teaching. In other words, how research theory can enlighten practice and how practice can enlighten theory (Riis, 2017).

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[2] https://www.oslomet.no/en/about/strategy-vision

Participation design in design, arts, and crafts education

In design, arts and crafts education, small communities emerge and persist when students discuss materials, designs, methods, functions, teaching and learning. In accordance with action research, the activity implies a process in which students interact with and learn from each other to understand their practices and situations, and to take purposeful action to improve them (McNiff, 2013). The projects focus on teamwork or on small communities of practice that serve as important elements of training in and preparing for the teaching profession, where the building process itself, dialogue, discussion, co-working and co-exploring all play central roles (Wenger, 1998). According to Etienne Wenger (1998), such groups develop a common repertoire of resources: experiences, designs, tools, and ways of addressing recurring challenges. These shared social characteristics have a positive effect on the artistic expressions of the embroidery.

Participatory design emerged within the design community in the 1970s, when users were given a contributory role in design work alongside the researcher and the designer (Sanders, 2008). Sanders expresses a future desire that this user-focused evolution would support a transformation towards more sustainable ways of living in the future. The terms *co-design* and *co-creation* evolved from the area of participatory design, and include flexibility, fluidity, and a community in motion (Sanders, 2008).

In an art-based learning environment, dialogue between actants changes and is important for driving a project forward, and two-way open dialogue is important for its development. Other significant factors are mutual trust and respect for each other's differences. Moreover, formation is developed from within in an educational environment that has a reflective relationship with one's own practice (Løvlie, 2011).

The importance of dialogue is based on the tradition of practical knowledge and knowledge in action (Molander, 2015), which in turn is based on Donald Schön's *The Reflective Practitioner* (1991). Riis's doctoral dissertation (2016) characterised creative dialogue as openness, complexity, and dynamic in nature. Creative dialogue comprises experiential knowledge or skills that can be described, though some parts of it evade communication because we may know more than we can articulate (Niedderer, 2013). The concept of *tacit knowledge* (Polanyi, 1983), however, will always follow a creative dialogue. To achieve a good flow of ideas, knowledge in design emerges through application, challenges, and the development of

experiences as well as through knowledge and action rules (Riis, 2016). In action research, the epistemology of knowledge can be tacit and spontaneous, where thought and action (and creation) can create new knowledge, and where adaptation and adjustment can expand reflection.

Incremental research: a strategy in learning processes

The embroidery projects gradually developed, with the lecturer adapting the task and making minor changes each year based on observations and students` feedback. The projects all served as practical action research, uniting practice in materials and collaborative methods in making art. The design practice was dynamic and flexible. The process was altered when the structure for the embroidery projects was modified. There was a 'systems approach' to practice research in design (Sevaldson, 2010, p. 23). I call this *incremental design research*, since it includes numerous smaller projects where ideas, methods and knowledge were established gradually. The activities were analysed, changed, and developed, and I became a reflective practitioner through all the projects, as described by Schön (1991). Critical reflection on the teacher`s influence would not be possible if the projects were too closely managed.

When reflecting on the course of the art-based process, I identified five main roles resulting from the dynamism and flexibility of co-activity (Sanders, 2008). I define co-activity as acting together or uniting in action, where the roles actively switch between artist, practitioner, facilitator, observer, and researcher (Figure 1) for both the students and the lecturer. The term a/r/tography concerns the three roles of artist, researcher, and teacher (Irwin and Springgay, 2008). In art and design practices, interesting and important spaces occur between the roles that influence the processes. How can these spaces be utilised? Figure 1 illustrates the a/r/tographical perspective of these roles and the spaces between them. I have added the practitioner and observer to develop the critical academic debate in research related to the projects.
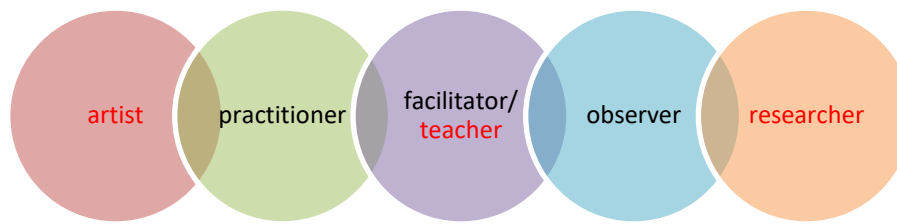
Figure 1. The actors' roles in art-based processes.
Illustration: Randi Veiteberg Kvellestad

The action research evolved into a systematic study with constant and varied factors, and with a gradual focus on cooperation and collaboration. Co-creation occurs when small student communities discuss designs, materials, methods, and functions. This dialogue plays a central role in training and preparing students for the teaching profession (Kvellestad, 2018). However, research-based teaching offered both individual and group assignments, as well as retrospective reflection on art-based teamwork. This in turn looked at what and how the students designed and improved their performance in a cyclical process of concrete experimentation, learning and critical questioning.

In accordance with action research, the students, together with the lecturer, tried to create an inclusive forum where practical work and research questions were explored and answered. Moreover, McNiff (2013) explains the processes by implying that students interact together and learn with and from each other to understand their practices and situations, and to take purposeful action to improve them. In artist education, both individual and collective relationships are of great importance. Ethical perspectives such as honesty and perseverance in group work, listening to and helping each other, being patient and accepting differences are some of the conditions and – for some students – the challenges that arose in the group

Cooperation and collaboration: two methods of working together

As the projects gradually evolved, building communities in teacher education became more important. In a typical situation, working in a team may provide individuals with opportunities to explore the best ideas for addressing a given issue in a company. Likewise, the teacher's role in a learning institution is to guide students towards understanding new concepts (Kvellestad, Stana, & Vatn, 2021).

In the healthcare field, Ness distinguishes between *cooperation* and *collaboration* to create better outcomes for patients and their families (Ness, 2016). Researchers Roschelle & Teasley (1995) support this distinction between cooperation and

collaboration. They describe *cooperation* as a situation 'where each person is responsible for a portion of the problem solving', whereas *collaboration* is 'the mutual engagement of participants in a coordinated effort to solve the problem together' (Roschelle & Teasley, 1995, p. 70). Cooperative efforts usually proceed smoothly because all the participants know what to do. In collaboration, however, participants should work and discuss more, listen to, and understand each other's points of view, and interact with those with whom they disagree or with those who do not have an opinion (Kvellestad et al., 2021).

The definitions of cooperation and collaboration as they relate to design clearly refer to communicative and relational processes (Kvellestad, 2017). In a didactic context, relational processes are based on dialogue between the actors and on making progress in art and design work. Further, the individual versus the collective is a central perspective both in art in general, in art education and as a method in artistic research.

In the embroidery projects, the main goal was to raise awareness of the differences between cooperation and collaboration. Cooperation in embroidery consists of several people embordering individual and alone without discussions but on the same textile towards a common goal. Collaboration in embroidery is characterised as interconnecting cogs, in that it requires closer contact, discussions and work between all parts along the way towards the goal (Kvellestad et al., 2021). However, Driskell (2018) clarifies that the team dynamics and the individual contributions differ in cooperation and collaboration. Actants worked more efficiently in cooperative processes, where they knew which tasks, they had to complete, than in collaboration processes, where they spent more time on discussing and shared decision-making.

Art-based learning processes

In professional practice, expertise and competencies have the capacity to be used in new ways (Schön, 2000). This relates to what Schön (1991) describes as *knowledge-in-action* and *reflection-in-action*. The two terms refer to craftsmanship, where one must work with great respect and insightful meaningfulness. Co-activity, a collective act of creativity, is central in such programmes. A sense of co-ownership is required, which is important for creating quality not only in embroidery, but in all material-based techniques.

Richard Sennett emphasised and elevated crafts by discussing them with great respect and insight in his book *The Craftsman*, where he advocates targeted work as an important part of crafts (Sennett, 2009). Targeting is something that is achieved, not something that is set in advance. In a material-based process, one works, then stops, asks questions, and reflects before resuming the work. It is an ongoing process where endurance is important. The students learned not to stop before the projects were finished. They had to be responsible for their own work. Embroidery is a slow process that demands patience and perseverance, which are valuable properties in all professions and social conditions.

To organise a teaching course, it is important to evaluate how to proceed before beginning each new step. In her doctoral dissertation related to the ideal of education and teacher education, Karen Brænne (2009) presents four perspectives which explain art and crafts in general teacher education: 1) encyclopaedic formation ideal with technical and material content; 2) formal aesthetic education; 3) charismatic attitude; and 4) critical image pedagogy. Some of these perspectives are relevant for the teacher training programme's projects when placing them in a scientific context. In her doctoral dissertation, Eva Lutnæs (2011) discovered a new perspective: a critical and co-creative community actor, which in this context provides a picture of students when they learn to problematise processes and idea development in an academic way.

Photographs as part of the research method

Action research is often used for research conducted in the social sciences and education related to learning or teaching practice (Glitsch, 2020). The method involves learning in and through action and reflection. The practice on which this article is based has improved, or taken action to improve, the practice. In action research, action refers to what one does, and research refers to how one finds out what one should do (McNiff, 2013). McNiff explains how the research part of action research involves collecting data, reflecting on the action shown through the data, generating evidence from the data, and thus making knowledge based on authenticated experiences. The data in this article comprise the photos of the students' work, an analysis of how to facilitate education in practice-based activities, and the students' reflections on this analysis. The data evolved in accordance with the changes in the tasks during the six-year span. As McNiff underlines, knowledge is never static or complete, it is in a constant state of development as new

understandings emerge (McNiff, 2013). There is a reflexive shift between where and how knowledge is made, moving between theory and practice, which makes it important for the methods used in art-based research (Sevaldson, 2010).

Images can be made as a part of a research project and can take many forms, including film, video, photographs, maps, diagrams, paintings, models, drawings, memory books, diaries, and collages (Rose, 2012, p. 297). The images can be made by the researcher or by the research subjects. The images are used actively in the research process, alongside other evidence. They are often called 'visual research methods' (Rose, 2012). Rose explores three methods, all of which use photographs as their key visual elements: photo-documentation, photo-elicitation, and photo-essays (Rose, 2012, p. 298). In the present article, photographs will document and analyse an artistic visual phenomenon of knowledge in embroidery and the students' teamwork. Some of the photographs, however, do not speak for themselves. They need an explanation or a comparison with others to answer the research question, which themselves may require further exploration.

The significance of dialogue

In the first project, called The Black Thread, the students were involved in my artistic work with exploration of synthetic leather and silk thread (Kvellestad, 2017). These materials are not an obvious combination, but they increase the material contrast in a new and challenging way and provide a deeper understanding of the material through experience and reflection. I started to explore these materials by taking small steps and select clear constraints such as using only one colour, either white-to-white or red-to-red. The exploration continued through dialogue with the simple stitch and the intention of taking the stitch seriously. Thus, I challenge the stitch by working with its length, density, and direction in exiting variations and possibilities. New critical questions arose from the testing. Applying only one colour inspired my creativity and innovation with new expressions in the material. This was my artistic experiential and procedural type of knowledge; knowledge derived from experience (Niedderer, 2013). The use of questions and dialogue played an important role on three levels: the material, the technique, and the embroidery topic.

The dialogue processes while developing and producing the embroidery also became an important source of knowledge for students' artistic processes. In collective acts of co-creation, multi-level dialogue took place between teacher and students, between students, and between materials/techniques/topics and students.

Such dialogue plays an important role in creating a positive teaching environment. With reference to Niedderer's work, this implied creative practice in design with artistic touches. Dialogue took place along different timelines in different projects. As the projects evolved, community building became more important. The students educated themselves as teachers in design, arts, and crafts, where creative practice with materials is a basic competence.

The projects

As textile artist and lecturer in design, arts, and crafts education I wanted to investigate and exploit embroidery projects in the textile session period to make it part of an art-based research process. The embroidery projects started in 2013. The analysis of the projects showed a gradual change year by year, even though the main characteristics remained the same. The current article will present the project's three main phases with photographs, the utilised framework, the factors involved in the research, descriptions of challenges, and critical experiences for the next phase.

First phase, 2013–2016: the Black Thread project

The first phase lasted between two and six weeks per year. Each year, about 60 first-year students were divided into three groups. Each group comprised 12–17 students, who were provided with one piece of light grey synthetic leather and different types of black thread. The goal was to gain experience with different stitches using black thread on an unusual material.

2013–2014. 60 students divided in three groups
- Lasted approximately six weeks. The students embroidered a collective picture with a free and unplanned composition.
- The content was the students' sense of humour or other states of mind.
- The students cooperated as individuals, with limited dialogue related to the final product (Kvellestad, 2017).
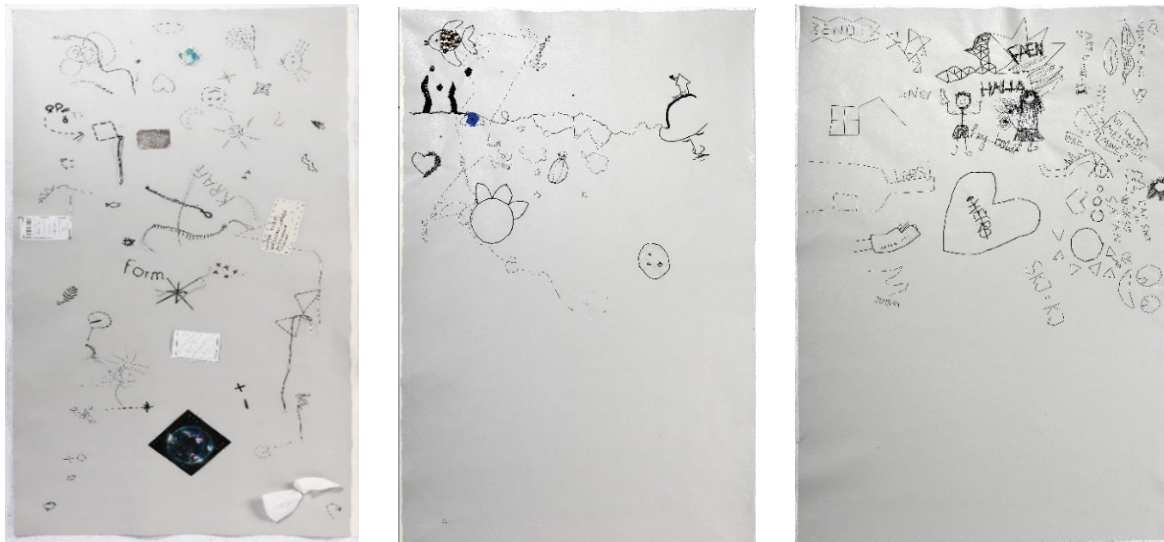
Figure 2. The Black Thread (2013). Each picture measured 107 x 58 cm.
Photo: Helle K. Stølevik © 2020 OsloMet.

2014–2015. 60 students divided into three groups

- The groups planned the composition before starting and made links between the contributions.
- Each student invited their neighbours to continue and finish their embroideries (Kvellestad, 2017).
- Through collaboration and discussion, they conducted creative and open-minded dialogue.

Figure 3. The Black Thread (2014). Each picture measured 80 x 54 cm.
Photo: Helle K. Stølevik © 2020 OsloMet.

2015–2016. 60 students divided into three groups

- The students were given more precise instructions about collaborative methods.
- They transferred sketches from a drawing course or an exhibit in the National Gallery.
- They emphasised stitches, textures, surfaces, and formal compositions.
- The art and design process were characterised by openness and appreciation.

Figure 4. The Black Thread (2015). Each picture measured 80 x 54 cm.
Photo: Helle K. Stølevik © 2020 OsloMet.

Summary and challenges

In this first stage of the embroidery projects, planning was crucial for the students. The photographs from the first to third years document a change in the execution and choice of topics. The teacher's instructions became more precise as time passed and as the task evolved. In the first year, the groups communicated but had minimal contact during the process. The sketches and topics were diverse, creating a wild and free composition without a group leader or common rules. In the two subsequent years, the students even suggested planning their own motifs and the embroidery before starting. The six groups had collaborative relationships and dialogical conversations about the materials and designs (Anderson, 2012; Kvellestad, 2017). Their planning contributed to thoughtful and clear compositions with harmonious elements.

A distinction was made in the teamwork in *the Black Thread* project between *cooperation* and *collaboration*. Cooperation at the start had an individualistic feel where the students worked separately. Collaborative relationships and dialogical conversations led to co-designed embroideries and to co-ownership of the project. This was an important experience for further research work. There was also a difference in participation in the design tasks (Kvellestad, 2017). In the first year, the students cooperated on the task but made individual designs, independent of each other, whereas in the subsequent years the students collaborated with, helped, and learned from each other. The researcher analysed these differences using photographic documentation. A key question was how to organise the education in

collaborative projects, given that collaborative acts take time. Furthermore, how could the dialogue and discussions among the students be stimulated within a short time frame?

Second phase, 2017–2019: from Close to Close to an expanded Working Together project

In the first year of the second phase, about 40–45 students were divided into two groups of 20–23 students. In the second year, about 60 students were divided into three groups of 20 students. Each group was provided with one piece of wool fabric and black thread of different qualities. The wool fabric was a new material in the research project. Each group planned a composition with sketches made in the drawing period. The goal was to gain experience with different types of embroidery stitches to create expressive lines.

2017–2018
- Two groups of students embroidered.
- The students discussed, tested, and developed sketches into a common topic and composition.
- One student began to embroider and then passed the product on to the next student to continue. All the students were included.

Figure 5. Close to Close (2017). Each picture measured 50 x 100 cm.
Photo: Helle K. Stølevik © 2020 OsloMet.

2018–2019

A new strategy was implemented. The project served as an introductory task to familiarise students with OsloMet and with fellow students. I expanded the project and included drawing and clay and called it the *Working Together project*. Sixty students were divided into three groups, and they took all three material-based courses in turn. One of the main pedagogical goals was to raise awareness early of the value of working together and the distinction between cooperation and collaboration (Roschelle & Teasley, 1995). This article refers mainly to experiences related to textiles and to joint experiences involving cooperation and collaboration.

In a two-step textile exercise entitled Close in Close, I divided each group (about 20 students) into two teams. Each group was given one piece of white wool fabric (50 x 100 cm) to embroider with different types of black thread. Team 1 (10 students) worked cooperatively (Figure 6), discussing, and choosing sketches, and each student embroidered one figure each. Team 2 (10 students) worked collaboratively (Figure 7), discussing, and planning how to fill in with stitches between the figures.

They sat and worked closely together. Upon completion, the students wrote about their experiences with cooperation and collaboration. These experiences were collected and used to analyse the project[3] (Kvellestad et al., 2021).

The photographs document the difference between cooperation and collaboration. In cooperation, the students embroidered individually one at a time, while in collaboration, the students sat together and worked closely and simultaneously. The students in both teams discussed and planned the work. They acted as artists and designers during the completion of the embroidery and worked with a sense of co-ownership and of sharing responsibility (Kvellestad et al., 2021). Figure 8 shows the embroidered results, one from each group (20 students). The photographs show well-executed compositions of an embroidery task.
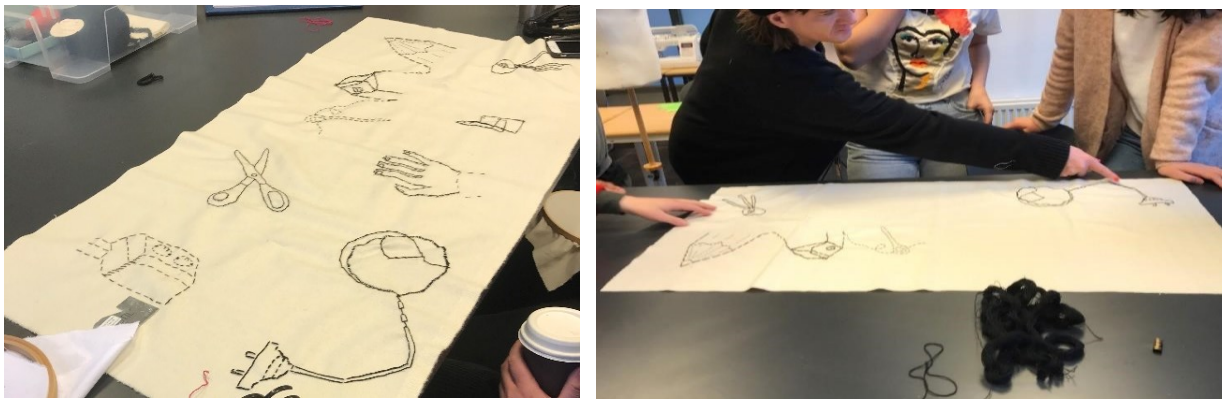
Figure 6. Members of Team 1 cooperating and discussing sketches and composition.
Photo: Randi Veiteberg Kvellestad © 2018 OsloMet.

[3] The Norwegian Centre for Research Data approved the research project.

Figure 7. Members of Team 2 collaborating on a flat pattern between the figures.
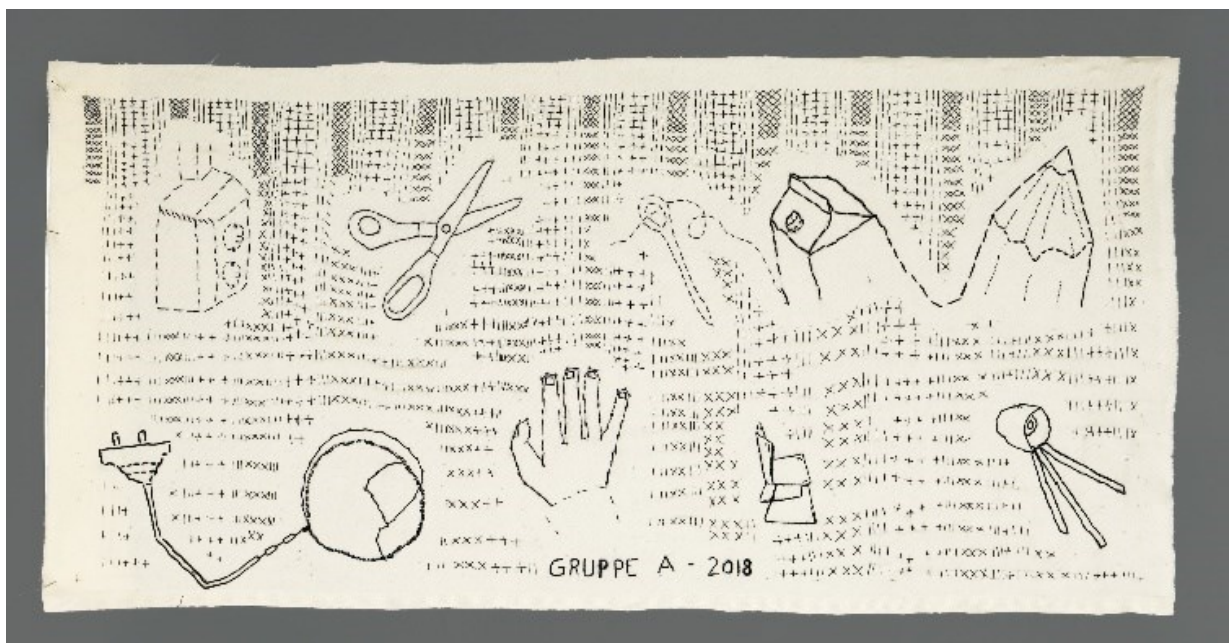Photos: Randi Veiteberg Kvellestad © 2018 OsloMet.

Figure 8. Close to Close (2018) measured 50 x 100 cm.
Photo: Helle K. Stølevik © 2020 OsloMet

Figure 9. Close to Close (2018). Each picture measured 50 x 100 cm.
Photo: Helle K. Stølevik © 2020 OsloMet

Summary and challenges

The purpose of the textile exercise was expanded to include interaction between students during co-embroidery. The first year (2017–2018) proved that the wool materials suited the project. Wool material is soft and can easily wrinkle between stitches, but this is easy to rectify by applying water and tightening. A variety of stitches made expressive lines that related to the purpose of the project.

In the final year (2018–2019), I organised the training in two teams for the purpose of experimenting while distinguishing between the two methods. Team 1 planned the composition and individually embroidered different figures from a common drawing, while Team 2 planned, discussed, assembled, and embroidered flat patterns for the figures to make the characters appear to be linked together. The act of linking characters together led the students to physically sit together and embroider, paying attention to each other, discussing, changing, and approving the work. In this way, as the students confirmed in their reflections, the process became collaborative. Many of

the students concluded that the whole became better than the sum of the parts (Kvellestad et al., 2021). The students in both teams took the material seriously, and had extensive practice with working patiently and purposefully, which was important for achieving quality. The material-based creation process was slow, and so teamwork required – and developed – courage and patience among the participants (Robach, 2012).

While working together on the same embroidery, the students gained a new understanding of creativity; the final embroidery was different from what they could have produced on their own. This strengthened the collaborative method. However, it was demanding to work in a team of 10 students. Even though it was my idea to organise the teams in this way, the students performed better than expected. The embroideries testify to a significant work effort. In the subsequent year and final phase of the study, the teams were organised into smaller groups.

Third phase, 2019–2020: co-activity with small panels and small groups

- The teams were organised into smaller groups of four or five students because collaboration was time-consuming.

- Each group was provided with one piece of white wool fabric (22 x 63 cm) and black thread. Half of the groups were also provided with coloured thread.

- The students transferred sketches made in an introductory task at OsloMet to create a joint composition.

- Each member embroidered a figure in the composition with black. The whole group planned to fill the surfaces between the lines.

Figure 10. Five of 14 panel embroideries (2019). Each picture measured 22 x 63 cm.
Photo: Randi Veiteberg Kvellestad © 2019 OsloMet.

Summary and challenges

Completing the work in the assigned time was made easier by organising the work in small student groups and on small panels (Figure 10). The compositions included varied contour lines, and creating surfaces was challenging, but it provided students with important knowledge about technique and design as well as creative thinking. The two approaches to aesthetical learning processes amongst the students had two main effects. First, to embroider together on the same textile, as a circular collaboration, created new insights into the embroidery skills of everyone involved. Second, embroidering together was a way of capturing creativity. The final embroidery was different from what they would have produced alone.

The students' evaluations (from the 2019–2020 project) indicated that it was important to listen to their viewpoints regarding the task framework, the teacher's guidance, and the collaboration. To ensure that they shared their critical reflections, they concluded their evaluations by describing one advantage and one disadvantage of the working methods. Their critical viewpoints aided analysis of the process as well as of the visual product. I confirmed that the evaluation strengthened the incremental research method.

Systematic and incremental thinking in material-based activities

When the project started in 2013, I did not know how the research would be expanded. However, when students are involved in material-based design work,

conducting an artistic project over time is a major advantage because it can be developed gradually. A main goal was to unite education and arts-based research through interaction between thoughts, activities, reflection, and creation. Regarding the research methods, the project's key factors were related to the photographs, the value of the dialogue, the systematic thinking in the projects and to the students as informants and critics. Moreover, these factors exemplify how epistemology for the material-based activities in design education has developed.

In the first phase (2013–2016), the reflection on action (Schön, 1991) was initiated by me, after the projects were completed. The students supplemented with oral experiences and descriptions but did not evaluate the project. Moreover, the embroideries and my reflections on team building resulted in awareness of the two working methods – cooperation and collaboration – in education. The term *co-designed embroidery*, or *circular collaboration*, emerged, which is a novel term in this textile educational context. Rose (2012) underlines that photo-documentation is used in the analysis and is a kind of visual research method. The photographs affirm features and changes in embroidery, enabling material-based action research. The first phase revealed that both individual and collective working methods in art and design education, left their mark on the results.

In the second phase (2017–2019), cooperation (in Team 1) and collaboration (in Team 2) served as important working methods from the start. I gave equal priority to learning embroidery and working in a team. I built the task as a reflective exercise that allowed students to acknowledge and reflect on the dynamics of teams and individual contributions in material-based tasks. A new feature in action research was that the students were producers, informants, and critics in addition to being embroiderers. In written assignments they reflected on their practice, their relationships with each other and on the experiences that enabled them to embrace embroidery more wholeheartedly. These reflections were important for the next stage in the research projects.

In the third phase (2019–2020), the main goal was to learn embroidery through circular collaboration, which was a new experience for the students. Limits were defined for the task, the medium and the teamwork (first cooperation and then circular collaboration), with four students per group. At the end of the phase, the students evaluated their experiences about learning embroidery and circular teamwork. These written experiences dealt with 1) the tasks with limits and

framework; 2) the collaboration within the groups; and 3) the effect of the teacher's input. They ended their reflections by writing one advantage and one disadvantage of circular collaboration in embroidery. The challenge (for the teacher) was to ask precise research questions and to receive the students' critical reviews of the teacher's role in the process. The third phase showed that formulating critical perspectives by first-year students must be learned. This is important to emphasise for further research in material-based projects, both within the art field and in art educations. It might be helpful to note Lutnæs' observation that critical reflection starts with confrontation and doubt; changes in gaze, thoughts, and actions are made possible by resistance, and enables (Lutnæs, 2019).

Discussion of the projects' results

The projects started as art-based research; thus, the goal was to find new ways of learning embroidery. This idea is rooted in the OsloMet's long history and in the three pedagogical principles established by Helen Engelstad, former rector of Statens lærerhøgskole i forming Oslo (now OsloMet) from 1947 to 1977, namely use of the brain, the heart, and hands (Engelstad, 1963). According to Engelstad, the most important aspect of creative material-based work is the sum of these three parts. Kirstine Riis (2017) adheres to Engelstad's principle when she explains the knowledge applied in a design process and in a research process as knowledge that is developed in indivisible interaction between hands, heart, and brain. This results in overall knowledge development. In her doctoral dissertation, Riis (2016) explains dialogue with the textile material through action and sensory experiences and how the process propels energy forward. Furthermore, she asks whether the design process and the research process can be kept separate. There is a tension between action and thinking, between the concrete, the sensual and the abstract understanding. As the project progressed, the students discussed and were challenged by others' ideas and defended their own. The knowledge was developed through indivisible interaction. The process forced the group of individuals to complement their weaknesses and build on their strengths.

Furthermore, the professional competencies were expanded to include social competence through cooperation and collaboration. This perspective pertains to learning as a social phenomenon with a focus on action and participation, but it also includes flexibility and fluidity (Anderson, 2012), and community in motion (Wenger, 1998). Focusing on collaborative methods is a didactic principle that is common in many subjects within both teacher and art education. The students who participated

in the present study learned how to successfully manage and complete a body of work. By applying this knowledge, they were given the opportunity to transform the competencies they gained and to apply them when teaching pupils of all ages.

In her doctoral dissertation dealing with learning and education in the study subject of design, arts, and crafts, Brænne (2009) characterised the content with four perspectives. The art-based projects in the present article have traits in common with perspectives number 2 (formal aesthetic education) and number 3 (charismatic attitude). The students worked as artists, with textile materials and embroidery techniques in formal aesthetic ways. Sennett writes about the engaging material awareness (Sennett, 2009) and asks what makes a material interesting. The students discussed design and different solutions and had a collective responsibility. With my artistic eye, this led to an expanded knowledge of embroidery and a personal interest in aesthetics. They explored the stitches, the threads, and the techniques in a free and experimental way. The colours added new aesthetic experiences.

According to Waterhouse, Søyland and Carlsen (2021) and to Illeris (2018), co-activity throughout the design process stimulates a collective creativity which strengthens projects and marks the results in positive ways. Moreover, co-activity in the embroidery projects is self-regulating; participants work closely together, and if someone contributes minimally, the group can encourage them to work more. This is the strength of the collaborative method; it stimulates a personal approach towards the task. Here we find similarities to Brænne's third perspective, charismatic attitude, where personal experiences mark the results. Competencies such as listening, discussing, and interacting or being challenged by others' ideas and defending their own ideas made the students vulnerable, but also conscious. A personal attitude towards and an aesthetic appreciation of embroidery developed.

Eventually, however, the process forced the groups of individuals to complement their weaknesses and build on their strengths. These social competencies will be even more important in the future in design, arts, and crafts education and in professional settings where self-awareness as well as respect for each other's differences are important. Collaboration can stimulate social learning for both design literacy and research in design education. An understanding of team dynamics allows positive consequences to be deliberately enhanced (Driskell, 2018). Moreover, the spaces between the roles of artist, teacher, and researcher (Figure 1) create room for the practitioner and the observer. A practitioner works and understands the exercise

and, especially, the tacit knowledge. To observe an action, they closely study and reflect on the activity. In the next stage, this will hopefully confirm and reinforce research. As artist I am closely connected to my material through my art practice, and this will affect its dissemination to my students. I alternate between writing and creating, and achieve a deeper understanding, which is an important part of my research.

In this arts-based learning process, the dialogue between the actants was important for driving the projects forward. I included the students, listened to them, and encouraged an open dialogue, but time constraints set boundaries. One obstacle to, or critical perspective on, this democratic form is the time frame. Some students mentioned the time factor in their project evaluations. The busy schedule meant they had to be effective. Sometimes efficiency cannot be combined with creativity. Time is needed to study, ask questions, wonder, and take a break in the creative process.

During the projects I had to consider both the professional and the social challenges. It could be asked whether my role as teacher dominated too much and was overly efficient. As artist I knew that professional input was important for creative work, and my guidance varied from conscious reviews to more random comments which created excitement and stimulated creativity. Since students were users and participants and did not have the correct answer, they were forced to think and create themselves. This experience is important in all teaching and artistic situations. McNiff (2013) emphasises that knowledge is a collective endeavour among individuals who share a practice, and I argue that the same is true for stimulating creativity.

As lecturer, I set the framework for the projects, varied the approaches, guided new student groups every year and thus acquired data for art-based research. The students took part as participants and informants, and I therefore call this action research in the art and design field. They contributed to a holistic and dynamic view of the education.

Transparency in teamwork

Cooperation led to reciprocity in embroidering figures with variations in the lines and to support for the emergence of collaboration as a more social interaction with greater transparency in the actors' efforts. Co-activity is self-regulating. Lutnæs built on Brænne's perspectives and changed the fourth perspective from *critical image perspective* to *critical and co-creative social actor*. This perspective has

commonalities with self-regulation and with the task of the final project in which the students evaluated the project's pros and cons. In the form of written reflections, they assessed the design knowledge and commented on the practice and on the teacher's role.

Moreover, in an artistic development transparency in and visibility of participation result in self-regulation. The students affirmed that transparency produced both pros and cons. The downsides were that collaboration takes time, the students lost control, misunderstandings and disagreements arose. This made it difficult to be honest and to criticise each other when necessary. However, several students noted that an advantage of transparency was that it resulted in new ideas leading to variety and creativity and stimulating activity. Additionally, sitting together resulted in a better outcome, communication was instant, and suggestions for changes came quickly. Thus, the whole became better than the individual parts. From an ethical point of view, this was an advantage for students who needed more experience in developing their skills. The close circular collaboration also opened for critical assessments and made the students co-creators in carrying out the tasks (Lutnæs, 2019). The participants had to be honest and to comment on the work with respect.

Differences in the students' abilities created different needs for help to overcome pertinent issues in the learning environment. In their evaluations, they mentioned the teacher's reminder to get ahead in the assignment and to meet and talk together. The first-year students needed this push because, as one of the students explained, weak communication leads to weak interaction. Some of them learned to adapt to collaboration. The collective contributes to the development of the unique and individual and has an important function in the artistic research method as well - it is not a contradiction to it or a threat to it. The collaborative activity involved a discussion of various strategies for composing and using visual elements and the students developed artistic competences together. This interaction, where we have different positions/roles in the process (Figure 1), strengthened the projects as research-based activities. The projects were managed, but both first-year and older students in art education sometimes need a framework to perform their best.

Concluding remarks

In material-based work, students learn how to execute and develop crafts and skills in different creative ways. The present article confirms that design and art processes require participants to play different roles. The photographs reveal an artistic

development in form and content, and the analysis explains the methods. The process was a synchronised activity in which the participants continuously tried to develop the embroidery. This activity required the students to negotiate, discuss, observe, and listen to each other's perspectives. The two approaches to collaboration amongst the students had two main effects. First, embroidering together on the same piece of fabric created new insights into the embroidery skills of everyone involved. Second, embroidering together was a way of capturing creativity. While working together on the same piece of fabric, the students gained a new understanding of circular creativity; that is, the final embroidery differed from what they could have produced on their own. This is an important experience for future teachers and the artists. Being challenged by others' ideas and defending their own made the students more conscious and reflective. From this realisation, it is evident that the artistic research method creates and stimulates teaching and practice-based activities. It provides opportunities to work with design, arts, and crafts education in a systematic and incremental way, giving rise to research-based art teaching.

About the author

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