SINIKKA PÖLLÄNEN & MĀRA URDZIŅA-DERUMA

5. FUTURE-ORIENTED REFORM OF CRAFT EDUCATION

The Cases of Finland and Latvia

INTRODUCTION

The purpose of this chapter is to describe craft education from three perspectives: current craft education, the challenges craft education will face in the future, and descriptions of two future-oriented pedagogical models with some examples that may reform craft education.

The present chapter will describe craft education in Finland and Latvia, countries whose educational and cultural histories differ. In both countries, craft education has had a permanent place in education as a separate school subject or combined with other subjects. In both countries, the value and appreciation of crafts have changed over time. Crafts were included in the curriculum mostly for practical reasons: it was important and valued that men and women be able to prepare the tools and artefacts needed in daily life (Pöllänen & Kröger, 2000, p. 234). After industrialization, craft teaching was rooted in learning the skills believed necessary for the success of a nation state (Garber, 2002, p. 139). In today's technologically advanced urban society, the strong tradition of handicraft education in general education is being reassessed (Karppinen, 2008, pp. 87, 90). Thus, this chapter briefly describes the history of craft education up to the present.

Learning, living, and working in a changing world challenges us to redesign our educational practices and extend the boundaries of traditional learning. This poses challenges for craft teachers to create new pedagogical perspectives. Thus, the chapter ends with examples of craft projects and pedagogical models that may help in the construction of new methods for craft education. Future-oriented pedagogical models illustrate the shifting focus from the end product and a person's skillfulness to abilities that can be recontextualized (van Oers, 1998, p. 482) in a new way outside the original learning context. The examples show how a teacher can facilitate learning across spaces and communities. Answering future challenges also requires the introduction of collective work into the, thus far, individual craft process.

E. Kimonen & R. Nevalainen (Eds.), Reforming Teaching and Teacher Education: Bright Prospects for Active Schools, 117–144.

PERSPECTIVES ON CRAFT EDUCATION

Beyond the Holistic Craft Process

Craft as an activity is based on the intellectual and physical characteristics of the maker (Ihatsu, 2002, p. 16). In crafts, a special way of knowing about the world has been formed: Knowing is directed by a vision of doing by hand and shaped by the mental and concrete products of doing. "Hand" includes all extensions of the hand and mind provided by current technology (Brey, 2000, pp, 2–5; Seitamaa-Hakkarainen et al., 2007, p. x). In different contexts, the synonyms for "craft" are "handicraft" and "handcraft." In Finnish and Latvian, the word "craft" refers to the words for hand and work (*käsityö/rokdarbi* = hand + work). According to Kojonkoski-Rännäli (1998, p. 31), the word "work" implies that there is always human activity directed by thinking. This activity includes the idea of the product that is going to be made, the product itself, and the craft know-how (including skills) in the product's realization. Anttila (1993, p. 16) saw that craft is the same as design while there is always an intention of giving form by different techniques when making products of different materials. Thus, Kojonkoski-Rännäli (1998, p. 92) introduced holistic craft and ordinary craft to describe the design and manufacturing process of handicrafts and the role of the maker in that process.

In the holistic craft process, all phases are conducted by the same person either on his or her own, or as an active member of a group (see Pöllänen, 2009, p. 3). According to Pöllänen (2009; 2015a), the maker is in charge of the ideas, the design, the preparation, and the assessment of the artefact and the production process in the following four steps:

Coming Up with Ideas/Innovation

The holistic craft process begins with brainstorming ideas. Previous skills, experience, and various stimuli constitute the basis of problem-solving activities. The teacher's role is to activate students with a meaningful learning task or theme, and direct their motivation. In the beginning, the ideas are outlines or scenarios.

Students' own themes for their activities may be found in daily life and cultural forms such as national and created heritage, the future, traditional or contemporary art or industrial design, paintings, games, drawings, sculpture, popular art, music, stories, films, newspapers, poems, nature, history, field trips and excursions, advertisements, or memories. Inspiration, in turn, can be provided by sensations, objects, shapes, structures, materials, and phenomena. This phase can include sensory experiences, such as music, smells, and scents. Media, especially social media and the Internet, may also serve as a source of ideas while at the same time helping to adapt information-searching strategies and critical thinking.

A common stimulating theme can assist in creating associations and shaping ideas. It is possible to use different creative techniques to suggest ideas (for brainstorming, question lists, the use of analogies and metaphors, SWOT Analysis,

breaking problems down into manageable components, morphological synthesis, or a relevance tree, see Nickerson, 2004, p. 404). The idea phase and problem analysis can benefit from technology (e.g., three-dimensional [3D] design), scenario planning, role-playing (see Mind Tools, 2014), as well as playing the Design Game (see Kinard, 2009, pp. 86–87).

In any case, beginners also need a conception of what they are getting into. Images, drawings, or examples of completed handicrafts and a sense of the techniques, materials, and tools needed to support the activity are needed. Sketching and sharing may concretize the learning task. In upper grades, testing materials and technical solutions support innovation and may increase students' creative solutions. Participatory and collaborative activities may support students' motivation to acquire new ideas for the learning task.

Design

The design stage is a transformation during which the inner ideas are given a symbolic form, and then concretized and documented in a visible design plan. Visual and technical designs help to raise the best esthetic and functional qualities of the product (plans for visual characteristics, technical solutions, and the fabrication process).

In this phase, a beginner needs stimuli and advice as well as support and feedback to guide the design process. This becomes easier and more concrete with the learner's or the group's previous knowledge of the topic and craft-related skills. Design can be supported by activities such as round table sketching (see Kröger, 2014), establishing a learning café, or using a learning method called "stealing." Here students may generate ideas (see eNorssi, 2014). Students may be inspired by different kinds of materials, for example, touching and exploring rough and soft textures with their eyes shut. The process can promote multi-literacy skills by taking advantage of visual, verbal, and auditory elements. Different memories, smells and scents, tastes, images, sounds, colors, light, objects, and shapes are significant impulses (see Kojonkoski-Rännäli, 2006, pp. 97–100). Craft education can also be linked to regional or local issues as well as to global challenges and sustainability.

Students can also be inspired by projects organized by institutions around the world. In addition, different visual art techniques and materials – pencils, watercolors, gouache paint, pastels, and computer graphics software – can be used to make sketches and compositions. It is necessary to focus on natural, ecological, renewable, and recycled materials for sustainable development. General documentation during the idea generation and design phase, and more specific documentation of testing and experimenting solutions during the practice phase, visualizes learning and includes it as a part of the making process.

As the learners' level of expertise increases, technical drawing symbols, dimensions, and scales are used in the plans. External design information, such as design constraints (e.g., the user, the purpose, the available resources), and stimulus (e.g., data sources, questions, tips, options, experimentation, testing), as well as

support of the choices, are needed at the beginning of the design process. These constraints create a feeling of safety and release energy for the creative process itself. However, since the nature of the designing process is the central learning objective of this phase, the constraints must encourage the process. Manufacturing-related technical design can be promoted by exercises that support three-dimensional understanding, such as prototyping or model-making, and technical experiments. When working with beginners the teacher can also use concrete examples of details and working stages, simulative games, half-solved examples, or hints containing working plans. Because design must be meaningful, it must take into account the way it fulfills its purpose in its function.

The design phase is the most important one in holistic craft, because this phase includes retrieving information, conducting experiments, solving problems, and evaluating solutions. It also involves considering the possible outcome. All of this reflects personal and group working processes and balances the outcome against the resources available (e.g., time, materials, machinery, equipment, tools, skills, costs). Although the design process is time-consuming, visualization is important, since it can assist in problem solving and handling a huge amount of information. Virtual design allows cooperation beyond the classroom and borders.

Making

Making an artefact is about realizing the design and revising previous knowledge and skills so that the new things learned during the process become incorporated into the existing body of knowledge. The knowledge needed in design is embedded in the context, formulated through searching and testing as a group effort, as well as individually. In many phases, the preparation phase also entails testing. Since the issue is about becoming intimate with the design process and then preparing a new product, of which the learner has no previous experience. For design problems the intent is to motivate inquiry not limited only to knowledge of materials, methods, and tools but also incomposing the underlying science. In this case, new knowledge is connected and applied in problem solving. As a result, in an iterative (i.e., spiral and cyclic) process, the technical and visual design of the artefact can still change during the making process due to learning.

The actual artefact can be implemented from various materials and textiles, using technical work techniques. Therefore, the students' creative process may lead to prototyping an innovation. Making learning visible with documentation helps students understand their problem-solving processes and expand their individual and group learning.

Assessment

The last stage of the holistic craft process is assessment, the central part of which consists of visualization, articulation, and reflection. Assessing the artefact and the

production process, as well as reflecting upon metacognitive skills, are all part of this phase. Sketches, notes, texts, images, videos, and their various combinations may support reflection and assessment discussion with other participants. Creative methods, such as narrative, drama, diaries, comics, performances, music, and videos, may support the assessment process and help to openly share the learning results. It is also possible to extend the discussion beyond the classroom into international channels. The implemented product, its quality and completion, is only a part of the evaluation. The assessment phase returns to the previous phases of the process, all the way back to the visual and technical design and the idea phase.

Altogether, holistic craft comprises all the above mentioned phases of the craft process (see Pöllänen, 2009; 2015a). If a phase is omitted, the craft becomes ordinary craft. Accordingly, ordinary craft is a reproductive activity in which the maker does not affect the design phase. Ordinary craft can also be a process in which the maker reproduces a previously learned model or technique (Pöllänen, 2009, p. 251). Thus, the craft-maker might use strictly guided instructions or utilize prepared substances. Creativity is integrated into the divergent process of holistic craft, and the manufacturing process of ordinary craft is, in turn, integrated into the convergent process (Mäkelä, 2011, p. 237).

Craft education includes the ideas that the knowledge of materials and of the process acquired through authentic experience creates a sense of commitment and responsibility, and that the different phases of the craft process stimulate the learner's own cognitive, sensory-motor, emotional, and social factors (Ihatsu, 2002, p. 19). Accordingly, engaging in holistic craft means being bodily, emotionally, and cognitively active (see Petitto, 2008; Mäkelä, 2011, pp. 222–225). Huotilainen (2013) noted that craft tasks are brain-activating exercises because they involve coordination and stimulate connections between neurons in the cerebellum. The significance of physical and bodily experiences in crafts reflects the exceptionally high representation of the hand in the brain – especially in the motor cortex. This part of the brain is involved in planning, controlling, and executing voluntary motor functions. Other parts of the brain control the sensory systems that are activated when a person engages with even the simplest crafts are also crucially involved. Wilson (2002) argued that the knowing subject is the minded-body or the embodied-mind (p. 626). In crafts, embodied knowledge is connected to thinking, reflecting, designing, and solving problems during all phases of the craft holistic process (Pöllänen, 2009, pp. 6–13). According to Robert and Michele Root-Bernstein (2013), crafts develop creativity and such skills as observation, visual thinking, the ability to recognize and form patterns, as well as manipulative ability. These are all skills that are crucial for scientists and innovations. Thus, using the hands in an active making process in crafts affects the brain, language, and culture. This increases the likelihood of both crossover creativity and of achieving important results (pp. 16–20).

CRAFT EDUCATION IN FINLAND AND LATVIA

Craft Education in Finland

Crafts have had an established presence separate from art since the Finnish school system was established in 1866. According to Bennett (1926), Finland became the first nation to institute crafts as an integral part of the national program for comprehensive school. The founder of Finnish public education, Uno Cygnaeus (1810–1888), integrated crafts in general education, and his ideas later spread outside Finland, first to Sweden and the other Nordic countries and then to England, the rest of Europe, and the United States (Reincke, 1995, p. 8).

Educational handicraft was taught as a method of harnessing the hands, head, and spirit as a re-energizing force for educating moral citizens (Cygnaeus, 1910a, pp. 193, 441). Craft education was supposed to teach students accuracy, patience, purity, punctuality, and prudence (Simpanen, 2003, p. 8). Educative craft also emphasized dexterity, design, and esthetics as well as consideration, innovation, and creativity (Cygnaeus, 1910b, pp. 195–196). Handicrafts included all traditional craft techniques and materials common during that period (wood, metal, textiles, local craft traditions, and even basic saddle-making and shoemaking skills) (ibid., p. 284).

However, the implementation of craft education in practice mostly involved developing the skills needed to maintain agricultural and household equipment and tools (e.g., furniture, household appliances, agricultural tools, carpets, clothes, socks, mittens) (Simpanen, 2003, pp. 11, 13). Craft education was also divided by gender: handicrafts for girls and woodworking for boys. In the beginning, there were no clear instructions, and teaching varied from school to school (Ahonen, 2003, p. 55).

In the early years of industrialization, faster craft processes such as using machines were introduced to replace the slow manufacturing techniques. Educational model series presented necessary exercises and tools, and because the work in factories was stratified, managing the entire craft process was not necessary. Work education supported the objectives of diligence, efficiency, and hard-working. However, hobby-inspiring crafts played a role in craft models (e.g., for dolls and toys, see Marjanen, 2012, p. 223).

After the Second World War, crafts with esthetic and practical features were supposed to help the transition to work and teach capabilities for daily life (Simpanen, 2003, p. 16). The primary aim was to develop students' personalities and create independent, hard-working citizens (Marjanen, 2014, p. 144). It was also important to produce or repair the artefacts needed in daily life. Increasing wealth brought new patterns of purchasing goods from international production, and this led to the need for consumer education (VN, 1952, pp. 179–182). Girls were taught traditional women's crafts and clothing care, while boys received instruction in woodworking, metalworking, and electrical work as well as in electric and mechanical engineering. However, the theoretical curriculum of the parallel secondary school system (from 12 to 16 years) did not provide boys in cities with craft education. Craft education was, however, taught at rural schools and girls' schools. Gradually, craft was taught

in all parallel secondary schools, typically from grades one to three (ages 11 to 14) (Halila, 1949, pp. 143–145).

In 1970, the old parallel school system was transferred to the comprehensive school system. In craft education, the techniques, materials, and objectives with ideas for student products were listed grade by grade (OPM, 1970). Crafts in comprehensive schools were intended to provide students with a wide theoretical perspective. In practice, they modernized into textiles and technical work as separate school subjects. All students were supposed to study both subject areas from grades one to three (ages 7 to 9). After that, the students could choose one of them for grades four to seven. During the sixth grade, students were allowed to choose a new subject area. Thus, the students in textile crafts learned technical crafts, and vice versa (ibid.). To promote gender equality, the National Core Curriculum in 1985 introduced new general objectives to provide the same opportunities for boys and girls in all school subjects (KH, 1985). As a result, students studied technical work and textiles in grades one to four, and the number of common periods in grades five to nine was increased. Gradually, the discussion about the educational value of design, art, and expression (textiles) as well as technology education (technical work) intensified.

Ever since 2004, craft has been a combined single compulsory subject for all students (OPH, 2004). The curriculum discusses the holistic craft process and common craft, both of which include technical work (e.g., wood, metal, plastic, electronic work) and textile work (e.g., sewing, knitting, crocheting, weaving, embroidering, textile printing, felting). In spring 2014, a new national curriculum was proposed in the *Basic Education Act*. The main reforms in craft education are in science-based teaching and learning. According to the proposal, craft is a compulsory subject (two hours a week) for all students from the first to the seventh grade; after the seventh grade craft is optional, with other art and skills subjects also being available. Craft has its own objectives, but these are supposed to be implemented in open themes and with a holistic interdisciplinary approach. Craft is supposed to be explanatory and experimental, being realized using various visual, material, technical, and manufacturing solutions (see OPH, 2014, p. 430). The curriculum does not give instructions for the pedagogical models, the prepared handicrafts, or the materials and techniques to be used. Instead, the curriculum emphasizes the use of many materials, co-creation and collaboration, and participatory learning.

Craft Education in Latvia

Crafts as a school subject was introduced in Latvia in 1874. However, in practice the position of crafts was uncertain, and their implementation was limited: The students cleaned the yard and classrooms, and chopped firewood (Vītiņš, 1988; Volāne, 1997, pp. 26–29). The Latvian craft subject was theoretically based on the ideas then current in the Nordic countries concerning the teaching of crafts (e.g., Cygnaeus, Solomon, Clauson-Kaas). Later, a Latvian system, named the Russian craft system,

which was created by Kārlis Cīrulis, was introduced (Cīrulis, 1879a; 1879b; 1887a; 1887b; 1887c; Kotriakhov, 2006, p. 76). This system described the content, methods, and organization of the craft subject, but it also introduced craft as a tool for bringing out students' personalities (Anspaks, 2004, pp. 32–33). During the first period of Latvian independence (1918–1940), craft was a separate and general school subject. The aims of the subject were preparation for practical life and the development of students' personality. According to the curriculum of folk and elementary school (for elementary education, see IM MLN, 1928; 1935; LTP, 1925), girls learned knitting, crocheting, embroidery, sewing, darning, and weaving, since 1935, and boys learned woodworking, basketry, pasteboard work, book binding, metalworking, glass-working, and agricultural work.

After Latvia was occupied by the Soviet Union and incorporated into it as a republic (1940–1991), the name of the school subject was changed. Initially, the subject was named "practical work" in grades one to four (1954–1969), and since 1970 "manual training" in all grades. The aim of the subject changed, and it concentrated primarily on practicing polytechnical skills for work. Crafts were taught in varying degrees in different years and different classes. During the school year 1948–1949 practical work was missing from the list of the subjects taught (Žukovs, 1987, pp. 72–89). In grades one to three or four, students mainly learned practical work, specifically paper work, pasteboard, fabric, plasticine, construction set, and clothing maintenance (LPSR IM, 1949; 1955; 1981). After grade four or five, girls and boys were taught different skills: Boys studied woodworking, metalworking, technical drawing, electrical engineering, while girls studied sewing, embroidery, crocheting, and knitting as well as nutrition, electrical engineering, and, during some periods, metalworking, woodworking, and electric installation. Girls and boys had agricultural work (LPSR IM, 1961; 1970; 1984).

After the restoration of Latvian independence in 1990, the subject name and content were changed again. For grades one to four and for boys, the subject was called "crafts." For girls, the subject was called "housekeeping" and consisted of crafts and home economics. The main aim was to promote the development of a moral, intellectually rich, creative, and harmonious personality. Textile techniques were supplemented with weaving and macramé in elementary and secondary school, and with printing, batik, machine embroidery, and machine knitting in secondary school. According to the curriculum (LR TIM, 1991; LR IM, 1992, pp. 4–5; LR IM MSD, 1992, pp. 32–37, 42), greater emphasis was placed on designing products. Since 1998, the subject of housekeeping has been the same for both genders in grades five to nine. Boys and girls study home economics but may have an optional part of textiles or wood and metalworking (LR IZM ISEC, 1998, p. 3).

Today, craft education in Latvia is included in the subject "home economics and technologies." It consists of one hour of paper work, textiles, molding and nature materials, wire, combined work, and the basics of home economics for grades one to four. For grades five to nine, the class lasts one or two hours per week. All students learn home economics but may choose between technologies I (textiles)

or technologies II (wood and metal). The textiles course consists of compulsory knitting, crocheting, weaving, embroidery, painting, and printing, but students may also learn other techniques. Wood and metal technologies consist of processing operations – planing, turning, incorporation, and surface treatment, working with manual and electromechanical instruments, machine tools, and repair work (MK, 2014b). Currently, the focus in home economics and technologies is on the holistic craft process. A new competence-based curriculum will be introduced in 2020. The course will aim to teach independent and purposeful working, preparedness to cooperate with other people, and to use a variety of resources interactively (MK, 2014a).

CRAFT TEACHER EDUCATION

As craft education in the school context has changed, teacher education has changed over the years in Finland and Latvia regardless of their historical and cultural differences.

Craft Teacher Education in Finland

Initially, from 1880 to the 1970s, craft teacher education was seminar and college-based education differentiated as textile crafts and technical craft (Seitamaa-Hakkarainen et al., 2007, p. 6). The education was mainly segregated by gender. The main reform in the history of craft teacher education was in the 1970s when all teacher educational institutions were transferred to universities. Today, craft teacher education in Finland is offered at three universities, and all students graduate with a master's degree (5 years, 300 ECTs [an European grading scale]). The main subject in craft teacher education is "craft science" for textile and technical crafts. The current objective is to develop degrees allowing students to combine craft contents within a single subject. This is a challenge because it diversifies craft, but at the same time, teachers' levels of skillfulness are feared to be decreasing (Kaukinen, 2006, p. 82). Today, students can study one craft as their major subject and the other as a minor subject. Nevertheless, minor studies are optional, and students have the possibility to take a subject other than crafts as their minor. Additionally, all classroom teachers in Finland are qualified to teach all core subjects of the national curriculum from pre-school to grade six. These elementary school teachers may also specialize in crafts and be certified to teach grades seven to nine.

In 1982, the first professorship in textiles, design, and manufacturing processes for handmade textiles was established (see Seitamaa-Hakkarainen et al., 2007, p. 6). It was internationally pioneering in the field of crafts. The 1990s was an academic discipline-building decade when science-oriented craft teacher education was established and the first postgraduate students wrote their dissertations. The discipline developed into a multidisciplinary research area the main objective of which was to study craft activities and results. Thus, the title of the professorship

was renamed craft science. In practice this meant that it no longer concentrated on specific materials, techniques, or products. This facilitated seeing craft science as an umbrella that could combine research concerning areas such as design, craft-making processes, and the use of products. Methodological issues and theoretical premises were applied to non-material craft. However, the Ministry of Education and Culture failed to standardize the title of the main subject as craft science in all craft teacher education institutions until the end of 2013 (OKM, 2013).

Craft science has its own separate and identifiable object of research. The paradigm of craft science is situated at the intersection of science, art, and technology. Research in craft science is multi and cross-disciplinary. It has methodological and theoretical connections to other sciences, for example, to cultural anthropology, cultural history, educational sciences, psychology, occupational therapy, education, art history, as well as semiotics. First, the research is primarily based on the human sciences studying human activity in the psychological, esthetic-artistic, social, cultural, historical, and socio-economic dimensions, with consideration also being given to the natural sciences and technological factors. Research projects in craft science continue to develop an appropriate theoretical basis with applicable current methodological solutions. Research in craft science has focused on multi-disciplinary problems and research projects.

Studies in craft science concern the interaction between knowledge formation and design and, the manufacturing processes related to scientific thinking. Learning is based on problem-based questioning, design, and manufacturing with teams and alone. In general, the main task in craft teacher education is to provide students with the qualifications for teaching and consulting in the domain of crafts in various educational settings and sectors of society. The aim of the studies is to provide expertise in craft education and to promote a high level of continued research in this field. The challenge is to implement craft teacher education so that it could better confront the varying demands of society, life, and culture.

Craft Teacher Education in Latvia

Craft was taught at the Baltic Teachers' Seminarium founded in Riga in 1870. Nonetheless, in the middle of the 19th century when the subject craft was introduced in schools and teachers were educated at the seminary, opportunities to learn crafts were not always available. During the first period of Latvian independence, from 1918 to 1940, teacher education was carried out in different ways, using such frameworks as courses, pedagogical classes, seminaries, and institutions, all of them including craft (Žukovs & Kopeloviča, 1997, pp. 43, 44, 56, 97, 118, 158–187). Manual training as the main subject was not taught to future teachers during the Soviet period until 1980 (Amanis, 1992, p. 7; Melgalve & Kļaviņa, 1998, pp. 8–9).

Today, the opportunity to study home economics and technologies as the main subject is available to teacher students at three Latvian universities. All home economics and technologies students graduate with a professional bachelor's degree

in Education (4 years, 240 ECTs). After that, students have the opportunity to continue their studies in master's programs. However, this is not required to become a certified teacher. At the end of their studies, students write a thesis focusing on some theme from home economics and technologies. However, classroom teachers and teacher students with a major in another subject may also study home economics and technologies as their minor subject. This qualifies them to teach grades one to nine.

CHALLENGES IN CRAFT EDUCATION TODAY

The last few decades have been described as a period confronted by profound challenges to our educational, health, cultural, and financial institutions. The resulting changes have created an ever-increasing need for robust lifelong learning, innovation, and the knowledge and skills necessary to solve the problems of the future (Scardamalia, Bransford, Kozma, & Quellmalz, 2011, p. 231). The next generation should also be empowered and enabled to express themselves creatively (Harris, 2012, p. 4). In order to confront these challenges successfully, our students should thus have a better opportunity to become active, communicating, and collaborating agents who are able to confront and solve complex problems while adapting and innovating in response to new demands and changing circumstances. In this process they will be using technology to create new knowledge and expand human capacity and productivity (see Binkley et al., 2011). This will require future-oriented pedagogical models as well as skills that can be recontextualized (van Oers, 1998, p. 482) in a new way outside the original learning context. It could also offer an eventual framework for reforming crafts in different contexts.

Karppinen (2008, pp. 85, 90) claimed that skill-based craft teaching that has emphasized functional objects as end-products of the craft process has at least partially lost its meaning. The focus in craft education must shift from a perspective that is tradition based (Ihatsu, 2002, p. 198) and individualistic (Garber, 2002, p. 132), thus emphasizing the end-product and a person's skillfulness (Karppinen, 2008, p. 85), to one oriented toward creating novel responses to the challenges in today's world. The main problem in crafts has been reproducing artefacts according to given models without any creative input (ordinary craft). However, design in holistic craft has proved difficult to concretize. Additionally, teaching innovation and creativity has been difficult. Several teachers have also indicated that combining crafts with other subjects so that it could be taught at schools gender-free with multimaterial content has resulted in the expectation that the students must become competent in too many skills.

At the same time, craft education at school having decreased, crafts have become one of the most popular self-chosen leisure activities. The well-being-enhancing element of crafts as a leisure activity is due to the significance of empowering experiences in crafts (Pöllänen, 2015b, p. 73). Interest in creative crafts and technology (technical work) has increased, but they are still undervalued (e.g., Root-

Bernstein & Root-Bernstein, 2013, pp. 16–20) as elements enhancing sustainability and well-being in different contexts.

ORIENTATION TO THE FUTURE IN CRAFT EDUCATION

The pedagogical models presented in this chapter were based on research to confront the challenges facing craft education. The models show how a teacher can shift from a teacher-centered teaching style to the connected learning and object-oriented process of knowledge creation as an approach for acquiring more generic skills (see Garber, 2002, pp. 142–143; Pöllänen, 2009, p. 250). These challenges require two responses. Firstly, creative knowledge work practices and collective work should be introduced into the craft process, which has thus far had the nature of an individual activity. Secondly, each group member should be given the opportunity to contribute while learning something new, feeling comfortable, and being appreciated. Collective and participatory learning may be facilitated to enhance design and knowledge-creation in crafts by making use of appropriate pedagogical strategies (see, e.g., ibid.; Kangas, Seitamaa-Hakkarainen, & Hakkarainen, 2013).

Kangas (2014) indicated that to engage in genuine design inquiry, students need sufficient time and support to understand the rationale directing the design practice if they are to actually engage in these practices in a design community. They also need to reflect on and share their emerging design knowledge (p. 63). Because design is inherently interdisciplinary, the learning process calls for knowledge of different disciplines and authentic contexts. In the iterative design process and the holistic process of crafting, design competence develops through several connected social, material, and embodied levels of thinking, interacting, and meaning making. These together integrate the process into a whole (see Pöllänen, 2009; Liljeström, Pöllänen, & Enkenberg, 2013a).

Crafts Implemented with Collaborative Design

Crafts implemented using a collaborative design, reform craft education by giving future-oriented and participative perspectives. Design-Oriented Pedagogy (DOP) offers a pedagogical model and process together with the underlying conceptual system that is embodied when learning with collaborative design. DOP involves constructing artefacts, but it emphasizes working with knowledge embedded in or bound to physical artefacts. It is also embedded on building interpretations and combinations of the cultural resources, and its outcomes contribute to the larger community (see Liljeström et al., 2013a; 2013b; Vartiainen, 2014). DOP proposes a transformation from predetermined learning objectives, activities, and environment, to the creation of innovation, dynamic learning networks, and participating culture. According to Liljeström and colleagues (2013b, pp. 599–600), the focus is transformed into emerging learning ecosystems that offer students the opportunity to self-organize and utilize the community, technology, and information resources

to construct their own interpretations of their shared learning tasks and the co-development process.

Crafts implemented with design-oriented pedagogy come into being by addressing a real-world design challenge as a learning task. Designing a self-made toy that is functional by the standards of both usability and technical and esthetic qualities is a suitable learning task in the lower grades, while building and furnishing a house would be a suitable one in the upper grades. Open and complex tasks are often experienced as personally rewarding and cognitively challenging learning situations (Rule, 2006, p. 3). However, an open-ended learning task provides the basis for learning the necessary content, while engaging in the challenge provides a natural and meaningful venue for using new information and skills exploiting mediating technology (see Figure 1). In practice, this means that the members of a learning community negotiate common goals, divide their duties, examine prior experiences, knowledge, and skills, and investigate the means and actions available to them. Additionally, they relate their motives, goals, or means to the learning task and process. In any case, collaborative design puts students to work together in teams in pursuit of advancing their own understanding. This is to be shared with the extended community while working with domain experts (Vartiainen, 2014, p. 53).

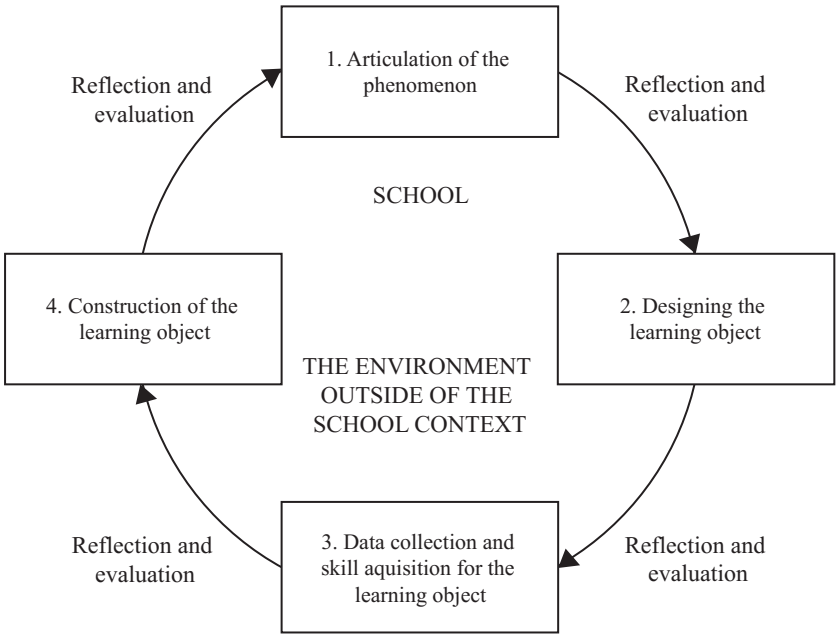

Figure 1. The Instructional Model of DOP in Crafts, as Modified from Vartiainen (2014, p. 43)

After defining a task as a learning object, the process encompasses all phases of the holistic craft process (Pöllänen, 2009, p. 256). A common stimulating theme can assist in creating associations and idea shaping. However, certain design constraints such as the user and the purpose of use and resources, can be defined in the learning task, while others that are related to design issues such as product quality, use, maintenance, and finishing, are specified as the design proceeds (see Kangas et al., 2013). When the learning object has been articulated, the students begin to define the type of knowledge and techniques required for the task. Literature, experimentation, and studying completed handicrafts or examples may be helpful in this phase (Pöllänen, 2009, pp. 255–257). The actual artefact can be realized from various materials and with different techniques.

The learning community may consist of students (two to six persons), teachers, and adults who are working with other students. It may also include domain experts in and outside the school context. Kangas and associates (2013) showed that when a professional designer worked with students in the classroom, the students acquired the experience of solving complex design problems according to the interdisciplinary nature of design learning. New technology, social media, and mobile technologies may provide tools for collaboration and data collection in addition to helping transform ideas into digital representations that can be jointly negotiated, developed, and shared with a wider community before and after the manufacturing process. The intentions of the learning community guide the process but may be transformed when it advances. To address a challenge, students develop designs, build prototypes, gather performance data, and use other resources to provide justification for refining their designs (Pöllänen, 2009, pp. 255–257). Students iteratively investigate, redesign, test, and analyze their ideas, and then make the artefact or a prototype. They articulate their understanding of the concepts, first in terms of the concrete artefact that they have designed and made themselves, then they transfer this understanding to similar artefacts or situations as well as to abstract principles of science (see Bereiter & Scardamalia, 2003, p. 59). Therefore, it is not simply an issue of interaction between subject(s) and artefact(s), but also a question of the process of perceiving the function and meaning of the selected materials, techniques, and tools in terms of achieving a particular goal (Vartiainen, 2014, p. 33).

The collaborative design can be organized as virtual co-design, in which case participants from different schools, districts, or countries can work together as a single group. The knowledge needed in the process is context embedded, formulated through searching and testing as both a group effort and individually. As the issue is about becoming intimate with the design process and, thereafter, preparing a new product, of which the student has no previous experience, the intent of confronting the design problems is to motivate inquiry into the underlying science rather than to simply acquire practical knowledge about crafts as materials, methods, and tools (Pöllänen, 2009, pp. 256–257). The teacher guides the teams toward self-motivated information retrieval and assessment. Instead of focusing on routine skills, the teaching aims at helping students learn more generic skills as well as the general principles of encouraging confidence and a willingness to take risks in innovation (Nickerson,

2004, p. 413). If needed, the teacher can assist by directing the learner's attention toward the essential issues, clarifying obscure bits, widening the perspectives, giving hints, presenting alternative solutions, or asking explanation-directed questions. When modeling or assisting students to find different solutions, the teacher can make the basis of the students' choices and actions visible by thinking aloud (van Oers, 1998, p. 482). The atmosphere and the assessment must be empowering, since the insecurity arising from the combination of the novel situation and the vagueness of the solutions presents the students with a challenging experience.

In any case, the process requires an assessment in which students may demonstrate their knowledge, skills, and strategies by creating an artefact in a manner reflecting a real-world evaluation process (see Lombardi, 2007, p. 3). Assessment may utilize other teachers' and students' peer-based evaluations, such as those made by an analogous craft group from the same school or by people from different contexts. The assessment may be based on an expert or panel assessment or, alternatively on the assessment made by a conference that focuses on the cooperative process (Pöllänen, 2009, p. 257). The work of the conference can include reflective analyses of thinking and learning for the purpose of creating metacognitive discussions and promoting self-reflection (Paris & Winograd, 2001, pp. 1, 15). One of the main ideas is that the learning results may be published and thus made accessible to a larger audience (Vartiainen, 2014, p. 40) through media such as web sites or blogs. Students may also organize presentations for a wider community, including parents, or for workshops for young children in day-care centers as well as for elderly people in residential care. Reciprocal conversations can encourage cross-cultural connections and build relationships (Hasio, 2010, p. 9).

Example 1: Forest-Themed Learning Games

One of the open learning projects assigned to the Finnish elementary school teacher students was to design and produce a textile-based and forest-themed learning game for elementary school craft education. Initially, all students took a field trip to the Forest Museum and the Research Park of the Forest Research Institute. The purpose of the trip was to provide a forest-themed framework and promote awareness of sustainable development through multidisciplinary cultural, economic, and ecological discussions.

Students worked in teams of three to five students. The groups had to co-design a joint learning game and practice the basic craft techniques needed for the games, with the teacher assisting when necessary. When the students began to gain expertise in the targeted skills and practices, they also serve as models for and coach their peers. During the project, the students were encouraged to exploit the knowledge of existing experts in fields such as craft science, educational sciences, psychology, forest science, museology, and economics inside and outside the university.

Designing the games required discussion and clarification of goals, possibilities, resources, problems, sub-problems, constraints, and activities in both face-to-face

and technologically mediated interaction. Students processed the esthetic and technical characteristics of the games throughout the entire design process. Making the games involved refining ideas over several design cycles and acquiring craft skills. This process involved preparing sketches and prototypes, retrieving knowledge, articulating ideas, and presenting them. The students learned the techniques and skills necessary for their process, – felting, sewing by hand and with a sewing machine, crocheting, embroidery, textile-printing, sun-painting, stringing, frame-loom weaving, string-making, tassel-making, simple beading, whittling, nailing, drilling – collaboratively. They used various types of materials such as textiles with different characteristics as well as wood, metal, and recycled materials.

The games incorporated ideas from most academic subjects, orienteering, and various other activities. The games dealt with real-life questions, some of them containing historical dimensions of forestry, forest conservation, and public rights of access. Only a few games were based wholly on imaginary stories. However, imaginative elements underlie real-life questions. Thus, mostly facts, but also fiction, new information, and earlier experiences all appeared as an integrated whole in the games. The story was usually integrated throughout the game, for example, in different details. Often, a question-and-answer format was chosen. Some games involved memory or functional tasks. Only a few games were based purely on chance.

Piloting the games to other students and subject experts and publishing the games in an open portal were important reflective evaluative features of the learning process (see Pöllänen & Vartiainen, 2013). Afterward, the same type of process was put into practice with a mixed group of elementary school children from the third to the sixth grades. The students were given the same assignment, but they first examined these earlier games before they began designing their own.

Example 2: The Chair Project

The projects requiring the students to remodel worn chairs cooperatively using different techniques and materials were organized in Finland and Latvia. The selected chairs had to be dismantled and repaired – spliced, sandpapered, painted – by the students. Then different kinds of measurements and computations were conducted to produce both an applicable visual and technical design as well as the coating material for the chairs.

The designs of the coating material produced by the students contained diverse thematic and abstract compositions. Several compositions were made containing geometric shapes such as crocheted circles, rectangles, and hexagons. Different color schemes and details were used to interpret the appearance of the chair to create a certain atmosphere or convey the user or viewer a message. In Latvia, almost all students combined several types of crocheted stitches, threads, yarns, and fabrics. Crocheted columns might be mutually interlaced or used as appliqué on the fabric. Some chairs had a removable, washable seat cushion. In Finland, students applied different textile techniques and materials to implement their themes such as the forest or the seasons.

Alternatively, the students might have emphasized the characteristics of the room in which the chair would be placed. As a result, the students gained co-designing skills, sustainable perspectives, and creative experience in restoring furniture.

Crafts Implemented with Self-Expression

Crafts as a process of design and manufacturing may serve as a self-expressive form of craft-art. In crafts, new forms of expression have become parallel to traditional techniques and materials. Any kind of material can be used, and the products of amateurs and experts are presented side by side (Ihatsu, 2006, pp. 20–26). Craft-art can be a process or product of deliberately arranged elements based on holistic craft. The relationship to tradition in craft-art is future oriented and renewing, following new trends and seeking influence from different cultures and phenomena. This type of self-expressive craft may be a way to grow sensitive to oneself and to different cultural or ecological phenomena, as well as to reflect on culture and society (Pöllänen, 2011, p. 116). Therefore, participatory learning may be just one instructional model to activate students to take a position and seek a meaningful common goal (Reilly et al., 2012). In crafts, this model may be implemented in an individual or team-based self-expressive process. In practice, however, the starting point is a common theme, co-learning, and shared expertise during the making process. Eventually reflections and discussions at the end of the process integrate the learning process and experiences (see Figure 2).

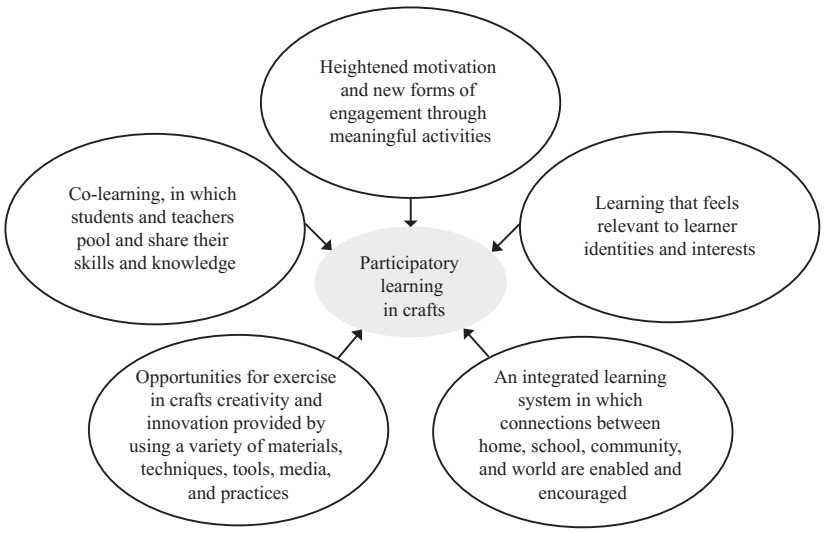

Figure 2. The Instructional Model of Participatory Learning in Crafts, as Modified from Reilly (2014, p. 3)

Craft as an act of expression is realized not only through the production of crafted items but also by the demonstration of one's skills, knowledge, thoughts, experiences, perceptions, and emotions (Karppinen, 2008, p. 85). Making, creating, and producing are powerful paths to deeper learning and understanding. They are achieved by having students engage in hands-on experiments and maintain an active and entrepreneurial attitude in their learning. This will enable them to recognize the importance of such an approach for well-being and success in work (see Seitamaa-Hakkarainen, Viilo, & Hakkarainen, 2010; Pöllänen, 2015b). Therefore, this type of craft may be implemented through generative understandings of touch, fantasy, and performance that allow for tactile knowledge. Expressing and articulating thoughts by concrete action as well as through an artefact all work together to create a natural way for both exploring one's self and sharing experiences through social interaction. This can happen through means such as masking and clothing to reveal one's multiple selves, but it can also be embedded in the narrative of a live-action role-play or in collaborative ecological art pieces (Pöllänen, 2011, p. 118).

Self-expressive crafts may be parallel to Mäkelä's (2011, p. 237) description of communicative crafts. This description is characterized by the deliberate expression of an attitude or a message, or by some other mediatory element. For example, craftivism means positive activism that brings crafted items as visual recognitions out of their usual environment bearing some kind of message. According to Garber (2014, p. 55), the main point is to connect people and to contribute to social change. Craftivism helps to expand one's state of awareness and to take account of daily actions. Additionally, it provides individuals and communities with opportunities for a richer spectrum of experience (see Greer, 2014). Satisfaction from accomplishing something successfully together with feedback from others both support the individual's sense of uniqueness, since they strengthen the student's identity as an independent actor while creating a positive self-image. Self-expressive tasks that call for insight into different life situations and cultures create a better understanding of the variety of different cultures and human experiences. Finally, as a consequence of improved self-esteem, craft as self-expression can enhance one's overall joy of living (Pöllänen, 2015b).

The goal of students' self-expressiveness is to improve creativity with projects and products, and to develop technology skills by using a wide range of media. These can include text, still images, audio, and video, utilized to produce a variety of creative works and creative processes. Activities may begin with a central theme or content area. Possibilities include focus literacy for storytelling, journals and publications, science and mathematics for reports, arts through digital images, and video production. The task can be defined as a theme (e.g., water) alone or together with the product. The task can be oriented to use concrete materials (e.g., natural or artificial) or means of artistic expression (e.g., lines, colors, textures), or techniques (Urdziņa-Deruma, 2001, pp. 102, 116, 177).

At the core of the learning task is the personal and active processing of a mental image or association. Students may work individually or in groups. Self-expression

is elicited in the students' own active process with the teacher assuming only an assisting and facilitating role. Associated activities support students' self-expression and progress in the process. Collaborating and taking another person's point-of-view provide valuable guidance for self-expression and reflection, as they stimulate the students to see things from new perspectives and in new ways (e.g., for a life role-game, see Pöllänen, 2011). Participating emphasizes students' self-organization in co-creation as well as other activities that utilize common themes or ideas (Lewis, Pea, & Rosen, 2010, pp. 8–10).

The assessment is based on the process as well as on creativity (see Nickerson, 2004). In the school context, it is necessary to realize that the artefacts do not always have to be original or unexpected. Instead, creativity consists of a creative process, a creative person, and a creative product. It also requires a creativity-enhancing environment (see Mayer, 2004). Reflection focuses on learning from the craft process, on self-orientation and working, as well as on the experiences and emotions that are meaningful for the learner. Karppinen (2008, p. 87) stated that activities such as artistic self-expression, introspection, and reflection help students find an individual and balanced relationship between the outer and inner worlds of the self. One of the aims in assessment is to strengthen students' personal growth, self-regulation, and self-empowerment. Students can evaluate their own process and common result, and all participants can discuss collaboration, co-design, and the artefacts. In the first grades, the teacher asks questions connected with different stages of the work process, collaboration, and product, later giving the criteria and structure for assessment (see Pöllänen, 2011). Students may also develop their own criteria and assess their work as part of the collaboration. The craft-art thus produced can be assessed by the criteria of originality, experimentation or risk taking, composition, the principles of design, and the elements of art (Dorn, Madeja, & Sabol, 2004). The assessment may take into account the technical quality, functionality, and conformity to the task (Urdziņa-Deruma, 2001, pp. 77–78, 114). Thus, all creative assessment possibilities may be taken into account. Students might write stories, poems, narratives, and diaries, take photos, or draw cartoons, or keep portfolios or blogs about their artefacts and the relevant processes. The process may be described using drama or performance, possibly accompanied by music. In addition, social media with different applications offer opportunities for delivering and publishing photos for a wider audience.

Example 1: Crocheting "Mold"

Students were presented with an open question asking them to take a position on a topical phenomenon using a type of yarn narrative technique. The learning task made students experiment, be hands-on, and active. As a result, the students depicted their worries about indoor air-quality problems (e.g., mold growth), which was then a problem in schools. Thus, the students decided to obtain information about the phenomenon and cooperatively crochet an interior textile as a textile graffiti. Its

the shape and color elements were to refer to mold. The theme activated students to take this very same phenomenon as a common learning task in another course, where the open learning task was to organize some kind of craft-related pavilion for an educational conference using their shared expertise. The main objective of the course was to understand the importance of distributed expertise and the emergence of creativity in co-learning and cooperation. The interest-derived learning task recognized the students' expertise and helped them to be entrepreneurial and academically oriented in their learning. Effective communication was supported by use of technological devices (e.g., Moodle, blogs).

The students decided to create a performance and organize a workshop for the conference participants. Students asked the participants to take part in a joint textile graffiti design. The idea of the performance and workshop highlight indoor air-quality problems and the significance of craft education. It was also hoped that the conference participants' former unpleasant experiences with school crafts could be reduced by the notion that "mold" cannot be crocheted in the wrong manner, and crafting together may be a pleasant experience. Thus, the common theme inspired students to co-develop and transfer their message to other students and other courses. The theme also seemed to expand the conference participants' awareness while they actively participated. The completed "mold" web was hung at the entrance of the teacher education building, and the social and printed media gave accounts of the learning process in articles and photos.

Example 2: Textile Dialog

The Textile Dialogue project was based on virtual co-design and intercultural interaction among Finnish, Latvian, and German students. In total, thirty-four students participated in the two-month project. They co-designed patterns for textiles in small groups, two or three students from different countries. Using a wiki platform, each group member created material in a collective folder and edited the page content in real time. At first, the students presented themselves with two symbols from their culture. The symbols were a starting point for the co-design process: to design an intercultural pattern together. Then each team member created designs on the basis provided the symbols and worked collaboratively toward the final product. During this phase, the students also monitored each other's design process to see the chosen symbols, patterns, and templates.

In the groups, the students discussed their digital intercultural patterns: the meanings of the original symbols and the new co-designed intercultural symbols, compositions, colors, and technical challenges. Then the students determined their final versions. In the middle of the project, lectures and workshops were held in Finland and Latvia. Teaching was also implemented virtually, but in this project, the lectures and workshops were organized as part of the teacher exchange. After the workshops, each student chose the technique and the type of the product for realizing the chosen co-design. As a result, diverse designs and implementations with different

types of symbols and sources of inspiration – nature, culture, designers' work – were materialized in forms such as a window decoration in a silk painting, small bags made with appliqué, and a crocheted pad. In the last stage, the students wrote reflective essays about the project. Despite the different interpretations, the symbols were sufficiently similar to serve as a means of working together, communicating, and understanding each other. In sum, co-designing on a wiki platform enhanced intercultural learning in crafts (see Kröger & Urdziņa-Deruma, 2015, pp. 3–13).

DISCUSSION

In this chapter, two countries, Finland and Latvia, whose educational and cultural histories differ, have served as an example of countries having historically different educational policies. Nevertheless, in today's conditions they are making similar efforts to organize craft education at school and in teacher education.

The meaning of craft has undergone many social and cultural changes in these countries, and these changes can be seen in the objectives and implementations as well as in the position of craft education over time. In technologically advanced urban societies, handicrafts have not been valued in the same way: The more society has developed industrially and technologically, the less it has relied upon crafts in daily life (Garber, 2002, p. 139; Pöllänen, 2011). However, in the 2000s the value of craft education must be re-evaluated, since it has been linked more to the creativity, problem solving, self-expression, sustainability, well-being, and social development than to practical utility of products (see Kangas, 2014; Pöllänen, 2009; 2015b).

Today, the learning objectives of the entire compulsory education system have been challenged. The curricula do not give strict instructions for pedagogical models, the prepared handicrafts, or the materials and techniques to be used. The objectives are general and provide teachers with flexible pedagogical possibilities. Although uncertainty regarding how to educate our students to confront the future successfully seems to prevail, there is also widespread recognition that the traditional defining of school subjects and as main subjects in university studies has raised the question of what should be taught to prepare students to be part of a knowledge-creating society (Schank, 2011, p. xvi; Thomas & Brown, 2011, p. 47; Ito et al., 2013, pp. 227, 324). It has become evident that students are growing up in rapidly changing times, particularly because of the increasing pace of knowledge development and technological advances. Sawyer (2004, p. 18) even insisted that the traditional implementation of a curriculum with scripted instruction emphasizes lower-order skills, the teaching of which does not rely on teachers' creative potential or their expertise in the subject matter.

Thus, the main challenge is for educational institutions to recognize current educational patterns. In so doing they must take into account the pedagogical strategies that may promote the development of generic skills, lifelong learning, innovation, and participatory culture in authentic learning contexts. Thus, the need exists to shift the focus in craft education to collaborative learning, active

participation, and the use of different tools and technologies to create new knowledge if complex problems in diverse situations are to be solved (see Binkley et al., 2011). In a sense, the pedagogical models presented in this chapter, along with their case examples, may serve as encouragement for teachers to incorporate more of the thoughts and interests, ideas, emotions, and sensations experienced by their students into the learning process. It has been demonstrated with certainty that when the topic in the learning task is interest-driven and relevant, students achieve far higher-order learning outcomes (see Ito et al., 2010; 2013, p. 22; Freeman & Brett, 2012, pp. 1038–1040). New pedagogical approaches may help teachers and students develop their design thinking and see new possibilities in craft (see Karppinen, 2008, pp. 85–87; Syrjäläinen & Seitamaa-Hakkarainen, 2014; Veeber, Syrjäläinen, & Lind, 2015, p. 24).

Accordingly, the research-based pedagogical models presented with the case examples may be useful in reforming craft education not only within compulsory education but also in teacher education. Designing, creating, problem solving, experimenting, producing, and making all encourage active skills acquisition for lifelong learning in multiple settings. This kind of hands-on tinkering leads to minds-on (heads-in, reflection) "thinkering" (see Anderson, 2012) through direct experience with materials helping students to take ownership of their learning in the form of the tangible product created by the experimentation and cooperation.

The pedagogical models also bring out a profound change in the ways we perceive the role of teacher and students, learning, learning environments, and contexts. It also influences our perception of the role of craft as an activity. Networking also brings new devices as well as a richer spectrum of experience for individuals and communities (see Greer, 2014). These models may help to expand craft education outside the classroom and connect people from different socio-cultural contexts (see Garber, 2014, p. 59). Cooperation and cross-cultural connections with students from different schools, districts, and countries may help students to be sensitive to themselves and to different cultural or ecological phenomena, as well as to reflect on culture and society (Pöllänen, 2011, p. 122; Kröger & Urdziņa-Deruma, 2015, pp. 7–13).

To sum up, there is a need for new pedagogical models and new visions of learning better suited to the increasing complexity, connectivity, and speed of the knowledge society. Notably, these examples of crafts implemented with collaborative design and self-expression may introduce pedagogical models that can enhance deep learning outcomes in cooperation with peers and experts in authentic contexts. They embrace the main principles of connected learning. This calls for interest-powered and shared purpose, as well as for production-centered, peer-supported, openly-networked, and academically-oriented learning (see Ito et al., 2013). It is also hoped that these pedagogical models and craft science-based orientations serve as a starter for professional development and intellectual growth through recognition and reflective practice in craft education.

REFERENCES

Ahonen, S. (2003). *Yhteinen koulu tasa-arvoa vai tasapäisyyttä? Koulutuksellinen tasa-arvo Suomessa Snellmanista tähän päivään* [The common school as equality or uniformity. Educational equality in Finland from Snellman to this day]. Tampere, Finland: Vastapaino. (In Finnish)

Amanis, I. (1992, November 19). Par mājturības mācību priekšmeta problēmām [On the problems of handicraft and home economics subjects]. *Izglītība*, *43*, p. 7. (In Latvian)

Anderson, C. (2012). *Makers: The new industrial revolution*. New York, NY: Crown Business.

Anspaks, J. (2004). *Mākslas pedagoģija: Mākslas pedagoģijas teorijas un prakses pamatu veidotāji* [Art pedagogic. The theories of art pedagogic and the creators of the basis of practice] (Pt. 1). Riga, Latvia: RaKa. (In Latvian)

Anttila, P. (1993). *Käsityön ja muotoilun teoreettiset perusteet* [The theoretical basis of craft and craft design]. Helsinki, Finland: WSOY. (In Finnish)

Bennett, C. A. (1926). *History of Manual and Industrial Education up to 1870.* Peoria, IL: The Manual Arts Press.

Bereiter, C., & Scardamalia, M. (2003). Learning to work creatively with knowledge. In E. de Corte, L. Verschaffel, N. Entwhistle, & J. van Merriënboer (Eds.), *Powerful Learning Environments: Unravelling basic components and dimensions* (pp. 55–68). New York, NY: MacMillan.

Binkley, M., Erstad, O., Herman, J., Raizen, S., Ripley, M., & Rumble, M. (2011). Defining 21st century skills. In P. Griffin, B. McGaw, & E. Care (Eds.), *Assessment and Teaching of 21st Century Skills* (pp. 17–66). New York, NY: Springer.

Brey, P. (2000). "Theories of technology as extension of human faculties." In C. Mitcham (Ed.), *Metaphysics, Epistemology, and Technology Research in Philosophy and Technology* (Vol.19, pp. 59–78). London, UK: JAI Press.

Cīrulis, K. (1879a, October 24). Mājrūpniecības svars vispārīgi un it īpaši audzināšanas ziņā [The importance of home industry, particularly in education]. *Baltijas Zemkopis*, *43*, pp. 339–341. (In Latvian)

Cīrulis, K. (1879b, October 31). Mājrūpniecības svars vispārīgi un it īpaši audzināšanas ziņā [The importance of home industry, particularly in education]. *Baltijas Zemkopis*, *44*, pp. 346–347. (In Latvian)

Cīrulis, K. (1887a, July 28). Rokdarbs kā vispārīgi attīstošs mācības priekšmets [Craft as the subject of general development]. *Dienas Lapa, 168*, pp. 1–2. (In Latvian)

Cīrulis, K. (1887b, July 29). Rokdarbs kā vispārīgi attīstošs mācības priekšmets [Craft as the subject of general development]. *Dienas Lapa, 169*, pp. 1–2. (In Latvian)

Cīrulis, K. (1887c, July 30). Rokdarbs kā vispārīgi attīstošs mācības priekšmets [Craft as the subject of general development]. *Dienas Lapa, 170*, pp. 1–2. (In Latvian)

Cygnaeus, U. (1910a). Ehdotuksia Suomen kansakoulutoimesta [Suggestions for Finnish elementary school action]. In G. Lönnbeck (Ed.), *Uno Cygnaeuksen kirjoitukset Suomen kansakoulun perustamisesta ja järjestämisestä* [Uno Cygnaeus' writings on the establishment and organization of Finnish elementary school] (pp. 173–344). Helsinki, Finland: Kansanvalistusseura. (In Finnish)

Cygnaeus, U. (1910b). Vastine tarkastuskomitean lausuntoon ja ehdotuksiin [The reply to the opinion and proposals of auditing committee]. In G. Lönnbeck (Ed.), *Uno Cygnaeuksen kirjoitukset Suomen kansakoulun perustamisesta ja järjestämisestä* [Uno Cygnaeus' writings on the establishment and organization of Finnish elementary school] (pp. 345–383). Helsinki, Finland: Kansanvalistusseura. (In Finnish)

Dorn, C. M., Madeja, S. S., & Sabol, R. F. (2004). *Assessing Expressive Learning: A practical guide for teacher-directed, authentic assessment in K–12 visual arts education.* Mahwah, NJ: Lawrence Erlbaum Associates.

eNorssi. (2014). *Stealing*. Retrieved April 23, 2014, from http://www.enorssi.fi/Stealing

Freeman, W., & Brett, C. (2012). Prompting authentic blogging practice in an online graduate course. *Computers & Education*, *59*(3), 1032–1041.

Garber, E. (2002). Craft education in Finland: Definitions, rationales and the future. *International Journal of Art & Design Education, 21*(2), 132–145.

Garber, E. (2014). Craft as activism. *The Journal of Social Theory in Art Education*, *33*, 53–66.

Greer, B. (2014). *Craftivism: The art of craft and activism*. Vancouver, Canada: Arsenal Pulp Press.

Halila, A. (1949). *Suomen kansakoululaitoksen historia III: Piirijakoasetuksesta oppivelvollisuuteen* [The history of the Finnish elementary school III. From the enactment of the division into districts to compulsory education]. Porvoo, Finland: WSOY. (In Finnish)

Harris, A. (2012). *Next Wave Cultures: Feminism, subcultures, activism*. New York, NY: Routledge.

Hasio, C. (2010). Veterans and an arts and crafts programme: A community of understanding and hope. *International Journal of Education through Art*, *6*(1), 75–84.

Huotilainen, M. (2013, September 27). *Käsityön pitäisi olla ihmisoikeus* [Craft should be a human right]. V. Kotilainen (Rept.). [Yle News]. Finnish Broadcasting Company. Retrieved July 26, 2016, from http://yle.fi/uutiset/kasityon_pitaisi_olla_ihmisoikeus/6852988. (In Finnish)

Ihatsu, A.-M. (2002). *Making Sense of Contemporary American Craft* (Joensuun yliopiston kasvatustieteellisiä julkaisuja, No. 73). Joensuu, Finland: University of Joensuu.

Ihatsu, A.-M. (2006). Käsityö – uusiutuva luonnonvara [Craft – A renewable natural resource]. In L. Kaukinen & M. Collanus (Eds.), *Tekstejä ja kangastuksia: Puheenvuoroja käsityöstä ja sen tulevaisuudesta* [Texts and mirages. Conversations on craft and the future of craft] (pp. 19–30). Hamina, Finland: Akatiimi. (In Finnish)

IM MLN (Ministry of Education, Department of Teaching Materials). (1928). *Latvijas tautskolu programmas* [Subject syllabus for Latvian folk schools]. Riga, Latvia: Gulbis. (In Latvian)

IM MLN (Ministry of Education, Department of Teaching Materials). (1935). *Latvijas pamatskolu programmas* [Subject syllabus for Latvian elementary schools]. Riga, Latvia: IM mâcîbas lîdzekïu nodaïa. (In Latvian)

Ito, M., Baumer, S., Bittanti, M., Boyd, D., Cody, R., Herr-Stephenson, ... Tripp, L. (2010). *Hanging Out, Messing Around, and Geeking Out: Kids living and learning with new media.* Cambridge, UK: Mit Press. Retrieved April 23, 2014, from http://www.dourish.com/classes/readings/HorstHerr-StephensonRobinson.pdf

Ito, M., Gutierrez, K., Livingstone, S., Penuel, B., Rhodes, J., Sale, K., ... Watkins, S. G. (2013). *Connected Learning: An agenda for research and design.* Irvine, CA: Digital Media and Learning Research Hub.

Kangas, K. (2014). *The Artifact Project: Promoting Design Learning in the Elementary Classroom* (Home Economics and Craft Studies Research Reports, No. 35). Helsinki, Finland: University of Helsinki.

Kangas, K., Seitamaa-Hakkarainen, P., & Hakkarainen, K. (2013). Design expert's participation in elementary students' collaborative design process. *International Journal of Technology and Design Education, 23*(2), 161–178.

Karppinen, S. (2008). Craft-art as a basis for human activity. *International Journal of Art & Design Education*, *7*(1), 83–90.

Kaukinen, L. (2006). Käsityöoppiaineen arvo ja merkitys sekä opettajankoulutuksen järjestäminen [The value and significance of craft as a school subject and the organization of teacher education]. In R. Jakku-Sihvonen (Ed.), *Taide- ja taitoaineiden opetuksen merkityksiä* (Teatterikorkeakoulun julkaisusarja, No. 39). Helsinki, Finland: Teatterikorkeakoulu. (In Finnish)

KH (National Board of General Education). (1985). *Peruskoulun opetussuunnitelman perusteet 1985* [Framework curriculum for the comprehensive school]. Helsinki, Finland: Kouluhallitus. (In Finnish)

Kinard, L. (2009). *Art+Quilt: Design principles and creativity exercises*. Loveland, CO: Interweave Press.

Kojonkoski-Rännäli, S. (1998). *Ajatus käsissämme: Käsityön käsitteen merkityssisällön analyysi* [The thought in our hands. An analysis of the meaning of the concept handicraft] (Research, Ser. A, No. 185). Turku, Finland: University of Turku. (In Finnish)

Kojonkoski-Rännäli, S. (2006). Käsityön kaunis tulevaisuus [The beautiful future of craft]. In L. Kaukinen & M. Collanus (Eds.), *Tekstejä ja kangastuksia: Puheenvuoroja käsityöstä ja sen tulevaisuudesta* [Texts and mirages. Discussions on craft and the future of craft] (pp. 97–107). Hamina, Finland: Akatiimi. (In Finnish)

Kotriakhov, N. (2006). The Effects of Otto Salomon's System on the Dissemination of Pedagogical Manual Training in Russia in 1884–1917. *Bulletin of Institute of Vocational and Technical Education*, *3*, 69–92.

Kröger, T. (2014). *Textile cultural dialogue*. Retrieved August 12, 2015, from http://ohje.punomo.fi/home/joensuu/textile_dialogue/index.htm

Kröger, T., & Urdziņa-Deruma, M. (2015). Intercultural dialogue by virtual co-design. *Techne Series: Research in Sloyd Education and Craft Science A, 22*(1), 1–14. Retrieved November 25, 2015, from https://journals.hioa.no/index.php/techneA/article/view/861/1156

Lewis, S., Pea, R., & Rosen, J. (2010). Beyond participation to co-creation of meaning: Mobile social media in generative learning communities. *Social Science Information, 49*(3), 1–19.

Liljeström, A., Pöllänen, S., & Enkenberg, J. (2013a). Making learning whole: An instructional approach for mediating the practices of authentic science inquiries. *Cultural Studies of Science Education*, *8*(1), 51–86.

Liljeström, A., Pöllänen, S., & Enkenberg, J. (2013b). The case of design-oriented pedagogy: What students' digital video stories say about emerging learning ecosystems. *Education and Information Technologies, 19*(3), 583–601.

Lombardi, M. M. (2007). *Authentic Learning for the 21st Century: An overview*. D. G. Oblinger (Ed.). Educause Learning Initiative. Retrieved May 10, 2008, from http://net.educause.edu/ir/library/pdf/ELI3009.pdf

LPSR IM (Ministry of Education of the Latvian Soviet Socialist Republic). (1949). *Pamatskolu programmas I–IV klasei* [Elementary school subject syllabus for grades one to four]. Riga, Latvia: LVI. (In Latvian)

LPSR IM (Ministry of Education of the Latvian Soviet Socialist Republic). (1955). *Pamatskolu programmas 1955/56 mācību gadam: Rokdarbi* [Subject syllabus for elementary education, school year 1955/56. Handicraft]. Riga, Latvia: LVI. (In Latvian)

LPSR IM (Ministry of Education of the Latvian Soviet Socialist Republic). (1961). *Praktisko darbu programma V–VII klasei* [Subject syllabus for practical work for grades five to seven]. Riga, Latvia: LVI. (In Latvian)

LPSR IM (Ministry of Education of the Latvian Soviet Socialist Republic). (1970). *Darbmācības programma V–VIII klasei* [Manual training subject syllabus for grades five to eight]. Riga, Latvia: Zvaigzne. (In Latvian)

LPSR IM (Ministry of Education of the Latvian Soviet Socialist Republic). (1981). *Darbmācības programma 1.–3. klasei* [Manual training subject syllabus for grades one to three]. Riga, Latvia: Zvaigzne. (In Latvian)

LPSR IM (Ministry of Education of the Latvian Soviet Socialist Republic). (1984). *Darbmācības programmas 4.–8. klasei* [Manual training subject syllabus for grades four to eight]. Riga, Latvia: Zvaigzne. (In Latvian)

LR IM (Ministry of Education of the Republic of Latvia). (1992). *Pamatizglītības standarts amatu mācībā* [Standards of craft training for elementary education]. Riga, Latvia: LRIM. (In Latvian)

LR IM MSD (Ministry of Education of the Republic of Latvia, Department of Learning Content). (1992). *Mācību programma 10–12 klasei* [Subject syllabus for grades ten to twelve]. Riga, Latvia: LRIM. (In Latvian)

LR IZM ISEC (Ministry of Education and Science of the Republic of Latvia, Centre for the Content of Education and Examination). (1998). *Mājturība: Pamatizglītības standarts* [Handicraft and home economics. Standards for elementary education]. Riga, Latvia: ISEC. (In Latvian)

LR TIM (Ministry of Folk Education of the Republic of Latvia). (1991). *Mājturības programma 5–9 klasei* [Subject syllabus for handicraft and home economics for grades five to nine]. Riga, Latvia: Zvaigzne. (In Latvian)

LTP (Ministry of Education of Latvia). (1925). *Latvijas tautskolu programma* [The subject syllabus for Latvian folk schools]. Riga, Latvia: LETA. (In Latvian)

Marjanen, P. (2012). *Koulukäsityö vuosina 1866–2003: Kodin hyvinvointiin kasvattavista tavoitteista kohti elämänhallinnan taitoja* [Handicrafts at school in 1866–2003. From household well-being toward life management skills] (Research, Ser. C, No. 344). Turku, Finland: University of Turku. (In Finnish)

Marjanen, P. (2014). Koulukäsityö naiseksi kasvattamassa [Craft education raising to be a woman]. *Kasvatus & Aika, 8*(1), 55–69. (In Finnish)

Mayer, R. E. (2004). Fifty years of creativity research. In R. J. Sternberg (Ed.), *Handbook of Creativity* (pp. 449–460). Cambridge, UK: University Press.

Melgalve, I., & Kļaviņa, A. (1998). Mājturības izglītība Latvijā [Home economics education in Latvia]. In G. Rudzītis (Ed.), *Current Issues of Training in Home Economics* (pp. 7–9). Jelgava, Latvia: LUA. (In Latvian)

Mind Tools. (2014). *Creativity tools: Develop creative solutions to business problems*. Retrieved April 23, 2014, from http://www.mindtools.com/pages/main/newMN_CT.htm

MK (Cabinet of Ministers of the Republic of Latvia). (2014a). *Informatīvais ziņojums* "*Par veiktajiem un perspektīvā plānotajiem pasākumiem kompetenču pieejā veidota valsts pamatizglītības satura izstrādē un ieviešanā*" [Informative report: "On the existing and planned activities for the development and implementation of the state elementary education content based on a competences approach"]. Retrieved July 2, 2015, from http://tap.mk.gov.lv/mk/tap/?pid=4032896 (In Latvian)

MK (Cabinet of Ministers of the Republic of Latvia). (2014b). *Noteikumi par valsts pamatizglītības standartu, pamatizglītības mācību priekšmetu standartiem un pamatizglītības programmu paraugiem* [Regulations regarding the national elementary education standard, elementary education subject standards, and examples of the elementary education syllabus]. Retrieved July 2, 2015, from http://likumi.lv/doc.php?id=268342 (In Latvian).

Mäkelä, E. (2011). *Slöjd som berättelse – Om skolungdom och estetiska perspektiv* [Sloyd as narrative – On schoolchildren and esthetic perspectives] (Doktorsavhandling i Pedagogiskt arbete, No. 41). Institutionen for Estetiska Ämnen. Umeå, Sweden: Umeå University. (In Swedish)

Nickerson, R. S. (2004). Enhancing creativity. In R. J. Sternberg (Ed.), *Handbook of Creativity* (pp. 392–430). Cambridge, NY: Cambridge University Press.

OKM (Ministry of Education and Culture). (2013). *Opetus- ja kulttuuriministeriön asetus yliopistojen koulutusvastuun täsmentämisestä, yliopistojen koulutusohjelmista ja erikoistumiskoulutuksista* [Statute of the Ministry of Education and Culture on the ministerial amendment on the educational responsibility, degree programs, and specialization of universities] (Asetus, No. 1040/2013). Opetus- ja kulttuuriministeriö. Retrieved October 8, 2014, from www.finlex.fi/fi/laki/alkup/2013/20131040 (In Finnish)

OPH (Finnish National Board of Education). (2004). *Perusopetuksen opetussuunnitelman perusteet* [National core curriculum for elementary and lower-secondary education]. Retrieved January 31, 2004, from www.oph.fi/ops/perusopetus/pops_web.pdf (In Finnish)

OPH (Finnish National Board of Education). (2014). *Perusopetuksen opetussuunnitelman perusteet* [National core curriculum for elementary and lower-secondary education]. Retrieved August 12, 2015, from http://www.oph.fi/download/163777_perusopetuksen_opetussuunnitelman_perusteet_2014.pdf (In Finnish)

OPM (Ministry of Education). (1970). *Peruskoulun opetussuunnitelmakomitean mietintö: Oppiaineiden opetussuunnitelmat* [Report of the curriculum committee for the comprehensive school. Subject-specific curricula] (Pt. 2, Komiteamietintö 1970, Ser. A, No. 5). Helsinki, Finland: Opetusministeriö. (In Finnish)

Paris, S. G., & Winograd, P. (2001). The role of self-regulated learning in contextual teaching: Principles and practices for teacher preparation. Retrieved September 9, 2006, from http://www.ciera.org/library/archive/2001-04/0104prwn.pdf

Petitto, L.-A. (2008). Arts education, the brain, and language. In C. Asbury & B. Rich (Eds.), *Learning, Arts and the Brain* (pp. 93–104). The Dana Consortium Report on Arts and Cognition. New York, NY: Dana Foundation.

Pöllänen, S. (2009). Contextualizing craft: Pedagogical models for craft education. *International Journal of Art & Design Education*, *28*(3), 249–260.

Pöllänen, S. (2011). Beyond craft and art: A pedagogical model for craft as self-expression. *International Journal of Education through Art, 7*(3), 111–125.

Pöllänen, S. (2015a). *Kokonainen käsityöprosessi* [The holistic process of craft]. Helsinki, Finland: Opetushallitus. Retrieved August 14, 2015, from http://www.edu.fi/perusopetus/kasityo/ops2016_tukimateriaalit/kasityoprosessi_perusopetuksessa (In Finnish)

Pöllänen, S. (2015b). Elements of crafts that enhance well-being: Textile craft makers' descriptions of their leisure activity. *Journal of Leisure Research*, *47*(1), 58–78.

Pöllänen, S., & Kröger, T. (2000). Käsityön erilaiset merkitykset opetuksen perustana [The diverse definitions of craft as a basis for education]. In J. Enkenberg, P. Väisänen, & E. Savolainen (Eds.), *Opettajatiedon kipinöitä: Kirjoituksia pedagogiikasta* [Sparks of teacher knowledge. Writings on pedagogy] (pp. 233–253). Savonlinna, Finland: Savonlinnan opettajankoulutuslaitos. (In Finnish)

Pöllänen, S., & Vartiainen, L. (2013). Forest-themed learning games as a context for learning by collaborative designing in crafts. *Techne Series: Research in Sloyd Education and Craft Science*, *20*(3), 33–49.

Reilly, E. (2014). *Play! Participatory learning and you!* Annenberg Innovation Lab, School for Communications & Journalism. Retrieved November 25, 2015, from http://www.slideshare.net/ebreilly1/play-participatory-learning-and-you-37774072

Reilly, E., & Literat, I., with Brennan, K., Felt, L., Garcia, A., Herr-Stephenson, ... Vertabedian, V. (2012). *Designing with teachers: Participatory approaches to professional development in education*. Annenberg Innovation Lab, School for Communications & Journalism. Retrieved March 10, 2015, from http://www.slideshare.net/ebreilly1/designing-with-teachers-participatory-models-of-professional-development

Reincke, H. J. (1995). *Slöjd: Die schwedische Arbeitserziehung in der internationalen Reformpedagogik* [Sloyd: The Swedish labor education in the international reform pedagogy] (Europäische Hochschulschriften, Vol. 11). Frankfurt am Main, Germany: Peter Lang. (In German)

Root-Bernstein, R., & Root-Bernstein, M. (2013). The art & craft of science. *Educational Leadership*, *70*(5), 16–21.

Rule, A. C. (2006). Editorial: The components of authentic learning. *Journal of Authentic Learning, 3*(1), 1–10.

Sawyer, K. (2004). Creative teaching: Collaborative discussion as disciplined improvisation. *Educational Researcher*, *33*(2), 12–20.

Scardamalia, M., Bransford, J., Kozma, R., & Quellmalz, E. (2011). New assessments and environments for knowledge building. In P. Griffin, B. McGaw, & E. Care (Eds.), *Assessment and Teaching of 21st Century Skills* (pp. 231–300). New York, NY: Springer.

Schank, R. (2011). *Teaching Minds: How cognitive science can save our schools*. New York, NY: Teachers College Press.

Seitamaa-Hakkarainen, P., Pöllänen, S., Luutonen, M., Kaipainen, M., Kröger, T., Raunio, ... Heinonen, A. (2007). *Käsityötieteen ja käsityömuotoilun sekä teknologiakasvatuksen tutkimusohjelma Savonlinnan opettajankoulutuslaitoksessa* [Research program in craft science and design, and technology education at the Savonlinna Department of Teacher Education] (Kasvatustieteiden tiedekunnan tutkimuksia, No. 100). Joensuu, Finland: Joensuun yliopisto. (In Finnish)

Seitamaa-Hakkarainen, P., Viilo, M., & Hakkarainen, K. (2010). Learning by collaborative design: Technology-enhanced knowledge practices. *International Journal of Technology and Design Education*, *20*(2), 109–136.

Simpanen, M.-R. (2003). Käsityönopetus suomalaiskouluissa 1800-luvulta nykypäiviin [Craft education in Finnish schools from the nineteenth century to the present]. In M.-R. Simpanen (Ed.), *Lyhyt oppimäärä koulukäsityöhön* (Suomen käsityön museon julkaisuja, No. 21, pp. 7–29). Jyväskylä, Finland: Suomen käsityön museo. (In Finnish)

Syrjäläinen, E., & Seitamaa-Hakkarainen, P. (2014). The quality of design in 9th grade pupils' design-and-make assignments in craft education. *Design and Technology Education: An International Journal*, *19*(2), 30–39.

Thomas, D., & Brown, J. S. (2011). *A new Culture of Learning: Cultivating the imagination for a world of constant change*. Lexington, KY: CreateSpace.

Urdziņa-Deruma, M. (2001). *Tekstils kā mākslas izglītības sastāvdaļa topošo mājturības skolotāju studijās augstskolā* [Textile as a part of art education in the studies of future teachers handicraft and home economics in higher education institutions]. Riga, Latvia: University of Latvia. (In Latvian)

van Oers, B. (1998). From context to contextualizing. *Learning and Instruction*, *8*(6), 473–488.

Vartiainen, H. (2014). *Principles for Design-Oriented Pedagogy for Learning from and with Museum Objects* (Publications of the University of Eastern Finland, Dissertations in Education, Humanities, and Theology, No. 60). Joensuu, Finland: University of Eastern Finland.

Veeber, E., Syrjäläinen, E., & Lind, E. (2015). A discussion of the necessity of craft education in the 21st century. *Techne Series*, *22*(1), 15–29.

Vītiņš, V. (1988). *Strādātmācības izpratnes līkloči* [Variation in the conception of work education]. *Skolotāju Avīze*, 11, 10. (In Latvian)

VN (Finnish Government). (1952). *Kansakoulun opetussuunnitelmakomitean mietintö: Varsinaisen kansakoulun opetussuunnitelma* [Elementary school curriculum committee report] (Pt. 2). Helsinki, Finland: Valtioneuvosto. (In Finnish)

Volāne, E. (1997). *Rokdarbi kā skolēnu darba prasmju veidošanās līdzeklis sākumskolā* [Craft as an instrument in the development of students' work skills in elementary schools]. Riga, Latvia: Institute of Pedagogy and Psychology, University of Latvia. (In Latvian)

Wilson, M. (2002). Six views of embodied cognition. *Psychonomic Bulletin & Review*, *9*(4), 625–636.

Žukovs, L. (1987). Darbmācības satura attīstības tendences Latvijas vispārizglītojošajās skolās [Tendencies in the development of manual training content in LSSR general schools]. In *Mācību un audzināšanas satura attīstības galvenās tendences Latvijas PSR vispārizglītojošajā skolā* [Tendencies of developing of the content of learning in LSSR general schools] (pp.72–89). Riga, Latvia: LPSR IM. (In Latvian)

Žukovs, L., & Kopeloviča, A. (1997). *Skolotāju izglītība un pedagoģiskā doma Latvijā* [Teacher education and pedagogical thinking in Latvia]. Riga, Latvia: RaKa. (In Latvian)