

# Students confronting risks during holistic craft processes

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*This study aims to examine risk-taking situations among students during holistic craft processes. The study was conducted during the spring terms of 2013 and 2016. The data comprise interviews of seventh-grade students (2013), in which they defined solutions found during craft design and production processes, and digital learning diaries (2016), in which students self-evaluated craft design, production and evaluation processes. The results show that making crafts includes risk-taking during every phase of the process. These are situations in which students either take risks or avoid them. The results reveal that risk-taking situations related to economical risk are emphasised in the design and production phases, in which the students make decisions regarding the product to be made and the techniques to be used. Psychological risk-taking is particularly connected to the production phase of the craft process, in which the students begin production and progress through its phases. Social risk-taking situations are linked to the design and evaluation phases, in which the students interact with their peer group and the social environment. Based on the study results, it is important for teachers to pay attention to these situations and how the students behave. In this way, teachers can teach and support the students in identifying and taking controlled risks, which is an important skill in a changing society looking toward the future.*

Keywords: risk-taking, craft process, craft as a subject, enterprise education

## Introduction

The craft process is defined as *holistic* when it includes design, production and evaluation. A person who completes all phases of the craft process gains experience that strengthens skills and abilities essential to life management (Kojonkoski-Rännäli, 1998). According to the Finnish National Core Curriculum for Basic Education (FNBE, 2014), teaching in craft education should strive towards a holistic craft process from the first year of school. The central aim of craft as a subject is to increase students' craft skills and knowledge in order to improve their self-esteem and provide the means through which they can experience the joy and satisfaction of the design and creation processes (FNBE, 2014). The learning process in crafts is based on learning by doing, which has positive effects on an individual's physical and psychological self. It develops motor skills, creativity, problem-solving skills, responsibility and tolerance of uncertainty (Lepistö & Lindfors, 2015). Craft as a subject supports the students' development as ethical, responsible, participating and enterprising citizens.

In entrepreneurship education, basic education (elementary and secondary education, known as *basic* in Finland) emphasises positive attitudes, basic entrepreneurial knowledge and skills and an entrepreneurial attitude (FNBE, 2014). Entrepreneurial learning is seen as a context, a learning environment and a process that supports individuals' decisions and actions (Holcomb, Ireland, Holmes & Hitt, 2009). Enterprise education and entrepreneurial learning can develop and enrich the pedagogy of craft teaching (Elo, 2016). It is focused on how students learn by doing through activity (Cope &

Watts, 2000; Gibb, 2005; Pepin, 2012; Rönkkö & Lepistö, 2016) and develops students' participation, interaction, decision-making skills, flexibility, problem-solving and risk-taking skills (Gibb, 2005; Holcomb et al., 2009).

In this study, seventh-grade students' risk-taking skills were examined during a holistic craft process. For the purpose of this research, entrepreneurial learning was understood as a process and a form of craft learning in which students take risks during decision making (Hietanen, Uusiautti & Määttä, 2014). Risk-taking is an essential element of entrepreneurship (Podoyntsyna, Van der Bij & Song, 2012). It is also a part of the craft-making process (Elo, 2016) and of hands-on learning (Blakey & McFadyen, 2015), while decision making involves both uncertainty and risk (Mishra, 2014; Mishra, Barclay & Lalumière, 2014; Mishra & Lalumière, 2010). During the craft process, the maker confronts many decision-making situations, which require courage and risk-taking skills to overcome (Blakey & McFadyen, 2015; Rönkkö & Lepistö, 2016). The types of risks involved in entrepreneurship include economical, psychological and social risks (Ristimäki, 2004). In this study, definitions for risks in the craft process were established to examine (1) how students confront risk-taking situations during the craft process, and (2) how these risk-taking situations are categorised as economical, psychological or social.

Prior studies related to student risk-taking abilities have concentrated primarily on vocational school and university students' experiences. For instance, Kyrö & Tapani (2007) examined university students' risk-taking skills in entrepreneurship education courses and found that risk-taking competence can be learned and taught. In basic education, students' risk-taking skills presumably have not been studied; thus, the current research brings new aspects of craft education related to risk-taking during the craft process to light.

### **The enterprise pedagogy of craft education**

The aim of enterprise education is to increase positive attitudes towards entrepreneurship and to develop individuals' knowledge, skills and attitudes related to entrepreneurship. In basic education, enterprise education can be understood as a teaching method that focuses on entrepreneurial skills and abilities that enable students to deal with life challenges and an uncertain future (Henry, Hill & Leitch, 2005; Jones & Iredale, 2010; Seikkula-Leino, 2011.) Enterprise education helps students become more self-confident, to analyse business ideas, to communicate with others, to develop networks and to lead and evaluate projects. Nevertheless, it should not be confused with general business or economics studies because its goal is primarily to promote creativity, innovation and self-employment. (Henry, 2013; Seikkula-Leino, 2011.)

Enterprise education pedagogy can be used across subject areas and throughout different phases of education (Jones & Iredale, 2010). According to earlier studies (Elo, 2015; Rönkkö & Lepistö, 2015) the role of the teacher in both formal and informal learning environments (Draycott & Rae, 2011; Sommarström, Ruskovaara & Pihkala, 2017) is of great significance when introducing enterprise education. Enterprise education is primarily based on constructivist learning theory, in which students are active players in the learning process (Jones & Iredale, 2010; Neck & Greene, 2011; Seikkula-Leino, 2011). Traditionally, the responsibilities of operating, brainstorming and planning lessons are seen as a teacher's task and students are passive and uninvolved (Jones & Iredale, 2010; Lepistö & Rönkkö, 2013). However, in enterprise education, the teacher acts as a facilitator, guiding the students through the process of learning and allowing them to think and act independently, make mistakes and take

responsibility for their own learning (Garnett, 2013). This teaching method encourages learning by doing, exchanging, experimenting, positive mistake-making, calculated risk-taking, creative problem-solving and interacting with the outside world (Jones & Iredale, 2010).

Entrepreneurship and crafting have many common features. The learning environments for enterprise and craft education are both functional and social in nature, and the learning process is based on learning by doing. During the craft process, the most essential features are innovativeness, creativity, perception of possibilities and accomplishment of a new activity, along with problem-solving, perseverance and risk-taking skills (FNBE, 2004; Lepistö & Lindfors, 2015; Rönkkö & Lepistö, 2016). These are the same elements that are important to entrepreneurship (Gibb, 2005). Although enterprise and craft education are subjects that seem to have a confluence of content and goals, relatively few studies have examined this relationship; instead, they concentrate on teachers' and teaching students' attitudes and experiences concerning enterprise education in general and craft teaching in particular (Elo, 2016; Lepistö & Rönkkö, 2013; 2015). Rönkkö and Lepistö (2016) researched seventh-grade students' problem-solving processes and decision-making skills during the craft process, but the risk-taking inherent in the decision-making aspects of crafting remain unexplored. The present study aims to fill this gap by investigating risk-taking and decision-making situations that students are exposed to in craft learning, and whether it is possible to promote related skills during the craft process by applying conscious and active risk-taking in craft teaching.

In the Finnish National Core Curriculum for Basic Education (2014), craft is one of the artistic and practical subjects; these also include music, art and physical education (FNBE, 2014). These subjects are suitable for the implementation of enterprise education since they are creative subjects by nature. Their curricula are flexible and learner-centred, which provides teachers more freedom when implementing lessons (Elo, 2015; 2016). In craft teaching, the development of active student enterprises can be supported by open-ended learning tasks, which allow students to express themselves and be creative and innovative through designing craft products and choosing craft techniques. At the same time, this kind of craft teaching, which is in accordance with enterprise education, demands that teachers bravely throw themselves into new situations that demand new professional skills to confront students' feelings of uncertainty (Lepistö & Rönkkö, 2013; Lepistö & Lindfors, 2015; Blakey & McFadyen, 2015) and to adopt the role of mentor or coach (Jones & Iredale, 2010; Hannon, 2006), who does not have immediate answers to students' questions.

### **Crafting as a risk-taking process**

Decisions are made after considering risk; risk is defined as known variances in outcomes (Ristimäki, 2004). Risk is also a condition in which individuals are self-aware. It requires both exposure and uncertainty; according to Holton (2004), '[b]ased on common usage, uncertainty is a state of not knowing whether a proposition is true or false' (p. 21). According to Mishra (2014), risk usually refers to the chance of a negative outcome, while uncertainty is the decision-maker's lack of required knowledge and information leading to ignorance of future events, which can cause positive or negative consequences. Uncertainty makes decision making more difficult because the decision-maker cannot predict the probabilities of different alternatives (Hansson, 1999; Mishra & Lalumière, 2010). Decision making always involves risk, which can jeopardise the continuity of functions or results. However, risk differs from uncertainty in that the decision maker is able to estimate the probabilities and effects of different alternatives. The concept of risk usually describes the possibility of failure as the consequence of an operation (Hansson, 1999; Mishra, 2014; Mishra & Lalumière, 2010). In relation to risk,

conscientiousness represents an individual's engagement in task-based activities; those who are conscientious are often organised, disciplined, careful and precise. Therefore, conscientious individuals are more likely to be associated with a given risk and have a tendency to engage in risky behaviours (Weller & Tikir, 2011; Larson, 2011). Risk-taking is an action-oriented social process that relates to both insecurity and uncertainty. It is more a psychological and social phenomenon than an economical one, and it can be learned. The psychological and social aspects of learning and individual risk behaviour are the focus of learning risk-taking competences. (Kyrö & Tapani, 2007.)

Ristimäki (2004) categorised entrepreneurial risk as economical, psychological and social risk. Economical risk refers to the economic capital that has been invested in the practice of entrepreneurship. Psychological risk is related to the individual's conceptions about his or her own competences and self-esteem. It is connected to how an individual confronts failure and evaluates his or her own actions. Social risk refers to how an individual interacts with his or her community. It is connected to social reactions towards failure and how the individual is able to receive criticism (Ristimäki, 2004). Some studies have revealed positive associations between risk taking and extraversion (Vollrath & Torgesen, 2002), while others have found negative associations or none at all. When social and recreational risks are considered, it is possible that social acceptability relies on obtaining the benefits associated with these activities. It also might be expected that extraversion should be positively associated with the perceived benefits of activities within these two domains (Weller & Tikir, 2011). It can be said that extraverts are more sociable and impulsive and use risky behaviours to achieve their targets (Vollrath & Torgesen, 2002).

Similar to decision making, creativity also involves risk of failure. When entrepreneurs and craft makers produce new ideas, they cannot be sure of functionality in advance and must take the conscious risk to try, despite the potential for mistakes (Nakata, 2011). Blakey & McFadyen (2015) emphasize creative learning characteristics as: trying things not previously attempted, having new activities, not doing things the obvious way, accepting failures and not judging others. Minimising risk simultaneously minimises creativity; thus, risk is always an element of creativity and the holistic craft process (Elo, 2016). Table 1 provides the definitions for economical, psychological and social risk in the craft process, which were adapted from Ristimäki (2004) for use in this study. These definitions were created on the foundation provided by the Finnish National Core Curriculum of Basic Education (FNBE, 2004; FNBE, 2014).

Table 1: Types of risks involved in the craft process

Type of Risk	Definition
Economical risk	A student's conceptions about economical crafting and whether it is profitable and ecologically responsible based on the quality of materials and type of work
Psychological risk	A student's conceptions about his or her knowledge and competence as a craft maker, which is connected to the student's self-esteem and self-image
Social risk	Social reactions towards working and possible failure, which is connected to the student's courage to be creative and make individual decisions

As in entrepreneurship, the craft process involves economical, psychological and social risks that closely interact. For example, if the student fails, the quality of the product may suffer and materials can be wasted; this is an economical risk. As a consequence, the student's self-esteem may be lowered; this is

a psychological risk because the student questions his or her own competence. When students lack information and are uncertain of the consequences of various options, it is either an economical or psychological risk (Blakey & McFadyen, 2015; Haataja, Hietanen, Järvi & Tompuri, 2009). Additionally, social risk can lead to psychological risk if social reactions are undesirable to the student or indicate failure; this can affect a student's self-esteem and independence (Rönkkö & Lepistö, 2016). Thus, social risk is related to communality and interaction (Ristimäki, 2004). Decisions are made by an individual but are influenced by the situation, values and network in which the person operates (Hicks, 2004). Often, decision making succeeds when a problem or opportunity agrees with a set of feasible solutions among a group of people; this is a method used in organisational decision-making situations (Simons, 1995).

## **Research aim and methods**

This study focuses on the experiences of Finnish seventh-grade students with learning crafts. The aim of the study is to examine the types of risk-taking situations students confront during the craft process. The research questions are:

1. How do students confront risk-taking situations during the craft process?
2. How are these risk-taking situations categorised as economical, psychological or social?

### *Study context*

The study was carried out in a medium-sized school with approximately 400 students in western Finland. The first phase of data collection was carried out during the spring term of 2013 from two craft courses: textile crafts and technical crafts. Both courses were 14 weeks in duration with three 60-minute lessons, totaling 180 minutes each week. The students were in the seventh grade (aged 13 years) and had chosen, according to their preference, either textile (all the girls) or technical work (all the boys) for grades 5–7. The study sample included eight students: four girls from the textile craft course and four boys from the technical craft course. These students participated in the study voluntarily, and the data were collected through interviews. The voluntary participation ensured that the students participated openly in the interviews.

In both craft courses, students were given a learning task with limitations on design. In the textile craft course, the learning task was to design an outfit and make one piece of clothing. The only restriction was that the students had to be able to identify at least one new skill they had learned based on the final product. The students were encouraged to create individual designs; thus, direction from the teacher was avoided during the design process. In the technical craft course, the learning task was to design and create an amplifier using plywood as a working material. The students were allowed to design the appearance of the amplifier, with the primary goal being that the students made their own choices wherever possible during the craft process.

The second phase of data collection was implemented during the spring term of 2016. These data were collected from the textile craft course. The course lasted six weeks, with three 60-minute lessons, totaling 180 minutes each week. The students were in seventh grade and had chosen textile work for grades 5–7. This study sample included 10 students, all of whom were girls. All students participated in the study voluntarily. The data were collected through digital learning diaries, which also served as the students' self-evaluation tools. The students wrote entries in their learning diaries at the end of every

lesson or at home. The learning diaries were part of the students' class assessment and were a compulsory part of the course. In addition, participation in the study was optional; if the student did not want to take part in the study, she could decide not to provide her learning diary to the researchers.

The core theme of the course was home decoration. The learning task emphasised design based on student's own interests and experiences (Lepistö & Lindfors, 2015), so creative responsibility and setting goal for the course were handed over to students (see Blakey & McFadyen, 2015). The task was to design and implement home décor product using textile work materials. When the students were given the learning task, they were directed to pay attention to time and the material resources available for making the product. Students began the design process individually, using iPads and sketching. They then held discussions about their ideas in pairs and in small groups. Next, they shared their ideas and developed plans collaboratively with the whole class. This method offered a social context for their learning (Kim, 2018; Karpati et al., 2017), opportunities to reflect, share and listen to each other's opinions (Blakey & McFadyen, 2015) and the chance to collaborate.

#### *Study data and data analysis*

The initial data came from eight students who were interviewed three times during the craft process: during the design phase, during the production phase and during the evaluation phase. These three phases, performed by one person, comprise the holistic craft process (Kojonkoski-Rännäli, 1998). The aim of the interviews was to observe enterprising elements in students' craft processes. During the interviews themes were discussed with each interviewee to various extents and in various orders (see Rubin & Rubin, 2005; Simons & McCormack, 2007). While interviewers gathered data, they also actively constructed knowledge, which is an important aspect of a qualitative interview (see Myers & Newman, 2007). The second data collection method comprised learning diary texts written by students during the same three phases of the craft process (design, production and evaluation). Topics for diary entries were directed by questions from the interview questions used for the first student group.

Both datasets were analysed qualitatively. A qualitative content analysis includes systematic analysis of the data, during which data are divided into analytical units and categorised (Mayring, 2000.) At first, the author read through both datasets several times; then, expressions that described student risk-taking situations during the craft process were examined. These expressions were coded and compiled into categories according to risk type (economical, psychological or social). These categories were compared and grouped by identifying similarities and differences among expressions. During the final stage, descriptive themes were formulated by grouping similar expressions under one theme. The following themes emerged: avoidance of risk-taking, risk-taking and materialisation of risk. During the analysis, the data were approached from the perspective of the research questions.

Excerpts from the students' interviews and learning diaries are presented in the results section to illustrate certain risk types that occurred during the craft process. For their protection, the students are identified only by their first names. Each name is followed by an abbreviation of the course title, i.e., clothing course (CC), home decoration course (HDC) or technical craft course (TCC), and a two-figure year code, i.e., 2013 (13) or 2016 (16), according to the course and year from which the quotation comes.

## Results

During the crafting process, students confront many situations in which they must take risks; the process of crafting is founded on decision making, which requires taking risks (Blakey & McFadyen, 2015; Elo, 2015; Rönkkö & Lepistö, 2016). In this study, risk-taking situations refer to decision-making situations involved in the craft process in which students must decide to take or avoid a risk. During the design phase, risk-taking situations were related to decisions about the craft product to be made and about the techniques used to make the product. During the production phase, risk was involved in the decision to start making the product and moving to the next production stage. During the evaluation phase, risk-taking situations were related to the reactions of other students and the social environment towards the finished craft product.

### *Economical risk in the craft process*

Economical risk in the craft process refers to students' conceptions of economical crafting. One of the objectives of basic education in Finland is to guide students towards sustainable development and lifestyles (FNBE, 2004; 2014). In craft learning, this means forming economical and ecological solutions during the craft process to design and implement high-quality and functional products and to take responsibility for appropriate use of materials (Firth, Stoltenberg & Jennings, 2016; Koskennurmi-Sivonen & Pietarila, 2009; FNBE, 2004, 2014.) Table 2 shows the main results of risk-taking situations related to economical risk in the craft process. The name of the course is cited to indicate results limited to a certain course.

Table 2: Economical risk in the craft process

Students tend to avoid economical risks during the craft process	<ul style="list-style-type: none"> <li>- By designing useful and sensible products</li> <li>- By creating high-quality products</li> <li>- By trying new techniques and alternatives to implementation artefacts in advance (CC and HDC)</li> <li>- By confirming the irreversible production phase with the teacher before implementation (CC)</li> </ul>
Economical risk realised by some students	<ul style="list-style-type: none"> <li>- When the finished product does not correspond to the students' expectations due to material or production choices (CC)</li> </ul>

During the design phase, the necessity and practicality of the products to be made were emphasised in all three craft courses. The majority of students in the TCC course and in both the CC and HDC courses tended to avoid economical risks. They wanted to produce products that were necessary, useful and of high quality. For example, some students thought about a subject even before beginning the course, including the products they would produce.

I had two or three alternatives, but I decided to do this one, because those other two I wouldn't have used anywhere. (Helen\_CC\_13)

It was quite clear what I would do because I have wanted to crochet a carpet for a long time already. (Julie\_HDC\_16)

The students' sense of responsibility for the quality of work emerged during the design phase; they wanted to produce finished, high-quality products. This was apparent in the detailed designs and consideration of alternatives. For example, all students in the HDC sketched their products before

beginning. On the sketch plan, they marked important details, such as the size of the product, the techniques used and the required materials. In Sara's sketch plan (Figure 1), she made a detailed drawing of a decorative pillow and indicated techniques (cloth printing and embroidery with sewing machine) and materials (white fabric).

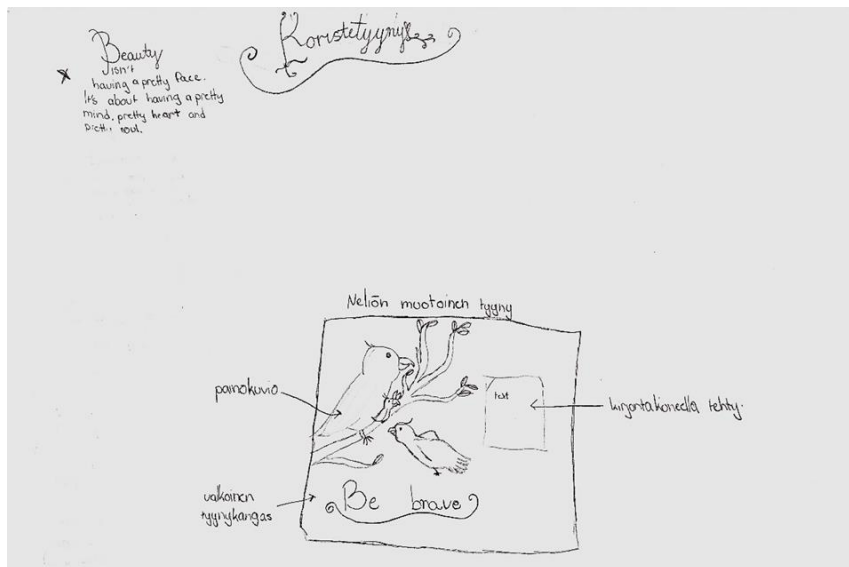


Figure 1: Sara's sketch plan of a decorative pillow.

When choosing techniques for implementation, the students realised the risks related to each and the possible effects on the final product.

I wanted it to be good quality so that it doesn't sound stupid or keep crackling or anything. (John\_TCC\_13)

During the production phase, the students were responsible for appropriate use of materials; quality was emphasised. The students tended to avoid risks that would be seen in the final result by conducting experiments to choose techniques, instead of applying a new technique directly during the production phase. This was especially true for students in the CC and HDC, who experimented with new techniques.

I tried the text style, which I will put on the product, but I tried it on a scrap of fabric, and it was good that I did because it didn't come out right. (Sara\_HDC\_16)

During the evaluation phase, students reflected on their own craft process. The economical risk was apparent for two of the CC students, whose final products did not correspond to the students' expectations due to material or production choices.

#### *Psychological risk in the craft process*

Psychological risk is connected to the students' conceptions of personal knowledge, competence as craft makers and self-esteem and self-image. Developing healthy self-esteem is a common goal of Finnish basic education; it is also one of the objectives of craft education (FNBE, 2004; FNBE, 2014). Table 3 shows the main results of risk-taking situations related to psychological risk during the students' craft process. The name of the course is cited to indicate results limited to a certain course.



Table 3: Psychological risk in the craft process

Students took psychological risks during the craft process	<ul style="list-style-type: none"> <li>- By designing and implementing the product using a new technique, which indicated a willingness to learn new things</li> <li>- By choosing to produce a challenging product that they had not produced before, which indicated a willingness to learn new things</li> <li>- By starting to produce the product (CC)</li> <li>- By moving from one production stage to another (TCC and HDC)</li> </ul>
The avoidance of psychological risks emerged	<ul style="list-style-type: none"> <li>- When some students feared a poor quality product (economical risk), they did not try new techniques</li> <li>- When students did not have the courage to move to the next phase of production without the teacher's acceptance</li> </ul>
The realization of psychological risk appeared in addition to economical risk	<ul style="list-style-type: none"> <li>- When students' conceptions about personal knowledge and competence as crafters were weakened as a consequence of the product's failure (CC).</li> </ul>

During the design phase of the craft process, students showed excitement towards new and challenging assignments. In all three courses, students were willing to take psychological risks when they designed the implementation of their products using new techniques. They wanted to learn new things, which requires psychological risk-taking.

I want to use a new technique because it would be nice to learn something new. (Emma\_HDC\_16)

Certainly, I want to learn new things while doing it. I'd rather do a new and challenging technique. (Aaron\_TCC\_13)

Although some students were willing and brave enough to try new techniques, they were afraid product quality would suffer if the technique proved too challenging. The students would have taken psychological risks by trying new techniques, but the economical risk restricted this psychological risk-taking.

S: Well, it depends how difficult those techniques are... I don't want to try a new technique by taking the risk that the product will be ruined if the technique fails.

I: But if you become convinced that the technique is manageable, then you could choose the more difficult one?

S: Yes. (David\_TCC\_13)

Psychological risk-taking also emerged when students decided which product to create. The majority of students in the HDC were pleased with the task, which gave them freedom to design. In addition to the necessity and practicality of the products, students wanted to produce products that they had not made before to challenge themselves.

During the production phase, psychological risk-taking was connected to the beginning of production. Students experienced uncertainty, especially in the CC, where all the students stated that they were somewhat afraid to begin the production process.

Yes, it was a little bit (scary). I was afraid that I would do something wrong straight away and... then, eventually it doesn't fit me. (Elise\_CC\_13)

Students in the TCC also realised the risk of failure, but they had greater trust in their own abilities due to their own knowledge, good instruction or earlier experiences. A similar result was seen in the HDC. In addition, psychological risk-taking came up when students proceeded from one production stage to another. Almost all TCC students and half of the HDC students proceeded or at least tried to proceed independently. They trusted their own knowledge, regardless of whether all production phases were familiar to them or not. In other words, they took psychological risks by trusting their own knowledge, despite being conscious of the possibility of failure. It seems that students' willingness to take risks in production stages was impacted by personal experience or previous observations. A few students in the HDC and CC disclosed that they had the courage to proceed independently when they knew that the possible mistakes could be fixed.

Although it seems that decision-making situations during craft production are mainly founded on psychological risk-taking, avoidance of psychological risks also occurred. Some students did not have the courage to proceed during the production stages without the teacher's acceptance.

I'd rather ask the teacher first if I don't know, so that I don't have to start all over again. (Sara\_HDC\_16)

The materialisation of psychological risk emerged in the CC when a failure during the production phase weakened the quality of the product (economical risk). This led to disappointment and the student's conceptions about her own knowledge and competence as a craft maker being judged.

#### *Social risk in the craft process*

Social risk refers to the reactions of social environments, peer groups and teachers towards the work and towards possible failure. In Finnish basic education, learning takes place both independently and in interaction with other students and the teacher (FNBE, 2004, 2014). In craft education, different subjects of interest and innovation arise from students' own experiences, which are emphasised (FNBE, 2014). Social risk relates to the students' courage to make creative and individual decisions during the craft process.

Table 4 shows the results of the risk-taking situations related to social risk among students in the craft process. The name of the course is cited to indicate results limited to a certain course.

Table 4: Social risk in the craft process

Students tended to avoid social risks during the craft process	<ul style="list-style-type: none"> <li>- By seeking approval for their design from the social environment by discussing and developing ideas with other students (CC and HDC)</li> <li>- By producing high-quality products that they dare to display to others (TCC)</li> <li>- By taking other students' opinions into account; however, not if they thought other students might dislike the final product</li> <li>- By declining to display the final product (CC)</li> </ul>
Students took social risks during the craft process	<ul style="list-style-type: none"> <li>- By designing the product independently without discussing or taking other students' opinions into account (TCC)</li> <li>- By designing original, distinguished products</li> <li>- By producing a product that is creative and contains individual solutions (TCC and HDC)</li> <li>- By displaying the final product (TCC and HDC)</li> </ul>

In the CC and HDC, students tended to avoid taking social risks when designing the product. They discussed and developed ideas together; this reflection within the social environment involved reflecting on one's own actions and ideas in relation to prevailing social norms (Elo, 2016). The values of peers influenced the process through comments and feedback (Elo, 2016). By discussing designs, students sought approval for their own ideas from a social environment; friends' views and opinions directed the design, thus affecting the final product.

We (among friends) comment on the plans of others, and we took ideas from others. (Jessie\_CC\_13)

In the TCC, the results were different. The students did not discuss their ideas with other students when designing. Their designs were more independent, and they had the courage to design unique products without caring about other students' opinions. In other words, students in the TCC took social risks. Two of these students avoided social risk by producing high-quality products, which they dared to display to others.

During the production phase, risk-taking situations related to social risk were not apparent. Instead, the evaluation phase provided plenty of examples of social risk. This was especially true among students in the CC, who sought approval for their designs from their peer group to avoid social risk. This was seen, for instance, when students chose to create similar products, which emphasised the significance of friends' opinions of the finished product. In the HDC, half of the students recognised the value of friends' opinions; this affected some students' opinions of their final products.

I: Are friends' views or opinions about your final product important to you?

S: Yes.

I: Why?

S. Well, it somehow makes me feel better, like it (the final product) is fine and they also like it. (Elise\_CC\_13)

Yes, it is (the importance of friends' views or opinions), because then I know whether I dare to put it on display in my room or not, and it also tells me I have succeeded in my work. (Kate\_HDC\_16)

Although friends' opinions were important to students, greater significance was placed on how they themselves experienced the final outcome. They wanted to produce products that their friends liked, but only if the final product was something they liked themselves. Social risk is thus connected to psychological risk because satisfaction arising from accomplishing something successfully supports an individual's sense of uniqueness, strengthens an individual's identity as an independent actor and creates a positive self-image and self-esteem (Pöllänen, 2011).

In the TCC and HDC, social risk-taking emerged when making creative, unique products. In both courses, every students' final product was original and contained individual solutions that distinguished the product from other students' products (Figure 2).



Figure 2: The final products of students in TCC and HDC were creative and unique.

The students were asked if they would like to display their final products in the social environment. It was clear that the students in the CC course were the most unwilling to show their products to people outside the course to avoid social risk. In the TCC and HDC course, social risks were not avoided; instead, students were pleased to take social risks and display their products. The majority of these students were satisfied with their final products and wanted other people to see what they had done.

## Discussion

During the craft process, crafters confront many decision-making situations in which they must make decisions requiring risk-taking to finish their products (Rönkkö & Lepistö, 2016). The results of this study showed that during the craft process, students confronted many risk-taking situations, in which they either accepted the risk or avoided it. During the design phase, risk-taking situations were characterised by decision making about the product to be made and the techniques to be used. During the production phase, risk-taking situations were related to beginning production and progressing through its phases. During the evaluation phase, risk-taking situations were linked to social environments and peer reactions towards finished products. From these risk-taking situations, it was possible to distinguish features related to economical, psychological and social risks.

The students took psychological risks by designing products using new techniques to challenge themselves. Craft learning requires taking risks, and the results showed that students were aware of this fact. However, some students took psychological risks by choosing challenging new techniques but feared that the quality of the final product would suffer, which led them to avoid these techniques. The students were afraid of possible failure caused by new techniques and the associated economical risk. In Finnish basic education and in craft teaching, the students are directed towards sustainable development and taught to pay attention to profitable economical and ecological solutions (FNBE, 2004, 2014). Emphasising economical values, sustainable development and high quality might have led to students limiting their risk-taking, which might restrict creativity. Based on this result, emphasising economical value directed some students to avoid risks; however, by avoiding risk, the important ability to take risks cannot develop. In general, the fact that students wanted to avoid economical risk was a

positive finding in regard to the aims of Finnish basic education (FNBE, 2004, 2014). Thus, the seventh-grade students internalised the significance of sustainable development and understood the effects of their own choices on it.

In the implementation of enterprise education, the learning environment plays a crucial role (Jones & Iredale, 2010). In this study, the social environment was particularly significant in the textile craft courses. In both CC and HDC, social interactions between students showed that students developed their ideas together to seek approval for their designs from their social environment. A similar result was found by Kokko (2009), who found that girls in a textile craft course were used to sharing their ideas and views with others. By making their own ideas visible to the social environment, crafters are inevitably exposed to possible criticism in a social context, as well as possible praise (Elo, 2016).

In the TCC, results differed significantly; students took social risks by designing their products independently without caring what others might think. In technical crafts, the learning environment set restrictions on social interaction due to noise from machines and tools, the use of protective equipment and working distance related to industrial safety. All of these factors can restrict discussion between students during class. It is possible that students in the TCC were unused to social interaction during the craft lessons; therefore, they worked more independently compared to the students in textile craft courses. Thus, students in the textile craft courses learned more social and verbal skills compared to students in the TCC. In textile craft courses, the physical learning environment enabled social interaction, and in fact, discussion with others was often perceived to be a part of textile work (Kokko, 2009). However, as was seen in this study, other students' opinions and views influenced designs in textile craft courses, which affected final products. Based on this result, social interaction might also have negative effects because it might restrict student risk-taking and creativity when designing craft products.

The effect of gender in examining the differences in students' risk-taking abilities was not a primary focus of this study. The students in this study had been allowed, according to the Finnish National Curriculum for Basic Education (2004), to choose either textile work or technical work as the content of their craft course (FNBE, 2004). The students chose the content areas according to traditional gender segregation: girls chose textile work and boys chose technical work (Lepistö & Lindfors, 2015). If the results take student gender into account, it would seem that boys in the TCC learned to take more psychological and social risks compared to the girls in the textile craft courses. However, it is likely that these differences are not connected to the students' gender but to the content areas of craft teaching (Lindfors & Lepistö, 2015). The new National Core Curriculum for Basic Education 2014 removes traditional gender-segregated content areas in craft learning and promotes educational equality between genders. Students no longer choose between textile or technical content; instead of crafting, they undertake exploratory, inventive and experimental activities in which different visual, material and technical solutions and production methods are used creatively based on students' own interests.

The new Finnish National Core Curriculum for Basic Education 2014 defines craft as a multi-material subject with a variety of technology and material areas (FNBE, 2014). This means that the craft subject is no longer divided by content areas, such as textile and technical work. Instead, approaches from both areas are used for craft learning. Craft teaching is based on students' explorative, inventive and experimentation abilities and focusses on creative innovation and resourcefulness, joining different visual, technical and material solutions (FNBE, 2014). This requires the creativity and courage to realise uncertain ideas (Lepistö & Lindfors, 2015). In schools, it is very common that students avoid making mistakes and failing; however, doing so prevents students from using their creativity and trying new things (Lepistö & Lindfors, 2015).

### **Limitations**

The first phase of data collecting was implemented during previous curriculum (FBNE 20004), in which students chose textiles or technical work according to their preference. The second set of data for this study was collected through learning diary texts. Writing the learning diary also served as the students' self-evaluation method and was part of the students' course assessment. Writing the learning diary was compulsory, but participation in this study was voluntary. Consequently, it is possible that the knowledge the learning diary texts would be assessed might have affected students' reflections and modified their opinions to return what they thought the researchers wanted. This must be considered in the results and conclusions. In addition, writing the learning diary in the context of craft learning was relatively new for these students. They were not used to reflecting and self-evaluation using this method, and in general, written tasks in the craft subject were unfamiliar to them. As a consequence, there were large variations in the contents of the diary texts. This can be considered a weakness of this study.

Futuremore, the study was implemented as a case study, and the study sample was relatively small. This study focussed on students' experiences with risk-taking situations confronted during the craft process in particular craft courses. For this reason, the research results cannot be generalised to all craft education contexts (see Mayring, 2007).

### **Conclusions**

The new Finnish National Core Curriculum for Basic Education 2014 will change teachers' roles in craft teaching when the students' active role receives greater emphasis. According to earlier studies, teachers play a significant role in enterprise education (Jones & Iredale, 2010; Rönkkö & Lepistö, 2015). Experiential learning, required by enterprise education, is often based on a lack of control (Larson 2011) and non-hierarchical interaction between student and teacher (Karpati et al., 2017). The teacher's task will be to facilitate the students' craft process. This study found that the role of social environments in students' craft process and risk-taking was significant. In this context, the social environment referred to other students. This is consistent with earlier research, which found that the social processes present in classrooms primarily influence students' outcomes (Bierman, 2011; Bush, 2005; Larson, 2011; Luckner & Pianta, 2011). It can be said that teachers are "invisible hands" in the classroom. Their instructional and social-emotional practices create the learning context in which students relate to each other and develop views of self as capable or not, and as cared for or not. (Farmer, McAuliffe Lines & Hamm, 2011; Hughes & Chen, 2011.)

This invites us to consider the craft teachers' influence on student risk-taking and how the craft teacher can direct and encourage students to take risks. Learning in a collaborative, informal context supports students' risk-taking learning more effectively (Kyrö & Tapani, 2007). Our study context was a quite traditional and formal school environment without co-operating with outside experts nor using informal learning environment. For example, the beginning of the design and evaluation phases, unexpected learning situations in risk-taking and 'site-based' experiences can have a greater chance of occurring (Firth, Stoltenberg & Jennings, 2016). This might mean teachers have additional opportunities to encourage students to take risks, even while working outside the familiar, secure classroom context. Learning often occurs both explicitly, through the messages and directions given by teachers or supervisors, and implicitly, affected by the models and dynamics of the learning environment (Bierman 2011).

In this study, enterprising craft education was carried out by the teacher acting as a facilitator, guiding the students through the process of learning and allowing them to think and act independently, make mistakes and take responsibility for their own learning. An open-ended learning task demands that teachers take their own risks and bear uncertainty. This study provided some information on how different economical, psychological and social factors affect student risk-taking situations during holistic, enterprising craft processes. This information can be utilised to plan lessons and teaching arrangements that better support students' ability to identify risks and encourage them to take risks when the chances of success are favourable. Hakkarainen and Paavola (2007) recently developed a model of the knowledge creation process that implements a dialogical model of learning. It has been applied in several cases, such as a students' design process in the basic school and in cross-fertilization between enterprises and educational institutions. In the basic school case, *the dialogical approach was intended to elicit innovative practices of working with knowledge within educational and professional communities by supporting students' collaborative creation of knowledge with the help of various experts, such as museum staff, craftspeople, and designers* (Hakkarainen & Paavola, 2007). This kind of learning model could also provide teachers with better possibilities to support students to learn and practice risk-taking competencies.

Teachers, as facilitators, should ensure that students are engaged in the activities of learning situations. For example, in a collaborative design process, students are most productive if all group members contribute to discussions and no one is allowed to dominate the discussion (Ismail, Sawang & Zolin, 2018). Students and teachers are both developers and receivers of new ideas and methods, and act as equal partners in the learning process (Karpati et al., 2017). This means that students have ownership of their learning (Firth et al., 2016). Craft learning in 21st century education environments and teaching practices provides a flexible and enterprising model for teaching active citizenship and participation among young adults (Karpati et al., 2017). Furthermore, to encourage more craft teachers to experience enterprising teaching and learning, it is important to remember that the ideas stated above require much more time for craft subjects in basic education.

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