

# Moving from Craft to Technology Education in Icelandic Schools

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**Abstract:** Craft was established in Iceland in the beginning of 1900 as a specific subject aimed at general education. The pedagogical framework was based on Danish school Sloyd. Different curricula focusing on craft were developed until 1999 when craft was re-established as a new technological subject, based on a rationale for technological literacy, innovation and design. The new subject, Design and Craft was influenced by the national curricula of New Zealand, Canada and England and a specific Icelandic model for Innovation Education. Design and Craft education is compulsory for all grades 1- 8 (ages 6-13), but optional for grades 9-10 (ages 14-15). In the new subject students base their idea generation and design on authentic problems and make their artefacts from resistant materials. The design systems were based on electronic circuits, mechanisms, pneumatics and structures. The article describes the establishment of Craft Education in Iceland, its development from 1918 to the present. Then it illustrates the curriculum change from Craft to Technology Education and the present situation.

**Keywords:** technology education, pedagogy, Craft, Sloyd, Iceland, technology, Design and Craft, Innovation Education, national curriculum.

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## 1. Introduction

Handicraft education became a part of general education in central Europe in the seventeenth century. The teaching was focused on practical skills and technology necessary to society (Kanonoja et al. 2000). The course content was based on using materials and skills to produce objects and artefacts. The students learned how to 'work according to the rules' and gained various skills needed for working life. Handicraft education brought together carefulness and perseverance with the growth of the whole personality.

The Icelandic Craft subject was established in the beginning of 1900. The pedagogy was based on a model for Danish school craft developed by Axel Mikkelsen in his Handicraft school in Copenhagen. The Danish school Sloyd was focused on bringing physical work in to harmony with spiritual aspects. The development of the capabilities of the individual as a whole person became the centre. Basic knowledge and skill were taught in the beginning to enable more advanced stages in the development of the individual.

Different curricula focusing on craft were developed until 1999 when craft was re-established as a new technological subject

under the name Design and Craft. In 2007 Design and Craft was revised. The new subject was based on a rationale for technological literacy, innovation and design. Design and Craft is based on a rationale for craft education, technological literacy, innovation and Design. The main aim is to develop technological literacy in students and ideation skills. The infrastructure of Design and Craft is influenced by the national curriculum in New Zealand, Canada and England.

In the curriculum for Design and Craft influences from the importance of innovation can be seen in students' design decision opportunities. Students' originate their ideation on real-life problem-solving and design. This activity is connected to craft based making of artefacts from resistant materials and design systems based on electric/electronic circuits, mechanisms, pneumatics and structures. Technical skills and workshop management is an important part of the curriculum.

The boundaries between craft and technology education are sometimes not obvious. Although many changes have occurred though different curricula, craft pedagogy is still the basis of the Icelandic Design and Craft subject. However, the subject is also technologically based and focuses on idea generation.

Craft typically focuses on the individual and is based on making traditional artefacts, but in Design and Craft subject the focus is on solving real human needs and problems through ideation. Craft education also works more with individual needs whereas technological education develops solutions to solve common needs of people.

The new model for the Design and Craft subject is a relatively young in Iceland. However, it seems to have re-awakened the debate about craft as a part of general education. The initial pedagogical values are still valid but it is important to keep the subject up-to-date. Nevertheless, keeping the subject alive for the future will depend on constant re-evaluation of the content and on-going discussion about the pedagogical values. It is the hope of the authors that the development will continue with both aspects onboard, educational craft and technology education.

This article firstly describes the establishment of the craft subject and the curriculum development of craft education in Iceland from 1918 to the present. Secondly the authors describe the curriculum change from craft to technology education and the present situation. The pedagogical background of the new Icelandic Design and Craft subject is illustrated. Finally the author reflects on the pedagogical value of the past and present.

## **2. Pedagogical Craft Under Influences from Danish School Sloyd**

All of the world's technological education started as handicraft education (Kananoja et al. 2000). Finland was the first country in the world to accept it as a compulsory school subject under the term Sloyd (Uno Cygnaeus 1866, Kananoja, T. 1991). Sloyd included the idea that the school should lead 'through work to work' (Kantola, J. 1997). Sloyd originally meant handy or skilful, and refers to the making of crafts (Chessin 2007). However, the meaning of Sloyd in relation to education refers to the discussions amongst philosophers of those times about the value of craft for general education (Borg 2008). The purpose of Sloyd was to use craft as a tool in general education to build the character of the child, encouraging moral behaviour, greater intelligence, and industriousness (Thorarinsson 1891). The Sloyd pedagogy became quickly spread out to Scandinavia and other countries including USA.

Aksel Mikkelsen (1849-1929), established Craft as a general subject in Danish schools an established his Handicraft School (1883) in Copenhagen and started to educate school teachers to teach Sloyd in Denmark 1885 (Kantola et al 1999). Mikkelsen called his Craft educational model Danish school Sloyd. Unlike the Finish model, Mikkelsen's system was built on class instruction (Kananoja 1989). Students were given exercises to train them in the use of tools. For example, they had to saw and plane together rhythmically. The lesson plan had to be flexible to meet the varying needs of individual pupils. Woodwork was the only undertaking because the school time allocated to Craft was felt to be too limited (Bennett 1937).

After 1890 several Icelandic educationalists introduced Sloyd into the educational system as an important part of general education (Mikkelsen 1891). They were influenced by Mikkelsen in Copenhagen (Mikkelsen 1891 & Bennett 1937).

### 3. Craft Education in Iceland 1907-1989

The originators of craft education in Iceland introduced Danish School Sloyd for Icelandic educators and authorities in the beginning of 1900. Consequently, their work became a basis for school law establishment for general craft education and curriculum development.

The first public school laws were established in the Icelandic parliament in 1907 (Log um fraedslu barna 1907). However, ideas for educational craft or 'school industry' were not included. Some of the possible reasons for this were a lack of school buildings and facilities, a lack of interest on the part of the authorities and the importance of children working in the economy.

The first national curriculum for the education of children was published in 1929. It included seven years school education for children living in urban areas and four years education for children in rural areas. Craft or school industry was still not mentioned, but drawing was recommended as a subject (Eliasson 1944). Even though crafts were not mentioned they were taught in several schools which had the necessary facilities. When a new law for children's education was passed in 1936 craft was given mandatory status.

Craft was first established as a subject in 1948, when guidelines for funding 'children and youth school education' were given. Instruction was gender based with craft for boys and textiles for girls (Fraedslumalastjornin 1948). The first integral national curriculum for compulsory education was published in 1960. The goals for each school subject were defined and the influence of Sloyd could be seen in the objectives for the craft subjects. They were gender divided but the goals for boys and girls were similar and emphasised the general pedagogical values of the subject.

In 1974 new laws for education were published. Compulsory education was modernised, and its aims and objectives were reviewed (Edelstein 1988). In these laws the role of general education was further defined in a democratic way: "...to enhance healthy individual development and individually based education" (Log um grunnskola 1974). Practical subjects gained more weight in order to meet different individual characteristics, abilities and interests (Log um grunnskola 1974). More emphasis was put on: "creativity and balance between theoretical and vocational studies" (1/5 minimum and 1/2 maximum) (Log um grunnskola 1974).

Based on the above law, a new national curriculum was published in 1976-1977 (The Ministry of Education 1977). In this curriculum 'Art and Handicraft' was established as a new area for craft education. This included art, textiles and craft. For the first time all the subjects were compulsory for both boys and girls. The rationale was pedagogically based. This curriculum was slightly revised in 1989.

Another national curriculum with fundamental changes was passed in 1999. In it factors that mediate the cultural heritage are not always as visible in the formal curriculum. Often a difference can be seen between what is written in the formal curriculum and what is actually done in schools. However, this time legislators took account of international influences in curriculum development and also Innovation Education and Technology Education run by school teachers. A new subject area for information technology and technology education was set up and included three subjects: Technology Education (instead of Craft), ICT and Innovation and Practical Use of Knowledge.

Table 1 shows different terms for craft education in the Icelandic school history and terms for different national guidance and curricula for craft and textiles.

**Table 1.** Shows terms for craft education during the Icelandic school history. (Olafsson 2008)

Year	Framework	Soft materials	Hard materials
1900	Rationale for handicraft	School industry and home industry	School industry and home industry
1936	Laws for child education	Handwork	Handwork
1948	Draft for national curriculum for children and youth	Girls Handicraft	Boys Handicraft
1960	<i>The National Curriculum (Compulsory)</i>	Girls Handicraft	Boys Handicraft
1977	<i>The National Curriculum (Compulsory)</i>	Art and handicraft ► textile	Art and handicraft ► Craft
1989	<i>The National Curriculum (Compulsory)</i>	Art and handicraft ► Textile	Art and handicraft ► Craft
1999	<i>The National Curriculum (Compulsory)</i>	Arts ► Textile	Information and Technology Education ► Design and Craft
2007	<i>The National Curriculum (Compulsory)</i>	Arts ► Textile	Design and Craft

#### 4. Technology Education

Technology education is the probably the most recent development stage of practical technological education in the world (Kanonoja et al. 2000). It implies utilizing new technology in education. The term technology education was first used by Uno Cygnaeus when planning the Finnish teacher training programs including Sloyd education in 1861 (Kanonoja et al. 2000). The term “*Technology*” has been used to cover all the technologies individuals develop and use in their lives. UNESCO, the United Nations Education, Social and Cultural Organisation,

defines technology as:

*“...the know-how and creative processes that may assist people to utilise tools, resources and systems to solve problems and to enhance control over the natural and made environment in an endeavour to improve the human condition.”* (UNESCO, 1985).

The above quote includes a purposeful application of knowledge and understanding to generate processes and build products that meet human needs. The human needs in particular communities decide the technology that is developed and how it is used (Page, Thorsteinsson, Lehtonen & Niculescu 2008).



**Figure 1.** Young Icelandic students at work in the craft room  
(© Arnason 2009)

In many countries, technology education has developed from or through craft education. Therefore as a school subject it often includes the traditional craft areas as working with resistive materials and technical drawing. Technology education provides an opportunity for students to increase their knowledge and understanding related to technology to develop their technological literacy (The Icelandic Ministry of Education 1999). This includes the ability to form and modify the physical world to meet human needs, by using materials and tools with certain techniques.

Technology education is meant to develop technological literacy in students which is achieved by bringing workshop activities to students. In technology education, however, learners should develop a greater appreciation for the work of craft workers and the skill required of that work. In the modern society, skills needed by the employees are constantly changing and increased need for all citizens

## 5. From Craft to Technology Education

The Icelandic Craft subject was re-established as a new technological subject in 1999, under the name Design and Craft (The Icelandic Ministry of Education, 1999). The new subject was based on a rationale for technological literacy, innovation and design. It became compulsory for grades 1 – 8, but optional for grades 9 – 10. The main aim was to develop technological literacy in students and ideation skills (Thorsteinsson 2002 and Thorsteinsson & Denton 2003). The infrastructure (see figure 8) of Design and Craft was influenced by the national curriculum in New Zealand, Canada and England and a new Icelandic model for Innovation Education. This model arose from the craft subject and was focused on idea generation. After a few years' curriculum development craft became an independent cross-curricular subject named Innovation



**Figure 2.** Toys made by students based on simple electronic solutions  
(© Thorsteinsson 2009 and Gunnarsdottir 2009)

to have high level thinking skills (The Icelandic Ministry of Education 1999). In effective technology education this includes problem solving strategies and work practice that will be useful in almost any profession or occupation (Page, Thorsteinsson & Niculescu 2009). Such education encourages students to be productive, innovative and enterprising. The process do design, construct and evaluate is central to technology. This involves ideas generation and decision making, as well as developing techniques and products to meet human needs.

and Practical Use of Knowledge (Thorsteinsson 2002 and Thorsteinsson & Denton 2003).

The curriculum development project had focussed on the development of students' ideation including searching for needs and problems in student environments and finding appropriate solutions (Thorsteinsson 2003 & Gunnarsdottir 2001). The new subject became cross-curricular and was aimed at general education, rather than being related to design type subjects. In the new Design and Craft subject the influences from the Innovation project were seen in students design decision opportunities. Students

originated their ideation on real-life problem-solving and design. This activity was based on the making of artefacts from resistant materials and design systems based on electric/electronic circuits, mechanisms, pneumatics and structures (The Icelandic Ministry of Education 1999).

## 6. The Present Curriculum for Design and Craft Published in 2007

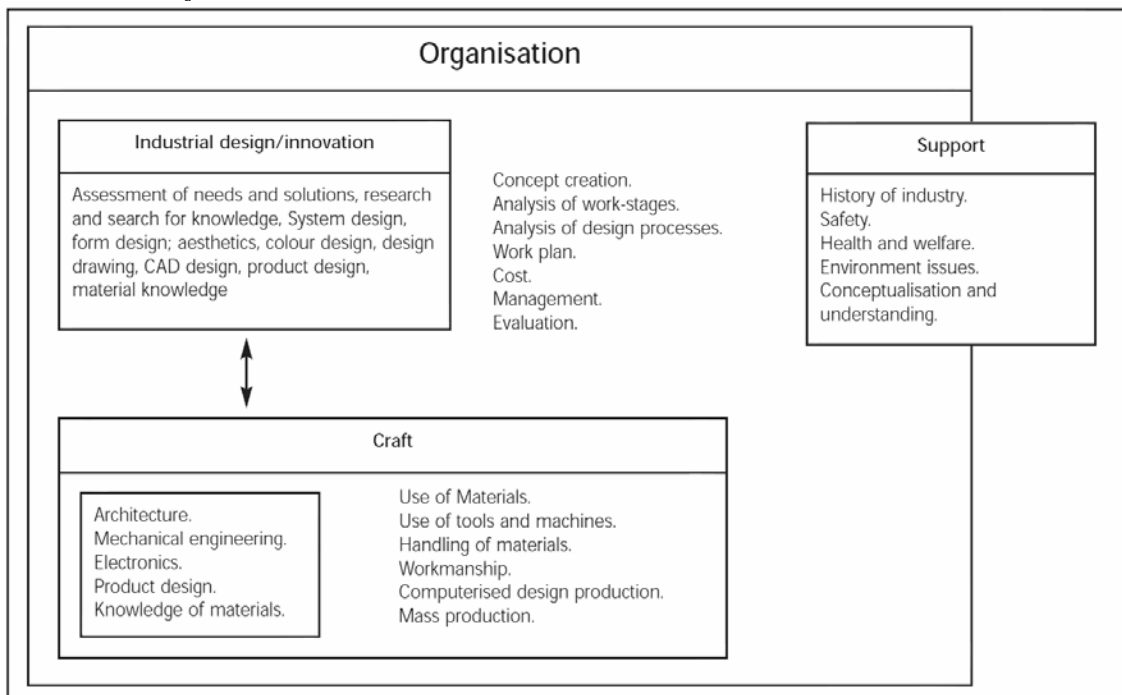
It was soon evident that not all teachers were satisfied with the 1999 curriculum in Design



**Figure 3.** Students work supported by computer aided design and manufacturing  
(© Thorsteinnsson 2009 and Tomasson 2009)

Figure 4 illustrates the background of the Design and Craft subject in the 1999 curriculum. The emphasis was on technological based craft focusing on design, and innovation. The undertakings were expanded from earlier a curriculum with traditional aspects from technology education. It was also recommended to support the students' process of idea generation and making of artefacts with relevant knowledge, for example concerning sustainable design, the history of industry and health and safety.

and Craft. In regular meetings in the Icelandic Design and Craft Teachers Association (Fis) the curriculum was discussed and opposing meanings shared (The Icelandic Design and Craft Teachers Association 2009). The older generation of teachers was conservative and not willing to change the traditions. The younger generation, however, was interested in changes such as increasing students' freedom to make their own design decisions and to undertake more technological based projects. The teachers educated in vocational



**Figure 4.** The figure shows the infrastructure of Design and Craft in Iceland 1999.

education have also been interested in improving students' workmanship and often shown more understanding of the values of technology education (The Icelandic Design and Craft Teachers Association 2009).

The curriculum from 1999 was ambitious and progressive and took significant strides towards technology education. However, many teachers felt these steps were too big and were uncomfortable undertaking work with electronics. They lacked both sufficient knowledge and the skill and interest to teach it. Some of them also argued that the curriculum development was not moving in the right direction (Olafsson, Himarsson, & Svavarson, 2005).

again included (Olafsson, Hilmarrsson, & Svavarsson, 2005).

Design and Craft became an independent subject in the new national curriculum. The two curricula from 1999 and 2007 are similar. The major emphases are listed in Table 2 and illustrate the main differences (The Icelandic Ministry of Education 1999 & 2007).

The focus on idea generation is still colouring the curriculum. Technical literacy is also important as technical skills and workshop management (The Icelandic Ministry of Education 2007). However, the new curriculum focuses now more on the individual, as tasks are more craft based than

Table 2. The table shows the main differences between the Design and Craft curriculum from 1999 and 2007.

Main emphasis 1999	Main emphasis 2007
1. Design and invention	1. Design and invention
2. Technical literacy	2. Technical literacy
3. Technical skills and workshop management	3. Technical skills and workshop management
4. Manufacturing and organizing the work	4. Handicraft and organizing the work
5. Focus on society	5. Focus on individuals
6. Industrial manufacturing	6. Outdoor education and green woodwork
7. Supportive source material	7. Sustainable design
8. Craft cu	8. Health and safety
9. Emphasis on technological based tasks	9. Emphasis on craft based tasks

When the national curriculum was revised in 2005-6 it was decided to ask for suggestions from the Design and Craft Teachers Association. Discussions had taken place on their website and in their meetings. Taking teachers' views into account it was decided to minimise the technological part of the curriculum. Design and Craft and ICT therefore became separate subjects (The Icelandic Ministry of Education 1999 & 2007).

The new curriculum for Design and Craft emphasised individualised learning and flexible instruction. Innovation and idea generation were still an important part of the curriculum. Work with unseasoned wood and glass was adopted for the first time. The old Sloyd values were revisited and were once

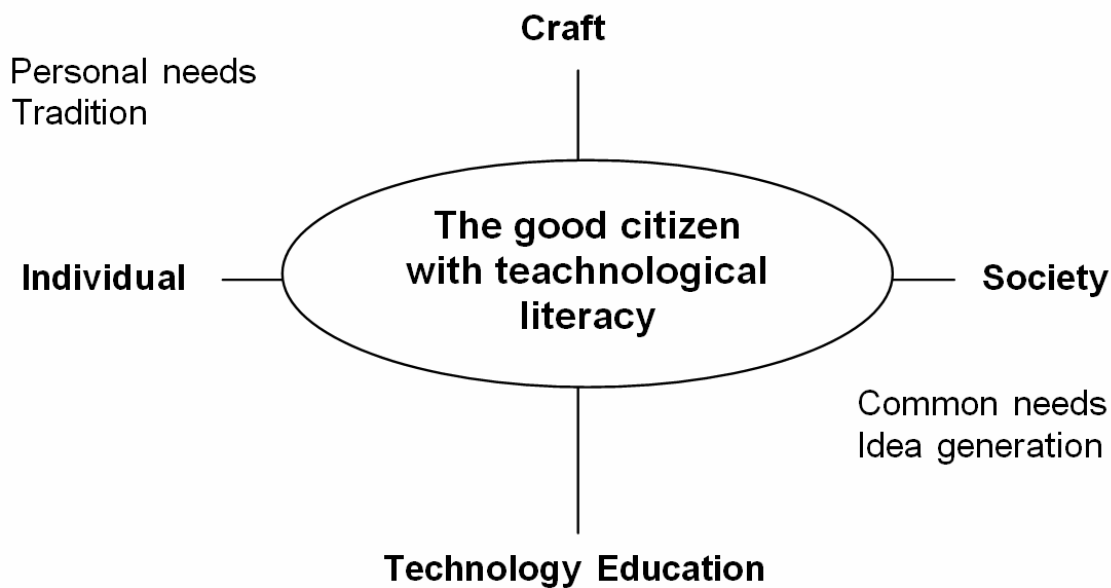
technological (see figure 5). The curriculum moves from the manufacturing process, like mass production, to handicraft based processes. Training students to organise their work is still important. New factors are outdoor education and green woodwork, sustainable design and health and safety. Teachers gained more freedom to construct the school curriculum and manage their teaching, as aims for each year are not listed. Final aims for key stages (4<sup>th</sup>, 7<sup>th</sup> and 10<sup>th</sup> grade) are listed (The Icelandic Ministry of Education 2007).

## 7. Discussion and Conclusion

Although many changes have occurred though different curricula, Craft pedagogy is still the basis of the Icelandic Design and

Craft subject today. However, the subject is also technologically based and focuses on idea generation. Nevertheless, the boundaries between Craft and technology education are sometimes not obvious, but lie mostly in ideological issues. Craft typically focuses on the individual and is based on making traditional artefacts, but in Design and Craft subject the focus is on solving real human needs and problems through ideation. Craft education also works more with individual needs whereas technological education develops solutions to solve common needs of people (Kananoja, 1997), (see Figure 5).

The new model for the Design and Craft subject is a relatively young in Iceland. However, it seems to have re-awakened the debate about craft as a part of general education. The initial pedagogical values are still valid but it is important to keep the subject up-to-date. Nevertheless, keeping the subject alive for the future will depend on constant re-evaluation of the content and on-going discussion about the pedagogical values. It is the hope of the authors that the development will continue with both aspects onboard, educational craft and technology education.



**Figure 5.** The Design and Craft subject is a combination of Sloyd and Technology Education (developed from Lindfors and Thorsteinsson 2002).

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