

Design and Craft Education in Iceland, Pedagogical Background and Development: A literature review

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Abstract

Sloyd pedagogy was introduced towards the close of the 18th century to Icelandic educators. Subsequently craft was established as a specific subject aimed at general education. In the beginning craft was called "school industry," to distinguish it from "home industry" whose aim was to help homes to be self-sufficient for commercial purposes. Different curricula focusing mainly 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. They design systems based on electronic circuits, mechanisms, pneumatics and structures. In this article the authors describe the pedagogical background of the subject and the curriculum development.

Key words

pedagogy, craft, pedagogical craft, Sloyd, Iceland, Cygnaeus, Salomon, Thorarinsson, Design and Craft, technology education, Innovation Education, national curriculum.

Introduction

Education for work was institutionalised in the 18th century in many countries. The main reason was the founding of general educational systems and the beginning of industrialisation. New methods for manufacturing and production demanded new skills from citizens (Kantola et al. 1999).

Pedagogically aimed craft education was established at the same time as a school-based system of formative education using the term Sloyd. 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).

Uno Cygnaeus in Finland and Otto Salomon in Sweden were major leaders in the development of a systematic Sloyd model for school education. They emphasised the usefulness of constructing objects through formal educational methodology (Kantola et al. 1999). The model was disseminated by Salomon through thousands of teachers from all over the world who attended his classes. Sloyd had a noted impact on the early development of manual training, manual arts, industrial education and technical education in many countries, including the UK (Bennet 1926). Sloyd was introduced in 1898 by the first Icelandic educationalist Jon Thorarinsson and became a compulsory subject from the beginning of 1900 (Ólafsson 2007).

This article describes and discusses ideas from European educationalists who developed ideas for craft as a pedagogical approach towards general education. Next the pedagogical/historical background of the Icelandic Design and Craft subject is traced. Then the introduction of Sloyd in Iceland is described and also the curriculum development of craft education in Iceland from 1918 to the present. Finally, the authors describe the curriculum change from craft to technology education and the present situation.

Historical background of craft aimed at general education

Education in the Middle Ages was focused on theoretical studies (Myhre 2001, Kapes 1984 and Roberts 1965). Nevertheless, educationalists, at this time, were discussing the importance of manual training (Anderson 1926, Bennett 1926, 1937 & McArdle 2002) as a part of general education to establish harmony between the physical and mental faculties to prepare individuals better for life (Thorarinsson 1891). Education for work was institutionalised during the 19th century (Bennett 1926, 1937). The main reason for this was the founding of general education systems and the demand for new skills from workers and citizens generally because of industrialisation (Kantola et al. 1999).

Comenius (1592-1671) who was often called "The Father of Modern Pedagogy", was an important scholar in the history of European education during the seventeenth century (Anderson 1926). He advanced the idea of a comprehensive curriculum involving both manual and liberal arts (McArdle 2002). Comenius advocated

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education that was practical, objective, and cultural (Anderson 1926). Comenius believed that human beings were born with a natural craving for knowledge and goodness, and that schools drive it out of them. He underlined the importance of teaching craft in public schools to enable individuals to identify their interests and to understand what life required from them (Thorarinsson 1891).

In his book *Didactica Magna* (Comenius 1633/1986) Comenius describes the fundamental principles of handicraft education and the importance of real life experiences. In order to learn, work should be done and the master should allow the disciples to learn through their own efforts, not just by him demonstrating the work to them. Comenius (Comenius 1633/1986) mentions the importance of the right use of tools and the making of precise copies of artefacts. He believed it was important to start with simple things familiar to the students and to practice using tools in the traditional way (Comenius 1633/1986 & Thane 1914). However, despite his ideas regarding craft in education Comenius did not develop any practical methods for implementing his ideas (Thane 1914).

In his two books "Essay on the Human Understanding" (1690/1980) and "Some Thoughts Concerning Education" (1693/2001) Locke (1632-1704) advocates the notion that education should prepare individuals for practical life through instruction in manual work and mechanical trades (McArdle 2002). Locke emphasises physical exercise as an important part of education. He argues that craft is healthy for the mind and important in order to give the body enough physical movement (Locke 1693/2001, Thorarinsson 1891).

In "*Some Thoughts Concerning Education*" Locke (1693/2001) describes woodwork as a healthy and good preparation for theoretical studies: "*In the next place, for a country gentleman I should propose... working in wood, as a carpenter, joiner, or turner, these being fit and healthy recreations for a man of study or business. For since the mind endures not to be constantly employed in the same thing or way, and sedentary or studious men should have some exercise, that at the same time might divert their minds and employ their bodies...*" (Locke 1693 / 2001: 204).

Rousseau (1712-1778) combined the works of Comenius and Locke in *'Emile'* (1764/1979) with experiences from his own diverse background. Rousseau (1764/1979) seeks to describe a system of education that would enable the *'natural man'* to survive in a *'corrupt society'*.

He employs the novelistic device of Emile and his tutor to illustrate how such an ideal citizen might be educated. Rousseau uses the character of young Emile to demonstrate his vision of an ideal education through nature and manual arts. He realises the value of learning through problem-solving within an apprenticeship rather than rote learning in a classroom (McArdle 2002). In *Emile*, Rousseau (1764/1979) describes the secret of pedagogy as body and spirit being in harmony when they nourish each other (Thorarinsson 1891). Rousseau thought individuals practicing craft were the happiest human beings and therefore he wanted Emile to learn woodcraft (Rousseau 1764/1979, Thorarinsson 1891).

In the beginning of 18th century the German scholar Franke (1663-1727) started craft education at his school in Halle (Thane 1914). Franke's activities were practically based (Thorarinsson 1891). His students were making things to use in daily life such as wooden boxes and tools for their homes and the school (Thane 1914). The activities, however, also enabled the students to earn a living and were closer to so-called cottage industry than pedagogically based craft education (Thorarinsson 1891).

Comenius and Franke were regarded as primary influences on the German educationalist Basedow (1723-1790) (Thane 1914). Basedow's pedagogical model emphasised handicrafts for all students in a curriculum intended to "*give some account of man*" (Anderson, 1926, p. 29). This was also closer to Rousseau's idea about the harmony between the spirit and the physical body. Basedow, therefore, underlined the importance of physical education (Thorarinsson 1891) and used craft activities alongside theoretical studies to achieve the balance between the physical and the spiritual. He argued that craft education was a good way to improve students' concentration and to prevent harm and frivolity when they got tired of reading books (Michaelsen 1914 & Thorarinsson 1891). Basedow was also concerned about the value of imbuing students with a happy working spirit. For him physical exercises and games were an important part of education that motivated students without manipulation (Thorbjörnsson, 1990).

Pestalozzi (1746-1827) is known as the father of pedagogical craft or manual training (Bennett 1926, McArdle 2002 & Thorarinsson 1891). He developed further Rousseau's philosophy which had appeared in *Emile* (McArdle 2002, Thorarinsson 1891) and named his ideas a "vocational alphabet" (A B C des Könnens). In Pestalozzi's methodology, drawing became an integral part of the curriculum. It was meant to sharpen the students' power of observation and description (Thane 1914).

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Pestalozzi's intention was to improve the lives of poor students through education associated with work (Bennett 1926). At the same time it was equally important to cultivate their minds and social consciences (McClure et. al 1985). Pestalozzi believed that schooling which emphasised only one side of education, either vocational or general, would create an individual who was of little value to society (McClure et. al 1985). He thought that by studying objects, students would gain impressions and experiences that could become a basis of knowledge (Bennett 1926). Pestalozzi divided the human character into three main entities; *the intellectual or the head, the moral or the heart and the physical or the hand* (Brühlmeier, A. 1998 and Kuhlemann & Brühlmeier 2002):

- The head was all about mental functions that lead a person to a *realisation* of the world and to a reasonable *judgement* of things. This required perception, memory, imagination, thought and language.
- The heart was primarily involved with the basic moral feelings of love, faith, trust and thankfulness and secondarily the activity of the conscience, the sense of good and bad and the orientation towards moral values.
- The term 'hand' was parallel to 'craft education', 'vocational education', or 'education for work'. The intention was that practical activity combined with dexterity and physical strength developed common sense and encouraged the determination that one's actions should culminate in fruitful labour (Brühlmeier 1998).

According to Pestalozzi craft training had to be embedded in peoples' general education. Consequently, every artistic ability had to be connected with the intellectual and moral powers (Barnard 1859). Education of the body had to be in harmony with nature's demands and give sufficient space for the child's urge to move around and play. A functioning school in which children had to sit unnaturally still for hours was not in accordance with nature (Thorarinsson 1891).

Based on Pestalozzi's ideas of training by observation and experience Froebel (1782-1852), developed the idea that children are inherently creative and express themselves best through action. He felt that handwork lay at the centre of all learning (Thane 1914). Froebel converted Pestalozzi's theories into practice with the development of the first "Kindergarten" in 1837. In this school the predominant idea was "(a)s activity precedes thinking, education must begin with doing; and that from this impulse to activity all education must evolve." (Bennett 1926:166). From craft activities, students could discover, arrange, invent and control. While Froebel worked mainly at the kindergarten level his idea of, "self-activity and the creative tendency of

the human mind," (Vaughn & Mays 1924:24) would have a profound impact on the way future educators would look at how children learn.

Pestalozzi was not actually a teacher but the practical framework for his ideas was based on Fröbel's methods (1781-1852) (Thane 1914, McArdle 2002 & Thorarinsson 1891). In Fröbel's Kindergarten, physical work was meant to be in harmony with the spiritual aspect. According to Fröbel's and Pestalozzi's ideas the spirit and the body were constantly co-operating, helping the child to understand the world around him (Thorarinsson 1891). Fröbel had little or nothing to say about further craft activities in later educational stages. Pestalozzi, however, opened experimental residential schools for the children of the poor (McArdle 2002 & Thorarinsson 1891) and although his instructional methods of using tools and manual labour to teach traditional school subjects were quite successful, his schools were not financial successful. However, Fellenberg (1771-1844), a contemporary of Pestalozzi, operated a number of these manual labour schools. His lasting contribution lies in the methods of administration and supervision he developed for this type of educational institution. Following the work of Pestalozzi and Fellenberg, many similar schools were established in Europe and America (McArdle 2002).

Uno Cygnaeus and pedagogical craft for general education

The Finnish educationalist Dr. Cygnaeus (1810 – 1888) founded public schools in Finland 1866 (Kananoja 1989). Cygnaeus developed Pestalozzi's and Fröbel's ideas further and introduced craft as a pedagogically based compulsory subject in order to improve general education in Finland (Thorarinsson 1891). Cygnaeus maintained that handicraft in school would not provide vocational training (Thorbjornsson 2006). Manual labour was an important aspect of the upbringing of all children. It contributed to an understanding between all classes of society and provided physical exercise (Bennett 1937).

Cygnaeus observed various European school systems when developing a proposal for the Finnish system. After studying schools across Europe, he decided that the first step in creating a system of general education in Finland would be to train teachers (Kananoja 1989). Cygnaeus started a teacher-training school in 1863 based on a curriculum that included a Pestalozzian view of manual labour or handicrafts. To emphasise this, craft became a part of the general curriculum (Kananoja 1989).

Cygnaeus drew a sharp distinction between handicraft or manual arts as part of the general curriculum and

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Figure 1: The photograph shows one of Cygnaeus craft classes in Jyväskylä around 1860

handicraft as part of a technical or specialised education (Kananoja 1989). He insisted that the handicrafts should be taught by regular teachers, not by special craftsmen (Bennett 1937). In 1866 manual training in Finland developed in two ways; males in rural communities were required to take the program and teaching centres had to offer courses with related content (Vaughn & Mays, 1924). With the implementation of his system of universal education for all citizens, Finland became the first nation to make handwork an integral part of a national scheme of elementary education (Bennett 1926, Kananoja 1989 & Kantola 1997).

Otto Salomon and the development of the Sloyd pedagogy

The Swedish educationalist Salomon (1849–1907) developed Cygnaeus's ideas for pedagogically based craft education further using the term Sloyd (Thorarinsson 1891, Kananoja 1989; 1991 & Kantola 1997). The term *Sloyd* is related to the old Icelandic word *slægur* with the original meaning being connected etymologically with the English word sleight (as in "sleight of hand"), cunning, artful, smart, crafty and clever (Nudansk Ordbog 1990, Den Danske Ordbog 2003-2005 & Borg 2006). *Sloyd* comprises school activities which use craft to produce useful and decorative objects. It is a pedagogical system of manual training which seeks to develop the child in general, through learning technical skills in woodworking or in sewing and knitting, and making useful objects by hand (Borg 2006 and Salomon 1893: 63). Sloyd for boys and girls was introduced in the 1880s in the Nordic countries where different countries gave the subject different names for similar content. For example, in Iceland the teaching of Sloyd was introduced under the name *school industry* and was later named *smidi* (Thorarinsson 1891).

Salomon's theories were strongly influenced by Cygnaeus (Salomon 1892). Cygnaeus taught Salomon that the hand

and mind worked in concert (Thorbjornsson 1990). Cygnaeus encouraged Salomon to study Rousseau, Pestalozzi, Fröbel and other pedagogues (Kananoja 1989). Salomon adapted many ideas from them; ideas which he later developed into a collective theory and a system for teaching handicraft in elementary schools. Salomon believed that the Sloyd system should be a part of general education for all students, both girls and boys and that instructors should be properly trained in the techniques of the system and not merely tradesmen (Bennett 1937, Thorbjornsson 1990 & Thorarinsson 1891).

However, contrary to the views of Cygnaeus, Salomon felt there should not be a division between handicraft as part of the general curriculum and handicraft as part of a technical or specialised education (Salomon's letters to Cygnaeus 1877-1887). In a letter to Salomon, October 28th, 1877 Cygnaeus wrote: *"Even if we agree, that Sloyd is important in the folk school, I think that the handicraft methods must be substantially different in the common folk school and in a special vocational school. In the former, handicrafts must be considered and handled first and foremost as a formal means of civilization and organised accordingly, so that the aim will be the development of the child's sense for form and beauty and general dexterity, and the drill of craftsmanship of all the possible work will be avoided. In the handicraft school the aim must be dexterity in various crafts and practicing it in order to secure the sale and economic profit of the products. The former concept of the aim of crafts has the natural development connection to the pedagogical system of Pestalozzi and Fröbel, and it should have the undeniable importance"* (Salomon's letters to Cygnaeus 1877-1887).

Salomon's system for educational Sloyd was more structured than Cygnaeus's (Bennett 1926). The child became the centre of Salomon's didactic system and he focussed on the development of the capabilities of the whole person. He underlined the importance of teaching basic knowledge and skill in the beginning to enable more advanced stages in the development of the individual as a good citizen (Moreno 1999), (see Figure 2).

Salomon was focused on the analysis of processes and their use in educational instruction. There were three key elements in his system; " (1) making useful objects; (2) analysis of processes, and (3) educational method" (Bennett 1926:64). Salomon's system included the following aims (Salomon 1892):

1. To instil a taste for and an appreciation of work in general.
2. To create a respect for hard, honest, physical labour.

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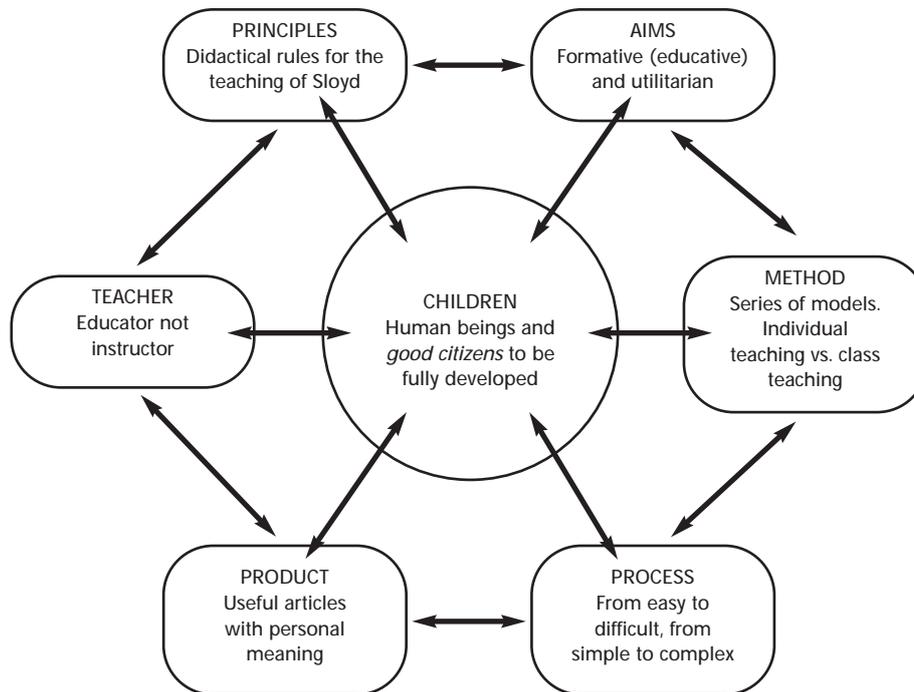


Figure 2: The didactic system of Salomon for Sloyd education developed by Moreno (Moreno 1998)

3. To develop independence and self-reliance.
4. To provide training in the habits of order, accuracy, cleanliness and neatness.
5. To train the eye to see accurately and to appreciate the sense of beauty in form.
6. To develop the sense of touch and develop manual dexterity.
7. To inculcate habits of concentration, industry, perseverance and patience.
8. To promote the development of the body's physical powers.
9. To acquire dexterity in the use of tools.
10. To execute precise work and to produce useful products.

Salomon established his international Sloyd school in Nääs in south Sweden and it became a world training centre for Sloyd teachers in 1875 (Bennett 1926 & Thorbjornsson 1990). Five Icelandic teachers joined his courses during the years from 1875 to 1917 (Bennett 1937). In 1904 he published *The Teacher's Hand-Book of Sloyd*, which was designed to assist teachers in applying a Sloyd course in their school (Salomon 1904). It contains all the information required for the implementation and explanation of Sloyd. It also defined wood characteristics and tool purposes, gave an explanation of the exercises, and example lists of models (Thorarinsson 1891, Salomon 1904).

Salomon's Sloyd centre in Nääs gained international recognition. Until the outbreak of the First World War, over 1500 foreign participants (teachers) from over forty countries arrived to take part in the handicraft courses at Nääs. In just a few decades, Salomon's Sloyd teaching methods developed into an international educational movement (Thorbjornsson 1990). Various international supporters held lectures, wrote newspaper articles and books, formed societies and taught handicraft at their schools. Educational Sloyd was demonstrated at international exhibitions (Thorbjornsson 1990).

Aksel Mikkelsen and the Danish School Sloyd

Mikkelsen (1849-1929), established Sloyd as a general subject in Danish schools after attending a course in Nääs with Salomon. Subsequently Mikkelsen established his Handicraft School (1883) in Copenhagen and started to educate schoolteachers to teach Sloyd in Denmark 1885 (Kantola et al 1999). Mikkelsen formed his own Sloyd model known as Danish School Sloyd. Unlike Salomon, Mikkelsen's system was not individually focused but was built on class instruction (Kananaja 1989). Mikkelsen developed small workbenches and tools for children, both left- and right-handed. In Danish Sloyd the saw was used as the main tool and all classes started with models made with a saw without using a plane. Files and sandpaper were not used: they were forbidden because they could

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Figure 3: From a Danish Sloyd classroom around 1900

hide faults. 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 Sloyd was felt to be too limited, even to learn one kind of Sloyd thoroughly (Bennett 1937).

The general underlying factors and principles of the Danish Sloyd system were:

1. The starting point of all Sloyd instruction should be the natural interests of the child (The Danish Sloyd Guide 1893, p2).
2. The material used should be wood and the tools should be only those in common use. In general, the things made should be objects used in daily life, especially those that require a coat of paint to be finished (The Danish Sloyd Guide 1893, p3).
3. The course of instruction should be organised so as to consist of (a) a small or limited number of groups of models and exercises progressively arranged, and (b) an unlimited number of coordinated extra models. (The Danish Sloyd Guide 1893, p3).
4. Preparatory exercises should precede the work of making the models whenever it is thought desirable to single out a particular process for practice, but the preparatory exercises should always be followed by the making of the corresponding model (The Danish Sloyd Guide 1893, p3)
5. Both class and individual instruction should be employed. Class instruction should be employed to show working positions, demonstrate the proper use of the tools and the sequence of operations needed for the correct construction, etc. (The Danish Sloyd Guide 1893, p4).
6. In class instruction, the general appearance of a model or exercise piece and the general method of making it should be taught by showing the model itself and explaining it; whereas the details of construction and

procedure should be taught through the use of drawings on the blackboard, which should be copied by the pupils into their notebooks (The Danish Sloyd Guide 1893, p4).

7. Tools should be selected or especially constructed to suit the child's size and strength, and no tool should be used by a pupil until its use and "technology" have been fully explained (The Danish Sloyd Guide 1893, p5).
8. The marks of the cutting tools should not be "effaced by the finishing" (The Danish Sloyd Guide 1893, p5).

Another Dane, Meldgaard, had visited the Swedish Sloyd school at Nääs like Mikkelsen. He developed the Sloyd subject along similar lines to Salomon. Like Salomon, Meldgaard preferred individual instruction. A violent personal dispute arose between Meldgaard and Mikkelsen which led to two mutually antagonistic Sloyd schools in the country for many years. Because of this, the Danish Sloyd subject was not able to keep up with general pedagogic developments for a long time.

At this time Iceland was under the Danish Crown. Therefore Danish influences were impacting the Icelandic culture and Icelanders commonly gained their higher education in Denmark (Mikkelsen 1891a). It was probably for this reason that the Danish Sloyd model was adopted in Iceland.

An attempt to adopt Sloyd in Iceland

Around 1890 several Icelandic educationalists tried to introduce Sloyd into the educational system as a part of general education (Mikkelsen 1891). They were influenced by both Mikkelsen in Copenhagen and Salomon in Nääs (Mikkelsen 1891 & Bennett 1937). However, craft was not mentioned in the public school law until 1936. Nevertheless, craft was taught in several Icelandic schools from 1891 (Mikkelsen 1891a).

Supported by parliament, the first Icelandic educational director Thorarinsson travelled to Scandinavia in the summer of 1890, to study educational systems for general education (Finnbogason 1903/1994). At this time Sloyd was a new subject in Scandinavian schools, but still not established in Iceland. During his journey in the summer 1890, Thorarinsson joined a summer course for in-service teachers in Mikkelsen's Handicrafts School in Copenhagen (Mikkelsen 1891a).

In the autumn of 1890 Thorarinsson (1891) gave a lecture in the Icelandic Teachers Association to introduce Sloyd to Icelandic educators. He referred to his studies in Mikkelsen's Sloyd school and suggested that Sloyd should

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Figure 4: Young Icelandic students at work in the craft room (© Arnason 2009)

be offered to Icelandic children (Magnuss 1939). In his lecture Thorarinsson named Sloyd a 'school industry'. He defined it as a 'general education for life' to distinguish it from teaching handicraft for commercial purpose (Thorarinsson 1891).

Along with the Icelandic Teachers Association Thorarinsson wrote a letter to the representative of the Danish government in Iceland and to the Icelandic parliament to seek financial support for starting Sloyd education in Iceland (Mikkelsen 1981). The intention was to get support to educate an Icelandic teacher in the Danish Sloyd School (Mikkelsen 1981) and to establish a school for Sloyd education in Reykjavik. The Icelandic authorities showed interest, but formal support was declined. However, the government gave Thorarinsson (then headmaster) support to start Sloyd education in his school 'Flensborg' in Hafnarfjörður (Mikkelsen 1891b).

At this time there were just a few public schools in Iceland and no laws for general education. The first primary school was established in the Westman Islands in 1745. By 1903 there were 47 primary schools in Iceland with 6210 pupils aged 7-14 (Finnbogason 1905 and Johannesson 1984). Nevertheless, handicraft was taught in just a few schools in Reykjavik and in Skipaskagi. The first law for public education was passed in the Icelandic parliament in 1907. However, handicraft was not included as a compulsory subject (Magnuss 1939).

Thorarinsson was also a speaker in the Icelandic parliament at this time. He tried to convince the authorities of the importance of starting handicraft education as part of general education (Mikkelsen 1891b). In his article on Sloyd or 'school industry' published in 1891 Thorarinsson

explains its pedagogical value: "...the aim of school industry is to assist the mental and physical development of young people, to truly educate them..." (Thorarinsson, 1891).

Thorarinsson (1891) uses the term 'school industry' to distinguish pedagogical craft from 'cottage industry' and to underline the values of craft for general education (see further Figure 5.). The aim of 'school industry' was to use handicraft as a tool in education to educate students to become good and fully developed citizens (see further Figure 3). The aim of 'cottage industry' on the other hand was to educate students to be self-sufficient and to be able to make a living from handicraft (Bjarnadottir 1912) (see Figure 5). Like Mikkelsen and Salomon (Thane 1914) Thorarinsson (1891) underlines the importance of educating Sloyd teachers. Carpenters should not teach 'school industry' as they were not likely to understand the pedagogical value of craft for general education. However, the commonality is the balance between the physical and mental and craftsmanship.

In 1902 another Icelandic educationalist, Finnbogason received a two-year grant to investigate education in Scandinavia. His task was to find better ways to organise general education in Iceland (Magnuss 1939). That same year Finnbogason wrote an article in one of the Icelandic newspapers *Isafold* (Finnbogason 1902) about education in Denmark. According to Finnbogason school subjects were given time depending on their importance. Physical Education was allocated most time and next in importance were Sloyd and Danish.

In his book 'Lydmennnun' (Education for the populace) Finnbogason (1903/1994) suggests what subjects should be included in general education. One of the subjects he

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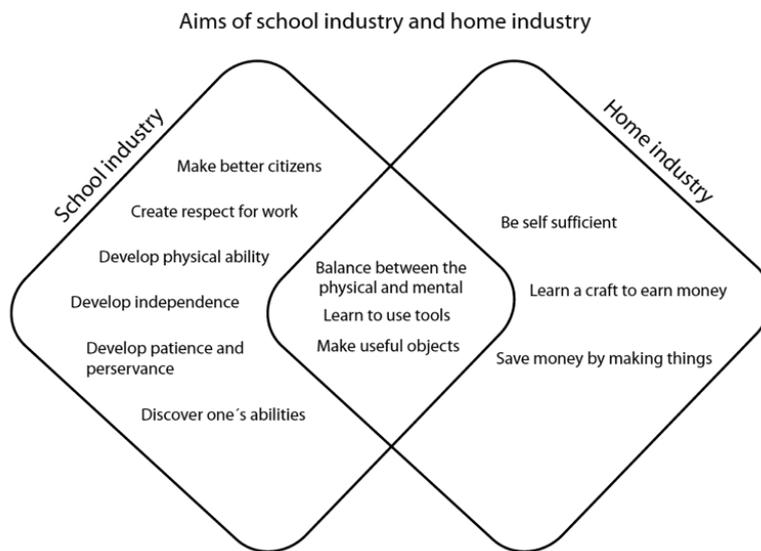


Figure 5: Shows the different aims for home industry and school industry

suggested was 'school industry' or handicraft. In his book *Finnbogason (1903/1994)* states: "When we look at the whole educational picture, there is perhaps no aspect regarding general education more important than that included in the question: How shall we teach the youth to toil with intelligence" (Finnbogason 1903/1994: 105). Finnbogason's educational exploration in Europe and

suggestions regarding general education were the basis of the first law for general education in Iceland that was established in 1907 (Magnuss 1939).

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 ► Textiles	Art and handicraft ► Craft
1989	<i>The National Curriculum (Compulsory)</i>	Art and handicraft ► Textiles	Art and handicraft ► Craft
1999	<i>The National Curriculum (Compulsory)</i>	Art ► Textiles	Information and Technology Education ► Design and Craft
2007	<i>The National Curriculum (Compulsory)</i>	Art ► Textiles	Design and Craft

Table 1: The table shows terms for craft education in the Icelandic school history

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Curriculum development and laws for general education 1907-1989

National curricula for craft education in Iceland have been based on different laws for general education. 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.

The originators of pedagogical craft education in Iceland introduced the ideology of Scandinavian Sloyd for Icelandic educators and authorities. 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 '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. However, 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 and a new subject for Innovation Education.

From pedagogical 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



Figure 6: Young students at work in the classroom (© Arnason 2008)

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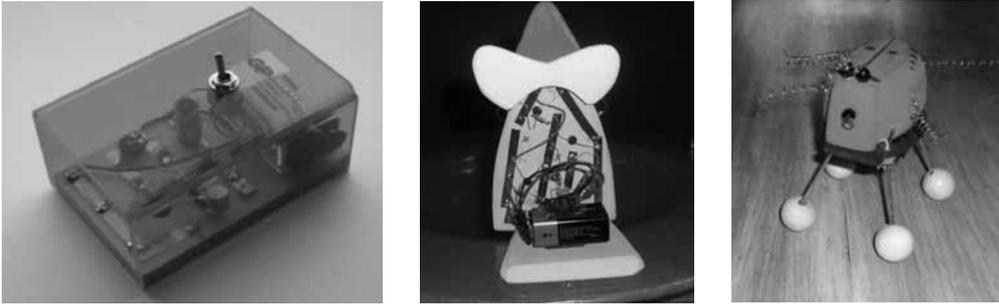


Figure 7: Toys made by students based on simple electronic solutions (© Thorsteinsson 2007)

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 it became an independent cross-curricular subject named Innovation 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).

Figure 8 illustrates the background of the Design and Craft subject in the 1999 curriculum. The emphasis was on technological based craft focusing on design, and

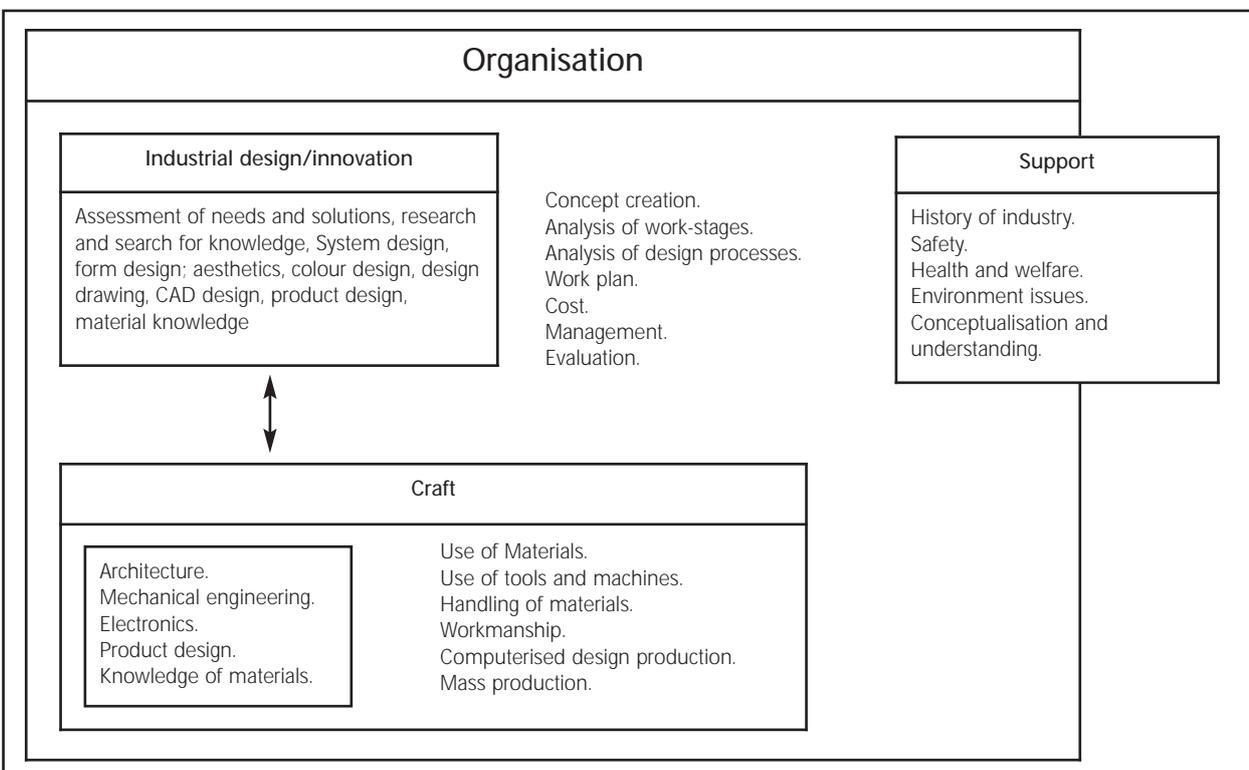


Figure 8: The figure shows the infrastructure of Design and Craft in Iceland 1999

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innovation. The undertakings were expanded from an earlier 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.

Figure 8: Shows the infrastructure of Design and Craft and the influences from the Innovation Education project (from the National Curriculum 1999).

The present curriculum for Design and Craft published in 2007

The Icelandic Design and Craft Teachers Association (Fis) was re-established around 1999 after being passive for several years. In regular meetings the present 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 technologically based projects. The teachers educated in vocational 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, Hilmarsson, & Svavarsson, 2005).

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

Design and Craft became an independent subject in the new national curriculum. The two curricula from 1999 and

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 organising the work	4. Handicraft and organising 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 culture	8. Health and safety
9. Emphasis on technological based tasks	9. Emphasis on craft based tasks

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

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2007 are similar. The major emphases are listed in Table 2 and illustrate the main differences (The Icelandic Ministry of Education 1999 & 2007).

The influences from “Innovation and Practical use of Knowledge” are still colouring the curriculum. The emphasis on idea generation based on design and invention is the same in both curricula. Technical literacy is equally 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 technological (see Figure 9). The curriculum moves from the manufacturing processes, e.g. 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 (4th, 7th and 10th grade) are listed (The Icelandic Ministry of Education 2007).

Conclusion

In the beginning, Sloyd was analysed as a school activity based on craft that was intended for personal development. The aims were pedagogical, rather than teaching individuals to make objects for a living (Thorarinsson 1891: 7). Comenius, Locke, Rousseau, Franke, Pestalozzi and Fröbel all emphasised the importance of physical training and craft in general education. They influenced the educationalists who established the Sloyd movement in Scandinavia and the originators of craft education in Iceland.

In order to establish a discussion forum the Department of Design and Craft at the University of Iceland asked a few specialists in the education of teachers to classify ideas regarding the purpose and pedagogical values of handicraft education during the periods 1890-1900, 1970-1977 and 1997-1999. A list of ideas found in articles and curricula was set up and classified. The resulting categories were; a) Sloyd values, b) knowledge and skill, c) health and safety, d) maintaining handicraft culture, e) preparation for further education and work, f) other issues. The histogram in Figure 9 shows the percentages of the ideas in each of four of these categories. Each idea could only go into one category. Two categories are not shown as they included only one to three ideas. The outcome is different but shows that the main emphasis is on knowledge and skill during all periods. The emphasis on Sloyd values decreases especially in the last period. Preparation for further education and work is still important in the last period. To maintain handicraft culture becomes more important in the later periods. In the first period the emphasis was on both Sloyd values and on knowledge and skill, but in the last period rationales related to Sloyd values are rarely mentioned.

Figure 9 awakens many questions that need proper examination. Nevertheless, it indicates that Sloyd values are still valid but might be of less importance due to technological aspects. However, in the curriculum 2007 they have been re-introduced.

Although many changes have occurred though different curricula, Sloyd pedagogy is still the basis of the Icelandic Design and Craft subject today. However, the subject is

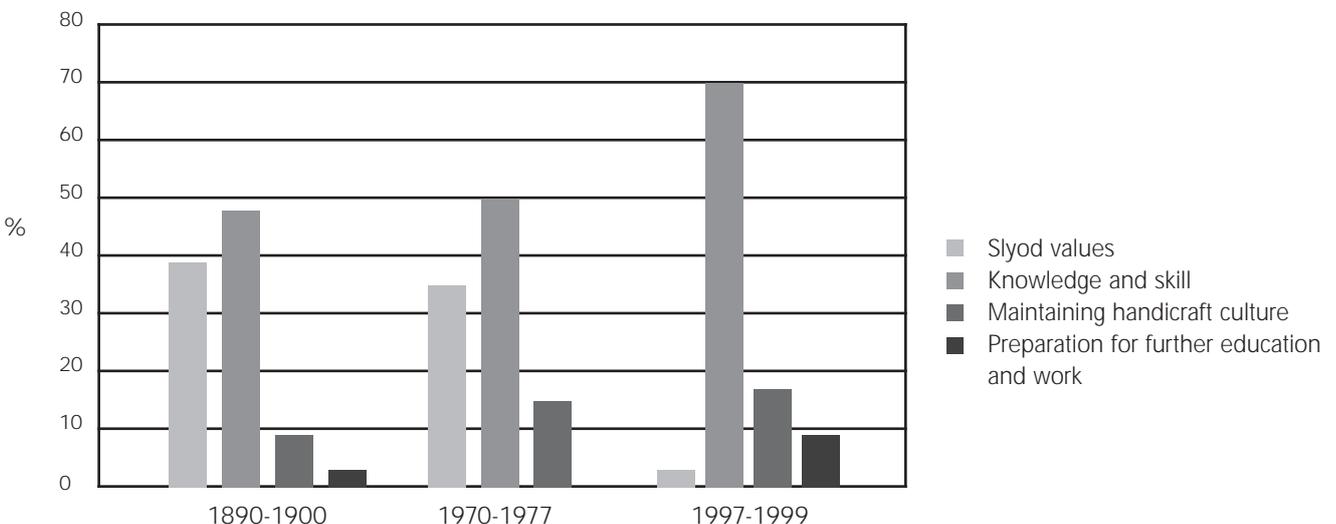


Figure 9: Relative importance of each of the four categories in percentages

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also technologically based and focuses on idea generation. Nevertheless, the boundaries between Sloyd and technology education are sometimes not obvious, but lie mostly in ideological issues. Sloyd 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. Sloyd education also works more with individual needs whereas technological education develops solutions to solve common needs of people (Kananoja, 1997), (see Figure 10).

The new model for the Design and Craft subject is relatively recent 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.

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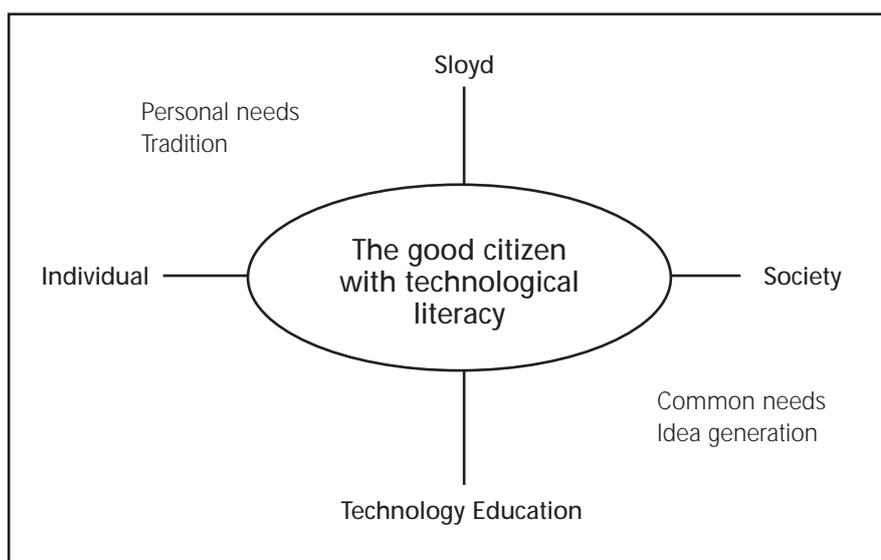


Figure 10: The Design and Craft subject is a combination of Sloyd and technology education (developed from Lindfors and Thorsteinsson 2002)

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