David Layton suggests that the technology subject in school has developed by balancing "a range of competing influences" and that a number of "stakeholders" have been and still are paramount to its evolution (Layton, 1994, p. 13). By talking of stakeholders Layton questions a traditional view of the development of subjects, namely that they are more or less copied from corresponding academic disciplines. The stakeholder perspective, on the other hand, implies that school subjects develop by means of a school-oriented logic, in the interplay between different societal actors – stakeholders (cf. also Layton, 1972, 1973). Within the same tradition one finds Thomas S. Popkewitz, who claims that "the history of school content is an intersection with social, cultural, political and economic interests" and that a lot of the research on school subjects is too narrow and limited in perspective (Popkewitz, 1987, p. 3):

Most histories of the formation of the school subjects ignore these relations by locating the broadening of the curriculum . . . to the formal functioning of professional committees and administrative problems of schools . . . (Popkewitz, 1987, p. 3-4).

Ivor F. Goodson has studied the development of several school subjects, for instance, biology, geography and technology (Goodson, 1988, 1994), and his arguments are similar to Layton’s and Popkewitz’:

It would seem that, far from being timeless statements of intrinsically worthwhile content, subjects and disciplines are in constant flux. Hence the study of knowledge in our society should move beyond the a-historical process of philosophical analysis towards a detailed historical investigation of the motives and actions behind the presentation and promotion of subjects and disciplines (Goodson, 1988, p. 165).

Research in technology education as a means of strengthening technology in the school curriculum could thus benefit from Goodson’s creed of “detailed historical investigation”. Research on the historical background to technology as a knowledge domain and practice in the school is still in its infancy and most of this research is carried out within the fields of history of education, curriculum history and technology education. In the latter field, this research was initiated only in recent years. In particular in UK and US technology education there has been historical research for a while and it has essentially been aimed at sketching a background to and shaping the identity of technology in schools. It has not been unusual for researchers – including David Layton, Edgar Jenkins, John Pannabecker, Stephen Petrina and others (see, for example, Layton, 1973; Jenkins, 1979; Pannabecker, 2004; Petrina, 2002) – to have connections both to technology education and history of education, which has strengthened both the educational and historical linkages to technology in the school.
To a great extent, the positive effects of such linkages for present-day technology education have yet to be seen. However, the aim of this paper is to explore three possible areas in which historical research on technology education could strengthen the position of the present subject in the school curriculum – knowledge base, teachers and stakeholders – together with an analysis of a Swedish historical case, technology in civic education. Three main questions are posed: How should the technology curriculum be studied as a historical phenomenon? Why and how did civic education come to include technology in the Swedish continuation school curriculum in the 1920s and 1930s? What are the possible benefits of historical studies for the present technology curriculum?

The nature, methodology and historiography of school technology
Goodson (1994) writes that “subjects are not monolithic entities but shifting amalgamations of subgroups and traditions which through contestation and compromise influence the direction of change” (Goodson, 1994, p. 42). Consequently, if one is looking for the nature of a school subject it is not easy to find a clear-cut answer, since a subject is amorphous and could be defined on various levels and from different perspectives. Depending on what aspects of a school subject that are to be studied the theories, methods and histories will therefore differ.

If the technology curriculum is seen as the manifestation of the subject in the school, there are particularly three areas or aspects of the curriculum that are important in order to historicize the technology subject.

First of all there is the knowledge base. It has been termed technological literacy in recent years and refers to the knowledge in and about technology that students should learn, which also often includes some notion of how they should learn. Technological literacy cannot only be restricted to a subject called “technology”, because there is potential technological knowledge embedded in most school subjects. This is particularly true of historical periods prior to the introduction of technology in general education. In order to pinpoint technological knowledge in other subjects one needs to be guided by a fairly broad, timeless philosophical definition of what technology is (although a philosophical definition is naturally also built upon historically accepted views of technology). A wide, comprehensive definition of technology, sufficient for the purpose of this study, is taken from Ginner (1996): Technology is everything that humans put between themselves and their environment in order to fulfill different needs as well as the knowledge and skills that they develop and manage in this problem-solving process. Kline (2003) is more specific in defining technology as artefacts, sociotechnical systems of manufacture and use as well as knowledge, technique, know-how or methodology (Ginner, 1996; Kline, 2003).

Secondly, there are the technology teachers, or teachers of other subjects, depending on educational and historical context. They are the ones who put the technology curriculum into practice together with the students. They are also the foremost defenders of school technology, with an own view of what the curriculum should be like.

Thirdly, there are the various societal stakeholders who have an interest in promoting their views of technological literacy and thereby influencing the content and form of the technology curriculum.

This means that the primary focus in terms of source material is the specified curriculum, that is, as found in national curriculum documents and statements. The delivered, or rather, enacted curriculum, that is, teachers’ interpretations and knowledge of technology that they use to plan and implement their teaching, is also addressed, for example, as expressed in journal articles,
handbooks and textbooks. Student learning, the *experienced curriculum*, is entirely left out, however (Banks & McCormick, 2006). The reasons for this are entirely historical. As much as one would want to be able to ask questions about learning to past students, it is unfortunately too late. Historians, therefore, base their research primarily on documents and, if possible, interviews with, for instance, currently active or retired teachers.

The source material used in this paper is, first of all, primary material concerning civic education: official reports, statutes, curriculum documents as well as relevant handbooks, textbooks and journal articles. In curriculum and educational history curriculum documents and textbooks are seen as authoritative texts or genres that have a decisive impact on the content of a subject, although textbooks lie closer to classroom practice. This is not to say that textbooks completely determine what is taught in the classroom, but they are still one of the most important factors shaping the enacted curriculum (Englund, 1986; Hultén, 2008; Selander, 1991). Textbooks have therefore been selected as examples of authoritative texts but also stakeholder views of what should be taught in the classroom. The actual selection of textbooks has been based upon the impact, that is, the most widespread books are the primary object of analysis. Journal articles are not systematically analyzed but selected as examples of stakeholder views at a particular time. Secondly, secondary material is used, mostly for the research overview but also to some extent concerning civic education. A hermeneutic method is employed when analysing the material, that is, single texts are related to the whole body of texts, the genres and historical context in a reciprocal, re-interpretive way (Anshelm & Kylhammar, 1996; Anshelm, 2000).

A history of the technology curriculum in either one of the three areas would gain from a historiographic conceptualization in terms of the breadth of analysis, and for these purposes internalist and externalist perspectives, originating within the history of science, will be employed. The former perspective had long dominated research in the history of science and even historical studies of technology, but this was being questioned from the 1930s onward in both these fields. In the internalist perspective technological innovation is seen as driven mainly by individual scientists and engineers and/or technical innovation/improvement. The centre of interest is the artefact – but very seldom system – itself, not, as in the externalist perspective, society, in which social, cultural, economic and political forces dominate and are seen as the main driving forces (Hansson, 2002; Hallström, 2002; Shapin, 1992). Staudenmaier (1985) adds a third perspective – contextualist – which constitutes a recognition that the internalist and externalist perspectives need to complement one another, that is, one both needs to look for the driving forces of technology in the artefacts and systems themselves and in the broader societal and cultural context. The contextual perspective could be said to acknowledge technological as well as non-technological actors and factors in shaping technology (Staudenmaier, 1985).

Like Pannabecker (1995) I will use these perspectives somewhat differently compared to Staudenmaier, and Pannabecker himself for that matter (Pannabecker, 1995). They are used as conceptual tools for analysing strengths and weaknesses of histories of technology education in the above three areas. Thus the internalist perspective signifies a more narrow focus on what could be considered as internal factors and actors in technology education: the technical knowledge base that is to be taught and the actors directly associated with this, the teachers, without connection to context. The externalist perspective, on the other hand, focuses on stakeholders who are not directly involved in technology education and are consequently regarded as external, together with broader societal factors. The contextualist perspective, then,
encompasses the whole range of actors and factors that affect the evolution of technology education, both internal and external.

**Writing the history of technology education in terms of knowledge base, teachers and stakeholders – a commented research overview**

The concept of technological literacy is used in technology education as a way of establishing what the **knowledge base** of school technology should be and thus what students should know about technology. In curriculum development and research the meaning of this concept has been the object of much discussion in recent years, although due to its manifold meanings it has been difficult to agree upon common epistemological ground (Jenkins, 1997; Waks, 2006; Williams, 2007). To a great extent the problem of finding common ground for definition is historical; the multifaceted historical roots as well as the different educational contexts across the world make it difficult to define exactly what the epistemological core of technology education should be. On the other hand, the complex nature of technological knowledge and activity makes it unlikely that there will ever be a uniform, universally acknowledged definition of technological literacy (Herschbach, 1996; Lewis and Zuga, 2005). Nevertheless, it is crucial to historicize the knowledge base of technology, not least in order to understand the complex present debates.

The most common way of writing the history of the technological knowledge base in schools has been to view it as a miniature version of academic engineering or vocational technology. This is particularly true of histories of industrial arts, engineering and vocational education in schools earlier during the nineteenth and twentieth centuries (see, for instance, Bennett, 1937; Anderberg, 1921). While there certainly is a need for such detailed research on the administrative and historical development of technology in the school, from early precursors to the various interpretations of technological literacy in curricula around the world today, the above examples seem too internal, narrow and limited. It is essential, first of all, to analyse technology as a complex domain of knowledge which is not limited only to the technology subject. Secondly, it must be set against the educational, social, cultural and political context of each historical period (see, for instance, Westlin, 2000, p. 132-159).

Since technology is a young subject in the school, historical research naturally needs to go back before the past 20-30 years and explore the epistemological foundations of predecessors such as craft, industrial arts, educational sloyd, civic education, natural sciences etc. as they were conceived earlier during the 19th and 20th centuries. In the Swedish case, for example, educational sloyd was arguably seen as an early counterpart to technology in general education in the first half of the 20th century, through its pedagogical focus on developing the student by means of manual training and the vocational focus on the use of tools and craftsmanship. Although educational sloyd was but one of many influences and also needs to be seen in its particular historical context in the transition between a rural and an urban-industrial society, it yet constituted the most important early predecessor to the obligatory technology subject that was introduced in the 1980s (Elgström & Riis, 1990; Hallström, 2008).

To broaden the scope of the historical analysis it also needs to include the principal actors in the history of technology education – **technology teachers**. They can be called internal actors or stakeholders operating within the educational system. Indeed, beyond the discursive and epistemological aspects of the technology curriculum it is the teachers that constitute the subject. Depending on historical and geographical context, technology teachers influenced the political
and educational processes of establishing a technology curriculum to varying degrees, and they were the ones who were to enact the curriculum in the classrooms.

As Foster (1995) and Pannabecker (1995) point out, at least American histories of technology education have often been, in Staudenmaier’s terms, internalist in that they have had a very narrow conception of technology education and have primarily focused on the contributions of single “educator-heroes” (Foster, 1995; Pannabecker, 1995; Staudenmaier, 1985). One cannot deny the historical influences of Pestalozzi, Dewey, Salomon, Cygnaeus, Della Vos and many others, nor is it possible to omit single influential teachers, technologists, principals, etc. who have through their work and devotion made an impact on the history of technology education in different countries. However, such histories often become reductionist in the sense that they relegate the evolution of technology education mainly to the efforts of single – internal – actors and thereby largely ignore the wider societal context.

One way of getting away from such historical reductionism would be to study subject associations, since they constitute collective efforts of teachers to defend their subjects in the curriculum, in schools and in society. But even such studies can become internal and focus principally on the associations themselves and their effect on the curriculum. Lindholm (1991), for instance, studies the Swedish Association for Mathematics and Natural Science Teaching (Föreningen för matematisk-naturvetenskaplig undervisning), which later came to include even technology teachers, during the mid-twentieth century. The focus is internalist, even introspective, in that the association and its activities are hardly related to the societal context at all. The work of the association is seen as an internal affair, even when it comes to the political struggle over the curriculum (Lindholm, 1991).

In contrast, Knight (1996) studies both inward and outward activities of the English Geographical Association and the National Association of Teachers of Home Economics and Technology as part of a broader educational, social and political context. Similarly, Layton (1984) expounds the social and political history of the English Association for Science Education and its precursors from the early 20th century until the 1970s and the advent of autonomous school technology, relating it to a wider societal complex (Layton, 1984).

Even a broad history of technology teachers as a collective in the form of subject associations and the like, which takes into account the external, societal factors that influenced them, will be insufficient concerning the introduction of technology subjects in general education, however. In many countries there were either no or few technology teachers and they were not always organized. For instance, in Sweden a compulsory school for the children of all social classes and both sexes was introduced in the early 1960s. Science teachers were organised in two rather influential subject associations, but still the natural sciences were reduced as regards weekly teaching hours. On the other hand, several voluntary vocational technology subjects were introduced in lower secondary education – the most comprehensive being teknisk orientering. The first ever independent technology subjects in general education thus came at a time when there were only very few vocational technology teachers to promote them. Consequently, if one wants to understand this significant shift one has to look for other stakeholders, both teachers of other subjects and actors external to the school (Hallström, 2009b; Lgr 62; Westlin, 2000).
There are several historical studies which deal with both internal and external stakeholders’ influence on the development of technology education, for instance, Elgström & Riis (1990), Hallström (2008), Layton (1984) and McCulloch et al. (1985). A few of the contributions in de Vries & Mottier (2006) might be included in this category, although they do not really employ historical methodology. The main reason for such a broad approach is the fact that curriculum is a political product and in order to do technology education history all the various political and other societal influences on the development need to be sorted out. In the next section I will elaborate on the stakeholder influences on both knowledge base and teachers, so as to come closer to a contextualist and integrative history of technology education.

Towards a contextualist history of technology education – Swedish civic education 1920-1935

In this paper it is suggested that a history of technology education could be carried out fruitfully in particularly three areas – the knowledge base, teachers and stakeholders of technology education. Several examples of more or less successful such histories have been related in the above overview. In this section the three historiographic perspectives from the history of science and technology will be discussed in relation to an empirical example of history writing regarding technology education: a Swedish case of technology in civic education in the 1920s and early 1930s. This was a time when there was no technology subject in general education, but increasingly there were cries from stakeholders for educational attention to technological literacy – in Swedish, teknisk allmänbildning or teknisk bildning. These discussions are essential in order to understand the introduction of voluntary technology subjects in the 1960s and compulsory technology in the 1980s as well as current debates on technological literacy in Sweden (Cullert, 1986; Hallström, 2008; Hallström, 2009a; Westlin, 2000).

In newly-industrialised Sweden universal suffrage was introduced in 1918 to 1921. Parallel to the processes of industrialisation and democratisation there was also an intense period of educational reform, the outcome of which was a modern elementary school curriculum and new vocational schools, among them the mandatory continuation school (fortsättningsskola). The aim of this type of school was for it to be both comprehensive and vocational, and many continuation schools were consequently vocational-technical and considered as part of the technical educational system, which means that there were very likely expectations from certain stakeholders on some form of technological literacy in terms of knowledge base (SFS 1918, No. 1001; Englund, 1986).

These schools and their different subjects were affected by the current societal transformation. Two new civic subjects were introduced as a result of democratisation: home region instruction (hembygdkunskap) for the elementary school and civic education (medborgarkunskap) for the continuation school. The former subject included technical items right from the start. Examples of technical content were clothes, different kinds of materials, houses and their heating and lighting, furniture and household utensils, transport technology as well as working life.

---

1 Indeed, the stakeholder perspective is not at all absent in articles in journals such as International Journal of Technology and Design Education, Journal of Technology Education and Journal of Technology Studies (see, for instance, Lee, 2007; Wright et al., 2008). The difference is that these articles do not address historical problems, nor do they employ historical methodology.
phenomena such as agriculture, trade and industry (Undervisningsplan för rikets folkskolor, 1947, p. 70-79).

In the subject civic education for the continuation school, on the other hand, technical issues were largely ignored initially, at least when looking at the preceding official investigation and the statutes for the continuation school. The investigation emphasized solidarity and responsibility towards others in society as the key aspect of the subject. The cornerstone of the subject (and society) was the family, from which other larger social units emanated (Folkundervisnings-kommitténs betänkande V, 1914). According to the statutes, civic education should include the organisation of Swedish society, the working of various units of social life such as the family, the municipality, the church and the state as well as civil rights and responsibilities in this society. Civic education should, just as the other subjects in this type of school, take as its starting point the local working life; the teaching should thus focus vocational aspects as much as possible (SFS 1918, No. 1001).

In 1919 the National Agency for Education (Skolöverstyrelsen) issued curriculum examples for all the subjects of the continuation school, to be used as a model when drafting local curricula. A national curriculum document was intended at this point, but it subsequently never materialized. The statutes of 1918, and often the examples of 1919, therefore came to be regarded as the official, specified curriculum, on which local curricula and textbooks were based. On the whole, they were very similar, the curricular examples being based on the statutes but more detailed. For instance, in the examples the Agency specified items for civic education – home hygiene (clothing, housing, sanitation), home economics, municipal concerns and their politics, administration and economy, church administration etc. – although it was pointed out that they were not obligatory. The curricular examples for the non-vocational continuation schools contained slightly more technology than the vocational ones – for example, handling communications systems such as post, telegraph and railway (Exempel på undervisningsplaner, 1919).

One of the most central actors behind the introduction and subsequent development of civic education was Värner Rydén, a very important figure in the Swedish history of education. He was originally an elementary school teacher, but had become a social democrat politician and Member of Parliament early on. Rydén was Minister of Education and Ecclesiastical Affairs for a short time in the late 1910s, at which time he issued the elementary school curriculum of 1919 and made the continuation school obligatory for those who did not go on to other secondary schools (Nationalencyklopedin, 2007). He was also the author of the single most important and widespread, but also nationalist and even propagandist, textbook in civic education during the decades after the First World War – Medborgarkunskap för fortsättnings- och andra ungdomsskolor (Rydén & Thomson, 1935; cf. Tingsten, 1969). Rydén thereby came to influence both the specified and enacted curriculum in civic education for decades, both as a politician, textbook writer and in-service educator, and thus constituted a most significant stakeholder.

Rydén realized the influence of technification upon Swedish society in general and education in particular in the 1920s. In a radio talk he expressed the view that a farmer, craftsman or businessman no longer could rely solely on the knowledge of his forefathers. They had to keep up to date or succumb to the competition. Agriculture, for example, required knowledgeable and capable practitioners: “The farmer must be able to keep up with the development of his
profession, study agricultural literature, and have at least the most elementary knowledge of the different branches of natural science…. The same goes for the industrial worker…. Nowadays each professional needs better schooling than before – this is an inescapable truth” (Rydén, 1926, p. 926-927).²

Yet he does not seem to have thought of civic education in the continuation school as a subject instilling comprehensive technical knowledge needed in an increasingly technical society. The content of his textbook is closely aligned with the statutes and focuses on the family, municipality, region, church and nation, from a historical but mainly political science point of view. It is devoid of any obvious technical content, related to the civic issues that are brought up. There are references to technology, for example, municipal infrastructure such as gasworks, water supply and tramways as well as military technology, but they are brief and very peripheral relative to the main political and administrative reasoning of the book (Rydén & Thomson, 1935). The same could be said about one of the other dominating textbooks – Medborgarbok för ungdomsskolor – although technical issues were perhaps a bit more prominent (Helger, 1930).

In order to study the further evolution of civic education one needs to move forward until the end of the 1920s, when the continuation school had been more solidly established.³ To begin with, local teachers as internal stakeholders need to be studied. Johansson (2004) has studied the local curriculum document of 1930 for continuation schools in the city of Linköping as well as minutes of the school board in order to see what they had to say about local teaching content. This case study indicates that the enacted curriculum in civic education was very similar both to the statutes and Rydén’s textbook. Teachers in Linköping seem not to have linked items of the curriculum in civic education to a technological knowledge domain in any conscious way (Johansson, 2004).

Elementary school teachers constituted the prime teacher group in the continuation school. A study of the mouthpiece of the Swedish Association of Elementary School Teachers (Sveriges allmänna folkskollärarförening), the journal Svensk Läraretidning, shows that there were those who questioned the current focus in civic education and Rydén’s textbook. E. Borglund, for example, pointed to the importance of teaching about the home, which was a pivotal item in civic education. However, he argued that in the continuation school the focus needed to be shifted towards the “material conditions for creating a good home” (Borglund, 1927, p. 655). Borglund described a kind of cross-curricular cooperation between civic education, educational sloyd and Swedish, in which his students had made drawings and models of their houses and experimented with rooms, furniture and equipment. Essays were written about how the students reorganized and rebuilt their rooms by painting, putting up tiled stoves, constructing wooden furniture, rearranging power points etc. (Borglund, 1927).

Sven Wikberg, who was a teacher educator, thought that civic education was too broad in scope and that teachers needed to delimit themselves when teaching the subject. One way of doing this was to focus on the home region (cf. the elementary school’s home region instruction),

---

² All translation from Swedish into English has been carried out by the author.
³ The Swedish school districts had been given a few years respite, until the end of 1926, in introducing continuation schools. Then 68% of the districts had formally started continuation schools (Fredriksson, et al, 1950).
particularly municipal services, and this could be done by juxtaposing history and the present.\footnote{The reason for focusing on the home region was that the subject matter should lie closer to the students’ own experience (Lindmark & Ekeberg, 1929).} He took health care as an example, in which different technological artefacts and systems were observable: medical treatment in hospitals but also preventive health care through “good housing, public baths . . . sewer and water systems, public cleansing . . .” (Wikberg, 1928, p. 286). This was by no means the most central aspects of Wikberg’s conception of civic education, but it is nevertheless interesting that it gained quite a prominent position.

His teacher handbook *Handledning vid undervisningen i medborgarkunskap* (1929) was by and large an in-depth account of the same political, administrative and juridical issues that permeated Rydén’s and Helger’s textbooks, albeit with the teacher rather than the student as its target. However, Wikberg also questioned the current way of teaching the subject and suggested a plan for dealing with city governance, in which the management and even functioning of technology became central: water, lighting, gas, public cleansing, road maintenance, traffic and city planning. Moreover, the importance of good schooling for technological innovation was emphasized and there was a section on industrialism and working class issues in which technology played a pivotal part (Wikberg, 1929).

If the context of the analysis is widened and stakeholders external to the school in the late 1920s and early 1930s are to be studied, the engineering community seems to be a relevant choice. Engineers were generally pragmatic and focused on the engineering and industrial implications of education (see Hallström, 2008). As a result, they often thought that the continuation school should be either more vocational or abolished altogether in favour of clear-cut technical-vocational schools. Alternatively, the elementary school could be extended, so that students could go directly to existing technical schools at the next level – *lärlingsskola* and *yrkesskola* (see, for example, Avdelningen för teknisk undervisning, 1927).

Yet there seems to have been cries for attention to technological literacy/*teknisk bildning* in civic education from members of the engineering community at roughly the same time. In the early 1930s the engineer Arvid Centervall made a speech entitled “Is our people interested in technological literacy [*teknisk bildning*]?” in which he questioned a common notion in early 20th century Sweden, namely that Swedes had a strong natural aptitude for all things technical (cf. Elzinga, et al, 1998; Mellström, 2009):

> It is not unusual for both younger and older citizens to become greatly enthusiastic over, for instance, new innovation and instantly want to know everything about it. It soon becomes apparent, however, that this interest is very superficial. In reality one should rather compare this with the joy and curiosity of children over new toys. This hardly constitutes any deeper thirst for knowledge, because as soon as they have learnt which button to press in order for the device to “go” . . . they usually feel satisfied. Trying to comprehend what is going on, and takings pains to understand why one should do this or that, is generally a lack of both patience and power of concentration for.

> A shallow interest . . . certainly exists to a great extent, and it is sufficient when it comes to using and taking advantage of technological progress. However, it is not enough for a nation that wants to carry on constructive activities in this area. . . . This requires a deeper interest, an interest that really tries to penetrate the nature of things (Centervall, 1932, p. 5).
Centervall went on to say that it was unfortunate that so many wanted to take advantage of industrial products but still considered industry itself uninteresting, even inferior. This was even true of “textbooks in civic education”, by which he very likely meant Rydén’s, and perhaps also Helger’s, book (Centervall, 1932, p. 6):

While in our public schools we learn names etc. of various cities, plants and animals, mountains and rivers in foreign countries that we will never see, the pocket watch, telephone, car, railway engine, printing presses, textile and agricultural machines . . . remain secret mysteries to most of us, despite their great practical significance (Centervall, 1932, p. 6).

Swedish society was being transformed as regards industry and technology on a grand scale in the 1920s, although this process was somewhat slowed down during the depression of the 1930s. Nonetheless, it is likely that, at least regarding civic education, Centervall was right in that modern industry was still so young in Sweden that it had not yet made an impact on the emerging school teaching about society and civic life (Centervall, 1932).

Apart from industry, however, there was greater attention to technical issues in civic education in the early 1930s, facilitated by the focus on the home region that many stakeholders advocated. A survey of what students actually learned in civic education during the years around 1930 also concluded that teachers should sacrifice political science issues and instead emphasize the home region even more than before (Lindmark & Ekeberg, 1931). Although Rydén’s textbook remained virtually the same as before, other books followed the new trend. Helger’s classic book incorporated in its 1935 edition a whole new chapter on the road system and its administrative and technical working, a sign that motoring had become so prevalent that it affected municipal administration and civic life by this time (Helger, 1935). There is also Thurén & Lindholm (1935), which gave more attention to technology in the home, municipality, local trade and industry as well as health care. Especially in relation to joint concerns in the local community the authors took up several technological systems – roads, lighting, water supply, public cleansing etc. Communications systems such as railroads, radio, telegraph and telephone systems were also touched upon. Furthermore, there was a large section on different professions and even technical ones were highlighted (Thurén & Lindholm, 1935).

A couple of decades later, a technical domain of knowledge had become an established part of the curriculum in social science (samhällskunskap), the successor to civic education in the then dominating 7-9-year long elementary school and 9-year compulsory school experiment. This technical knowledge was related to home and family (the house, clothing etc.), working life, trade and industry as well as communication (Undervisningsplan för rikets folkskolor, 1958; Timplaner och huvudmoment vid försöksverksamhet med nioårig enhetsskola, 1960). In particular the curriculum for the elementary school, whose seventh and eighth grades were intended as successors to and substitutes for the continuation school (cf. SOU 1944:20, p. 112; Marklund, 1980), harboured technical elements in social science, for example, related to home and family and communications technologies:

---

5 Despite this Rydén’s co-author Thomson promoted the focus on home region administrative issues at the expense of downright political science at this time (Thomson, 1933).
According to Englund (1986), in the transition from civic education to social science during the 1940s and 1950s the subject changed from focusing a democratic and civic content to rational-scientific methods. However, despite the scientific dominance there were still civic values embedded in the subject: “This value base implied the gradual incorporation of the individual into a society embarked on technological and economic growth” (Englund, 1986, p. 302).

The content of the social science curriculum reflected this change, but the historical development from the mid-1930s to the late 1950s needs to be studied in more detail. In doing so one should not be restricted to neither the internalist nor the externalist conception of historical development. Clearly a change as regards technical content in civic education started as early as the late 1920s, initiated both by internal stakeholders, such as teachers, and external ones, for example engineers and politicians, but this needs to be studied in more detail beyond the mid-1930s. Such a study needs to take into account all the various actors and factors, both internal and external to school technology, that influenced the direction of change, in short, it needs to be contextualist. This seems also to be in line with Layton’s admonition not to neglect the “range of competing influences” and “stakeholders” surrounding technology education, see figure 1 (Layton, 1994, p. 13).

**Figure 1. Internalist, externalist and contextualist approaches to the history of technology education**

![Diagram showing internalist, externalist, and contextualist approaches to the history of technology education](image)

*Sources: free adaptation of Staudenmaier (1985); Pannabecker (1995).*

**Conclusion**

A first conclusion that can be drawn is that a history of any of the three areas must include a consistent analysis of the educational, social, cultural and political context to be able to fully grasp the problematic related to the evolution of technology education. In order for this to be achieved in full it is crucial that contextualist studies of technology education be carried out. As
was indicated in the above research overview several such studies already exist but many more need to be written.

Secondly, one very important reason for doing the history of technology education is to “uncover” its roots, that is, to go back before its introduction 20-30 years ago, because the complex nature of the present subject is to a great extent due to its historical heritage. This is also why writing the history of technology education is such a demanding challenge. How does one show which root preceded which branch? The items of mundane every-day technology, for example, so central a part of present-day technology curricula in Sweden and in many other countries, where did it originate?

Thirdly, this study suggests that in Sweden civic schooling in the broadest sense – home region instruction (hembygds kunskap), civic education (medborgarkunskap) as well as social science (samhällskunskap) – probably contained the seeds of today’s emphasis on mundane technology. Somewhere around 1930 there was a significant shift in the enacted curriculum of medborgarkunskap from more general political science items towards the administrative working of the home region, much like the subject matter of the elementary school subject hembygds kunskap. This shift made technological matters come to the fore: technical appliances and systems in the home, community services, city planning and every-day communications technologies. Apart from Centervall, the involved internal and external stakeholders probably had little ambition to convey knowledge in and about technology per se, but rather civic issues as they were affected by technology. Sweden was technified on a grand scale in the 1920s and 1930s, perhaps more so than in many other Western countries, and especially the home was the object of technical rationalization (Elzinga, et al, 1998). Civic issues were therefore more and more technified at this time, which is also increasingly evident in some of the studied textbooks and journal articles.

However, although there is certainly a need for Goodson’s “detailed historical investigation” the historian cannot know for sure about the existence of relevant source material (Goodson, 1988). It seems to be meagre regarding subjects in which the historical actors did not consciously put technological items. There was also mundane technology in, for example, educational sloyd, so what was its contribution? And what role did international influences from practical and civic subjects in the rest of Europe and the USA play? It is well-known that American school conditions and educational philosophy, notably through John Dewey, were influential, but not very much about their actual impact concerning technology (Bromsjö, 1965). More extended and thorough historical investigations would undoubtedly lead to more answers – this papers is, of course, also a call for such studies – but even a result in the form of a number of questions is itself a reward. The historian has then arguably succeeded in showing the complexity of the history of technology education, which should warn against too ready solutions in the present debate about technological literacy.

Nevertheless, as was also shown by Hallström (2008), a great deal of the content of the Swedish obligatory technology subject of the 1980s and its present-day counterpart could be traced back to the 1920s and 1930s. Modern comprehensive school technology thus did not spring from a historical vacuum, but contained elements with a long historical tradition in other subjects. The practical elements inherited from educational sloyd still play an important part and so do natural science aspects on certain items, for example, electro-technology and mechanics. Societal aspects and items of mundane technology, as has been shown, were at least partly derived from civics. Yet comprehensive aspects have gained ground at the expense of ‘pre-vocational’ items, and the
definition of technology underlying the current curriculum is much broader than technology merely being industrial-practical work or an application of science. The current element of history of technology, which is quite a unique feature from an international perspective, can perhaps be traced back to certain interpretations of the home region instruction curriculum (Cullert, 1986; Elgström & Riis, 1990; Hallström, 2008; Technology Curriculum for the Swedish Compulsory School, 2000).

Finally, by writing contextual history of technology education in the suggested three areas it is not only possible to obtain knowledge of why and how technology education ended up where it is today. This historical knowledge could, in turn, also serve to strengthen the position of technology education in today’s school curricula in three ways:

1. one can strengthen the identity of the amorphous subject domain of technology through knowledge of the diverse historical roots. The technology subject need not take full responsibility for the development of technological literacy in the school, for there used to be, still is and probably should be technical content in other subjects as well. Here researchers and technology educators need to rely also on input from the sociology and philosophy of technology in defining the role of the technology subject in achieving technological literacy.

2. One can learn how to act strategically today from past ways of organizing the curriculum, selecting content, building alliances with other subjects, balancing different stakeholders and influences.

3. One can find better ways of relating the knowledge base of technology education to changes in society, for example, technological and environmental change, changing conceptions of student learning, changes in the global economy etc.

References


*SFS* 1918, No. 1001, Kungl. Maj:ts nådiga stadga för fortsättningsskolan; given Stockholms slott den 16 september 1918.


Information about and address of the author:
Jonas Hallström, Ph.D., Associate Professor, 
Linköping University, S-581 83 Linköping 
Sweden
jonas.hallstrom@liu.se