Processes or/and Products – What do teachers assess?

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Abstract

This paper draws on research that is part of a larger project supported by the Swedish Research Council investigating communication and learning in Sloyd practices. In the paper I provide a brief outline of what the Sloyd subject is in Swedish schools and what the similarities and differences are between Sloyd and Technology. It is hoped that the issues raised through the Sloyd research will be helpful in considering similar issues in Technology Education.

What learning qualities and other values do teachers describe, when assessing their students? It is known that classroom talk is not very developed in Sloyd classes. How then is it possible to teach and to learn during Sloyd lessons? According to the result from the National Evaluation of all subjects in Swedish schools, Sloyd teachers and their students, to some extent, had different opinions about what qualities of learning were desirable. The teachers put priority on assessing the processes, while the students thought it was the result and finish of every product that was most important when teachers made their assessments. I will discuss what teachers think they assess, based on repertory grid interviews and using analysis frameworks from other research in art education. The results indicate some difference between the language used for thinking and the language used for communication. I argue for the need to develop professional languages for use in learning, teaching and assessment in Sloyd classrooms and suggest there may be parallel issues for Technology Education.

Key words

education, Sloyd, Technology, design, crafts, assessment, curriculum, repertory grid, professional language

Background

In this article I will present research, which has been produced within a three-year research project *Communication and Learning in Sloyd Practices,* supported by the Swedish National Research Council. The project aims at contributing to increased understanding of teaching and learning in Sloyd[1] (Lindström, L., Borg, K. et al., 2003). This paper is connected to a subproject whose aim is to investigate what learning qualities are fostered by good Sloyd teaching. I will discuss here what Sloyd teachers think they assess, based on repertory grid interviews and what it seems they assess based on the outcome of the computer program constructs.

Sloyd was introduced as two subjects (textile work for girls and woodwork for boys) in Swedish schools more than 100 years ago[2]. The educational idea was to foster the child in a general, holistic way, dealing with values, habits, attitudes etc. through letting the children make objects/products for daily use in the house or in the family. Gradually the use of objects as models for reproduction was replaced by the idea about fostering childrens' individual development and their ability to express themselves while working with textiles, wood and metal. Nowadays creative processes are focused in the national curriculum for the compulsory Sloyd subject (Skolverket, 2000). Now, in the course of study almost nothing is mentioned about craft techniques or products. The emphasis is on the importance of developing values like self-esteem, aesthetic sense as well as problem solving ability.

Craft, Design, Sloyd and Technology

When society changes also the content in schools changes, either there will be adjustment within old subjects or new subjects will be introduced. Various technological (digital) media are nowadays used as tools for learning and performing, which probably also changes the conditions for educational processes and

[1] With Sloyd means working in mainly textile, wood and metal materials. The subject *Sloyd* cannot be translated as Art and Craft or Design and Technology. It is a unique combination of content, which can be found as parts in different subjects in other countries. To not confuse the reader with halting comparisons, I choose to use Sloyd instead of any other translation.

[2] Sloyd is the English translation of the Swedish word *slöjd*, when it is used in educational contexts as the name of compulsory school subjects in Swedish and Finnish comprehensive school system. The word can be derived from the old Icelandic word *sløgdə* with the original meaning being something like sleight, cunning, artful, smart, crafty and clever.

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subject contents. The main focus in the Sloyd subject has changed over the years, new content and new aspects have been added. The old subject knowledge has been reduced, and while it is unlikely that the older content will disappear, the core of the subject has become wider and more difficult to identify (Borg, 2006). Technology and Design have been introduced as new subjects or subject content that are supposed to fit the need of the modern society. In Sweden, Technology education was introduced as an elective subject in 1970's and it is now compulsory in the nine-year comprehensive school, while Design education appeared in secondary schools from the 1990's. In the comprehensive school Design is a part of the subject content of the Technology subject (Hagberg, 2005). Both the new Design and Technology subjects and the old Sloyd subject face similar problems with showing a clear identity. The goals and aims are sometimes overlapping.

Goodson (1994) has investigated curriculum and history of subjects. He concludes: *First*, subjects are not monolithic entities, but shifting amalgamations of subgroups and traditions, which through contestations and compromises influence the development of a new subject or the direction of change. This is quite the case regarding Sloyd, Design and Technology. *Second,* during the process of becoming a school subject, the pedagogic and utilitarian purposes also have to be defined at university level, by scholars. This has not happened in Sweden. Neither Sloyd nor Technology has specific connections to suitable academic disciplines. The few dissertations can be regarded as isolated contributions and there are still few postgraduate students and so far no professorships in Sloyd or Technology education. This is without doubt a severe weakness of both fields (Hagberg, 2005). Under such circumstances it might be necessary to lean on to research in other disciplines or branches, which might be relevant. Hagberg (2005) recommends that new research may involve practitioners of various kinds like teachers, engineers, technical researchers as well as artists and artisans. *Third*, the debate over curriculum reveals very often a conflict between subjects over status, resources and territory. This is recognizable in Sweden, where there is so far no national consensus. It might be confusion about what is Sloyd and what is Technology. Teachers sometimes have to argue for getting resources for "their" subject. It is also quite common that teachers in wood and metal Sloyd also teach Technology. Teachers in new subjects like Technology and Design have no given, generally accepted subject core to build upon and the difficulties inherent in developing a subject identity have been obvious. The lack of a penetrating and general discussion of what a new subject should contain can lead to varied interpretations in schools and the annexation of the subject by various teachers on pragmatic grounds. On the contrary for the Sloyd subject there is a very strong subject tradition of primarily teaching craft techniques, which might overshadow any initiative to reformulate the subject aims, and confuses the understanding of the role of the subject in schools of today. Teachers in both Sloyd and Technology have problems to describe the core of their subject nationwide, because it may vary quite a lot from school to school, from teacher to teacher. The content of both subjects is wide and interdisciplinary.

What to assess and how to assess students' learning in Sloyd?

First it is necessary to scientifically get to know more about what happens during Sloyd education classes, which support the question *what* can be assessed. Second it is important to know about ways of communication during the Sloyd classes to be able to answer the question *how* Sloyd knowledge can be assessed. Hetland (2006) and her research group have studied Art education classes in USA and distinguished what they call "Three Studio Structures". The sessions are described as *Demonstration-Lectures, Students-at-Work* and *Critiques*. In a Sloyd classroom it is also possible to make the same categorizing of the activities. Through, so far unpublished, results from video and MP3 recordings in the Sloyd classrooms, made by my fellow researchers, it is possible to understand that Students-at-Work might be the main content of most sessions in Sloyd. To a great extent, the classroom talk contains instructions from the teacher as in Demonstration-Lectures. Or the teacher is occupied by answering questions made by the students while they are working in the sessions Students-at-Work. The Critique sessions are generally not very frequent.
There are different tools for communication in Sloyd teaching and learning. The spoken or written language

is not the one and only means of instruction. Very often the teacher demonstrates how to handle tools and how to master craft techniques while the students are supposed to observe, imitate and learn. Now there are also computer-based multimedia (ICT) learning aids available, where the students themselves can learn by repeatedly use a CD or DVD discs and watch what is shown on the screen. The language itself is, so to say, insufficient. When teaching Sloyd, spoken language might be used as a complement to gestures, samples and more or less silent demonstrations (Cederblad, 2007). But when there is time to evaluate, discuss or reflect over the outcome of the lessons and the methods used, spoken language will play the most important role in order for the teacher and student to understand each other. The students are supposed to talk about phenomena that they have learned or experienced without words. But even the Sloyd teachers themselves seem to lack adequate vocabulary for the purpose.

Critiques give structure to both evaluation and reflection. In this paper it is the Sloyd teachers' way of thinking and formulating critique that is especially interesting. One question left to answer, is whether the verbal comments really guide the students towards desirable qualities of learning or not. We learn from the result of the National Evaluation of all subjects in Swedish schools (NU -03) that Sloyd teachers and students to some extent had different opinions about what qualities of learning Sloyd were desirable. The teachers mentioned the priority of assessing the processes, while the students thought that it was the result and the finish of every object or product that was most important, when teachers made their assessments. One possible reason for the discrepancy in opinions might be that there is not enough talk about evaluation and assessment in the Sloyd classroom. The National Evaluation verified that hypothesis. One third of the sample of pupils, who are a statistically representative sample of the total cohort of pupils in Grade 9, never talk with their Sloyd teachers about their progress. Less than 10% talk to their teachers on a more regular basis. The majority of the students are told about their progress once or twice a year through information from the teacher (Skolverket, 2005).

Some research results

The research question aiming at investigating the learning qualities in Sloyd education is highly important because of a possible confusion between what was the traditional way of putting emphasis on the final product and the current trend of focusing on the students' own ideas and how they manage to handle their individual processes. The progression of subject knowledge was earlier guaranteed by the order of suggested objects carefully chosen by the teachers as well as the prescribed working craft techniques. Now it is more difficult to understand, describe or identify the increasing of, or deepened, subject knowledge. It is possible that the assessment methods are influenced in the same way; the old structures of thought are still there in the mind of the teacher, but challenged and enlarged with new aspects to consider.

The repertory grid method was chosen for the research because of the unique possibility to let the teachers write down their own words directly on the computer instead of answering questions from the researcher. This method was developed by George Kelly (1955) under the name of the psychology of *personal constructs*[3]. It is a theoretical framework for studying how human beings make sense of their experience of the world through every person having access to a certain number of personal "constructs" that provide a sort of mental meaning and structure. The constructs are bipolar, every interviewed person is supposed to label the end positions and then rank the elements along the line. In this case the elements were the students' performances and products, which appeared on the computer in accordance with the input from the interviewed person. The method is based on comparisons, contrasting different qualities with one another and ranking, used as tools for getting closer to the meaning of words/concepts. Soep (2000) discuss critique as a phenomenon in her dissertation *Making things with words*. She also suggests making up continua, which are very similar to Kelly's constructs. The difference is that in Kelly's and my case, it is the interviewed teacher him/herself, who makes up the constructs, while Soep presented pre-prepared or negotiated continuum.

[3] The space available does not allow me to describe the method in detail. The method is described in Fransella & Bannister (1977), Borell & Brenner (1997) and Fransella (ed.) (2003) as well as in other handbooks on research methods.

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The main target in this part of the research project was to, through repertory grid interviews, capture as authentic concepts and use of words as possible. According to earlier research in the field, the method is tested as very useful, when the intention is to put words to an inner, not quite verbalized, dialogue (Lindström, 2001). Other researchers have been close to similar ideas, when trying to investigate how teachers think and talk. When learning through participation in practice and in dialogue with other people, it is common to use a palette of examples or cases. The experienced teacher is capable of recognizing qualities, but might have a problem to verbally describe and define what he/she can distinguish. Donald Schön (1983) argues that it might be easier to explain what is *not* suitable than to list what is desirable.

Altogether 98 constructs were collected, generated by nine Sloyd teachers and teacher educators describing how they think about the achievements of their students. The interviews were also documented using iPod recordings. The bipolar constructs could be formulated as "make slipshod pieces of work – make precise work", "inventive – traditional", "dependent on the teacher – work independently", "simple product design – elaborate product design" etc. From the beginning of the interviews it seemed to be easy for the teachers to formulate constructs. As the interview went on, it was obvious that the teachers had to think harder in order to find the most suitable ways to describe the meaning of the triads. Gradually it became more and more difficult to distinguish between slight differences in their way of generating words. The teachers also tended to repeat some words, sometimes with another meaning than the first or second time.

Two examples of the confusion of understanding the underlying meaning of some words are presented below. The text is taken from the transcribed interviews. The first is the concept *creative* or *creativity*, which was frequently used especially by two informants, with different meanings and combinations like: creative problem solving, a creative process is to create pictures instead of copying, creativity is connected to imagination, to be creative is equal to be artistic or ambitious, to take initiatives of one's own, to make one's own judgements, or it is a person who does not need to ask about everything, a student who is independent etc. If the concept of creativity is to be used when assessing students, it is necessary to have reached consensus about how to recognize if creativity has been used.

The second word or concept is connected to *tradition*. It was very often taken to be in contrary bipolar position to having new ideas by the interviewed teachers. Traditional was combined with other words like careful, old fashioned, old things, old craft techniques, objects looking old, specific colour combinations, reconstructing something, the old way of prescribing to make certain objects in certain order in the Sloyd classroom, something common not unusual. Even students themselves could be called traditionalist. All nine informants gave some hints of traditional as something less good compared to thinking new ideas. The impression given from the informants is that they might believe that anything with unusual colour combinations and strange designs is of greater interest because of its novelty than a carefully made replica of something, which might function as a piece of practice for the next project or as an object for inspiration. Maybe the dissociation from the tradition can be explained by their consciousness about the turn of the subject from value products to value processes?

The research result related to other research projects

There is no relevant similar research available within the field of Sloyd. Without having anything to relate to, it is difficult to understand the meaning and the result of a small research project. That is why I relate my findings to two other research projects in Art education. Usually every researcher makes up his/her own qualitative categories. I have in this case chosen to use the result from other researchers as tools for my own analysis.

The first research project is reported by Lindström (2007) with the aim of articulating implicit criteria used by teacher educators and professional artisans in order to assess expertise in craft and design. Lindström wanted to describe the increasing qualities of knowledge from novice to expert (Dreyfus & Dreyfus, 1986). The study engaged two professional craft designers and five students who were going to

Process criteria		Product criteria	
Investigative work	40	The visibility of the intention behind the work	0
Inventiveness	8	Colour, form and composition	12
Ability to use models	5	Craftsmanship, material and techniques	23
Capacity for self-assessment	10		
TOTAL	**63**		**35**

Table 1. The distribution of the content in 98 personal constructs under Lindström's rubrics.

become Sloyd teachers. Their work was documented in individual portfolios and investigated by means of the repertory grid method. In this case it is interesting to relate the personal constructs from my research to the vocabulary developed in Lindström's portfolio-project. His findings generated process and product themes, which I also used to categorize the constructs from my research.

The process criteria are: *investigative work, inventiveness, ability to use models and capacity for self-assessment*. As product criteria the following are listed: *the visibility of the intention behind the work, colour, form and composition*, and finally *craftsmanship, material and techniques*. With a summative presentation in Table 1, I show how the collected 98 personal constructs from the nine teachers and teacher educators in my research project can be distributed in the rubric cells.

Because of the very small sample of teachers (nine persons) it is not possible to generalize any result to any other group of Sloyd teachers. There were no special difference in the answers from the teachers and teacher educators. That is why the results are presented as combined figures. Any figure or comment should be regarded as a hint or a tendency of where the Sloyd teachers put their interest. This has to be further investigated to be verified. The figures do show, however, that the teachers favoured to focus on the process (63 constructs) over the product (35 constructs). It also reveals that most constructs were connected with the explorative work with materials and tools. In the case of ability to use models it is mentioned with a negative turn. Models are usually understood as something to copy in case the student cannot work out what to do on the basis of a personal idea. In capacity for self-assessment there are a group of constructs with content like reflection, planning and subject didactics.

In the right column the most remarkable result is found. The teachers did not relate to the intention behind the product. According to Lindström (2007), the Art teachers who participated in another research project gradually became more conscious of the importance of interpreting visual art work against the background of the students' intentions. This is an important remark because students' performances in Sloyd, as a subject supporting students' general development, cannot be judged according to criteria made up by looking at professional crafts people's performances. Students' intentions might not always correspond to those of the teacher and the "correct" or "good" solution cannot be understood or valued without knowing the intention behind the product. As can be seen in Table 1, the teachers paid more attention to the *craftsmanship* (23 constructs) than to *colour, form and composition* (12 constructs). These figures do not necessary mean that the Sloyd teachers were not interested in colour, form and composition but maybe it was easier for them to find words for craftsmanship when formulating their constructs.

The second research project to relate to in search of a professional vocabulary in Sloyd is conducted in USA by Hetland et al. (2006; 2007), a research team from Project Zero, Harvard Graduate School of Education. Their point of departure is based on earlier research, which has shown that learning take place when making interacts with perceiving and reflection (Winner, 1991). In Arts teaching and learning as well

as in Sloyd teaching and learning, the main focus is not only on developing craft skills and techniques, but also on developing mental habits and alertness to use those skills in a varied way. The research question was: "What does high quality teaching in visual art look like?" The research group studied five teachers in five different schools in Boston with emphasis on Art education. They video-recorded 38 classes and made a number of follow-up interviews. What are interesting in relationship to my research are the categories called *Habits of Mind*, which came out as a result of the categorizing and coding done by the research team.

Hetland et al. (2006) defined eight Habits of Mind, which were developed during the visual art classes. Here follows a short summary of the descriptions:

Develop Craft labels activities when the students work with media and tools to develop craft technique. While they work, they learn about elements of art: form, line, surface, values and artistic conventions, even if they do not need to adhere to them. When students work with craft they also always learn other habits of mind as well.

Engage and Persist is used for learning to embrace problems and to overcome obstacles in order to sustain tasks over time, "how to work through frustration".

Envision. Students in art classes are supposed to generate images and possibilities in their minds through imaginative visualization or modelling processes.

Express. To develop the habit of Express, the students have to think beyond technical skills and focus on the purpose and intention of their work and to show their personal meaning.

Observe is the skill of careful observation. Students are supposed to look more closely than they naturally do and to see with new eyes. They are helped to look beyond their ordinary way at their own works as well as at other works.

Reflect including ***evaluation***. Here students are asked to think about their processes, intentions and decisions. They are also asked to make self-assessments through judging their own works as well as those made by others. This helps them to become self critical and to use criticism as a source of ideas and possible improvements.

Stretch and Explore In the studio classes, students are supposed to work on the limits of their abilities. They are encouraged to try new things and extend beyond what they have done before, and while doing that taking risks of failing or using possibilities to explore the unknown.

Understand Art World is divided into two parts. Students are supposed to learn about their own relationship to the art domain, now and earlier. They are also supposed to work collaboratively with peers on group projects, as well as learning from others' work. This could be labelled as art in society.

Hetland et al. (2006, 2007) do not distinguish between process and product, but between different qualities of knowledge, where process and product criteria might be embedded. It is quite possible to anticipate that similar Habits of Mind will also develop in Sloyd classes, even if the media there is textile, wood and metal materials and different tools and techniques are used. With the help of the coding list from the Hetland project, the constructs from my project were sorted into Hetland's Habits of Mind (Table 2).

	Total	Teacher educators (n=4)	Sloyed teachers (n=5)
Develop Craft	19	5	14
Engage and Persist	29	3	26
Envision	1	0	1
Express	3	0	3
Observe	3	2	1
Reflect and Evaluate	20	11	9
Stretch and Explore	23	13	10
Understand Art World	0	0	0
TOTAL	98	34	64

Table 2. The distribution of the content of 98 personal constructs in Hetland's et al. Habits of Mind.

Looking at the result of my sorting, it is possible to say that most constructs may be connected to Develop Craft and Engage and Persist (all together 48), which are connected with "Student-at-work" sessions. That means what the students do and how they engage themselves in the production and making. Stretch and Explore is another important group, which contains 23 constructs. Here the constructs cover the difference between those who work "traditionally" and those who are brave enough to find their own combinations of materials and colours as more unique ways of designing their objects. The habit of mind called Reflect and Evaluate is of special interest for the teacher educators as well as the previously mentioned Stretch and Explore, which seems quite plausible. Reflection plays a prominent role in the current teacher education program, and to explore beyond earlier limitations of knowledge is what higher education is about. What are most interesting are the few constructs that have been sorted into Envision, Express and Observe. It could be that that those Habits of Mind are not frequently thought of, or discussed by the interviewed teachers, or alternatively they are thought of, but not mentioned. Maybe it is a lack of vocabulary, which causes the low figures?

Summing up

Nine Sloyd teachers were interviewed by means of the repertory grid technique, which created 98 personal constructs. They were asked to write down concepts they used when thinking about assessing their students on the computer. Those constructs have been used in sorting processes using Lindström's criteria for processes and products and Hetland's Habits of Mind in order to relate my results to other research results and in order to interpret the findings.

I found that the nine teachers were more interested in process criteria than in product criteria and that they were more concerned about the actual work with the production, techniques and workshop practices than with the teaching and learning Envision, Express and Observe. They favoured aspects that contain some sort of novelty and variation, while the ability to use models and working "traditionally" seemed less interesting and less rewarding. Reflection in particular, but also evaluation is especially important to the teacher educators. The students' intentions with their work were not covered by any personal construct, but intentions ought to be a topic of discussion between Sloyd teachers and their students. Perhaps that discussion took place earlier during the production process, and the teachers did not think about intentions when assessing the students' work in the end of the process?
When studying the content of the constructs sorted under Develop Craft or Craftsmanship, Material and Techniques, it is possible to anticipate that the old structure of assessing craft techniques and products seems to be the part where the teachers have a usable language. While the lack of constructs under Envision, Express and Observe as well as the Visibility of the Intention Behind the Work, might indicate areas where the teachers lack professional language of assessing. Does that mean that teachers in Sloyd work with assessments in a more intuitive way than other teachers, who use language as the most important mean of communication?

There are some effects caused by using categories and themes from other research projects. My informants raised another aspect of learning quality: the importance of being taught in a practice community and how the social interaction among students and between teachers and students affect the learning outcome. Lindström does not cover this aspect; his themes are based on individual students' achievements. The cooperative aspect is partly included in Hetland's "understand Art World", but the explanation does not cover exactly what my informants meant.

Within any professional or scientific field there is a more or less developed professional way of talking. When using a specific language for communication among professionals, the meaning of the words becomes clearer, less ambiguous. Within artistic fields, painters, writers, actors etc. might discuss the thinking involved in the creative process, genesis of ideas and struggle to realize a vision. Their products are not supposed to be evaluated as products of reasoning or verified experiments but as something aesthetically compelling and in that way regarded as more emotional than, for instance, a design product. The language of designers and the language of the artists therefore have to be similar but different.

The "Sloyd language" is loaded by technical terms while the educational qualities are scarcer and described by words borrowed, but not always well integrated with the Sloyd content, from the field of education. Within the tradition of the Sloyd subject it is more common to discuss "what have you made/produced and what is your next project?", than to discuss qualities of learning and increased knowledge. What the teacher has registered about the student's increased knowledge and skills are not talked about. In Sloyd it will be necessary to look for methods to verbalize the knowledge. Soep (2000) gives an example when she argues for making up bipolar continua when giving critique. The use of these continua gives some structure to the critiques sessions and gives lot of opportunities to discuss the process from possibility, intentions and elaborations to later switch to focus on accountability, evidence and necessity as the work progress. The continua did help the students to situate themselves within the field of getting and giving critique.

Within educational settings the professional language has to be developed and practised when giving instructions, when asking questions, when making analyses, for evaluation, for reflection and when making assessments. The dilemma for teachers and students in Sloyd is that the subject content and methods and even teacher education traditions belong to the field of technical craft as well as the artistic and furthermore the educational field. The language used is therefore a mixture of concepts generated from several areas where the academic level is absent. The historically change in subject focus and the weak connection to research in the field are others problems.

When it comes to Technology Education in the comprehensive school, the problem to develop a language shared by Technology teachers might be even more difficult, because of the multiple perspectives from various fields, which have contributed to the Technology subject. A professional culture connected to research and development of school subjects is needed in order to develop the specific language within different subject fields. But there are overarching areas like research in creativity or assessment methods, which might equally interest teachers in subjects like Visual Arts, Sloyd, Design and Technology (ex. Kimbell, 2005, Lindström, 2001).

The question in the title of this paper has provided some answers and aroused some new questions. The new questions generated by the unexpected results of my sorting might be influenced by the method I have used, but they serve to indicate where further research has to be done. Further and deeper research will need to focus on the language of assessing Sloyd education in the areas represented by none or very few personal constructs. The ways of giving instruction will be studied in a later phase of the research project as well as the language used during the critique sessions. What is reported in this paper is one small step towards a better understanding of the language used for assessments in Sloyd.

Hopefully the research focus in this article can serve as something of interest on a more general level as well. The interest in the vocabulary used, is based on the still mysterious relationship between thought and language. Does the language create the thoughts or do the thoughts create the language? Does the language shapes and regulates thought by providing concepts to guide our thinking (Tishman & Perkins, 1997)? My result shows that there might be a difference between the language of thinking and the language of communication. According to Säljö (2005) Vygotskij argued that the language is first used for communication, and second as a tool for thinking. If so, we have to put the highest priority on developing the language for communication in the Sloyd classroom in order to get tools for thinking, discussing and arguing about the qualities of learning.

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