Drama as a pedagogical tool in technology education

A study of teachers’ perceptions of drama exercises when teaching ethics in technology

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Drama som didaktiskt verktyg i teknikundervisningen

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Abstract

According to the National Agency of Education in Sweden, ethics should be a part of technology education in compulsory school (Skolverket, 2011), though research shows that technology teachers struggle with how they should teach ethics in technology (Kåreklint, 2007). The National Agency of Education also states that although drama does not have its own syllabus in Swedish grade school, it is encouraged that it is integrated in other subjects. The purpose of this study was to inquire how drama can contribute to the teaching of ethics in technology education in secondary schools. This was attempted to be fulfilled by answering the question “How do teachers view the usage of drama as a pedagogical tool when teaching ethics in technology education?”

The inquiry was answered conducting three semi structured interviews with three different technology teachers from three secondary schools in Sweden. All teachers had previous to the interview received and conducted a lesson plan with their pupils, specifically developed for this study, where ethics in technology could be taught with a drama exercise. The interview was largely based on the teachers’ impression of this lesson.

The result of the study shows that all participating teachers were very positive to the idea of using drama as a tool when teaching ethics in technology education. All teachers expressed that the lesson had gone well and they all answered that they could see themselves use drama as a tool again. The conclusion being that drama could be a viable option for teaching ethics in technology education.
Sammanfattning

I läroplanen för grundskolan ska tekniketik vara en del av teknikundervisningen (Skolverket, 2011). Dock har forskning visat att lärare i Sverige har svårt att inkorporera detta i sin teknikundervisning (Käreklint, 2007). I läroplanen för den svenska grundskolan så är drama inget eget ämne, men uppmanas av Skolverket (2016) att integreras i andra ämnen. Syftet med denna studie var att undersöka hur drama kan bidra till undervisningen av tekniketik genom att besvara frågeställningen “Hur ser lärare på användningen av drama som ett didaktiskt verktyg i teknikundervisningen kring etik?”

Frågeställningen besvarades genom att intervjuar tre tekniklärare från tre olika svenska grundskolor. Innan den semi-strukturerade intervjun hölls hade lärarna mottagit och utfört en för denna studie designad lektionsplanering där tekniketik lärdes ut genom en dramaövning. Intervjuerna vilade till största del på den uppfattning lärarna fått kring lektionen i fråga.

Resultatet av studien visade att alla medverkande lärare såg positivt på att använda drama som ett didaktiskt verktyg för att lära ut tekniketik. Samtliga lärare uttryckte att lektionen hade fungerat bra och att de planerade att fortsätta använda dramaövningar i framtiden. Slutsatsen var att dramaövningar kan vara ett alternativ för undervisning av tekniketik.
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Introduction
Drama, as we define it today, can be traced back to ancient Greece, around 2500 years ago. There they celebrated their gods with song and dance, and eventually started to act out these stories as if they were the gods themselves (Jansson, 2010). Since then drama has been a part of our society, its importance and purpose vary through the centuries, but is always present.

Ethics, as part of technology education, is not a clear defined concept. According to the Swedish technology philosopher Sven Ove Hansson (2009) ethics is a term that is hard to define, but regards to what the right course of action is in relationships and societies (p. 29) (Author’s translation). The vague definition, along with the subjective nature of ethics which causes teachers to be unable to take the position as a lecturer, and solely present facts to pupils, is some of the reasons Kåreklint (2007) gives as to why teachers in Sweden can find it hard to make it a part of their technology teaching.

This study examines the use of drama in ethics education in technology classes, for the purpose of giving teachers the tools they need to teach the subject. The main research question is answered with semi-structured interviews with three Swedish secondary teachers, after they taught a lesson by following a specially designed lesson plan with their pupils. The lesson plan describes drama-based learning in the field of ethics in technology education.

The study aims to contribute to two parts of the pedagogical research field. The first is drama-based learning. Drama-based learning’s pedagogical advantages has previously been researched, with some examples presented later in this study. However, no studies were found specifically on drama-based learning in technology education. Hopefully, this study will fill this gap, and answer whether drama-based learning could have a place in technology education.

The other part of pedagogical research this study could contribute to, is ethics in technology. Like previously stated, Kåreklint (2007) has in his research noticed that technology teachers has a hard time incorporating ethics when teaching technology. Though no research has been found where means of teaching ethics in technology has been presented as a viable option for Swedish technology teachers. The drama-based exercise presented in this study aims to contribute to this field of research.

Research question
The main purpose of this report can be phrased the following:

“To examine how drama can contribute to the teaching of ethics in technology education in secondary schools.”

This purpose can be fulfilled by answering the following inquiry:

- How do teachers view the usage of drama as a pedagogical tool when teaching ethics in technology education?
Drama as a pedagogical tool in education

History
Drama as a pedagogical tool can be traced back to the 10th century, then used by the church. The church had problems conveying their message to the people, since most were illiterate and the sermons were in Latin, which most did not speak. Therefore the church started acting out scenes from the bible (Jansson, 2010), to teach the biblical message to the masses in a way they would understand.

These sorts of biblical plays were introduced to schools in the 16th century, with Martin Luther as an important spokesperson for its pedagogical values. Swedish schools were not late to follow, and so the first Swedish written play, a religious school play, dates back to the 16th century (Rasmusson, 2008).

During the following two centuries, drama had a largely non-existent part in schools. But with the start of the 20th century, the birth of drama as the pedagogical tool we recognize it as today, took place. In the beginning of the 20th century a new school of pedagogy had grown big both in Sweden and in the rest of the world. This new way of teaching praised a pedagogy with emphasis on “learning by doing” to nurture the pupils creativity and self-esteem (Rasmusson, 2008). In contrast to the old ways, where children were expected to be quiet and obedient, this new school encouraged pupils to be able to reflect and have opinions (Rasmusson, 2008). Drama would have an important role to play here.

Today drama does not have its own syllabus in Swedish secondary schools, but The Swedish National Agency for Education encourages its use in many different subjects (Skolverket, 2016). However the practical use of drama in other subjects in schools is as of today seems limited (Skolverket, 2016). Fredriksson (2013) explains this occurrence as lack of knowledge regarding drama as a pedagogical tool among teachers (p. 69).

In this study, when presenting the lesson plan and analyzing the results, some core key words is of interest in the field of drama. Bellow follows some definitions of those key words.

Definitions
Drama
Just as the origin of the occurrence, the definition of the word drama can be traced back to ancient Greece. The Greek word drama means action (Rasmusson, 2008). It can be concluded by this definition that drama describes the occurrence where you act out, through roles, different scenarios.

Drama as pedagogy
With the phrase “drama as pedagogy”, we can explain how drama can be used as part of our education system. Today drama is mostly used as a tool to socially and creatively strengthen pupils (Rasmusson, 2008).

Role plays
Role play can be defined as a play that depicts a situation from our society. A role play therefore needs realism and can be a tool to reflect and analyze the world around us (Rasmusson, 2008).
Socio analytical role plays

Role plays can be used as a tool to help pupils analyze aspects of society. Björn Magner (1972) developed a method where his pupils got to act out different problems in society, to better analyze and understand them.

Technology education

Technology can be traced to the Greek word “technologia” which translates to “systematic production” (Gyberg & Hallström, 2009). Though we can trace it one step further, since the word “technologia” is derived from the words “techne” which means “art” or “craft” and “logos” which means “doctrine” (Gyberg & Hallström, 2009).

Another way to define technology was attempted by Svante Lindqvist (1987). He defined technology in eight steps, deriving from how people mostly use the word:

1. Technology is the use of machines, gears and tools
2. Technology is applied science
3. Technology is man’s methods to conquer nature
4. Technology is man’s methods to conquer the physical environment
5. Technology is man’s methods to satisfy their needs through the use of physical objects
6. Technology is the methods used to process raw material in order to increase their usefulness
7. Technology is man’s methods to satisfy their wishes through the use of physical objects
8. Technology is all rational, effective activities

According to NE, the national encyclopedia, (Nationalencyclopedin, 2017) the definition of technology is the following: “… the generic term for all of man kinds’ methods to satisfy their wishes through physical objects” (Author’s translation). Which seems to share similarities with Lindqvist’s 7th definition. However, Bjurulf (2015) points out that though NEs definition is relatively easy to understand, it is lacking in the sense that it only applies to physical objects (s. 17) (author’s translation). The term technology should also contain the knowledge and processes involved in creating an object (Gyberg & Hallström, 2009).

As a result of the many ways to define technology, it has in this study been assumed that different teachers can have different definitions of their subject. This could be of importance when analyzing their views on how it could be taught.

Technology as a school subject has a relative short history and with a content that varies around the world (Gyberg & Hallström, 2009). Since the start of national curriculums for compulsory school in Sweden in 1962, until the introduction of the curriculum in 1980, the subject of technology was optional. It was aimed at pupils in the higher grades and had a clear vocational orientation. The content of the subject was in great length controlled by the industries and was often taught in workshop environments (Bjurulf, 2015).

In 1980 technology as a subject became mandatory, and was taught in traditional classrooms. It was now a part of the natural sciences and Lindqvists second definition, technology as applied science, was used the most in classrooms. In 1994 technology got its own syllabus, but was still affiliated with the natural sciences. Technology shared lesson time with the natural sciences and its syllabus was considered vaguely phrased. The vague definition of “technology” and the unclear syllabus resulted in
teachers that had to model their own definition of the subject, and the technology subject looked very
different from classroom to classroom (Bjurulf, 2015).

Technology education in Swedish secondary schools today follows the syllabus from 2011 (Skolverket,
2011). The new syllabus still gives teachers considerable freedom of interpretation, but gives a more
detailed content than its predecessors (Bjurulf, 2015).

The central content is divided into three general themes: “Technological solutions”, “Working methods
for developing technological solutions” and “Technology, man, society and the environment”
(Skolverket, 2011). Each theme contains several items to be taught during the lessons.

Ethics and technology
As mentioned in the introduction, ethics can be defined as the answer to what the right course of
action is in relationships and societies. Hansson (2009) also phrases it as “being ethical is following the
written and unwritten rules regarding how we should act in different social contexts or roles” (p. 30)
(Author’s translation).

When talking about ethics we need to address the word “values”, specifically ethical values. In contrast
to the term “facts”, values never have one truth, but differs between persons and contexts (Hansson,
2009). The term ethical values is important when addressing ethics in technology, since the differences
in people’s values affects what one think of as “unethical”.

Technical development will always have consequences for our society. Peoples different ethical values
will clash and discussions on what is ethical or not will always be a current debate. To evaluate which
consequences technology could have on society, man and the environment and to consult the
possibilities to affect them, is called technology assessment (Hansson, 2009).

In the syllabus of the subject of technology, ethics in technology can be found under the general
heading “Technology, man, society and the environment” in the core content. Within this term there
are two points of interest for this paper:

- Consequences of choice of technology from ecological, economic, ethical and social
  perspectives, such as in questions about development and use of biofuels and munitions.
- How cultural attitudes towards technology have an impact on men’s and women’s choice of
  occupation and use of technology (Skolverket, 2011, s. 257).

Aside from the core content, phrasing of interest for this paper could be found under the longer-
termed aims for technology education, which pupils should have the opportunity develop all
throughout compulsory school. The sentences of interest here are:

“Asses the consequences of different technological choices for the individual, society and the
environment, (Skolverket, 2011, s. 254)”

“Through teaching, pupils should be given the opportunity to develop their understanding of the
importance of technology and its impact on people, society and the environment. In addition, teaching
should give pupils the preconditions to develop confidence in their own ability to assess technical
solutions and relate these to questions concerning aesthetics, ethics, gender roles, the economy and
sustainable development. (Skolverket, 2011, s.254)”
Previous research

Previous research has been made around the world regarding drama as a pedagogical tool, though no study were found regarding drama in technology education in compulsory school. Concluded below are some studies with interest for this study, due to either similarities in subject, two of the studies examines how drama can be used in science education, a subject that shares a history with technology in Swedish schools. Other studies were regarded as of interest for this study because it originated from Sweden, or because the age group were similar to the one in this study.

Kristina Fredriksson’s (2013) study examines how teachers in Swedish compulsory schools and preschools perceives drama as a pedagogical tool in general, and how much it is used in Swedish schools. The research, conducted in the form of an extensive interview study, shows that teachers’ perceptions of drama varies greatly. Some teachers feel that they lack knowledge in the subject, so they feel uncomfortable using it, and some teachers think it is a great tool for teaching and uses it frequently. The study also shows that drama is mainly used to increase the pupils’ social skills, for example prevent bullying. The teachers’ explanation to why drama is rarely used in their everyday teachings is that drama does not have its own syllabus, and that they therefore cannot take the time it needs, and that they have insufficient skills for drama work.

Osama H. Abed (2016) examined how drama-based science teaching would affect pupils understanding of scientific concepts. This research took place in Amman-Jordan, with secondary, male pupils. Here the drama-based teaching took the form of role playing exercises, were the pupils acted like water molecules. The study was conducted by creating two groups of pupils, one that had the drama exercise and one control group, that was taught the same material in a traditional way. These two group took the same exam afterwards, to see which group who had learned the material best. The study shows statistically relevant increase in the pupils understanding of scientific concepts in favor for drama-based learning.

Rebecca Hendrix’, Charles Eick’s and David Shannon’s (2012) study greatly resembles the one concluded by Abed (2016). The Hendrix et al study took place in the United States, with upper elementary pupils (4th and 5th grade), and examined how drama affected the pupils understanding of scientific concepts. This study was conducted the same way as the Abed (2016) study, with control groups and exams, and like Abed, the study shows an increase of understanding of the concepts in favor for drama-based learning.

Marios Koukounaras-Liagis (2011) investigated how theatre in education could influence pupils’ perceptions of and attitudes towards cultural and religious diversities. The research took place from 2006 to 2007 in Greece, with secondary school pupils. In this study, the pupils did not participate in the theatre themselves, but instead got to see a play and later analyzed it. The results indicated that, the pupils could discuss matters of cultural and religious diversities well, and the project was well received among teachers and pupils.

All studies where drama was used as a tool for a specific subject, showed a positive result in favor for drama-based learning. The Fredriksson (2013) study showed that the teachers’ knowledge and confidence in using drama is of great importance for successful learning. The fact that the teacher needs to be confident in the material that should be taught is of importance for this study, and will be further discussed below.
Method
For this study a lesson plan were conducted for drama-based teaching of ethics in technology. By creating a lesson plan, the teachers had something concrete to base their views on at a later interview. The lesson plan could also be constructed to be as clear and easily understood as possible, to make sure that the teachers felt confident in using drama and therefore would more likely have a positive experience (Fredriksson, 2013). A specific lesson made it possible for the teachers involved to compare drama-based learning to past experiences.

Conducting the lesson plan
The lesson plan were conducted as a socio analytical role playing exercise. The practical roots of the exercise stemmed from drama exercises the author of this study has participated in, as a part of the syllabus in drama-classes. Examples in written form of the kinds of exercises the role playing part of the lesson plan has been inspired by can be found in the Swedish book “Spela Teater”, by Gate and Hägglund (1988).

The role playing exercise became socio analytical by focusing it on aspects of society, specifically the technology intensive parts of society, since it is a part of technology education. Characters the pupils would play were formed as stereotypes of people you might meet in a technology intensive society, whom were vague enough to leave a lot of room for interpretation by the pupils. When the pupils forms characters of stereotypes, they have to use their own prejudices about that stereotype to make it “come to life” on stage. They fill their characters with their own life experiences and knowledge (Rasmusson, 2008).

All decisions made when conducting the lesson plan were made with consultation by a drama teacher. The drama teacher helped with designing the lesson plan to make sure it would be easily understood by the participating teachers. The drama teacher also contributed with advice to the participating teachers, with examples like the importance of not making participation in the acting part mandatory, and to let the pupils guide the discussions as much as possible.

The lesson plan
The lesson plan for this study is drama-based learning in the form of a role playing exercise. Pupils will in small groups act out short scenes were each pupil has a designated role that represent people you could meet in the technology-intensive world. The purpose of the exercise is to discover hidden prejudices the pupils might have, and discuss these in a technological context. Roles and locations for the scenes are provided by the lesson plan and should be distributed at random by the teacher.

The groups of pupils are given a short time to prepare their scene, and are thereafter encouraged to show it to the rest of the class. After all groups have showed their plays, a teacher-led discussion takes place to highlight the prejudice and put it in a technology context. The lesson plan can be found as whole (in Swedish) in Appendix 1.

The lesson plan takes the form of a role playing exercise, since it can be used as a reflection on reality. The pupils can with the help of role play analyze our society (Rasmusson, 2008). The purpose of the exercise is to evaluate how cultural notions in society have consequences for men and women, but also society as a whole, thus fulfilling both earlier mentioned points in the school curriculum (Skolverket, 2011).
Since the pupils were likely to be inexperienced in drama, the exercise started in smaller groups, to get used to the concept and warm up. This method can help calm potential worries among the pupils (Rasmusson, 2008). The lesson plan was clear regarding the fact that no pupil should be forced to participate in anything that made them uncomfortable, and that learning can be achieved by just observing and discussing (Rasmusson, 2008). This was a way to make both teachers and pupils more comfortable and ultimately more confident.

At the end of the exercise, a teacher-led discussion takes place. The lesson plan included some examples of what could be discussed, but the teachers were advised to conduct their discussion based upon the scenes their pupils had come up with. The purpose of the discussion is to highlight the prejudice that the pupils displayed in the scenes, and put it in the context of technology, and thereby connect it to the technology syllabus.

Selection
Three teachers were interviewed for the study. For selections, around twenty technology teachers in secondary schools, around the Stockholm area were emailed regarding their interest in participating in the study. Three teachers were in the end interested in participating in the study after many reminders and email contacts. A generalized form of the email (in Swedish) can be read in Appendix 2. A short description of the participating teachers follows:

**Teacher A:** Has worked as a teacher for 18 years, and teaches technology alongside math and science in a public school. This teacher chose to do the exercise with 9th graders, in a class of 15 pupils

**Teacher B:** Has worked as a teacher for 23 years, and teaches technology alongside math and science in a public school. The teacher chose to do the exercise with 8th graders, in a class of 18 pupils.

**Teacher C:** Has worked as a teacher for 20 years, and teaches technology along with woodworks in a public school. The teacher chose to do the exercise with 8th graders, in a class of 14 pupils.

Data collection
The semi structured interview was used for data collecting in this study. Denscombe (2016) describes the semi structured interview as an interview where the interviewer has a prepared list of subjects or questions that should be answered, but the interviewee still has a lot of freedom to expand their ideas and respond more fully to the questions (p. 266) (*author’s translation*). This form of interview is considered optimal for this study, since the inquiry regards the teachers view on the subject, rather than facts. By using a more flexible structure for the interview, the teachers gets a greater opportunity to expand on their views and experiences.

The decision to use interviews for data collection was made to better understand the teachers’ point of view on the matter, since the research question regards the teachers’ views. Other alternatives, as observation of the lesson, would not explicitly answer how the teachers felt about the lesson. By not participating in the lesson, and basing the results solely on the teachers’ answers about the experience, the author, with own views on drama-based learning, could take a more distant approach. The research question asked how teachers’ view drama-based learning, and that could best be answered by interviews.

The questions asked for data collection, here translated to English by the author, were:
1. How was the lesson? What was your general opinion?
2. What are your thoughts in general regarding ethics in technology education?
3. What do you think when you hear the word drama?
4. What are your thoughts in general regarding drama as an pedagogical tool?
5. What are your thoughts more specifically on the lesson plan I sent out? What were your initial reaction?
6. How did your expectations match the result?
7. What is your view of the pupils’ experience?
8. Can you imagine using either drama in general or the lesson plan specifically again?
9. Can you tell me any pros and cons with this exercise?
10. Any further comments?

The questions original phrasing, in Swedish, can be found in Appendix 3.

The data was collected by audio recording during the interviews. Each interview were between 15 to 20 minutes long and they took place at the schools were the teachers worked. According to Björndal (2013) audio recordings have two great advantages over written recordings (s. 71) (author’s translation). The first is that you can “conserve” an observation that might be lost otherwise. By recording the interview, no responses will get lost in the process. The other advantage is the great details that come with a recording. Using audio recordings to collect data makes it easier to focus on the interviewee and collect the data necessary.

Analysis
Before analysis the audio records were transcribed. Since the data was to be used for a content analysis, the interviews were transcribed in its entirety (Denscombe, 2016), with the exceptions for major deviations from the subject.

The data was analyzed by a content analysis. A content analysis can be used to find “hidden” meanings in texts. By breaking the content down to smaller units, and categorizing them, it is possible to find themes and messages in a text that was not obvious from the start (Denscombe, 2016). Content analysis follows a logical procedure in six steps:

1. Chose a content to analyze
2. Break the content down to smaller units
3. Formulate relevant categories for the analysis
4. Encode the units in accordance to the categories
5. Count the occurrence of the units
6. Analyze the data regarding frequency of the units and their relation to other units

(Denscombe, 2016, p. 392) (author’s translation)

This form of analysis was deemed preferable for getting an idea of the teachers’ opinions, since it is a preferable tool to find hidden values and ideas.

After transcription of all three teachers’ interviews, they were read and analyzed thoroughly. Words, with synonyms (excluding short words like and, or, was etc.), that appeared in more than one interview, were categorized together with context. These categories could then be analyzed to see if they conducted a certain theme, and finally if that theme would answer the research question.
Ethical aspects
When conducting research, there are a number of ethical aspects to take into consideration, especially when dealing with people. This study has taken the Codex, formed by the Swedish Research Council (Vetenskapsrådet, 2016), into consideration when conducting the research.

This means that all participants have been informed before each interview that the data exclusively will be used for this study and that they can choose to withdraw their consent at any time. All participants have been made clear that their participation will be anonymous and the information they give only will be used in this study. All recordings have been safely archived during the study, and will be erased after the end of the study.

Results
The results of this study was derived and analyzed from interviews of three different technology teachers shortly after they had held a lesson by following the previous mentioned lesson plan with their pupils. The result is analyzed by concluding how it answers the main inquiry of the study:

- How do teachers view the usage of drama as a tool when teaching ethics in technology education?

The inquiry is best answered by dividing the results into four themes, presented below.

**Drama-exercises is a good way to teach ethics in technology**

The most notable theme from all interviews were the positivity of the exercise as a whole. The positivity theme can in itself be divided into two sub-themes: fun and educational.

**Fun**
One of the first things all teachers brought up was how much fun they and their students had. One teacher commented that:

“We all laughed a lot. The roles [the pupils] played became real characters, it was very funny.”
(Teacher A) (Author’s translation)

All three teachers used some form of the word “fun” when describing both the exercise and drama in general. All teachers also expressed that their pupils thought it was a fun exercise too. Some teachers said that a few of their pupils were originally concerned, but that all pupils seemed to enjoy themselves in the end. One teacher expressed it as:

“Some [pupils] initially felt some doubt, and some were really excited from the beginning, but in the end they all participated and it seemed like they all had a good time.”
(Teacher B) (Author’s translation)

Another teacher thought that the pupils would feel more concern than they did, and concluded that s(he) probably were the only one that felt inexperienced in these kinds of exercises. S(he) expressed it as:

“I thought [the pupils] would think that this was a difficult exercise, but they were really excited about it. I think they have done these kinds of exercises in other subjects, so I guess I were the only
All teachers said that they wanted to continue to use drama-exercises in the future, with one of the reasons being how much fun it was.

*Educational*

The other positivity-theme noticeable from all interviews were that all teachers thought that the exercise were educational. All teachers expressed that the exercise seemed thought-provoking and that interesting discussions were held. Two teachers’ expressed it as:

“[The pupils] created characters, that I could highlight and we could discuss their origin. It is a symbol of their cultural prejudices.”

*(Teacher A) (Author’s translation)*

“[Drama-exercises] helps you discover things about yourself that you might never see otherwise”

*(Teacher C) (Author’s translation)*

They all thought that the pupils seemed to reflect on their own concepts of society in a way they normally would not do in a classroom. The educational aspect was also brought up by all teachers as a reason to why they were considering using this kind of exercise again.

The ethics in technology education for these teachers has been in the form of discussions and mainly focused on gender roles. Although, all teachers thought that drama-exercises could be a viable option, and would like to use it more. One teacher reflected on it as:

“I think it’s important for the pupils to be able to express themselves creatively when approaching ethics, and drama is a good option for that.”

*(Teacher C) (Author’s translation)*

*Prior knowledge of drama is beneficial*

All teachers addressed the issue of knowledge in theatre and drama. Teacher B had prior knowledge in drama that s(he) thought was of a great advantage to him/her, s(he) expressed it as:

“I’m one of those teachers that likes these kinds of exercises. I have prior knowledge in drama and have used it [in other subjects] before.”

*(Teacher B) (Author’s translation)*

Teacher B had used drama in biology class before, and in his/her role as head-teacher for a class, but never when teaching technology. The other teachers were not familiar drama, which caused some concerns in the beginning, but did not seem to be a problem when they got started. These teachers expressed it as:

“I have no knowledge [of drama], so I have never used it […] I’m not used to [working with drama-exercises] but it went really well, we had a lot of fun.”

*(Teacher A) (Author’s translation)*

“I rarely use these kinds of exercises, they don’t feel like ‘me’ […] It was really fun though, and I can really see the use of it.”

*(Teacher C) (Author’s translation)*
The teachers that were concerned at the beginning thought that the lesson plan gave them sufficient information to be able to teach the pupils with confidence.

**Drama-exercises are time-consuming**

Time was the biggest, and sometimes only the problem with the lesson the teachers expressed. All teachers felt that drama-based learning takes time, and needs to take time, in order for it to be meaningful. But time is something neither of them felt they had enough of. Some teachers expressed it as:

“The downside is that [drama-exercises] is very time-consuming, and that is a very big problem when so much needs to fit in the technology subject.”

(Teacher B) (Author’s translation)

“It was very time-consuming. I had to manage time constantly by interrupting interesting discussions, which was a shame.”

(Teacher C) (Author’s translation)

The teachers felt concern in using this kind of exercise in any greater scale when teaching ethics since so much more needs to be taught. Technology is according to the teachers a comprehensive subject with a small time-frame for teaching.

**Discussion and conclusion**

The purpose of this study was “To examine how drama can contribute to the teaching of ethics in technology education in secondary schools.” This was done by creating a lesson plan were a drama-based exercise was used to teach ethics in technology, and send it out to three technology teachers in Sweden. These teachers were then interviewed regarding the lesson, so that the study could be able to answer the inquiry: “How do teachers view the usage of drama as a tool when teaching ethics in technology education?”

The results show that all the participating teachers shared similarities in their views on the matter. All teachers expressed positivity regarding the experience and to drama as a tool in general. They all felt that the lesson went well and they considered continuing using drama as a tool in the future. This result matches the result of the Abed (2016), the Hendrix et al (2012) and the Koukounaras-Liagis (2011) studies, regarding the positive results. There was no test in this study to measure the pupils’ knowledge, instead the quality was measured by the teachers’ impression.

The teachers highlighted some problems, with similarities from all teachers. The time aspect was a big concern for all involved. Ethics in technology is in the syllabus for technology, but only a small part of it, which leads the teachers to feel that they can’t spend as much time on it as a drama exercise requires. The main issue here is that some of the teachers had not taught ethics in technology in a sufficient amount prior to the exercise, so more time needs to be put into teaching ethics than what is currently done, if ethics in technology should stay in the syllabus.

Some contradictions in the teachers’ answers regarding ethics in technology is of interest to highlight. They express that they think it is an important part of technology education, but they still do not feel that they can give enough time to teach it thoroughly. The cause of this could be explained in different ways, with the most probable explanation being that ethics in technology is only a small part of the
syllabus, and the larger parts get prioritized when the teachers need to optimize for time. Although it is important to take into account that it should not be a viable option to simply disregard a part of the syllabus. It can therefore be discussed that a working way to teach ethics should be allowed to take some time.

Another issue brought up by the teachers is their lack of knowledge in drama. These two concerns, lack of time and knowledge, match the general issues teachers have with drama-based learning, according to the Fredriksson (2013) study. Although all teachers in this study seemed to think the instructions on the lesson plan were sufficient for them to feel confident in using drama-based learning, despite lack of prior knowledge.

Most teachers expressed a wish for options in how to teach ethics in technology. They felt that it is a difficult part of the subject of technology to tackle, and that concrete examples on how to teach it would be appreciated. There seems to be a demand here for material to help the teachers form lessons.

Since the time were of essence when this study was conducted, some decisions were made with impact to the results which are of interest to discuss. The decision was made to only regard the teachers’ opinion of the exercise, by conducting interviews. In a larger study it would have been of interest to get the pupils’ opinions first hand by conducting interviews with them, and to observe the exercise to see what decisions were made by pupils and teachers that could affect their opinion on the matter. If these kinds of data would have been collected, it would open the option to better understand the teachers’ opinions and discuss them.

Another issue that arose during the study regards how the teachers were chosen. The teachers in the study were those who expressed interest in participating. This is of interest to take into account when analyzing the results, since teachers who would like to participate in these kinds of studies might not be representative of the general Swedish teacher. This issue is difficult to circumvent since you cannot force someone to participate in a study.

The fact that few teachers participated in this study, all worked in the same region and who chose to participate, could have affected the results. It is not possible to say anything about how other technology teachers in Sweden would regard these kinds of exercises, since the group was too small and homogeneous to make any kinds of generalizations.

What further could have affected the results, is the means of how the data was collected. The author of this paper has a very positive view of drama-based learning, and although precautions were in place to reduce this influence on the participating teachers, it could affect the results. The author were not present during the lesson, to avoid other views on the lesson than those of the teachers. But the author were the one to conduct the interviews and analyze the results. Attitudes from the interviewer could have affected the answers from the teachers, and the analysis of the data, therefore potentially compromising the results of the study.

Since the results of this study shows that teachers could view drama-based learning in technology as a viable option, further studies needs to be conducted in the field of drama-based learning in technology education. Preferably a more comprehensive study in the form of a questionnaire with more participants to get a general view of Swedish technology teachers views on the matter. It would also be of interest to examine which other fields in technology education that drama-based learning could be a viable option, since no previous research seems to exist. Investigating alternative
educational tools for teaching ethics in technology is also needed, since it is a problem area for teachers.

It is of interest to discuss the meaning of these results and what could be interpreted from it. This study collected data from three teachers, which is too small of a group to generalize what Swedish technology teachers would think of these kinds of exercises. What one can conclude from the study is that it is a viable option for some teachers. Some of the teachers in the study had no prior experience with drama, yet they all felt that the exercise went well and were considering using it again. The study in no way suggests that this exercise is a good option for all teachers, but it can be concluded that it works well for some, and could be taken into consideration for teachers struggling to teach ethics in technology. It would be of interest to see a larger study during a longer period of time to better see the pupils’ long-term understanding of ethics after learning it through drama exercises.

**Conclusion**

The conclusion of this study is that drama-based learning could have a role to play when teaching ethics in technology education. There is a demand for a viable way to teach the subject, and teachers view drama as a positive way to do it. For drama-based learning to work as a pedagogical tool, the teaching material needs to be detailed and easily understandable, so that the teachers can feel comfortable in their role. It will also take some courage from the teachers to be willing to put time into the subject, since drama is a time consuming exercise. But with time and effort, drama-based exercises as an pedagogical tool for teaching ethics in technology is an option that should have a role to play in all Swedish secondary schools.
References


Fredriksson, K. (2013). Drama som pedagogisk möjlighet: En intervjustudie med lärare i grundskolan (Licentiatavhandling, Linköping Studies in Pedagogic Practices, 17, Linköping Studies in Education and Social Sciences, 2) Linköping: Linköping University Electronic Press. Tillgänglig: http://liu.diva-portal.org/smash/record.jsf?dswid=-8003&pid=diva2%3A623308&c=1&searchType=SIMPLE&language=sv&query=drama+som+pedagogisk+m%C3%B6jlighet&af=%5B%5D&aq=%5B%5B%5D%5D&aq2=%5B%5B%5D%5D&age=%5B%5D&noOfrows=50&sortOrder=author_sort_asc&onlyFullText=false&sf=all


Appendix 1: Lesson plan

Lektionsplanering –
Dramaövning i teknikutbildning

Inledning


Lektionen kommer att bestå av två segment – dramaövning och diskussion. Syftet med dramaövningen är att väcka tankar hos eleverna kring deras egna föreställningar och fördomar i det teknikutbildningsintensiva samhället. Det är därför viktigt att fånga upp dessa tankar och resonemang i en lärarledd diskussion för att sätta det i sitt sammanhang.

Nedan presenteras konkret hur lektionen bör hållas. Minimumtiden för planeringen är 60 min, men får gärna vara längre för utförligare diskussion eller mer förberedelsetid för eleverna.

Lektionen

Läraren samlar klassen och förklarar upplägget och syftet för lektionen.


Eleverna får nu gå iväg i sina grupper och förbereda en liten "mini-pjäs", en per grupp, som de senare ska visa upp för sina klasskamrater. Nu får eleverna visa för de andra gruppmedlemmarna vilka karaktärer de är, men det hålls hemligt för resten av klassen.

Pjäserna ska inte vara längre än ett par minuter, och syftet är att de andra grupperna ska kunna gissa vilka karaktärer som eleverna spelar (de på lapparna). I pjäsen får de inte säga rakt ut vilka de är, utan behöver agera på det sätt de tror är typiskt för den karaktären de spelar.

Eleverna får bara fem minuter att förbereda detta, det viktiga är att de har en idé om hur deras karaktär kommer att reagera. Efter förberedelser samlas eleverna igen och visar upp sina pjäser för sina klasskamrater. Klasskamraterna ska nu efter varje pjäs gissa vilka karaktärer som porträtterats.

Efter att alla grupper är klara följer en lärarledd diskussion. Här är det viktigt att koppla dessa pjäser till verkligheten och ifrågasätta varför karaktärer porträtterades som de gjorde. Fokus bör ligga på att porträtten representerar elevernas kulturella förstämningar samt vilka konsekvenser detta får för
dessa samhällsklasser när det gäller teknik. Det är viktigt att inte anklaga enskilda elever för deras val utan belysa det generellt. Låt diskussionen styras av eleverna, om diskussionen kommer in på ett specifikt ämne i synnerhet, stanna där och låt eleverna diskutera kring det. Det viktiga är att diskussionen blir levande och eleverna är deltagande, inte att precis alla punkter kommer med. Exempel på diskussionsfrågor som läraren kan använda går att finna längre ner i planeringen, men dessa bör endast ses som förslag, vad som är intressant att diskutera blir tydligt under elevernas uppspel.

Att tänka på

Det är viktigt att som lärare från början vara tydlig med att det inte finns ett ”rätt sätt” att göra dessa pjäser. Eleverna behöver känna sig bekväma i den mån det går, det är därför viktigt att inte tvinga någon till något de inte vill. Om någon elev inte vill delta är detta okej, och läraren kan då belysa att det kan vara lika givande att titta på pjäserna. Det viktiga är deltagandet i diskussionen senare. Om någon elev får en lapp denne inte är bekväm med är det okej att dra en ny lapp.

Det kan vara svårt att komma igenom de ”spärrar” eleverna kan ha kring att bjuda på sig själva och delta. Det viktiga är att förmedla att det är på elevernas villkor. Var tydlig med varför denna övning görs från början, vad lärandemålen är och att det är diskussionen och inte pjäserna som bedöms.

Exempel diskussionsfrågor:

- Varför var det så lätt att gissa att Närname föreställde en kvinna? Vad gjorde att ni såg det?
- Vad var typiskt för en chef? Varför?
- Vad var typiskt för en hantverkare? Varför?
- Finns det andra sätt att visa att någon är väldigt miljömedveten? Kan ni ge exempel?
- Så som ni valde att spela idag, tror ni det har något med hur vi i Sverige ser på varandra och behandlar varandra på riktigt?
- Tror ni att det kan få konsekvenser för vissa samhällsgrupper att vissa bemöter dem på ett annat sätt?

Platser:
Lunchrummet på IT-företaget
På bilbesiktningen
Vid kärnkraftverket
På chefens kontor
I spelaffären
<table>
<thead>
<tr>
<th>Sättningsplats</th>
<th>Karaktärer:</th>
</tr>
</thead>
<tbody>
<tr>
<td>På flygplatsen</td>
<td>Politiskt aktiv i miljörörelsen, Kvinnlig anställd</td>
</tr>
<tr>
<td>På tågperrongen</td>
<td>Chef för kärnkraftverk, Europeisk hantverkare</td>
</tr>
<tr>
<td>I datorsalen</td>
<td>Taxichaufför, Receptionist</td>
</tr>
<tr>
<td>I verkstaden</td>
<td>Kvinnlig chef, Städare</td>
</tr>
<tr>
<td>På konserten</td>
<td>Chef med utländsk bakgrund, Anställd med utländsk bakgrund</td>
</tr>
<tr>
<td></td>
<td>Äldre manlig chef, Äldre kvinnlig chef</td>
</tr>
<tr>
<td></td>
<td>Äldre anställd, Rörmokare</td>
</tr>
<tr>
<td></td>
<td>Ung och rik, Ung och fattig</td>
</tr>
<tr>
<td></td>
<td>Kvinna med utländsk bakgrund, Chef för kolkraftverk</td>
</tr>
<tr>
<td></td>
<td>Religiös kvinna, Religiös man</td>
</tr>
<tr>
<td></td>
<td>Högutbildad man, Högutbildad kvinna</td>
</tr>
</tbody>
</table>
Högutbildad med utländsk bakgrund               Nördig person
Nördig kvinna                                   Manlig lantbrukare
Kvinnlig lantbrukare                            Ung mamma
Tekniskt kunnig                                 Tekniskt okunnig
Politiskt aktiv för konservativt parti        Högt uppsatt politiker
Högt uppsatt kvinnlig politiker
Hej namn,

Mitt namn är Olivia Bång, och jag läser till Tekniklärare på KTH (Kungliga Tekniska högskolan). Jag ska nu skriva mitt examensarbete och har valt att undersöka hur dramaövningar kan bidra till undervisningen av tekniketik.

Upplägget för undersökningen är följande:

- Jag tar fram en lektionsplanering där dramaövningar används för att undervisa i delar av det innehåll i teknikundervisningen som berör tekniketik
- Jag skickar ut lektionsplaneringen till de lärare som ingår i undersökningen
- Lärarna i undersökningen uppmanas att hålla en lektion i en högstadiklass med denna lektionsplanering
- Därefter har jag ett möte med de lärare som ingått i undersökningen för en intervju kring upplevelsen av lektionen.
- De svar jag får in vid intervjun kommer att tolkas och sammanställas av mig. Resultatet kommer därefter presenteras helt anonymt, utan hänvisning till skola eller klass.

Jag hoppas att du finner detta ämne viktigt, så att du kan tänka dig att vara med i undersökningen. Min handledare på KTH, Eva Björkholm, tipsade om att jag kunde kontakta dig.

Ifall du är intresserad, kontakta mig snarast genom att svara på detta mail.

Med vänliga hälsningar,

Olivia Bång
Appendix 3: interview questions

Samtycker du att delta i detta forskningsprojekt, vilket innebär att jag anonymt analyserar och sammanställer dina svar, utan att sprida personuppgifter till tredje part?

Hur länge har du arbetat som lärare? Hur länge har du arbetat som tekniklärare? Vilka ytterliga ämnen undervisar du, eller har undervisat, i?

Hur har lektionen gått? – Vad var din allmänna uppfattning?

Hur tänker du i allmänhet kring etikaspekternas i teknikutundervisningen?

Vad tänker du på när du hör ordet drama?

Hur tänker du i allmänhet kring dramaövningar som verktyg i undervisningen?

Vad tyckte du mer specifikt kring planeringen jag skickade ut? Första tankar?

Hur ställde sig dina förväntningar jämfört med resultatet?

Hur upplevde du att elevernas upplevelse kring lektionen var?

Skulle du kunna tänka dig använda det igen? – drama i allmänhet, planeringen i synnerhet?

Hur upplevde du att diskussionen i slutet gick?

Kan du nämna några fördelar och nackdelar med detta upplägg?

Ytterliga kommentarer?