

TEACHING ABOUT INTOXICATING SUBSTANCES IN PRIMARY SCHOOL: TEACHER STUDENTS' THOUGHTS ON THE SUBJECT

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Abstract

Exposure to harmful substances such as alcohol, tobacco and drugs, is a danger and risk for the well being and health of children. The better children understand these dangers, the easier it is to avoid the adverse effects. Several studies have dealt with harmful substances and the well-being of young people. However, the role of formal, as well as informal education has not been studied as extensively.

This paper presents the first preliminary results from a larger project. This project focuses on what and how toxicology is taught in Finnish schools and how children and young people get information about harmful compounds. The aim of the project is to create a better way of teaching toxicology in school. This paper reveals teacher students' thoughts on the teaching of intoxicating substances in primary school. Teacher students wrote before their studies of module "The Human being". The result of the study shows that primary school teacher students thought that teaching which relates to intoxicating substances, should be neutral and based on facts. We believe that the preliminary results of this study will be useful in improving the teaching of intoxicating substances in teacher education.

Key words: *teacher education, toxicology education, intoxicating substances.*

Introduction

Substances in the environment can cause adverse health effects in children. Smoking, alcohol and drugs for example are well known substances which reduce the well being and health of children and young people. Children can also be exposed to many other dangerous substances, because they are surrounded by thousands of compounds, which are used commonly in society. These kind of compounds are chemicals such as therapeutic drugs, different kinds of pesticides and biocides, chemicals in the home e.g. paints, glues and detergents. For children's safety, it is important that chemicals are used properly and that children are aware of the danger and risk of these chemical compounds to their health.

Four major things determine the well being and health of children (Figure 1): the child himself, his/her family, and the social, chemical, physical and biological environments surrounding the

child. These all contain several subfactors and their role is greatly dependent on the age of the child. Useful toxicological knowledge obtained during school years, will benefit the well being and health of children. How it can be improved in Finland will be studied in this project, this study being the first part of it.

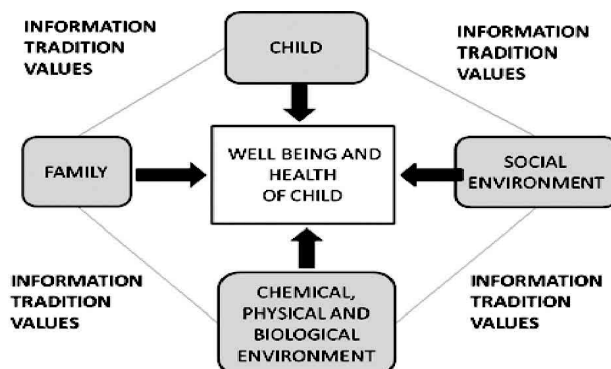


Figure 1. Factors affecting the well being and health of children.

Toxicology at schools

School is the only organization which is responsible for teaching toxicological subjects to all children. Toxicology comprises of several scientific fields. It is fragmented because of the many disciplines involved. The aim of toxicology is to prevent the adverse health and environmental effects caused by chemicals and for this purpose toxicology produces and gathers information about substances. Plentiful, exact toxicological information, makes these preventive measures possible but is required by law for several chemical groups: therapeutic drugs, pesticides, biocides, food additives and radioactive compounds. Toxicology no longer relates only to the field of poisons. While in school, it is important for children and young people to create for themselves a whole picture of the effects of chemicals, in order to eliminate fear and promote care when using them.

Health education in the comprehensive school is based on a multidisciplinary foundation of knowledge. The intent of the instruction is to promote the pupils' competence regarding health, well-being, and safety. From the first to the fourth grades health education is taught as part of the environmental-and-natural-studies subject group, in the fifth and sixth grades it is a part of biology/geography and physics/chemistry, and from the seventh to the ninth grades it is a stand-alone subject. According to the national core curriculum, the instruction must be planned so that the pupil gets a comprehensive picture of health education throughout his/her basic education. Instruction in health education, as well as in biology, geography, physics, chemistry, home economics, physical education, and social studies, must be planned cooperatively. In planning the instruction, collaboration also takes place. (National core curriculum for basic education, 2004.)

Studies in physics and chemistry cover among other things active substances in intoxicants and their harmful effects (National core curriculum for basic education, 2004). The pupils will come to know the key things about tobacco and intoxicants, know why they are harmful, and be given examples of why their use is dangerous. Later the objectives in health education are for pupils to come to understand themselves and human complexity, as well as the values and viewpoints related to health, disability, and disease; to learn to describe and evaluate the main factors that promote health or cause diseases and in respect of the media to identify and weigh choices related to health and safety. They will learn to utilize concepts and information acquisition methods relevant to health and disease, and benefit from them in promoting health.

Further, the core contents of health education is teaching pupils how to take care of their health; to understand the danger of smoking, alcohol, drug abuse and the use of other intoxicating substances

with their side-effects of pleasure, dependency, and the related choices. Pupils should be able to describe and weigh the dependency and health risks associated with the use of intoxicants and other stimulating substances such as tobacco, snuff, alcohol, drugs, and solvents, as well as the reasons for and consequences of their use; teaching should provide and justify examples of ways to avoid using such substances.

Best practices to improve the well being and health of young people

Schools, as social environments, are increasingly seen to be in an excellent position to make an impact on young people's health. This includes reducing the vulnerability of young people to poor health behaviour and its outcome in later life, thus positively affecting their health across their whole lifespan (Marks, 2009; Winters et al, 2007). Substance use amongst young people continues to be a source of concern and attempts are being made to influence this behaviour. One common type of response is to provide drug prevention information and activities at the community level. (e.g. Newbery, McCambridge & Strang, 2007.) Community-level interventions seek to influence the environment, culture, policy, and the norms of a community, rather than directly targeting individuals with interventions designed to influence their behaviour.

International evidence suggests that most information-based drugs education fails to change behaviour, and that even education which demonstrates some success, regularly shows effects that are modest, irregular, and unsustainable over the longer term (see e.g. Newbery et al., 2007). Despite recent promising developments in our understanding of how education can influence substance use behaviour, the challenges facing those who seek to prevent substance use in young people and measure success in terms of changes in the behaviour itself, are manifold. Programmes are often conceived or outdated conceptual models.

School health education is vital to improving the health of the nation's citizens. However, to be effective, school-based education must be comprehensive, continuous, and interdisciplinary. There must be adequate provision of teacher training, time available for instruction, family involvement, and community support. (Marks, 2009; Hunt et al, 2009). Health education must not only offer information, but must foster motivation, and also provide the skills necessary to accomplish the health goal. Topics embedded in a comprehensive health education curriculum must also include messages that are relevant to all children and their guardians or parents (family, Figure 1). It must be constantly updated if classroom lessons are to provide significant and sustainable effects on the overall health knowledge, attitudes, and practices of young people.

Two key roles for health educators have been identified. First, to support the mechanisms already known to be effective in reducing harmful use such as smoke-free environments (chemical, physical, and biological environment) and second, to provide an "expert" source of information on health and drugs for use by the vast majority of young people who both want and require this during their lifelong "journeys" (Aldridge, 2008a, see also Measham, 2007; Sandford, 2007). There is a real need for information on what instruction and conceptual models would best serve to ensure that all children have an equal opportunity of achieving optimal health and experiencing high quality learning.

Young people's consumption of alcohol, drugs and cigarettes has been studied in several surveys (e.g. Aldridge, 2008b; Hunt et al., 2009; Kempainen et al, 2002; Measham, 2007). There is less research on the educational materials and methods, the implementation of the instruction, and their interdependencies. Because toxicology is fragmented into environmental and natural science-studies, physics, chemistry, biology, geography and health education, there is a danger that the essential topics are all not being taught during the school years and that teaching is not promoting the well being and health of children in the best way possible. Teachers are responsible for the choice of teaching methods, materials and topics. There is little known about the methods teachers use in Finland on subjects in health education concerning intoxicating substances. However, choices are important from the viewpoint of the pupils' values, attitudes and behaviour. This research broadens knowledge in the educational context, by focusing on different kinds of learning materials and methods.

Methodology of Research

In this first part of the study, before studying their module, teacher students (N=20) wrote about their knowledge of intoxicating substances, where their information has come from and how they think it should be taught in the primary school. The data was collected in February 2009 while studying the module "The Human being". Part of the data was also collected through interviews, reflection diaries of teacher students' experiential learning situations, and summaries of class laboratory activities.

"The Human being" study module (3 credits) is a voluntary course for primary school teacher students. It belongs to the multidisciplinary study program in basic education. "The Human being" module focused on basic knowledge of human anatomy and physiology, e.g. cells, tissues, organs and the systems of the body. This study module included collaborative laboratory activities and a study about relevant organs; e.g. lungs, heart, liver and kidney. Teacher students explored the scientific inquiry as a learning method, provided examples of its use in primary school and demonstrated this method through written reports and summaries of class laboratory activities. Based on these studies, some teacher students (n=4) wanted to make their voluntary report concerning tobacco and alcohol. Finally, the reports were presented to other students, results compared, and ideas discussed in seminars.

This paper only presents an analysis of what was written about teaching ideas before the instruction. The study is qualitative in a nature and is the start of wider research on the teaching of intoxicating substances. The writings were analyzed by content analysis. First, they were carefully read through in order to understand their content, after which they were categorized. The initial codes were constructed reflecting the teacher students' ideas concerning the teaching of intoxicating substances. Revision of the emergent codes occurred during the second reading. The writings were read a third time whereby teacher students' ideas were placed into the final and more general categories. Descriptive categories were constructed based on the core ideas that emerged from the different teacher students. The analysis of the writings was done by two researchers which provided a degree of triangulation. The categories were discussed together which ensure credibility in data analysis process. The results cannot be generalized due to the small number of teacher students' descriptions of teaching about intoxicating substances, but it is possible to expand the data (e.g. reports and interviews) and analyze the depth of understanding of the teacher students' thoughts.

Results of Research

After classification of the students' writings concerning the teaching of intoxicating substances, there were found to be 15 themes. Altogether 68 ideas were described. The frequencies of descriptions in different categories are shown in Table 1. Due to the fact that there were only 1-3 descriptions in the categories of personal choice, prevention, scientific examples, correct use, own example, planning, parents and methods, these have been excluded from the table.

Table 1. Categorization of Teacher Students' descriptions of teaching about intoxicating substances.

| Category | Teacher students' descriptions | Number of suggestions |
|-------------|--|-----------------------|
| Facts | ...based on facts... ...reliable information... ...information: explain and answer children's questions... | 12 |
| Edification | Edification events... Starting point is edification... Tell basic things... | 6 |

| Category | Teacher students' descriptions | Number of suggestions |
|--------------|--|-----------------------|
| Influences | ... influencesharmful effects ...real disadvantages of drugs... ...tell about the dangers and ...dependence/addiction... | 8 |
| Neutral | ...avoid causing fear or anxiety... ...forbidden things fascinate children... ...not be too aggressive ...not impose one's own values... ...not be frightening | 15 |
| Examples | ...warning examplespersonal life-stories cases and stories video about withdrawal symptoms... | 6 |
| Time | ...starting earlier and earlier ...start edification in time ...in primary school | 4 |
| Thinking | think over whybe considered ...be discussed | 4 |
| Total | | 68 |

Most of the primary school teacher students thought that teaching about intoxicating substances should be based on facts.

Should be taught based on facts

Children and young people must get reliable information

Should be taught by edification and information: explain and answer children's questions

By honest and truthful

Children and young people must get reliable information in time, so that they have tools to make their own choices, when the time comes

Highlight negative sides

Teach properly; present facts without preaching

Fact-based teaching should be foremost in their minds concentrating, more on giving information than interacting with the pupils. Information is needed as background knowledge to help the pupils make their own decisions later.

Primary school teacher students also thought that the teaching should be neutral.

Should not cause fear or anxiety

Not by frightening, browbeating or forbidding

Should be taken into account that forbidden things fascinate children

Teacher should not be too aggressive

Too much forbidding causes curiosity and gives encouragement to try

Teacher should not impose his/her own values

No preaching

Should speak openly, directly and plainly

Should be considered carefully: some of the parents might be alcoholic

Realistic, without preaching

The students were cautious about arousing fear. They also took into account that the pupils' family background may possibly be problematic from the aspect of instruction.

The students also considered that the teacher ought to tell pupils about the influences of intoxicating substances.

Should be taught about the effects on health and social life

At least tell pupils about the harmful effects

Children should understand the real disadvantages of drugs; make drugs concrete
not believe rumpus

Do

Important to tell about the dangers and dependence/addiction

Consider influences

Should be taught about harmful effects and their dangerous nature

Talk about the effects on health and the disadvantages: why they should not be used

There was discussion about both the dangers of intoxicating substances and dependence on them. It can be interpreted that this category still is delivering information.

The students considered the teaching to be edification, giving information.

Too often information is directed at those who are not at risk

Starting point is edification

Schools must have Health edification

Edificatory events are important

The students have mentioned edification as an event, which can be interpreted as being a short-time event.

Some of the students highlighted the visits of former users as examples.

Experiences of users in grade 5, warning examples

Personal-life stories

Cases and histories

A Video about withdrawal symptoms would be best; fear, but pupils are too sensitive for anything except descriptions

Somebody who has had problems should come and tell about them

Visits of earlier users are effective edification

The students thought that the stories of former users would be emotionally effective in teaching through their experience. Though the students pointed out neutral education, they still referred to emotions.

Students highlighted other themes such as choice of pupils, choice of timing, meaning at what age instruction should be started, pupils' thinking abilities, and prevention.

Highlighting the significance of one's own choices and responsibility

One should say "no" to experimentation in the case of drugs

Important to start edification in time

Should be considered in the primary school

Consider why people use intoxicating substances

Things should be considered, discussing the background knowledge (how wrong they are)

Pupils' feelings and opinions should be discussed

Show different measures of opinions

Attention should be paid to prevention

There should be preventative measures

Only one student mentioned telling pupils how to use substances wisely, the teachers' own example, well planned teaching, and parents. Only two students mentioned scientific experiments. Methods the students mentioned were: scientific experiments, real examples, thinking, group work, and drama.

Conclusions and Discussion

The teacher students thought that they could have an impact on young people's health. The main result showed that many of the teacher students thought that teaching about intoxicating substances should be neutral and based on facts. It is important that children are taught about the hazards of alcohol, tobacco and drugs. Teacher students thought that the pupils should make their own personal decisions. Pupils should also participate in the discussion of health issues, thinking about it and taking an active role in the teaching. These findings partly agree with the findings of Marks (2009).

Teacher students had many ideas on how to change harmful behavior amongst pupils. They mainly highlighted facts and information although conversely they had expressed the role of active participation. They did not mention the core content in the curriculum: active substances in intoxicants, teaching about toxicology. The objective of health education in the core curriculum, being able to identify and weigh choices related to health, was seen in the category 'own choice', which was mentioned only twice.

The teacher students did not emphasize scientific inquires as a method of achieving knowledge about intoxicating substances and understanding about the human body. However, this is one of the most common methods used in the Finnish comprehensive school, especially in chemistry. One of the most interesting results was that teacher students did not mention the social media as a method of teaching about intoxicating substances.

According to the results of this study the teacher student's ideas concerning teaching about intoxicating substances, were conceded with the results of Newbery et al (2007). The primary school teacher students supported information-based education about intoxicating substances, though in earlier studies it has been noticed that information does not change behavior (Newbery et al., 2007). The students pointed out all of the elements affecting well being; the family, child and social environment as well as, to some extent chemical, physical, and biological environments. Only one of the teacher students mentioned family or parents. As in literature, family involvement has been reported to be one influencing factor in effective education (Marks, 2009; Hunt et al., 2009).

In conclusion, we have to state that in developing Health education in Teacher education, we should concentrate more on toxicological subjects and on the understanding of human anatomy and physiology. The results cannot be generalized. However, the results may be utilized in planning and implementing Teacher educator's further education. The next phase in this research is to analyze the rest of the data which has been collected: interviews and reflection diaries of students' experiential learning situations. We hope the data will give us a better understanding of the teacher students' ideas.

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