



A Nordic Initiative in Bioethical Educational Resources

Report from a working group on
educational resources
in bioethics



Preamble

The Nordic Committee on Bioethics (NCBio) organized on the 27th of May 2008 a workshop in Oslo entitled “*Teaching Material in Bioethics*”. The purpose of the workshop was to identify excellent educational resources on bioethics that already were available in one or more Nordic languages, resources that could be translated and modified in order to make them available in all Nordic languages. The Nordic Committee on Bioethics decided on the board meeting May 28th to establish a working group that was to give the committee specific advice on how to continue the work.

The working group has consisted of the following members:

- Aldís Yngvadóttir, dipl. ed., editor of life skills materials at The National Centre for Educational Materials, Island.

- Wenche Erlien, cand.scient. in science education at The Norwegian Centre for Science Education
- Ole Johan Borge, Ph.D. in stem cell biology and senior advisor at The Norwegian Biotechnology Advisory Board.
- Per Kornhall, PhD in Plant Systematics, dipl. ed., teacher and project coordinator for the Swedish Centre for School Biology and Biotechnology.
- Thomas Laursen. MA, project leader at The Danish Council of Ethics, Denmark
- Pekka Louhiala, medical doctor and ethicist at the University of Helsinki, Finland.

The group has had two phone meetings and one regular meeting in Oslo in addition to numerous emails.

Content

Preamble.....	2
1. Aims.....	4
2. Why teach bioethics in school?	
3. Choice of language and target group.....	6
4. Selection of resources to promote.....	7
5. Web design.....	8
6. Running the website; practical issues.....	9
7. Costs of establishing and running the website.....	10
8. Spreading knowledge about the website to relevant people in the Nordic countries.....	11
9. Conclusions and summary.....	12
Appendix 1: Examples of educational material that might be translated with budget proposals.....	13
Appendix 2: A sketch of how the proposed Nordic website could look like.....	17

1. Aims

The ambition of the working group was to give the Nordic Committee on Bioethics advice on how to develop a Nordic web-based solution holding educational resources in bioethics. This report will:

- give examples of relevant resources that can be translated and in some cases slightly modified to fit a broad range of users in all the Nordic countries
- define suitable target groups for the website
- suggest a structure of such a website
- estimate the costs of translations and adaptations of existing resources, and for the development of a

Nordic website on bioethics in education

- suggest how the website should be developed and managed over time and estimate the yearly cost
- give advice on how to spread information about the website to teachers in the Nordic countries

The working group expects the Nordic Committee on Bioethics to decide on the next steps in this project. If it decides to continue this project, this should involve defining a budget, proposing a deadline for launch of the website, and suggestions for the next steps of the project.

2. Why teach bioethics in school?

Modern biology offers many opportunities to discuss moral issues and develop ethical reasoning skills. It is important to teach bioethics at school because ethical discussions are an important part of young people's training to become involved citizens in our democratic societies. Working with bioethics is a means of training in critical and creative thinking that can improve the active participation that is an important part of democratic citizenship. In our societies we cannot only amass knowledge of technical opportunities. We also need to know what to do, and what not to do, with our technologies, and to imagine or predict how our actions, or lack of actions, can influence our lives and future. We must decide what to allow and what not to allow, what to support and what to hinder. And in many cases when it comes to new technologies these choices must be made from ethical standpoints.

Another aspect is that *“Men are neither angels nor devils; that makes morality both necessary and possible.”* (H.L.Hart). That is, individuals have a natural tendency to champion their own interests. Part of the process of growing up is to understand that individual interests sometimes have to be balanced against interests of other people. But how can this be done? Ethical discussions can be of great value in such a process. The kind of practical dilemmas that can be found in bioethics also often engage pupils at an emotional level. That makes them motivated to look for facts and to develop their reasoning skills. Students are in such discussions trained to see the difference between different types of facts and values. If we do not include bioethics in school curricula we are assuming that our children form their reasoning skills and understanding of ethical issues somewhere else. That is to take a great risk.

3. Choice of language and target group

The working group concludes that the material on the website, ideally, should be in all five Nordic languages. This because it cannot be expected that the potential users in all the Nordic countries can fluently read the other Nordic languages.

If a resource is not available in all languages at the time of publication, it should be clearly stated at what date it will be made available in the different languages. This date should preferably be no later than three months after the date of the first publication.

The target group for this effort should be teachers, pupils, lower grade students and the general public. The work group envisions that the typical user of the website is a teacher. Pupils could also use the website, but we expect pupils to go directly into the resource that their teacher has pointed out to them. For the teacher the website ideally would be a veritable smorgasbord of teaching resources of high quality.

4. Selection of resources to promote

Only resources of high quality should be presented on the website. This implies some form of editorial approval before publication. A prerequisite for publication is that a resource is relevant for teachers and pupils in all or most of the Nordic countries. With relevance and quality we mean that they are on target, tried on pupils, approved by ethic and science experts, and have a curriculum based content.

When it comes to what type of resources ought to be included, the working group suggests that a wide variety of resources should be allowed on the website.

This includes resources using different tools to involve the reader/user and resources suitable for users with different interests, backgrounds, age, sex etc.

The working group supports a wide understanding of the concept of bioethics. It includes not only moral issues arising from the development of modern biotechnology, but also the age-old issues of medical ethics. The website should therefore ideally contain material from all different areas of bioethics.

5. Web design

There should be various routes on the website to the different resources. However, age of the pupils and topic should be the two most visible entry points into the website. This can be achieved by designing the website as a “library” of resources. In appendix 1 we have examples of different resources that we think would be suitable for translation, and in appendix 2 a brief sketch of how the new site would look like.

Suggested age groups:

- 2-5 years
- 6-9
- 10-15
- 16-19
- all ages

Examples on relevant topics:

- genetically modified plants and food
- genetically modified animals
- xenotransplantation
- research on animals
- cloning
- stem cells
- genetic testing
- environment
- end-of-life issues
- research in medicine and biology

Type of resource:

- leaflets
- animations
- active pupil participation
- games, plays
- movies and films

6. Running the website; practical issues

We propose that the new Nordic website should be a technically quite simple solution, but with a pleasant and easy navigable design.

In the start a full time, short term position (3 – 4 months) is required for one person to oversee the construction of the website and the translations of a number of key resources. This person should also establish a network with national contact persons in every country and ideally also different networks or advisory groups consisting of teachers. These groups could also possibly help with the translations and work with the promotion of the site.

It is of key importance to ensure a robust website. To this end it is preferred to have the resources directly on the new website. Some resources do however require a special technical platform and would then best be included by simply adding a link to an external website.

Controlling quality of the resources, identifying new resources, ensuring that the website is working and regularly updated etc. requires weekly attention. We therefore suggest that it should be a part time employee that has the responsibility of running the website after the initial phase.

7. Costs of establishing and running the website

The costs of establishing and running the website are indicated below. We have separated the costs of establishing and running the website. There will be a one-time, start-up cost related to designing and setting up the actual website and establishing a network of national coordinators.

The cost of establishing the website is estimated to be 45 000 €. This amount can be specified as follows:

- Salary and social cost for a full time employee 3-4 months: 25 000 €
 - Web design, etc.: 10 000 €
 - Promotion, national coordinators: 10 000 €
- In total: 45 000 €

The person hired for this task should, ideally, have experience in web design, production of educational material and communicating with teachers and pupils.

In parallel with establishing the website the first educational material should be translated and made available at the website. The person hired should establish a network of relevant resource persons in the various Nordic countries and create an effective system for translating educational material.

After the initial phase of establishing the website and translating the first resources, the website will need regular maintenance. This includes ensuring that the website is working properly, promoting the website and ensuring that new resources are included.

The costs of translating educational material vary according to the type of the resource. To get an idea about the cost we have followed the recommendations given by the experienced teachers at the workshop in

Oslo and made budgets for a few selected resources. These budgets are included in appendix 1.

A brief summary:

- Heimurinn minn, My World (Island) - <http://www.heimurinn.is/>. 20 000 €
- Etik og livet (Denmark) www.etikoglivet.dk. Translation costs per subject 6 000 €.
- Etisk Forum for Unge (Denmark), <http://www.etiskraad.dk/sw9852.asp>. Translation and design 12 000 €
- Facebook project (Denmark) 7 000 €.
- The Norwegian Biotechnology Advisory Bard, short theme leaflets. Translation 2 200 € per leaflet.
- Snøball film (Norway), www.bioteknologiskolen.no: 5 000 € per film.
- Viten.no (Norway), Gene Technology. This resource is already translated into Swedish and English. Translation to Danish, Finnish and Icelandic: 14 000 €

If these resources are translated the aggregated cost is estimated to app. 110 000 €.¹

The cost of translation might seem high. However, it is important to keep in mind that the cost of translating an already developed material into all Nordic languages is probably only about 10-30 % of the cost of producing the educational material in the first place.

We propose that approximately 100 000 € should be allocated to this project in its inaugural year. Thereafter a cost of 50-60 000 € per year seems suitable to maintain the website, promote its use and include 2-6 new resources every year.

1. This includes: Heimurinn minn; Etik og livet (5 subjects); Etisk Forum for Unge (one subject); Facebook project with seven dilemmas; five short leaflets from The Norwegian Biotechnology Advisory Bard; five films from Snøball film; The viten.no gene technology programme.

8. Spreading knowledge about the website to relevant people in the Nordic countries

The different Nordic countries have different available routes to spread news about educational material. This includes resource centres, teacher's organisations, science centres, teachers colleges, educational ministries and the like. Such routes are well established in all countries, and it is considered by the working group to be relatively easy to spread information about the website through these channels. We propose that the committee produce some kind of promotional material that can be used in the various countries.

It is important to consider different ways of promoting the website in order to make sure that as many as possible actually find their way to the website and make use of the educational material made available. The group recommends that attention is directed to this issue also in the design process of the website. That is, different ways of gathering and creating activity around the website should be considered; for example, conferences for teachers, proposals for combining resources, social web-technologies etc.

9. Conclusions and summary

A unanimous working group think that bioethics is a excellent area to promote Nordic cooperation. Our countries have both a high level of biotechnological research and industry, and our values are similar enough to make materials produced in one country usable in the others. In all countries teachers are already using

locally produced material on bioethics and there is a good chance that a Nordic website on bioethics will be used by many teachers in all countries. It is of course unnecessary that every country should produce their own resources when useful high quality resources are already available in another Nordic language.

Appendix 1

Examples of educational material that might be translated with budget proposals

Heimurinn minn (My World) - <http://www.heimurinn.is/>

The webpage Heimurinn minn, My World, is produced by The National Centre for Educational Materials and The Environment Agency of Iceland. Technical development and design was made by Naest ehf. The webpage is meant to be a modern way of teaching younger children about environmental issues and the learners are engaged by various interactive assignments.

Budget

Estimated cost from Naest ehf. for doing a version in four Nordic languages such as changes of programming, graphical design, input of audio materials etc. 20 000 €.



ETIK OG LIVETS BYGGEKLODSER (www.etikoglivet.dk)

The website etikoglivet.dk is an educational website about new microtechnologies that raises bioethical questions (technologies such as stem cells, chimaeras, cloning and gene technology). It has interviews with researchers as well as ethical experts for each topic. The site is curriculum based and contains relevant assignments. It contains a guide for the teacher as well as a general section on bioethics.

Budget:

A: only one topic

Translation of one topic - four nordic languages 5 740 €

Graphical adaptation 4 028 €

In all: 9 768 €



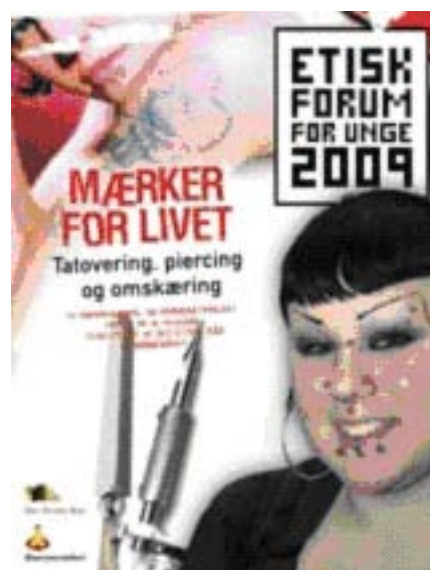
B: all topics on the website

Translation of all topics - four nordic languages:	28 700 €
Graphical adaptation	6 000 €
In all:	34 700 €

Note: It is highly recommended to translate the whole website. Only in this way, the pupils would have full value of the bioethical learning content.

Etisk Forum for Unge - <http://www.etiskraad.dk/sw9852.asp>

Ethical Forum for Young People is a teaching and democracy project organized by the Danish Council of Ethics for the graduating classes of lower-secondary school. The project consists of a teaching booklet (app. 30 pages) and the gathering of an Ethical Forum – 17 pupils from all over the country – who meet, discuss the topic and make a statement. The Council has for example produced booklets about stem cells, euthanasia and "Life Brands" (male circumcision, piercing and tattooing). The purpose of the project is to improve young people's knowledge and awareness of bioethical topics – and to coach them in the art of discussing fundamental values in a democratic manner.



Budget:

Translation (one booklet, 30 pages) into four Nordic languages:	8 070 €
Graphical adaptation:	4 028 €
In all:	12 098 €

Note: The translation of a booklet could be accompanied by proposals and initiatives to establish Ethical Forum for Young People in other Nordic countries or a forum at a pan-Nordic level. This could – as a positive side effect – create activity around and visibility to the Nordic site.

The Ethical Challenge – dilemma game: web-based with facebook application

"Den etiske udfordring" is a dilemma game, where you are asked to declare, whether you agree or disagree (on a scale) on different ethical topics (for example organ donation). The game ends with a profile. The game has a Facebook application, and you can send the application to your friends on Facebook and hence compare your profile on ethical matters to the profile of your friends.



Budget

Translation of 7 dilemmas	1 608 €
Technical implementations	5 370 €
In all	6 978 €

The Norwegian Biotechnology Advisory Board, leaflets

The Norwegian Biotechnology Advisory board has developed a series of 4-page long leaflets. The leaflets cover a wide variety of topics related to biotechnology. Examples are prenatal diagnosis, pre-implantation genetic diagnosis, assisted reproduction, inheritance and genetics, DNA-identification, genetic testing, genetically modified food and ethical argumentation. The leaflets are designed specifically to meet the need of 15-19 year old pupils and to stimulate an ethical debate. The leaflets can be downloaded as PDF-documents.

The cost of translating one leaflet from Norwegian to Swedish, Finnish, Danish and Icelandic is app. 2200 €. The cost is based on using a professional translator. The cost of translation might however be lower if we instead can use for example experienced teachers. Teachers might even do a better job since they already know the subject.



Bioteknologiskolen, www.bioteknologiskolen.no

The Biotechnology School is a film- and web based educational project mainly for upper secondary school. There are ten films, around 10 minutes each, covering the main topics of modern biotechnology. The films are very suitable for the teacher to include in a lesson. Additional material suggests complete lessons and project work. The project is developed in cooperation between Snøball Film AS (www.snoball.no), The Norwegian Biotechnology Advisory Board (www.bion.no) and The Norwegian Centre for Science Education (www.naturfagsenteret.no). The films can be downloaded from a website. All text is presented both in html and as downloadable and printable pdf-files.

Filmliste

1. [Bioteknologi: En kort introduksjon \(10:59\)](#)
2. [Arv og avl: Når to blir en \(12:33\)](#)
3. [Gener: Hva skal vi med kunnskap om genene? \(11:01\)](#)
4. [Stamceller: Det fleksible arvematerialet \(09:22\)](#)
5. [Befruktning: I mitt bilde? \(10:36\)](#)
6. [Genetisk sykdom: Jakten på sykdomsogenet \(11:27\)](#)
7. [Bioteknologisk industri: Fra grunnforskning til produkt \(10:57\)](#)
8. [Vaksiner: De magiske dråpene \(11:16\)](#)
9. [Bioprospektering: Naturen sett med nye øyne \(12:00\)](#)
10. [Biobanker: Levende innskudd \(11:57\)](#)

The cost of translating all ten films, and additional material on the web is approximately 50 000 € excl. VAT. A more detailed budget is included below.

DUBBED VERSION

Translation to Swedish, Danish, Finnish and Icelandic, 120 min x 4:	480	min á NOK	275	132 000
Voice up artist, fee	4	stk á NOK	10 000	40 000
Studio & technical cost, 10 films x 4	4	stk á NOK	10 000	40 000
Subtitling of interview sequences, 60 minutes x 4	240	min á NOK	250	60 000
Sound work and new sound mix, 60 minutes x 4	240	min á NOK	250	60 000
Compression and preparation for web, 120 minutes x 4 (flash + wmv)	480	min á NOK	30	14 400
Translation of web text to Swedish, Danish, Finnish and Icelandic	15000	words á NOK	2	22 500
Web hotel, 3 years hosting of 3 Gb material	15	Gb á NOK	950	14 250
Copyright, additional countries NRK material	4	stk á NOK	8 500	34 000
Copyright, additional countries music	4	stk á NOK	12 000	48 000

Total, excl. VAT

465 150

In Euros

52 681€

SUBTITLED VERSION

Translation to Swedish, Danish, Finnish and Icelandic, 120 min x 4:	480	min á NOK	275	132 000
Subtitling, 120 minutes x 4	480	min á NOK	250	120 000
Compression and preparation for web, 120 minutes x 4 (flash + wmv)	480	min á NOK	30	14 400
Translation of web text to Swedish, Danish, Finnish and Icelandic	15000	words á NOK	2	22 500
Web hotel, 3 years hosting of 3 Gb material	15	Gb á NOK	950	14 250
Copyright, additional countries NRK material	4	stk á NOK	8 500	34 000
Copyright, additional countries music	4	stk á NOK	12 000	48 000

Total, excl. VAT

385 150

In Euros

43 620€

viten.no

viten.no is a web-based platform with digital teaching programs in science for secondary school developed by the Norwegian Centre for Science Education. The Viten teaching programs are available for free, and Flash-Player is the only software needed to use them. Students in grade 8-12 can work collaboratively on various science topics and each topic ranges in duration from 2-8 science lessons. Since launching viten.no in 2002, 16 teaching programs are available. All Viten programs are composed as learning environments providing scientific information and a wide variety of activities.

The Viten program “Gene Technology” cover the following topics: cell, genes, inheritance and environment, the use of gene technology and debate. The program consists of text, images animations, simulations and interactive tasks. Student can write answers on different exercises. The answers are saved on the Viten-platform, where the teacher can comment on the work at any time.

Demo version of “Gene Technology”: <http://genetechnology.viten.no>. The Viten program “Gene Technology” is translated to English and Swedish.

The cost of translating of the Viten program “Gene Technology” to one language:

Translation of text:	1 170 €
Developing the program with new language (including hosting):	3 510 €
Total:	4 680 €

Translation of the program to Danish, Finnish and Icelandic: 14 040 €

Appendix 2

A sketch of how the proposed Nordic bioethics teaching website could look like

Choose language:



Choose age group "16-19 years":



See all resources for age group 16-19 and choose the resource “Genetic testing”

bioetik.org 2-5 years 6-9 years 10-15 years **16-19 years**

- About bioetik.org
- Why teach bioethics in school?
- Curriculum
- Contact us

www.bioteknologiskolen.no : stem cells
 Type of resource: films
 Description: A 10 minutes film covering the topic stem cells with additional material suggests complete lessons and project work.

Genetic testing
 Type of resource: leaflet
 Description: 4-page long leaflets designed specifically to meet the need of 15-19 year old pupils and to stimulate an ethical debate. The leaflets can be downloaded as PDF-documents.

[Etik og livets byggekodser](#)
 Type of resource: website
 Description: The website etikoglivet.dk is an educational website about new microtechnologies that raises bioethical questions (technologies such as stem cells, chimaeras, cloning and genetechnology).

The Nordic Council of ministers post@bioetik.org

See information about the resource Genetic testing:

bioetik.org 2-5 years 6-9 years 10-15 years **16-19 years**

- About bioetik.org
- Why teach bioethics in school?
- Curriculum
- Contact us

Genetic testing
 Type of resource: leaflet

Description: 4-page long leaflets designed specifically to meet the need of 15-19 year old pupils and to stimulate an ethical debate. The leaflets can be downloaded as PDF-documents.

Developer: The Norwegian Biotechnology Advisory Board

Date of origin: 2007

Target group: 15-19 year old pupils, teachers

Download: [genetic testing \(pdf\)](#)

Corresponding resources:

- [Prenatal diagnosis](#)
- [Pre-implantation genetic diagnosis](#)
- [Assisted reproduction](#)
- [Inheritance and genetics](#)
- [DNA-identification](#)

The Nordic Council of ministers post@bioetik.org

R E P O R T



norden

Nordic Committee on
Bioethics