

Transmitting Gender Competence in Biology Teacher Training¹

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SUMMARY

This article deals with the most recent developments in teacher training for secondary school in the subject biology at the teacher training college in Geneva. The focus is on the question how the gender aspect can be appropriately addressed as a transversal study content and how pupils as well as teachers react to this study program.

GENDER ASPECTS IN EDUCATION IN GENEVA

Since 1981 the Swiss Conference of the Cantonal Education Directors (EDK) of the Swiss Cantons recommends a joint education for girls and boys. This aim is supported by the federal law of 24 March 1995 on the equality of women and men which includes a demand for targeted policy measures for the equal treatment of girls and boys in education.

In 2005, integration of gender aspects in education became a clear political goal in the Canton of Geneva, after the governing council and the Director of Education had declared it a priority.² The Geneva university teachers took the municipal authorities at their word and demanded, together with feminist associations and the Swiss equal opportunities office, that obligatory gender-relevant courses be introduced in the training of all teachers when the new secondary school teacher training was incorporated in tertiary education in 2007. In this way the subject of gender was integrated in the training of primary and second-

1 | Original version in French.

2 | République et canton de Genève: Instruction publique, culture et sport. 13 priorités pour l'instruction publique URL: <http://www.ge.ch/dip/priorite12.asp> [15.12.2013].

ary school teachers. In particular in the training of secondary school teachers there was to be no gender-relevant course outside of the general curriculum, so as not to create the impression that the subject of gender is an isolated element within education. Gender has to be recognized by the students as a key competence of their professional practice which they need to be able to mobilize at any time during their teaching activity and not merely as another curriculum subject (such as specific courses on sustainability, religion, citizenship etc.).

The students at the Institut universitaire de formation des enseignants de Genève (Geneva University Institute for Teacher Training) are confronted with the subject of gender in the first year of study in general subjects that address various aspects of the teacher's profession. In the second year of study the subject returns in the didactics seminar which aims at enabling the student teachers to analyse their subject area from a gender perspective.

The present text offers an overview of our approach to encourage future teachers in the biology didactics seminar to develop gender competences. Here we will notice that despite their master degree in biology, students are only rarely informed about the history of the biology of sex and are unaware that the representation of a binary sex is a historical construction. The deconstruction of this representation with illustrations from the 16th and 17th centuries serves as an introduction to the topic and enables a critical analysis of the illustrations used in biology textbooks. This helps to make clear which implicit statements these illustrations convey.

Insufficient gender competence of teachers

Even though equal treatment of girls and boys in the schools of francophone Switzerland is a relatively young topic, it is, in the view of the future teachers of the Institut universitaire de formation des enseignants de Genève, today already fully ensured. Baurens and Schreiber (2010) also share this assessment. In the courses, students frequently experience the topic of gender as a rather abstract issue, since the majority of them is convinced that they conduct themselves absolutely identically, entirely independent of the pupils' gender (Mosconi 1994). The study by Collet & Grin (2011) makes clear that even though the students realize that there are still cases of unequal treatment of women and men in society they do not regard school as being the cause of it. Instead, they hold a number of immaterial, supposedly overpowerful entities responsible, such as the state, the world of employment, society in general, mentalities, traditions etc. The study also shows that students tend to accept the contents of the available textbooks or

other teaching material unquestioned and believe the issue of sexism is already solved here. We know, however, that the problem is anything but solved, despite some progress already achieved in this area (Détrez 2006; Sinigaglia-Amadio 2010; Tisserant/Wagner 2008). We can establish that the future biology teachers are very uncritical towards their own discipline, whose history they barely know and who don't have the necessary tools to question it from a gender perspective.

A French debate as a didactic example

This development is situated in the context of a controversial debate which was triggered by the introduction of gender aspects in biology class.

In the gazette of 30 September 2010 the Ministry of Education supplemented the curriculum with a chapter titled *Becoming Man or Woman*, which deals with “distinguishing between socially conditioned sexual identities, sex/gender roles and stereotypes on the one hand and private sexual orientation on the other, taking biological circumstances and societal representations into account.”³

The massive protest from the ranks of the Catholic right that followed on this event led to a letter to the minister of education in which 80 UMP delegates demanded the deletion of the theory of sexual gender, which is defined as follows:

“According to this theory, human beings are no longer defined as men or women, but as practicing certain forms of sexuality: homosexuals, bisexuals, transsexuals. These textbooks therefore impose an unscientific philosophical and sociological theory according to which sexual identity is a cultural construction that depends on the environment people live in.”⁴

These protests raise the interesting question of who has the right to define scientific criteria. This aspect is also at the heart of the petition ‘Teaching gender – against an archaic censorship’ (in French: ‘Enseigner le genre: contre une censure archaïque’) in which a number of French scholars point out that

“in no way can it be the task of politics to judge the scientificity of research subjects, methods or theories. Only the scientific community can assess the work of its members [...] Analysing ‘prejudices’ and ‘stereotypes’ in order to question them is the core of every scientific activity. This is all the more necessary when we are dealing with difference between the sexes which even today are represented as natural to justify unequal treatment [...]”⁵

3 | Gazette of the French Ministry of Education No. 9 of 30 September 2010.

4 | Letter of 30 August 2011 by 80 UMP delegates of the National Assembly to the Minister of National Education, Luc Chatel.

5 | Institut Emilie du Chatelet (2011): Enseigner le genre.

URL: http://www.institutemilieduchatelet.org/Enseigner_le_genre.html [15.07.2011].

This debate lends itself to illustrating the study objective in the competence area 1 of the future Geneva teachers, i.e. “situating themselves as experts in their teaching subject, adopting a critical stance towards it, as well as being familiar with its history, methods and teaching materials”. In addition, the debate serves us as an introduction to the topic, as the following example of a lesson will show.

Method

In order to sensitize students to the influence of gender-specific elements on teaching material we developed a two-hour study module together with university professors for didactics in the subject of biology.⁶ This module is part of a series of didactics lessons on anatomical illustrations and their possible forms of interpretation. In the course of this series the university professors remind the students of the fact that pupils can spend their time at the microscope drawing air bubbles in all detail, even though they are supposed to examine a cell. But if these pupils do not know what a cell looks like they could in effect take air bubbles for the actual

object of examination. The teacher, in turn, may not even notice the air bubble since she/he immediately recognizes it for what it is and systematically discards it.

Together with the future teachers, we will here draw a parallel to the representations of the genital tract to show them how prefabricated stereotyped theories about sex can lead to distorted anatomical illustrations. First we show the students an anatomical table from the work of Thomas Laqueur (1992) which shows the female genital tract. In this illustration André Dulaurens identifies a seminal duct (PP), which partly blends into female testes (OO), as well as ejaculation vessels (QQ) that disembody into the uterus (M). Laqueur (1992) declares that Dulaurens represented the female genital tract in this way because he was convinced – like other anatomists of his time such as Vésale – that the female genital tract was the inner version of the male genital tract,



Figure 1: Female genital tract, André Dulaurens, *De dissectione*, Paris, 1600.

6 | My thanks go to Rémy Kopp and François Lombard, research assistants at the Institut universitaire de formation des enseignants de Genève (IUFE), for their support in the introduction of this module.

somewhat like a glove turned inside out. It is therefore very much the convictions of the time that have led to androcentric anatomical illustrations and technical terms, even though dissection could already prove that these did not match with reality. We can therefore say that the scientific community of the 17th century did not assume a specific anatomy of women that distinguished itself from that of men, owing to the gender theory of the time that implied a continuum between male and female. From the perspective of the binary of sex these are blatant distortions in the representation of reality. On the other hand, the notion of a continuum between the sexes offers the advantage to also include intersexuality, which has no place in the strictly binary sex theory.

Where is the womb?

We begin by analysing medical-historical texts about the assumption, widely held from the ancient Egyptians until the 19th century, of a wandering or at least mobile female genital tract. Hippocrates explained mental disorders in women with a lack of sexual activity, as a result of which the womb dries up and has to wander around searching for humidity. It thus supposedly wanders through the body and causes contusions of the hypochondrium (leading to respiratory distress and seizures), of the heart (causing restlessness and anxiety), of the liver (responsible for hysteric cramps) and the head (causing spasms). In the same period Plato describes the uterus as an

“indwelling creature desirous of child-bearing, – remains without fruit long beyond the due season, it is vexed and takes it ill; and by straying all ways through the body and blocking up the passages of the breath and preventing respiration it casts the body into the uttermost distress, and causes, moreover, all kinds of maladies.”⁷

These disorders are called hysteria, from the Greek *hystera* (uterus). It is obvious that the social interest of such theses lies in the control of the female body. The doctors were able to persuade her in her own best interest to have frequent sexual intercourse and numerous pregnancies.

These assumptions outlasted centuries, for even Charcot, although hardly believing the thesis of the wandering womb any more, prescribed his female patients compression bandages for their ovaries to protect them from major hysterical attacks.

7 | Platon (360 BCE.): *Timaios* 91 c), in: *Plato in Twelve Volumes*, Vol. 9 translated by W.R.M. Lamb. Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1925. <http://www.perseus.tufts.edu/hopper/text?doc=Perseus%3Atext%3A1999.01.0180%3Atext%3DTim.%3Apage%3D91>.

The notions that the womb determines the women's moods or that a non-pregnant woman acts against nature are widely held even today. Regarding the womb or uterus, biologists and doctors know very precisely where it is located, but what about the pupils?

Indeed, knowledge about sex-related organs is far from self-evident, both for boys as well as for the girls, particularly because this knowledge is often strongly tabooed. In addition, a large part of the female reproductive apparatus is inside the body. Contrary to the penis, the external genitals (labia, vulva, and clitoris) are seldom mentioned, featured or depicted. Sometimes pupils don't even know the corresponding terms. In addition, we have to state that many young parents have a lot to say about the willy of their little boy (its size, its mobility...) while they have nothing to say about the minnie (or other possible names) of their little daughter. When parents later talk to their little girls about their sex, then this is often combined with the instruction to have a wash down there, implying they are somehow dirty (Détrez 2006).

In biology lessons the pupils can learn to better understand their bodies – provided they are given adequate illustrations that are not stuck in the binary pattern and contain as few implicit attributions as possible.

Let us now take a look at the following illustrations which were taken from a secondary school I science workbook (8th grade, age 13-14 years):

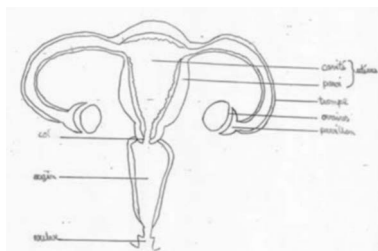


Figure 2: Female genital tract, from the written notes of a pupil.

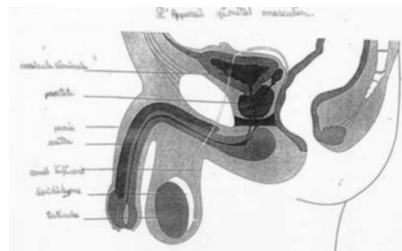


Figure 3: Male genital tract, from the written notes of a pupil.

These two illustrations of the female and the male genital tract are often used by teachers; it is the sort of illustrative material that they like to hand out to their pupils for labeling. It is however evident that the illustration of the male genital tract not only has a better image quality (more detailed, more gradations of grey), but that it also includes a part of the body. Here the pupils can identify the penis, the testicles and the muscles of the buttocks. The illustra-

tion of the female reproductive apparatus, by contrast, is a simple sketch without any reference to proportions, or an indication in which part of the body the organs are located. The fact that the female genital tract lies inside the body does not justify not depicting the body – it would only facilitate to identify the exact location.

Puberty

The treatment of the subject of puberty in secondary school biology class is somewhat sensitive, since the pupils themselves enter puberty around this time. Here then, not only general facts about the human body are conveyed, as it is done in the units about the muscles or digestion, but also the changes taking place in the pupils' bodies are discussed. As already earlier in the case of the illustrations of the genital tract, we decided to approach the discipline via its history, to make clear how social roles and moral codes tend to be biologized, thereby portraying as unavoidable and situating social power relationships as something natural. Thus we can for example read in Antoine Marro's treatise on 'The puberty of men and of women' from the year 1902: "Besides physical flaws we could observe that premature unions produce more criminals, thieves and even violent perpetrators." He concludes that marriage should be delayed as much as possible. Nevertheless, premature unions "are for the body and for morale significantly less dangerous than [male] onanism."

Regarding young women, Bureau-Riofrey writes in his work 'Physical Education for Young Ladies or Hygiene for the Woman Before Marriage' (in French: 'Education Physique des Jeunes filles ou Hygiène de la Femme avant le Mariage') published in 1835 that during puberty

"there is something like the movement of nerve fluids that run through the system with desire to entrench themselves; such physical phenomena explain perfectly the fluctuations in the nature of young girls, their constant but still fleeting afflictions that constantly shift inside the body like fluids in a container carried around."

This is followed by a list of the various afflictions of young girls which sometimes even drive them to suicide. The list takes up a whole page.

In this description we again encounter the image of wandering inside the women's body – this time not of the uterus, but of fluids – which reminds us of the Hippocratic theory of moods from the 6th century B.C.E which was still widespread well into the 18th century. This theory depicts women as cold

and humid, making them more vulnerable, susceptible to all sorts of disorders, weaker. Owing to these constantly undulating fluids they supposedly had vapours and mood swings and were therefore fickle. Here, too, the question seems appropriate whether we continue to adhere to the concepts the Hippocratic theory is based on although we have long ago discarded the theory as such.

Let us once more return to the written notes of the pupils taken during a learning unit on puberty. The teacher asks the class to list various changes that occur during this phase of life. He presents the following table to the class:

Features	Woman	Man
<i>Primary sex/gender features</i>		
First signs of puberty	menstruation	ejaculation
<i>Secondary sex/gender features (body)</i>		
Chest	breast	
Glottis		Adam's apple
Muscles		stronger development
Skin	cellulitis	hair
Skeleton	widening of the pelvis	widening of the shoulders
<i>Sekundäre Geschlechtsmerkmale (Verhalten)</i>		
Behaviour	feminine	virile
Habits	make-up, hairstyle	beard

Table 1: The changes in puberty, from the written notes of an 8th grade pupil.

Looking at this table we encounter numerous errors and inaccuracies. First we can criticize the strict binary categorization which is set unmarked as a default. Thus for instance the fact that only men can have an Adam's apple does not mean automatically that all men have an Adam's apple. It is similar with the other listed elements (not every man has automatically stronger muscles than every woman). We also notice with concern the connection of the first menstruation with cellulitis (which by no means occurs systematically during puberty), since some young women at this age can feel urged by normative body schemata to extreme thinness, well aware that anorexia can also suppress menstruation.

The division of the table in two columns creates the impression that everyone can place themselves either in one or the other category. According to statistics, in the Canton of Geneva alone there live around 300 intersex persons.

What is also problematic is the logical connection between the first signs of puberty (menstruation and ejaculation) and the significance the teacher accords to puberty: it is the phase of life in which human being acquire the ability to reproduce. Such a depiction reduces sexuality to reproduction and puberty to the development of reproductive organs. We should remind ourselves that the term 'puberty' originates from the Latin *pubertas*, which means covered with hair.

The further contents of the table are even more questionable: In the rubric of behaviour-related secondary sex/gender features beard growth (which incidentally does not appear on the genetic map of all men) is put on the same level as the (purely cultural) making-up of women. The table thus implies that cultural behaviour is biologically conditioned and attributes to both sex-related categorizations the respective behaviour – virility is expected of real men, femininity of real women. Anyone that cannot be put into this binary categorization is therefore regarded as biologically abnormal.

CONCLUSION

The analysis of these topic areas aimed, on the one hand, to show future teachers that the knowledge conveyed to them with regard to gender aspects is not neutral, and on the other, that the ideological influences in the representations are often hidden, because they correspond to our convictions about the one sex difference (in French: 'La différence des sexes') (Marro 2012) and sexuated stereotyping (in French: 'stéréotypes sexués') that permeates our society. In addition, the future teachers have to recognize that the pupils also absorb this knowledge through the filter of their respective youth and family culture, which is also strongly marked by sex/gender stereotypes. Thus the secret curriculum (Forquin 1985) of the biology class contains unscientific elements which contradict those values promoted by the school, but nevertheless flow into the knowledge transfer. We therefore think it important to degender this field.

While the future teachers certainly expressed interest in the topic, it has shown that their knowledge barely goes beyond the discovery stage. Some groups needed our support to make the sexed/gendered representations of their teaching materials visible. It seemed obvious to us that for the majority of them it had never crossed their mind to take up a gender-sensitive, critical stance towards the teaching contents conveyed to them (see study targets

competence area 1). Many of the future teachers were amazed at their newly acquired insights. Some students also went beyond the mere sensitizing stage by mobilizing more general knowledge about gender aspects conveyed to them at an earlier point in time (for instance in the first year of study). One group established, in the framework of a thorough comparative analysis of different illustrations presented to pupils, that the manner of depicting the female and male bodies can lead to merely partial or erroneous representations of reality. These teachers now choose their teaching material with a fresh perspective and use, for instance, illustrations of the genital tract from various angles or three-dimensional depictions that better reflect reality.

It seems evident to us that for the majority of these teachers an acclimatization phase is necessary before they can apply their newly acquired knowledge in class. Even though we were able to detect a certain general degree of sensitization, it is difficult to conduct an accurate survey of the actual learning effects on the teachers as well as of their ability to absorb the newly gained competencies (Boutin 2004). Nevertheless we can agree with Progin and Müller (2012) and say that we have laid the foundation for a sex/gender competency which could make it possible to respect sex/gender-related diversity and give guidance to the pupils in an environment free of discrimination.

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