

Inviting queer ideas into the science classroom: studying sexuality education from a queer perspective

Mattias Lundin

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Abstract Science education has been pointed out as fact-based and built on reliable knowledge. Nevertheless, there are areas that include other aspects. Sexual education is, according to the Swedish syllabus, such an example and it involves aspects as love, sexuality and relations. These aspects suggest a possible tension between the biological and well-established definition of sex and later non-dichotomized perspectives. Teachers need to take both of these aspects into account as they work. Equality work aiming at providing equality for people that are not part of the prevalent norms for doing gender and sexuality is another endeavour to teachers in science education. To be able to study prevalent norms a queer perspective has been used. The hetero norm is defined in this perspective and it is explained as the expectation that everybody is heterosexual and wishes to live in hetero pair-ship. This perspective also involves the normative construction of man and woman. The different ways to approach sex and sexuality is the research object of this study and the research question is formulated as follows: How can the construction of the hetero norm be visualized by queer theory to challenge the norm in sexuality education? A framework that visualizes the hetero norm and that could elicit attempts to question the norm was chosen for the analysis. The applied framework can be summarized using the following descriptions: repetition of desirability, dichotomization of sexes, differentiation of sexualities and hierarchy of positions. The data constituted of observations made in two classes with 14-year-old students during sexuality education lessons. The results illustrate how the hetero norm was reconstructed in all of the four parts of the applied framework. The analysis provides four examples of how the norm was challenged, first, by expressing the unexpected and uncommon, second, by an orientation towards uncommon positions, third, by eliciting the communalities of sexes and fourth, by an illumination of the queer. It is concluded in the paper that a challenge of the hierarchy of positions is subsequent to the challenge of the initial parts of the framework. Furthermore, the part of the framework

Lead Editors: K. Scantlebury and A. Hussénius

M. Lundin (✉)
Linnaeus University, Kalmar, Sweden
e-mail: mattias.lundin@lnu.se

called repetition of desirability could benefit from being part of a different level compared to the following parts of the framework. The excerpts used in the analysis were chosen because of their applicability to the framework. However, the biological content does not stand out in the chosen excerpts. The analysis cannot point out if this is a coincidence and it is open to further research to illuminate whether the biological content is diminished, or if teachers might focus on the biological subject content separately from the questions referring to love, sexuality and relations. To conclude, the framework seems to be fruitful to illuminate equality issues regarding the hetero norm both by visualizing the reconstruction of the norm as well as visualizing attempts to challenge the same norm.

Keywords Heteronormativity · Queer theory · Sexuality education · Norm challenge

Utökat abstrakt

NO-undervisning betraktas ofta som faktabaserad och bestående av säker kunskap, även om helt andra aspekter också ryms inom ämnet. Sex- och samlevnadsundervisningen utgör ett sådant avsnitt, där de svenska kursplanerna anger att till exempel kärlek, sexualitet och relationer ska utgöra en del av innehållet. Sexualundervisningen innebär därför en möjlig spänning mellan å ena sidan det biologiska innehållet och å andra sidan genusteoretiska perspektiv på kön. I lärares arbete ingår att se till att dessa båda delar får sitt utrymme. De olika sätten att betrakta kön på innebär inte bara en utmaning i sig utan ska också ses som en del i en strävan för likabehandling i skolan, vilket innebär att skapa (goda) förutsättningar för alla. Detta gäller samtliga elever oavsett om individen i fråga kan anses harmoniera med gängse normer eller inte. I det aktuella projektet har en queerteoretisk ansats valts för att kunna studera den rådande normen inom sexualundervisningsområdet. I denna ansats är heteronormen central och den definieras här som förväntningar på att alla är heterosexuella och önskar leva i heterosexuell tvåsamhet. Heteronormen inkluderar också idéer om hur kvinnor och män förväntas vara och att dessa båda kategorier inte ska blandas. I föreliggande projekt ligger huvudfokus på de olika sätt som kön och sexualitet kan göras på, med frågeställningen: Hur kan queerteori användas för att synliggöra både rekonstruktionen av heteronormen och tillfällen att utmana samma norm? Datainsamlingen gjordes i form av videoobservationer i två klasser med 14-åriga elever, under avsnittet sex- och samlevnad i NO. Vid analysen har ett ramverk använts som kan sammanfattas i följande fyra delar: *repetition of desirability*, *dichotomization of sexes*, *differentiation of sexualities* och *hierarchy of positions*. Resultatet visar hur heteronormen rekonstruerades med avseende på ramverkets fyra delar och dessutom erhöles fyra exempel på hur normen utmanas: *expressing the unexpected and uncommon*, *orientation towards uncommon positions*, *eliciting the communalities of sexes* och *illumination of the queer*. Analysen indikerar att det är svårt att utmana den hierarkiska ordningen av positioner (*hierarchy of positions*). För att nå en högre position krävs av individen att ha rätt kön, rätt sexualitet och vara önskvärd på 'rätt' sätt, dvs hierarkin förutsätter de övriga tre delarna i ramverket. Analysen indikerar också att ramverket skulle kunna byggas i flera nivåer så att relevansen av dess första del (*repetition of desirability*) tydliggörs för de efterföljande delarna, det vill säga att önskvärdheten blir tydlig med avseende på såväl kön som sexualitet. De använda utdragen från det empiriska materialet valdes för att de kunde knytas till heteronormen på

något sätt, oavsett om samtalet handlar om biologi eller mer allmänt om relationer. Det biologiska innehållet är emellertid inte särskilt framträdande i utdragen. Detta kan vara en tillfällighet eller så kan det biologiska innehållet vara reducerat i sex- och samlevnadsavsnittet. Alternativt kan lärarna valt att behandla det innehållet separat i förhållande till innehållet som berör kärlek, sexualitet och relationer. Som slutsats kan sägas att ramverket framstår som fruktbart för att belysa likabehandlingsfrågor med avseende på heteronormativitet, både genom att accentuera rekonstruktionen av norm och identifiera tillfällen att utmana densamma.

Challenging norms in schools

Science education often has been regarded as non-negotiable and based on only facts. William Letts (2001) asserts that science education knowledge is fact-based and consisting of so-called reliable knowledge. From this perspective, science knowledge is static, maybe due to its empirical origin and the importance placed on the use of experimentation for reproducible results. James Gaskell (1992) claims the empirical origin of knowledge is shaped by an emphasis on students' exploring and laboratory work. Nevertheless, there are several important examples where moral and ethics have played prominent roles in science education. For example, socio-scientific, social justice, and eco-justice issues use facts, but can also connect with values, responsibility and students' awareness. Another example where the school science curriculum has the potential to address, values, morals and ethics is through sexuality education. The Swedish syllabus for biology (Swedish National Agency for Education 2011) states that questions dealing with sexual relations are important when school science focuses on the human being as a biological creature. When discussing human sexuality and reproduction, teachers are required to address "questions concerning identity, gender equality, relationships, love and responsibility" (Swedish National Agency for Education 2011, p. 108). The syllabus includes learning goals but it does not suggest how teachers should align teaching biology with a focus on personal aspects related to gender and sexuality, stating that teachers should "counteract traditional gender patterns. It should thus provide scope for pupils to explore and develop their ability and their interests independently of gender affiliation (Swedish National Agency for Education 2011, p. 10)."

With this directive from the Swedish National Agency for Education, biology teachers must plan an inclusive curriculum that avoids intolerance and discrimination based on, for example, sexuality. One approach in deconstructing social inequality is to critique social norms. Lena Martinsson (2008) asserts that several societal norms can be combined and intertwined with other norms causing contradictions. For example, the hetero norm can contradict the norm that gay people should not be discriminated against. This complexity, combined with the goal to deconstruct social inequities, has important implications for teachers' and students' engagement in discussion about human sex and sexuality in the biology class.

Dennis Sumara and Brent Davis (1999) challenge stereotypic views of sex and sexuality in education by proposing a focus on pedagogy as already sexualized. Similarly this project examined sexualized items in science teaching and sexuality education, such as girls' interests in boys and vice versa. Sexuality education involves a hypothetically perceived tension between the biological and well-established definition of sex on the one hand, and gender theories pointing out the social dimensions of gender, on the other.

Understanding the impact of hetero norms

In this paper the assumption that everyone is heterosexual and wants to live in heterosexual partnership is defined as *hetero norm*. Michael Warner (1993) describes the hetero norm as the heterosexual culture's ability to think of itself as "the very elemental form of human association, as the very means of reproduction (p. xxi)." Fanny Ambjörnsson (2006) stresses that the hetero norm refers to different aspects of society's values and expectations related to the construction of sexuality and gender. In order to provide education that engages and relates to all students, a critical perspective on the heterosexual norm is important. Queer ideas provide a critical perspective of the hetero norm, and also of the prevalent ways people regard gender. Susanne Luhmann (1998) summarised these critical ideas as, "*queer* aims to spoil and transgress coherent (and essential) gender configurations and the desire for a neat arrangement of dichotomous sexual and gendered difference central to *both* heterosexual and homosexual identities." (italics by author, p. 145). Judith Butler (2007) questions if a definition of gender can be separated from the gendered body and as the concept of gender is limited by its connection to biological sex. She suggests that the terms, feminine and masculine could be used to describe what often is referred to as a man's body as well as a woman's body, and the other way around. Furthermore, sexual desire is a central concept within the foundation of heterosexuality and the dichotomised way of describing man and woman (Butler 2007). When using a queer perspective, sexual desire becomes detached from biological sex.

Science education involves hetero norms that might promote othering. Letts (2001) describes such structures as hegemonic, heterosexual masculinity and provides examples of conversations between teachers and students in which giving the correct answer is encouraged, whereas reasoning and use of evidence is not prioritized. Letts describes these conditions as "a masculinist notion of objectivity, where the goal is to see what 'truths' are revealed..." (p. 266). Raewyn Connell (2005) claims that school provides a normalised way of regarding masculinity. A stereotypic picture of masculinity achieves a hierarchy among boys. If a boy that breaks the masculinity norm, for example by expressing homosexuality, he may be marginalised (Connell 2005). Marie Nordberg (2006) describes the construction of masculinity and the mechanisms that strengthen the norm using doorkeepers to indicate mechanisms that exclude or point out the other. Labels such as "fag" and "sissy", function as doorkeepers to point out behaviours that "deviate" from masculine normality. Students may use the masculinity norm in their biological definition of sex. The femininity norm can be associated with stereotypic views of women that is not only hierarchical among women, but that is also hierarchal in relation to men.

Stereotypic views on gender might also have consequences for interpretations in biology research. Måns Andersson and Miriam Eliasson (2006) explain how gender stereotypes might influence our understanding when studying animal behaviour. However, gender research has contributed to the understanding of gender and sexuality in ethology by avoiding gender stereotypes and androcentism. Specifically, gender theory has challenged the mutual partner choice interpretations of male and female behaviours that correspond to stereotypic views on gender (Andersson and Eliasson 2006). Malin Ah-King, Lotta Kvarnemo and Birgitta Tullberg (2005) have studied fish from an evolutionary perspective and present examples and interpretation of data that are not based on gender or heteronormative stereotypes. Ah-King, Kvarnemo and Tullberg (2005) report how males within a fish population care for spawns, and provide an explanation of paternal care in relation to the fishes' mating system and territoriality. These studies show how culture can

influence science explanations, and that biological patterns and practices do not support heterosexual stereotypes and a discussion of these issues is relevant in science education.

There is limited science education research with a critical perspective on the dichotomous views on sex and sexuality. However, Vicky Snyder and Francis Broadway (2004) used queer theory in their content analysis of science textbooks and noted that non-hetero norm positions are often absent in textbooks. Furthermore, they report that if textbooks discuss homosexuality the context is often AIDS-related. Jesse Bazzul and Heather Sykes (2011) critiqued a biology textbook using queer theory and showed how the text constructs heteronormativity and offered strategies for teachers to challenge this representation. Francis Broadway (2011) notes the need for science education researchers to go outside the discipline to find new ways of knowing and frameworks to look *at* science education. Jay Lemke (2011) provides examples of how using new theoretical frameworks to analyse science education could benefit the field by providing new ways of knowing about “alternative sexualities, intersexed persons, and the like that is distorting the science, it is also the absence of all the interesting and potentially normativity-threatening, facts” (Lemke 2011, p. 288).

Other science education research that challenges the field’s heteronormativity include Steve Fifield and Howard Swain’s (2002) study describing the intersection of personal identity and science from a hetero norm perspective, illuminating homosexual perspectives on science teaching. Their descriptions of homosexual teachers’ standpoint on being homosexual are related to an occasional discomfort rather than comfort. They describe a teacher’s ambiguous feelings: “Behind his classroom door he discovered an ambiguous terrain in which he was a knowing subject, and an object of knowledge in cultural (and scientific) norms that defined him in ways inconsistent with his own feelings.” (p. 9). They explain that these issues could deal with qualities like “normal” and “natural” and concluded that those qualities are read into nature, but are not reflections of it.

Qualities such as normal and natural are possible to relate within the Swedish syllabus for biology that addresses concepts such as identity and sexuality. These topics provide an opportunity for students and teachers to explore the different ways of understanding sex, gender and sexuality that is much more than the anatomic division between male and female. Butler (2007) addresses the norms attached to sexuality. She argues that questioning something that looks obvious creates anxiety for those involved. Maybe so because the obvious and given become cornerstones on which we build our interpretations of the world. Nevertheless, to question the obvious is necessary to challenge dated ideas. For example, drag (i.e. dressing as the opposite sex) questions gender norms as it creates dissonance regarding anatomy, identity and gender performance (Butler 2005). Today drag is more accepted and as such it provokes and creates less anxiety. However, drag can produce an anxiety when one (re)defines the concepts of woman and man. Norm breaking gender expressions provide opportunities for learning about different ways of doing gender and identity.

Bronwyn Davies (2003) argues that children are socialized into a discourse where the dichotomy of biologic gender (sex) is central. When boys in her research acted according to hetero norm assumptions associated with the girls (and vice versa), she interpreted their actions as less convincing and comfortable. That is, young children are aware of how hetero norms dictate their expected behaviours and act accordingly. However, Davies (2003) identifies norm-breaking practices that teachers could use to promote freedom of expression and doing identity. For example, children acting or dressing according to expectations related to their opposite sex, can be occasions when it is possible to deconstruct prevalent gender norms in order to change and/or challenge them (Davies 2003).

That is, children can provide opportunities for addressing these topics and teachers could use those opportunities to discuss and challenge gender norms.

This study focuses on norm breaking utterances or performances that teachers might address in the classroom to question students' views of sexuality, and how masculinity and femininity are attached to sexuality (Reimers 2008). The norms reinforce what kind of sexuality and how students should express their sexuality. To question a norm implies asking if it is legitimate. Tolerance infers noting that a practice or utterance is something different from the norm and accepting the difference. The work to question and challenge norms is important for individuals who break the hetero norm, by taking a non-heterosexual position or performing a gender variant behaviour. According to Graciela Slesaransky-Poe and Ana María García (2009) girls would "profit from a world where the construction of women and ascribed attitudes and traits are seen as equal and as valuable as those of men" (Slesaransky-Poe and García 2009, p. 209). That is, the deconstruction of the hetero norm implies that all the limiting expectations about behaviours would also be deconstructed. This is an important endeavour for people who are not aligned with the stereotypic pictures of women and men, heterosexual or homosexual. For example, it would facilitate for men and women on a continuum of femininity and masculinity to move freely between homo-, bi- and heterosexuality. Without the norm, a person will not have to ascribe to a pre-defined position.

Research question

The study examined how teachers' and students' verbal interactions in a biology class established and questioned ideas related to the hetero norm, identified the sexualisation of pedagogy and documented challenges to the hetero norm. Very few classroom studies on sexual inclusion and equality have considered the subject content. The research question is:

- How can the construction of the hetero norm be understood by using queer theory to challenge the norm in sexuality education?

Study site

This study is part of a larger project that focused on how science models encounter other ways of making meaning in sexuality education, such as socioscientific issues. The researcher contacted the principals at three lower secondary schools located in southeast Sweden and explained the project's goals. These schools differed in size and location. Two principals recommended teachers for the study, which focused on students in two biology classes. One class had a female teacher, and the other had a male teacher. In the results these two persons will be called "the teacher" in order to avoid comparisons between the two and individual identification.

The two classes each consisted of approximately 20, 14-year-old boys and girls in each class. Overall, the researcher observed, audio recorded, and produced field notes for 14 lessons. The first part of the analysis identified examples from school science where the hetero norm was brought to the fore and where assignments and dialogues between participants related to sexuality education. Furthermore, a consideration to provide defined and not too lengthy excerpts was made. The second part of the analysis used Lundin's

(2011) framework to interpret the examples. A description of this framework is provided in the next section.

A framework to understand and question the norm

Lundin's (2011) framework was developed from a review of literature on heteronormativity and provided an analytic tool to critique that norm. The framework is applicable in other Western countries with cultural similarities and education systems. Lundin's (2011) framework consists of seven parts: *repetition of desirability*, *dichotomization of sexes*, *differentiation of sexualities*, *hierarchy of positions*, *marginalization*, *issue making*, and *personation*. The parts are not hierarchical, but constructed to facilitate the discernment (and analysis) of the hetero norm. Furthermore, the framework attempts to systematize research on the hetero norm within education settings.

This study used the framework's first four parts because these relate to positions when the hetero norm is constructed or challenged. The framework's three latter parts focus on a homosexual position. Consequently, this study used *repetition of desirability*, *dichotomization of sexes*, *differentiation of sexualities*, *hierarchy of positions* as the data did not involve conversations explicitly addressing homosexuality, nor did the research question specifically address the marginalization of a gay person. [See Lundin (2011) for a detailed discussion of *marginalization*, *issue making*, and *personation*.]

The first part of the framework, *repetition of desirability* addresses people's repeated conversational items. The *repetition of desirability* is founded on Butler's (2007) reflections on the norm concept, where a norm needs to involve a repetition. This part of the framework refers to various items that are repeated as desirable and worthwhile in the socio-cultural context. The second and the third part of the framework are based on two assumptions that Ambjörnsson (2006) used to describe the hetero norm. The second part is called the *dichotomization of sexes* and examines the distinction between women and men, and the different societal expectations of men and women that are fundamental to the hetero norm. This part of the framework is related to Snyder and Broadway's (2004) "binaries" that is, the dichotomization of sexes. The third part of the framework is the *differentiation of sexualities*, referring to the distinction between hetero- and homosexuality and examines how students relate or approach to desire or (sexual) relations.

The fourth part of the framework is the *hierarchy of positions*, refers to different ways of performing sexuality and assumes that heterosexual relationships are expected rather than same sex relationships. It also refers to a hierarchy that might be perceived in relation to other ways of being sexual or not, such as falling in love with several persons at the same time (polyamorism) or not being sexual (asexuality). This part of the framework builds from ideas presented by Butler (2007), Michael Foucault (1993) and examined in the Swedish context by Ambjörnsson (2006) and concerns the hetero norm as a system of power. That is, what is part of the norm is obvious and assumed, and what is beyond the norm, can be questioned and regarded as illegitimate. What might be regarded as illegitimate or abnormal is the result of an on-going process of categorization of people and this process rests on power relations between the different subject positions. Foucault (1993) explains this process as a social construction of subordinate subject positions, in which for example a homosexual subject position is made subordinate.

Snyder and Broadway (2004) present research similar to Lundin's (2011) framework using a queer theory summary chart that summarised key ideas and salient points of queer theory orientation. However, their chart has a different purpose than the one used in this

analysis. For example, Snyder and Broadway's (2004) queer theory chart involves the concept of 'binaries' that refer to the division of men/women (cf. dichotomization of sexes) and homosexual/heterosexual (cf. differentiation of sexualities). The analysis in this study used *repetition of desirability*, *dichotomization of sexes*, *differentiation of sexualities* and *hierarchy of positions* to examine the data set, not as distinct categories, but as processes that establish power relations.

Construction and challenge of the heterosexual norm in school science

Desirability

This first results illustrate how science classroom work reflected desirability in terms of students' language and actions. In an introductory lesson, the teacher asked students to name human sex organs by posing the question: "What should it be called?" The students drew the symbol of man and woman on a sheet of paper to make two columns. Underneath the different symbols they were instructed to: "write all the words you can come up with for the boy's and the girl's sex organ." The teacher wrote all the words that the students generated on the whiteboard and then asked them to categorize the words into three groups: "nickname", "ugly" and "at the doctor's". The teacher chose and defined the three categories. The teacher explained that the category of words denoted "nickname" was intended for the everyday words that the students would use for human sex organs. "Ugly" included "those words you don't use without thought", whereas "at the doctor's" included the words that they would use when they went to see a doctor. The transcript documents comments made by several male students and indicates a distinct turn taking. However, the conversation is a small illustration of many student comments made during less than a minute, with a background noise consisting of inaudible small talk and giggling.

- Teacher ... I wrote "ugly" and "nice" here and of you say these—would you say these words are ugly and not to be uttered in any way
- Student 1 dickhole [most likely referring to a vagina]
- Student 2 Forgot to write...
- Student 3 But I am not ready!
- Teacher Well, I thought of a category, what would you say, if you were about to go to the doctor? What would you say? What words would you use then, or... or...
- Student 4 I feel pain in my muscle sausage
- Student 5 I feel pain in my bang cover
- Student 6 or the dickhole?
- Students haha!
- Student 7 or the wet cave

The students independently decided which words they preferred for the male and female sex organs. The class then voted on the most preferred word in each category (nickname/ugly/at the doctor's). As the students accomplished this assignment they negotiated what words that could be classified as a nickname and what words that could be seen as appropriate at the doctor's or that was not appropriate at all (ugly).

The example illustrates desirability of *language* and shows how a collective assignment can produce normative perspectives. In this case, the students' work was an inventory of options (different possible words to use) and a subsequent negotiation of how to use these words. As there were many words introduced, the students' conversations involved

negotiation of appropriate words. For example, a male student asked: “Cock is also an ugly word, I guess?” The example can also be used to illustrate the dichotomization of sexes as the activity required different words for the two sexes. Furthermore, the assignment was used normatively to define sex organs. Students only referred penises and vaginas in their conversations, and other body parts that could be involved in sexual acts were not discussed.

Dichotomization

This classroom work and discussions reinforced the idea that humans are ‘divided’ into two sexes. For example, the teacher instructed the students to share their thoughts about the opposite sex:

... well, you can have some thoughts about, eh the opposite sex. Things that you think of... why do blokes... or wondering how they think of this. Why, what do girls think about this [how boys think]. Now you do like this, make a line. This I like answered by girls, questions to girls by boys and you write a list with questions and those questions I will type on a clean sheet of paper...

The teacher’s instruction assumed the questions that girls would like to ask boys would be different from the questions that boys would ask girls. Also, the instruction did not focus on students articulating questions to persons of the same sex. How the teacher constructed and presented the assignment (involving the different words for male and female) also implied a strict dichotomization of sexes because it presupposed that there are critical differences between how girls and boys address sexuality and human relations. One possible interpretation is that such an introductory task established the foundation of the lessons sequence: the differentiation of sexes. However, despite the dichotomization shown in this example, the same teacher explicitly expressed opposite objectives. According to the teacher, one purpose of the activity was to “compare girl–boy, discover that much is alike, concerning for example what happens when [a person is] aroused, sensitive areas etc.” Although this latter example involves looking for similarities, it is still based on the dichotomy of girl and boy. That is, the outcome of this approach could be perceived as exceptions to the hetero norm dichotomy of women and men.

Differentiation of sexualities

The examples in this third category show how the classroom discussion portrayed humans as having a single, stable sexuality. In one lesson, the activity began with a group of girls standing at the front of the room as the teacher read aloud five fictitious boys’ names. The names were written on the top line of five columns on the whiteboard and the teacher asked the girls to stand close to the boy’s name that they found the most interesting, telling them, “You are supposed to choose, even though you know nothing about these blokes, which one you would like to be in a relationship with. And now I will write and then, you choose and pick a place where you stand accordingly”. The intent of the activity was for the students to describe what was “attractive in other human beings”. The girls selected the same name. After the first choice, the teacher provided more information about the five boys’ physical characteristics, including hairstyle. The girls could change their selection. The boys watched and commented on the girls’ choices and laughed about the information of the fictive boys. A third piece of information, describing the boys’ attitudes (e.g. kind,

mean, aggressive), was provided and the girls could change their selection. The teacher asked some of the girls why they changed places (i.e. choose another fictive boy).

One girl explained that she changed her choice because the fictional boy practiced ballet; no further explanation was given. However, another girl said that “I love him anyway” with a cheerful voice as the group, seemingly a bit astonished about her comment, noticed the boy’s interest in ballet. As the description of a fictive boy’s long hair was given, one of the observing boys commented: “I told you he was gay”. The hairstyle was the only descriptor that prompted the boy’s comment, which was also a way of specifying the boundaries of an acceptable male subject position. It is possible that students labelled the boy as sexually deviant (gay) because his hairstyle was regarded as deviant to the preferred hairstyle for heteronormative males. This example illustrates the differentiation of sexualities because the class activity required the students to express sexual desire. The students’ conversation did not differentiate a *variety* of sexualities, but focused on heterosexuality and a heterosexual desire in contrast to a homosexual preference.

On another occasion, the teacher asked students to identify attractive male body parts. The students used an electronic system to vote on one of the following options: the neck, back, jaws, teeth, and thighs. The activity was repeated with respect to women where the options were: breasts, hips, hair, eyes, teeth, and thighs. The choices provided to the students, can be seen as based on a differentiation of sexuality, as the options were different in relation to the two sexual subject positions. Another option would have been only to point out the same options for all students regardless of whether the subject was a boy or girl, for example: teeth or thighs. Nevertheless, *both* the boys and the girls were asked to rate sexual attractiveness for male and females. That is, an occasion where the differentiation of sexuality could have been questioned and challenged was created, but the challenge was never made. However, students did not publically share any negative remarks when asked to comment on the attractiveness of the same sex. One boy said that he would not consider male attributes. Some students asked if they were expected to consider their same sex and a few asserted the difficulty of such a task. One of the boys stated, “I am not gay but okay...” and completed the activity. The teacher explained that their answers could deal with what they appreciate or value (e.g. what is nice...) in a boyfriend or girlfriend. This activity did not separate boys’ and girls’ choices. Nevertheless, the students’ answers indicated different values of sexual attraction between a man and a woman. That is, the different options regarding the two different sexes suggests that the desire in the first part of the assignment (male attributes) was expected to be different from the latter part of the assignment (female attributes).

The examples illustrating the differentiation of sexualities are based on human desires related to one’s attraction to another human being and subsequently framed through one’s perspectives on sexuality. Another example that implies a challenge to the dichotomization is a question given to the students. The teacher asked the students to describe a good-looking partner. The class summarised these characteristics as: “good-looking, reliable, faithful, kind, smart, go-ahead, sexy”. Here, their conclusion was general and did not differentiate using sexualities.

Hierarchy

This fourth category illustrates how classroom discourse indicated a hierarchy of positions regarding sexual orientation, with homosexuality in an inferior position. The excerpt has four students’ (Jens, Tom, Linn and Josephine) talking during group work. Their conversation is not connected to the teacher’s instructions and is an example of students’ social

discussions in-between their assignment-related talk. This is a freestanding conversation that is not part of the class activity. As the boys (Jens and Tom) talk, they lower their voices and keep their mouths close to the recorder. They use classmates' names (John and Richard) as pseudonyms. John and Richard are two students who worked a few tables away from Jens, Tom, Linn and Josephine.

Jens I am John
 Tom I am Richard (dissembled voice) and I like dicks
 Jens Oh that was kind of gay, Richard
 Linn (laughs)
 Josephine (laughs)

The word gay ('bögg' in Swedish) is sometimes used to indicate an inferior social position or something unappreciated whereas its original meaning is homosexual. "Gay" can be used to refer to a homosexual subject position, which is inferior to the heterosexual position. In the conversation the students co-construct the concept "gay". When John (Jens second turn) denotes Richard's desire with "gay", a hierarchy of heterosexuality and homosexuality is construed, because the inferior subject position is connoted to the homosexual desire expressed by Richard. There are two items in the conversation that support this interpretation. First the two boys' use of classmates' names, indicates they are actors in this delicate topic. This delicacy is the first notion that supports the idea of a hierarchy of positions. Second, the girls' laughter, perceived as laughter *at* Richard, indicates that Tom is funny at the expense of Richard. Making fun at somebody else's expense involves a hierarchy of required power positions. The girls' laughter can also be perceived as embarrassment at the boy's conversation. The embarrassment could then refer to an uneasiness of a seldom-addressed topic that became elicited in their discussion. As a final remark on the previous excerpt it can be argued that Jens' utterance implies a categorisation of sexualities because he denotes Richard's desire and makes it stand out as homosexual. This pseudonym conversation is an example of a hierarchy. The first example (where sex organs are named) shows the concept of desirability through choice of words; the use of disrespectful words indicates a hierarchy. In this case the hierarchy is interpreted in relation to the sex organ as it suggests that one sex organ is for the use of the other. The power positions are then attached to the concepts being used.

The challenging work to challenge

The desirability identified in the assignment to label words (nickname, ugly or "at the doctor's") in combination with the determination of the most appropriate word in the same assignment, not only implied a construction of hetero norm, but also an occasion of challenging the norm. In the excerpt presented to illustrate their assignment, students laughed when some doctor's words were mentioned. As indicted by the laughter, the boys suggested words rarely used in the doctor's surgery. In using slang, the students reinscribed the hetero norm. However, the use of slang is in itself a way to challenge the expected and common way of talking in the classroom. The students' expressions imply a challenge of the norm by *expressing the unexpected and uncommon*. Similarly, it is possible to bring forward non-hetero norm positions. As the assignment is carried out (as shown in the first excerpt) these occasions could be used to address the unexpected and the uncommon. A teacher needs an awareness of the hetero norm and a confidence to challenge that norm.

In the activity which asked students to consider the physical attractiveness of a potential partner (assignment using the electronic voting system), boys and girls could consider two common characteristics: teeth and thighs. In the example, these communalities are elicited as a part of the heteronormative activity. Nevertheless, the similarities in answers also provide an occasion where the teachers and students could challenge the norm, in this case by *eliciting the communalities of sexes*. Communalities are occasionally addressed in the data and the students were then, for example, asked to compare *similarities* and *differences* between women and men. There is also an ambiguity in emphasising similarities. The ambiguity is to point at the communalities without expressing the items that re-construct the norm, for example pointing out communalities that are at risk of being interpreted as exceptions in an otherwise dichotomous description of sexes. As the hetero norm usually is auto reconstructed, a possible approach is to recognize and name the occasion as it occurs and use it to challenge the prevalent (and already existing) heteronormative ideas and perspectives.

There is no spectrum of sexualities available in the exemplified utterances and conversations, rather the heterosexuality is prevalent and polyamory, asexuality, and/or bisexuality perspectives are absent. Although the data does not show how these subject positions can be addressed in classroom conversations, the results can be interpreted as the separation of homosexuality and heterosexuality, while there is silence regarding other sexualities. Future research can address how teachers and students could challenge the differentiation of other sexualities in science.

The assignment asking students to describe the physical features of a hypothetical partner could produce a hostile environment for students who would like to break the norm. One of the excerpts showed how Jens used the word “gay” to indicate inappropriate sexuality. His use of the word gay is an example of Nordberg’s (2006) concept of doorkeeper. The doorkeeper shuts the gay person out of the social context. By detaching the descriptions of the hypothetical partners from indicators of the persons’ sex, students could avoid the normativity of the assignment. That is, the assignment could then become less normative with reference to sexuality. However, if the students were to make their choices based on other criteria such as spare time activities or housing, the assignment would be yet as normative with respect to other norms than the hetero norm. Also, if the fictive persons in the play were described in gender neutral ways, it is likely that the hetero norm would assert power on the different choices made by the students and a given description would probably still be interpreted as gendered.

When trying to challenge the differentiation of sexualities it is insufficient to only focus on the communalities of sexes. A teacher’s endeavour should be to present sexualities without describing non-mainstream sexualities as peculiar. In a normative setting any illumination of the non-mainstream could be perceived as an illumination of the queer. According to Butler (2005) such illumination is inevitable and drag is an example of one non-mainstream approach. As the suggested work to challenge the differentiation of sexualities is not found when discussing sexualities, I propose that an *illumination of queer* as a first step to challenge the differentiation of sexualities. Through illumination, items that traditionally were perceived as odd may become familiar. For example, various ways of being, identifying and performing sexuality become possible. The children in Davies’s (2003) study provided material for challenging stereotypic ways of doing gender. Similarly, this study’s results had two examples where such occasions could be identified, but teachers did not use these for further discussion. First, one of the girls asserted that she would choose the fictive boy even if he practiced ballet because she “loved him anyway”. Although her utterance involves a message of tolerance it can be regarded as a first step,

not only to express the unexpected and uncommon, but also to orient towards such positions. Second, one of the boys said, “I am not gay but okay” as he considered the options given by the teacher. Similar to the girl’s utterance, what he said could be seen as an *orientation towards uncommon subject positions*. An interpretation is that such an approach is sensitization. That is, when repeatedly experiencing the positions initially perceived as odd, a sensitization might make the participants accustomed with these positions. The word sensitization then refers to the process of getting used and familiar with things that are not part of the norm. In the beginning, it is likely that the approach now denoted as sensitization might imply that uncommon subject positions become perceived as peculiar and odd as it might take a while to get accustomed to them. Furthermore, an orientation towards uncommon subject positions could be arranged as a performance. The previous example illustrates the hierarchy, and where Jens and Tom played the roles of their classmates, Tom could be seen taking a homosexual subject position. This is a performance, with dubious consequences because the students laugh at Richard’s expense. However, in role-plays, performance could be used in learning activities to try and familiarize with new subject positions.

One solution to the hierarchy of positions would be to assert the importance of a teacher not overlooking or ignoring the opportunity to discuss the students’ heteronormative dialogue and practices. However, teachers cannot be present in all groups. The comments illustrate how students reconstruct the hierarchy as well as the subordinate subject position (Foucault 1993). The challenge for teachers is to help students reflect upon how their conversations and actions reinforce the dichotomization of sexes and the differentiation of sexualities and how they could deconstruct this hierarchy. This approach may eliminate hierarchies and subordinate subject positions within the class based upon sexuality.

The first part of the discussion provided possibilities to challenge the hetero norm, but further research to examine how high school biology classes could challenge the hetero norm is important. In this initial study, which investigated the utility of the framework, the participants did not explicitly discuss sexuality. By collecting data that involves such discussion, researchers may have the opportunity to examine the applicability of the framework’s seven parts, and in particular, the different ways of being (sexual), identifying and performing sexuality.

The excerpts presented in the results represented sexuality education (biology) *and* were applicable to the framework. None of the excerpts illustrated biological knowledge as a masculinist notion of objectivity (Letts 2001). The excerpts focused on human relations and provide the opportunity for further research how emotions and relations are intertwined and balanced with biological “facts”. This research exemplifies relational issues in biology education and shows how these are founded on heteronormative ideas. The results could be seen as an indicator of teachers’ interpretations of the Swedish syllabus of biology (Swedish National Agency for Education 2011). This study shows how teachers emphasize relational issues, although the biological content is not evident in the study’s examples. It seems that relational aspects are not intertwined with the subject content; this is contradictory to Letts’s (2001) findings where fact-based knowledge is the crucial part.

Another implication of the study is the Swedish National Agency for Education (2011) policy documents could benefit from being expressed more clearly. A queer reading of the policy document in combination with the data presented, indicates a need for substantial explanations, and professional development for teachers on these topics. Furthermore, the results suggests that classroom conversations provide occasions for challenging normative ideas—that is *if* the teachers can advantage of these situations. One example from the data is the schooling into normalised ways of making partner choices that the students

participated in (cf. the example of *differentiation of sexualities*). Such an activity can be seen as a way of learning the valued and appreciated desire. The queer perspective especially includes the concept of desire (Butler 2007).

The research presented here is concerned with classroom practices and the applicability of queer theory. The applied framework is operating on different levels. For example, the repetition of desirability refers to a phenomenon relating to both of the two subsequent parts of the framework (dichotomization of sexes and differentiation of sexualities). Furthermore, the analysis shows that the hierarchy of positions is not only a consequence of the first part of the framework, but it is also indicated to be difficult or even counterproductive to challenge the hierarchy itself. A challenge of the hierarchy might jeopardise and reinforce the categories of the hierarchy. It is, for example, necessary to acknowledge different sexual subject positions as equal to challenge the hierarchy of sexualities. When acknowledging them as equal they are simultaneously pointed out with risk of becoming reinforced. An option would be to challenge the categories themselves and question if the dichotomization of sexes and the differentiation of sexualities are useful.

More research is needed to provide a better understanding of how to challenge or break heteronormative patterns in school science, both by developing the policy documents and the pedagogical practices that would explicitly address these concepts in school. Further research could examine the impact of such classroom work using Lundin's (2011) framework on the construction and deconstruction of the hetero norm.

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Mattias Lundin is senior lecturer at Linnaeus University in Kalmar, Sweden and previous guest researcher at Centre for Gender Research at Uppsala University, Sweden. He lectures at the teacher training program. His research concerns gender issues in science education and specifically the concept of normativity in classroom practice.