Research Article

Agnès Jacquerye*

A revolution in sex education using sex robots

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Abstract: After more than four decades of school sex education programs, there is still a great deal of inadequate information around, together with mixed messages and general confusion. Topics covered have ranged from “no sex” to “safe sex”, and there has been a tendency for pupils to drift into the “alternative” areas of pornographic media. This approach may have contributed to generations of women and men finding themselves, in adult life, living with unresolved sexual problems caused by a truncated and disorderly “education”. The arrival of robots presents an opportunity to reconsider the way in which sexuality is taught and to introduce an innovative and ethical educational practice. This article proposes a conceptual framework where there can be an extension of medical simulation toward sex education based on advanced sex robots, offering a dynamic, effective and ethical teaching method. This article considers why, how and where as well as what is workable and technically feasible. The target is that, with the help of a new generation of robots, a fulfilling love life will be accessible to every man and woman. The engagement of both, the simulation community itself and the political will, is vital to ensure that a more enlightened and emotionally intelligent sex education can become a reality in the near future.

Keywords: sex education, simulation, medical simulation, sex robots

1 Introduction

1.1 How is sex education currently delivered?

For a long time, society was rather reluctant to accept the need for sex education, because “sex is natural” [1, p. 10].

However, over the years, sex education has proven to be essential in coping with unwanted pregnancies and the transmission of AIDS, among other things [2, p. 2].

Sex education was introduced in European schools around four decades ago, but was rather limited to “no sex” or “safe sex”, and was usually delivered in a conventional way [3, p. 14].

However, in 2006 the International Planned Parenthood Federation European Network suggested the addition of the notion of pleasure into the curriculum, positioning itself in these terms: “Comprehensive sexuality education seeks to equip young people with the knowledge, skills, attitudes and values they need to determine and enjoy their sexuality – physically and emotionally, individually and in relationships. It views ‘sexuality’ holistically and within the context of emotional and social development. It recognizes that information alone is not enough. Young people need to be given the opportunity to acquire essential life skills and develop positive attitudes and values” [4, p. 6].

In 2010, the World Health Organization (WHO), along with other prestigious stakeholders, invested in an intensification of initiatives in the field of sex education. In its publication “Standards for Sexuality Education in Europe”, the WHO recommended “that all Member States should promote holistic sex education to guarantee sexual health and sexual well-being” [5].

From the mid-1990s on, pornography became easily accessible to all [6], thanks to video tapes, DVDs and more recently the Internet, without age restriction and without control. At the beginning, pornography was viewed as an unofficial way to learn about sex, but more often, it was simply used to provoke sexual arousal.

Most sexologists believe that if someone does not receive good sex education, he or she will not know how to become competent in lovemaking [7, p. 8; 8, p. 10].

Clearly, there is a need for a more balanced, efficient, insightful and sensitive approach to sex education, covering such relevant areas as human emotions, the human body, human relationships as well as erotic art and ethical concepts.

Could the use of advanced robots then be a way to improve sex education?

This article proposes a conceptual framework in which the extension of medical simulation in medical training

* **Corresponding author: Agnès Jacquerye**, Center for Research in Health Economics, Management of Care Institutions and Nursing Sciences, School of Public Health, Free University of Brussels, Bruxelles, Belgium, e-mail: ajaquerye@ulb.ac.be

could be applied to sex education based on advanced sex robots. The target is that within a decade, with the help of true-to-life simulators, sex education could be accessible in Centers of Excellence to anyone who wishes to be supported on a path that leads to a more intimate and harmonious sex life as well as an improved overall sense of well-being.

2 Conceptual framework

2.1 Sexual experiences

There have been many studies about discomfort in sexual relations [9]. Spiegelhalter studied 15,000 British adults aged 16–74 years who participated in interviews about their sex lives over a 2-year period from 2010 to 2012 (Figure 1). “Overall, around 50% of women and 40% of men reported one or more sexual problems (dark line), these rates increasing with age. But the proportions seemed high even for 16- to 24-year-olds. Around 22% of females and 15% of males reported two or more problems (blue line), and perhaps the most remarkable feature of the graph is the way the blue lines are essentially horizontal: the incidence of multiple problems is similar for younger and older people. The problems identified included: lack of interest in or enjoyment of sex, physical pain as a result of intercourse, experiencing no excitement or arousal, difficulty in reaching climax and, for women, an uncomfortably dry vagina while, for men, trouble in achieving or maintaining an erection” [10, p. 230].

For 10 years, during a regular 2-hour program on French national radio, Brigitte Lahaie, a former sex worker, listened to the questions of her listeners and helped them shed some light on their love lives [11]. In 2011, she summarized her experience in a book covering a hundred frequently asked questions. Without taboo, she tackled such subjects as the usefulness of letting go in sexuality, lack of desire, erectile dysfunction and the use of toys and aphrodisiacs. She looked at how to build sexual knowledge as well as how to overcome certain fears. Her broadcasts were enormously popular.

During my sexology sessions, I often ask the woman to draw her genital region. The drawings most often show a great lack of knowledge of this part of the body. The clitoris may be missing, and/or the vagina, the urethra, the anus. Concerning the female genital region, the results from males are generally no better.

In cases such as these, how can we love and have fun with a body we do not know? How can we recognize ourselves as fully sexed human beings? It takes gentleness and time for a woman to truly know how to use her body. This must also be borne in mind and should be a factor in more enlightened types of sex education.

2.2 Evidence to support the use of novel applications for simulation technology

In 2015, in my capacity as a professor at the School of Health, specializing in the quality of care and patient safety, I attended the inaugural university session in the

Figure 1: Proportions of sexually active men and women reporting problems (with the permission of the author and editor) [10, p. 230].

simulation laboratory. I was particularly impressed by this new way of teaching and, in parallel, as a qualified clinical sexologist, I was even more interested in the techniques used. I have since studied literature on simulation-based medical education and also followed the related training courses at, among other places, the Centre of Excellence Ilumens of the IUT Paris Diderot. It seemed both highly appropriate and urgent to explore how to adapt and transfer these new medical teaching models to the field of sex education.

Simulation is a technique – not a technology – to replace or amplify the real experiences with guided ones that evoke or replicate substantial aspects of the real world in a fully interactive manner [12]. Simulation technologies broadly encompass diverse products including computer-based virtual reality simulators, high-fidelity and static mannequins/plastic models and robots [13]. Simulation is a newly evolving teaching methodology. At present, it is intended for all health professionals, to develop, maintain or even strengthen their skills in order to provide the quality of care, respecting all required safety criteria.

Indeed, simulation makes a major contribution to the reinforcement of skills by staging, analyzing and adjusting them as much as possible before the time comes to implement them. All knowledge is mobilized, thus promoting integration and transferability.

Simulation sessions have to meet a set of specifications in order to guarantee the real efficiency. On the basis of scientific and ethical values, there are fundamental principles to be integrated: the use of a scenario with accurate and measurable objectives, an organized and structured briefing, and then a debriefing session which takes into account all emotional reactions [14].

Over the past 20 years, numerous simulation centers accredited as Centers of Excellence have been created to develop this way of teaching. These centers are generally connected to the medical faculties of universities and high schools. In 2019, the Bristol Medical Simulation Center listed 1,589 centers of simulation worldwide [15], which means there is a huge potential resource available. In 2011, Cook et al., the leaders of simulation techniques at the Mayo Medical School, concluded their systematic review and analysis of technology-enhanced simulation by saying: “in comparison with no intervention, technology-enhanced simulation in health professional education is consistently associated with major positive effects on knowledge, skills, and behaviors plus moderate effects on patient-related outcomes” [16]. And more recently, in 2017, Griswold et al. concluded that “a significant body of international research has begun to show how simulation-based medical education and

competency-based medical education can improve patient care and patient outcome” [17].

This evidence suggests that a potential synergy between simulation using robots and sex education could and should be developed.

2.3 A conceptual framework for the successful delivery of simulation techniques and sexual education

Three elements are important to consider. First, the content of the curriculum must be based on scientific evidence and recent developments in the field of sexuality. There is so much to be dealt with here, and the amount of published material is limited.

In 2006, Komisaruk et al., as well as Linden in 2015, explained the organization of the sensory nerves innervating the pelvic region: “sensory information from the pelvis is carried to the brain by three spinal nerves, the pudendal, the pelvic and the hypogastric [18, p. 10: 19, pp. 98–99]. They enter at different levels along the spinal cord. Sensations from the uterus and cervix are also conveyed via a cranial nerve called the vagus, which enters the brain stem directly. It is important to note that even a single nerve can convey information from a number of different skin sources. For the man, for example, the male pudendal nerve carries sensation from the penis, anus and scrotum” (Figure 2). This enables us to explain, for example, the three main types of orgasms for the woman: the one generated by clitoral stimulation in connection with the pudendal nerve, the one generated by the “G point” vagina with the pelvic nerve and the one generated by the cervix region with the hypogastric and vagus nerves. These orgasms are of different intensities in the body, and there is also individual variation in the sensory nerve wiring of the genital region. As Leleu writes, we can learn about our individual tuning by “playing the whole keyboard of orgasms” [20, p. 307].

Having access to the correct information, skills and behavior are the basic elements in the formation of stable, fulfilling sexual relationships and improved erotic competence.

The second element is to translate this updated knowledge into comprehensive, sensitive and practical language, into “know how”, in such a way as to arouse interest in acquiring an erotic skill. Two models in sexology appear to be compatible with the use of human advanced robots and the results of science: the Sexocorporel one and the MEBES. The Sexocorporel model, created by Professor J-Y Desjardins of the University of Montreal Sexology

Figure 2: The organization of the sensory nerves innervating the pelvic region © 2017 Joan M. K. Tycko, Illustrator [18, p. 10].

Department, in the 80s, is an encompassing view of human sexuality that considers all of the physiological, personal, cognitive and relational components involved in a sexual experience. In reality, these components closely interact although for didactic purposes they are treated separately [21, p. 66] [22]. On the other hand, Britton's sexual health model, the MEBES, includes assessment and the creation of an action plan for particular sexual concerns at the relevant stage of life. MEBES is founded on the idea that helping the person with a sexual concern usually involves mind (M), emotions (E), body, body image (B), energy (E) and spirit (S) dimensions [23, p. 4]. These two models complement each other and could form the basis of the teaching curriculum.

Third, a great deal of work needs to be done to improve people's understanding of the robots that exist. There are realistic simulators which can feel, interact and express emotions. It is essential to encourage discussion

and debate on empathy with artificial intelligence and on the situations experienced in this context [24,25]. Participants can then go beyond the simple mechanics of intercourse and the techniques of sexual stimulation; they can invest in emotional experience. The emotions and the whole psychological climate in which sexual encounters occur are as important – if not more important – as sex itself.

Consequently, simulation can be considered within ethics to facilitate critical analysis.

2.4 Is this new approach technically feasible?

Sex education clearly needs to be improved and could be revolutionized by the introduction and use of advanced computerized human simulators for both adults and young

Figure 3: Mannequin-based simulators placed in the larger simulation context which includes an immersive environment, inputs and outputs, and an operator learner pairing (with permission of Springer Nature) [26, p. 210].

people. We need to create a new generation of models, true-to-life simulators. It is important to distinguish between medical simulation, on the one hand, because the idea is not to medicalize sexual education, and gender-based sex robots, since we are looking at sexuality in a holistic way.

These true-to-life simulators can be created, thanks to the combination of the medical industry and the sex robot industry. Of course, we need to know exactly what we want in the construction of these true-to-life simulators, and what we want to transmit between the programmer and the learner [26, p. 210] (Figure 3).

3 Conclusion

Today, there is a need for innovative teaching methods in sex education. Medical education has been revolutionized by the use of simulation, and sex education can be too. The arrival of robots is an opportunity to have better access to sex education for all in order to pursue a safe and pleasurable sexual and emotional life. Simulation, combined with advanced sex robots, can also revolutionize sex education by offering a modern, effective and ethical teaching method.

The creativity and engagement of the simulation community itself is vital. We also need the political will, which is one of the biggest challenges facing the promotion of good sexual and loving health for all those who want to be responsible for their own well-being.

All these elements will help us to ensure that this improved outlook in the world of sex education becomes a reality in the near future.

Finally, let us, as Tisseron wrote in 2015, ask programmers to think of robots to whom we will be able to say: “Enable me to know exactly who I was and who I am so that I can take ownership of the person I will be in the future” [27, p. 186].

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