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The Roles of Biological Knowledge While Exploring Action-Oriented Knowledge and The S-Ivac Methodology in Sex Education

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Abstract

Today there is a strong trend in educational research to focus on the methodological aspects within the health area. In this paper we argue that health education has to deal with an interdisciplinary context oriented at specific health problems. Biological knowledge can describe the extension of health problems which typically empower us to consider statements such as: “if I do this, this will happen” or “if these are the conditions or circumstances, the risks may increase”. This knowledge is important because it arouses our concerns and attention and, consequently, creates a starting point in order to feel the desire to act. In this sense, it can be one of the prerequisites to develop students’ empowerment and action competence.

Besides the construction of this scientific knowledge, if we only consider this perspective and students are not given any explanation as to the reasons why problems exist and how we can contribute to solving them, we run the risk of contributing simultaneously to the arousal of concern and the formation of action paralysis among pupils. The S – IVAC methodology (Selection of the problem – Investigation, Vision, Action & Change) has been developed as a practical instrument to construct the action oriented knowledge of students and to promote the development of actions to increase their action competence.

As a result of this, the contribution of participatory-action-research in an action-oriented sex education project applying the S-IVAC methodology, whose main aims were to analyse what the dimensions of student action-oriented knowledge regarding sexuality are and the level of their participation, will be presented. Three hundred and fifty students from the 7th to the 12th grade constituted the sample of this research. The results obtained through participatory observation, individual and group interviews, online class diaries and discussion e-forums will be presented.

Key words: Participatory action research, democratic health education paradigm, action, action competence and sex education.

1. Introduction

In the pedagogical debate concerning health and environmental education it is often emphasised that teaching must be student-centred through the use of active strategies (e.g. Chawla, Cushing, 2007; EI, UNESCO, WB and PCD, 2003; EI, WHO,

2004; Evans, Tripp, 2006; Hsu, Johnson, Brooks, 2003; Vilaça, 2008a) and the development of actions (e.g. Ballantyre, Connell, Fien, 2006; Barrett, 2006; Jensen, 2000; 2002; 2004; Jensen, Schnack, 1994;1997; Jensen, Jensen, 2005; Jensen, Simovska, 2005; Kickbush, 1997; 2001; 2002; Nutbeam, 2000; Vilaça, 2006; 2007). In this sense, nowadays there is a strong trend in the educational sector and in educational research to focus on the methodological aspects within the health area. One of the questions focused on is about being able to make teaching more effective and what new methods can be developed to achieve this objective. Current health problems are a great challenge for the educational environment. If the aim of teaching is to develop the possible solutions for these problems, a fundamental rupture with the current ways of thinking in health and in environmental education, is required. In the educational world, this means understanding whether the questions regarding what constitute the central learning contents should have a more central position than those of a methodological nature. An important consequence is that health education has to deal with an interdisciplinary context oriented at specific health problems (Jensen, 1994a; 1995; 2000).

Action oriented teaching, within the democratic perspective, involves working in a broad field of knowledge, not only regarding the consequences of health problems, but also, of their causes, their visions regarding the future and the knowledge regarding the strategies in order to find solutions. In other words, action oriented knowledge is a complex interdisciplinary understanding built on a shared process of critical dialogue, reflection, development of visions, planning and action taking as part of the teaching and learning process (Simovska, Jensen, 2003). This democratic approach is built on a positive and broad concept of health.

According to Jensen (1994a) the positive aspect of the World Health Organization (WHO) definition of health is to work with the concept of wellbeing without losing the perspective of disease. The most important consequence to include this aspect in the definition of health is that the personal notions of the target groups regarding what wellbeing really is to them must be looked at in a serious way, independently of the fact that they are students or individuals from the local community. The discussion regarding the dimension of the amplitude of the holistic concept of health, broad or narrow, completes the positive or negative dimension of the concept of health. If the

focus on health is limited to lifestyles, the work will then be developed within a narrow concept. However, if lifestyles and life conditions are included when teaching, then the concept of health, which is subjacent, becomes broad.

Interdisciplinary methods can be referred to as a precondition to carry out action oriented teaching. Based on the experience within the Health Promoting Schools, and other connections regarding the environmental education area, the eight perspectives mentioned below must be dealt with in the projects within the area of health (and environmental education) (Jensen, 1994a; 1994b): (1) which subject should be worked on; (2) which problem within the subject in question should be work on; (3) what are the causes of this problem; (4) why did it become a problem; (5) what alternatives can one imagine (6) what action plans exist to obtain these alternatives; (7) what barriers will be brought to light through these actions; and (8) what actions will be started. These perspectives do not necessarily represent steps that should be worked on following a certain order, but issues that must be dealt with during the learning process (Jensen, 1994a).

In this sense, Jensen (2000) argues that the main objective of health (and environmental) education should be the development of students' ability to act and change. Therefore, it is possible to conclude that knowledge and insights should be, in essence, action-oriented, which means that knowledge should include the following four action-oriented dimensions: (1st) What type of problem is it?; (2nd) Why we have the problems we have?; (3rd) How can we change things?; and (4th) Where are we going?

The first dimension emphasises biological knowledge as a pre-condition to the desire to act, because this type of knowledge makes it possible to describe the extension of health problems (knowledge about the effects) (Jensen, 1994b). It can be about the consequences of certain behaviour, such as drug abuse, the non-use of condoms or the contraceptive pill (Vilaça, 2006) or about the consequences of acid rain or the poor quality of air in cities or the work place (Jensen, 2000). Typically, this knowledge empowers us to consider statements such as: "if I do this, this will happen" or "if these are the conditions or circumstances, the risks may increase" (Simovska, Jensen, 2003). This knowledge regarding the consequences of the problem is important because it is the type of knowledge that arouses our concern and attention and, consequently, creates

a starting point in order to feel the desire to act. In this sense, it can be one of the prerequisites to develop students' empowerment and action competence.

Besides the construction of this scientific knowledge, if we only consider this perspective, and students are not given any explanation as to the reason why problems exist (causes of the problem) and how we can contribute to solving them (strategies of change), we run the risk of contributing simultaneously to the arousal of concern and the formation of action paralysis among pupils (Jensen, 2000; Simovska, Jensen, 2003; Jensen, Simovska, 2005; Vilaça, 2006). As a consequence, the causes of the problem must be identified as soon as possible (Jensen, 1994b). Such causes, which mean the social determinants underlying our behaviour, include causes associated with social and psychological factors and can include questions such as: What aspects of our living conditions influence our use of condoms?; Why is taking the pill more common in older Portuguese adolescents? (Vilaça, 2006); What aspects of our living conditions influence us to transform the normal use of alcohol into an abuse? (Simovska, Jensen, 2003). Even if the problem is displayed in a classroom or at school, the underlying causes are quite often found outside these places. Consequently, the social observation methods, where health and environmental problems display economic, social and cultural structures in which they develop, are essential (Jensen, 1994a).

A third dimension of knowledge, “knowledge about change strategies”, is also important, because it includes knowledge about how to gain control over our own life, how to influence the school environment or how to contribute to changing our living conditions in society (Jensen, 2000; Simovska, Jensen, 2003). This area of knowledge is crucial for the course of action-oriented health education within the democratic health promoting school, and is particularly related to the field of psychology and sociology.

Finally, a fourth dimension of knowledge should be developed, “knowledge about alternatives and visions” in order to deal with the development of students' ideas and dreams and perceptions regarding their future life and the society in which they will grow up in (Jensen, 1994b; Jensen, Simovska, 2005).

It is important to understand how teachers and pupils actually organize the construction of the four dimensions above mentioned in order to act and take part in the resolution of the problems with which they can develop their action competence

(Jensen, 1997), that is, their ability to have reflexive, individual or collective actions and provoke positive changes in their lifestyles and/or conditions that will lead to good health. The S – IVAC methodology (Selection of the Problem – Investigation, Vision, Action & Change) has been developed as a practical instrument that can be used in schools in order to structure health promoting activities and make student participation easier, with the objective of constructing their own action-oriented knowledge and to promote the development of actions in order to increase action competence. This instrument assumes a number of perspectives that can be dealt with in a project or teaching methodology within health and environmental education (Jensen, 1997a; Simovska, Jensen, 2003; Vilaça, 2006; 2007; 2008b). With this model, it is possible to clarify what type of insight teachers and teaching materials should attempt to provide. Given that knowledge between people integrates scientific, social and historical elements, and pupils attain these insights better, if they are allowed to gain experience on their own with the questions when working on projects, the role of teachers consists of, to a great extent, being a consulter to the pupils' action-oriented projects, rather than only overwhelming them with heavy scientific facts.

In Portugal, sex education is understood as being part of the entire educational process and one of the components of health promotion (Ministério da Educação, Ministério da Saúde, APF, CAN, 2000), where students should be the principal actors. Since sexuality is considered as a life area and a space for dialogue, students should be allowed to put forward problems and collaborate in their resolution (CNE, 2005).

In order to apply the above-mentioned background, a participatory and action-oriented sex education project applying the S-IVAC methodology, using information and communication technologies (ICTs) was developed in some Portuguese schools (7th to 12th years). The main aims were: (1) to analyse what dimensions of students' action-oriented knowledge regarding sexuality were developed (namely, the main characteristics of the ideas related to the problems/themes selected, visions and activities/actions developed); (2) to characterise the level of student participation; and (3) to identify what barriers were brought to light during the implementation of the action-oriented project.

2. Methodology

Population and Sample

Eight hundred and seventeen students from the 7th to the 12th grades, of fifteen schools of the Braga District in the North of Portugal, were involved in this sex education project and constituted the online population of this research (table1).

Table 1: Characterization of students online (N= 817)

Educational level	Preparatory school						Secondary school			
	7 ^o grade (N= 222)		8 ^o grade (N= 223)		9 ^o grade (N= 214)		10 ^o grade (N= 82)		11 ^o grade (N= 76)	
Age										
Mean	12,7		13,4		14,5		15,4		16,1	
Minimum	11		12		12		14		15	
Maximum	16		16		18		19		20	
Std. Deviation	0,99		0,89		1,1		0,75		0,73	
Sex	f	%	f	%	f	%	f	%	f	%
Male	123	55,4	107	48,0	100	47,2	32	39,0	27	35,5
Female	99	44,6	116	52,0	112	52,8	50	61,0	49	64,5

The data that is comprised in the description of students online refer to the date of their entrance in the project, whether it was in the first or in the second year. Each school year in preparatory education had approximately the same number of students in the project (27,2%, 27,3% and 26,2% from the 7th, 8th and 9th grades respectively). The same does not occur in secondary education (10,0% and 9,3% in the 10th and 11th grades respectively). In all school years, female participation was predominant, except in the 7th grade.

In order to allow an in-depth comprehension of the implementation of the project, six schools involving three hundred and fifty students of this project were selected from the initial population, in order to investigate how sex education methodology was implemented in the School Area in secondary education (10th to 12th grades) and in the Project Area and/or Civic Training in preparatory education (7th to 9th grades).

Methods and techniques of collecting and analysing data

In the research techniques, participatory observation, informal individual interviews and semi-structured group interviews, online class diaries and e-forum discussions were included (figure 1).

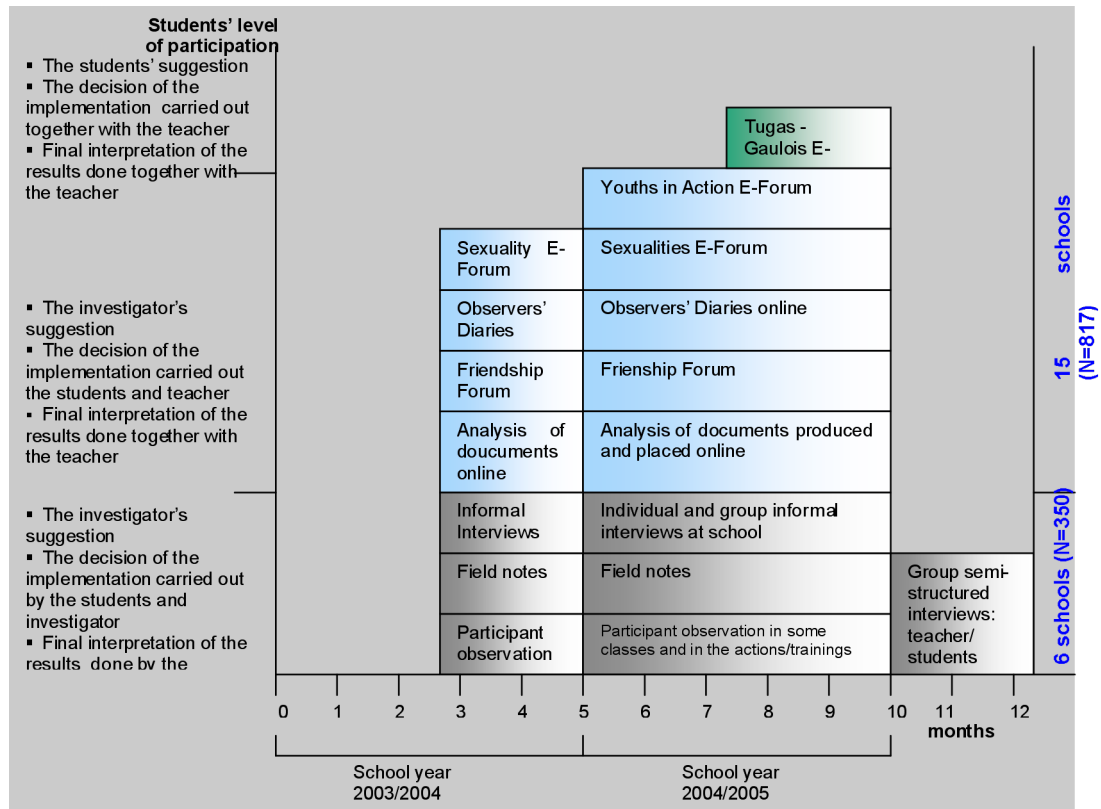


Figure 1: Instruments used in the several phases of the research and the students' type of participation in this research

This study was developed in two phases. The first occurred during the school year 2003/04, approximately during five months, with a part of it occurring simultaneously with in-service teacher training. In this stage, the students created the online infrastructure to participate in the project's website, debated the concept of sexuality and sex education and selected the themes/problems that they would like to see discussed. In the second phase, which occurred in the following school year (2004/05), the students developed one or two themes/problems that they would like to see discussed in the ambit of the project's methodology. The students, with the teachers' collaboration, agreed on the investigation method focussed on them. As it was intended that students, just like teachers, would be co-partners in the investigation and assumed

that as a right and a duty, all the data collecting techniques would be agreed on, the research instruments were different in the two school years. A triangulation of those techniques and the inferences or conclusions between the researcher and the participants were carried out.

In the treatment of data that will be later presented and discussed, generally the school was used as a unit of analysis. When the unit of analysis was different it will be described in the data description.

3. Results and Discussion

At the beginning of the project, all schools published online on the website, Healthy Youths in Action, a presentation of the students, the school and the community and their first discussion about what sexuality and sex education are to them.

The problems chosen by the students in order to carry out their action-oriented projects were mainly related to: the prevention of adolescent pregnancy and contraceptive methods (73,3% of the schools); prevention of sexually transmitted infections (60,0%); the first sexual relationship (46,7%); sexual behaviour (40,0%); dating (40,0%); dialogue with parents concerning adolescent sexuality (40,0%); puberty/ awakening of sexual maturity (33,3%); homosexuality (20,0%); interpersonal relationships and friendship (13,3%); the Youth Consultation at the Health Centre (13,3%); the morning-after pill (13,3%); human fertility (6,7%), abortion (6,7%); love, intimacy and communication between romantic partners (6,7%); paedophilia (6,7%) and other paraphilias (6,7%); adult sexuality (6,7%); and sexual dysfunctions (6,7%).

Simultaneously, the themes dealt with in the anonymous interaction in the Sexualities Sub-Forum, whose aim was to encourage student to debate ideas, receive help from a doctor or psychologist, solve doubts and give suggestions regarding youth sexual health are described in table 2.

Table 2: Interaction of students in the Sexualities Sub-Forum

Theme	Number of messages	Number of answers
7th to 9th grades		
Sexual relationship: first sexual relationship, what it is like, how to have sex with pleasure	31	60
Dating: how to start dating, problems during dating	20	47
Contraceptive methods and how to use the condom	6	15
Homosexuality	1	2
Total	58	124
10th to 12th grades		
Prevention of unwanted pregnancy: fertile period, contraceptive methods	13	28
Prevention of sexually transmitted infections	7	19
First sexual relationship	5	17
Oral sex	4	20
Problems during dating	3	10
Menstruation: hygiene, pre-menstrual trauma	3	9
Problems during friendship relationships	2	3
Anal sex	1	7
Orgasm	1	3
Masturbation	1	1
Sex and pleasure	1	4
Male sexual potency	1	8
Total	42	129

The students from secondary education (10th to 12th grades) practically only participated in the Sexualities Sub-Forum. During the group interviews, where students were divided by gender, they explained that they only accessed it when they were concerned with personal problems and needed the doctors' or the psychologist's help. They never entered spontaneously in this space to answer messages sent by other colleagues and only answered them when they were exposing their own particular concerns. The students from the two school levels found having a doctor and a psychologist online useful to clear their doubts. Nevertheless, the students from secondary education mentioned that what influenced them more regarding their personal choices was the doctor's and the psychologist's opinions, whereas most of the students from the preparatory school who were interviewed considered that for all of their doubts, except those concerning technical aspects regarding contraceptive methods, the opinion of friends was decisive in their choices.

In the Sub-Forum, Youths in Action, its aim was to encourage students to follow the publication of the projects from the several schools on this website and present their comments and ideas regarding the investigations, visions, actions and assessment of their projects, put online by the students. Some of the schools were very creative regarding the use of such space to build knowledge regarding the themes that were

being worked on, namely, through the creation of clubs online, in which the club was initiated by the presentation of the theme that they wanted to debate (table 3).

Table 3: Interaction of students by school in the Youths in Action Sub-Forum

School codes	Number of messages	Number of visitors	School codes	Number of messages	Number of visitors
A	0	0	I	2	20
B	140	1272	J	19	306
C	0	0	L	0	0
D	29	191	M	5	78
E	0	0	N	0	0
F	48	343	O	0	0
G	0	0	Q	0	0
H	0	0	Total	243	2210

Some of the schools did not participate in this forum and in the ones that participated more assiduously, this was the Sub-Forum the students liked best. The messages with a greater number of answers were related to the following themes: love and the deception of love (30,5%); AIDS and condoms (20,3%); students and parents (16,9%); puberty (10,7%); how to know when it is the right moment for the first sexual relationship (7,9%); homosexual behaviour (6,2%); and sex in adolescence (3,4%). The students who participated more in this Sub-Forum thought that it was the most interesting one, because they could debate themes which they were investigating and increase their knowledge.

In the Friendship Sub-Forum, whose aim was to enable an increase and improvement of interpersonal relationships among the students involved in the project from the several schools, the messages were quite often sent to students of the opposite sex (65,0%), sometimes to students of the same sex (24,0%) and also sometimes to groups of students (11,0%). The messages sent were essentially related to comments regarding the initial presentation carried out by the schools: the physical appearance of the person they wanted to get to know better, what personal features they had in common, the reason why they were in the project, and the exchange of opinions regarding what was published in each of the schools. When the messages were sent to big groups (a class, a school, the boys or the girls involved in the project) they were also generally sent to groups of friends from another school and were also messages just to have some fun and see what would happen. From the middle of the project, this Forum was used to make personal dates among students from different schools, talk about

football, the school subjects, school and teacher performance and to encourage the access to messages sent in other Sub-Forums.

The number of messages sent per school varied, not only because the number of students within the project was very different, but also because the access conditions to the Internet was not the same (table 4).

Table 4: Interaction of students by school in the Friendship Sub-Forum

School codes	Number of messages	School codes	Number of messages
A	34	I	28
B	68	J	32
C	12	L	12
D	72	M	8
E	16	N	74
F	53	O	6
G	23	Q	14
H	79	Total	531

The students from the 7th to 9th grades were responsible for the sending of 92,5% of the messages of the Friendship Sub-Forum. In the first year of the project, there was a greater affluence in this Sub-Forum. Sixty five percent of the groups interviewed in the schools from 7th to 9th grades thought that it was the sub-forum they most liked to participate in.

The sub-forum Observers' Diary, where students' class diaries were elaborated in all lessons by an observer of the class who was generally different from one activity to another, kept the same participation level throughout the whole project, with students sending material to publish online and carrying out their evaluation/assessment of the lessons and the Project as co-partners of the investigation (table 5).

Table 5: Interaction of students by school in the Observers' Diary Sub-Forum

School codes	Number of messages	Number of visitors	School codes	Number of messages	Number of visitors
A	0	0	I	22	83
B	76	259	J	69	361
C	0	0	L	15	41
D	10	27	M	103	433
E	4	18	N	0	0
F	11	41	O	6	13
G	6	26	Q	41	143
H	16	63	Total	379	1767

The number of messages sent by the schools was different, but fundamentally conditioned by the number of classes involved in each school. Almost all the messages

sent had the material produced by the class attached. In this sub-forum, just as what had happened in the teachers' equivalent Sub-Forum Class Diary, the number of visitants was very significant, which may reveal that the Observers' Diaries sent were read by their colleagues from the same and/or other schools. This sub-forum was considered as one of the class activities necessary for the assessment and publication of the project.

Most of the students considered that the acknowledgement of the projects by the several schools on the website was beneficial in two main aspects: it allowed them to analyse the continuity of the project and show not only their peers but also the local and national community, what people their age were capable of doing to improve living conditions and to contribute to sexual health promotion; most of the students considered that even without the access to the Sub-Forums, the website already educated people of their age because the projects reflected the doubts and concerns they felt and were common to most of the teens of their age.

The effect of this website as an instrument of change at school and in the community was only valorised as a consequence of students' actions to maintain the sustainability of the project. According to their opinion, student influence regarding reality as part of the learning process was only achieved with their action experiences while the website was only considered a continuity of such actions.

In order to continue the explanation about of the roles of biological knowledge while exploring action-oriented knowledge and the S-IVAC methodology in sex education, the results of one of the various action-oriented projects carried out in schools using as a starting problem, how to prevent unwanted adolescent pregnancy, will be presented.

Scientific knowledge as a precondition for action

The students considered that this problem was important for them for three main reasons: because they were not biologically, emotionally and economically prepared to be mothers or fathers; they didn't want to negatively affect their studies and life projects with a baby; and because their parents might take offence at their behaviour and not help to bring up a child and also because they are not able to deal with this situation alone.

In order to better understand the extension of the problem, they discussed in class what specific needs adolescents require in order to prevent unwanted pregnancy. They suggested a lot of methods: (1) taking the pill; (2) using a condom; (3) simultaneously taking pill and using a condom; (4) taking the “day-after pill”; (5) withdrawing the penis before ejaculation; (4) oral and anal sex as an alternative to vaginal; (5) mutual masturbation without coitus; (6) not having sexual relationships during the fertile menstrual period; and (7) not having sexual relationships.

The class was divided into four research groups in order to investigate the consequences of the use of these methods. The first group investigated the functioning of the menstrual cycle with and without the use of the pill, the side effects of its use and its efficacy. The second group carried out a research about how to use a condom, the kind of condoms commercialized and their efficacy in the prevention of pregnancy and sexually transmitted infections (STIs). The students of the third group investigated how the “day-after pill” acts and the side effects of its frequent use for female sexual health. And, finally, the fourth group investigated the risks of the natural family planning methods in the prevention of unwanted pregnancy and STIs and the facts and myths associated with their use by adolescents.

In a class assembly, the spokesperson of each group presented the results and conclusions of his/her investigation group to the class. After a class debate, students decided that the best methods to protect adolescents against unwanted pregnancies and STIs are: not having sexual relationships; using both the pill and a condom simultaneously; and, if something wrong happened, taking the “day-after pill”. As a consequence, students started thinking about why adolescents don’t use these methods.

Scientific knowledge is not enough: the causes of sexual problems are structurally anchored in our society

The causes debated by students to explain why adolescents don’t use or use inadequately the right methods to prevent unwanted pregnancy and STIs, were focused on personal causes related to their lack of knowledge or personal competences to act according to their knowledge and on social causes. For example, on the one hand these students defended that some causes of this problem were related to their own lifestyle: “quite often when it is the first time, we don’t know how to use contraceptive methods”;

“adolescents get pregnant because they don’t look for information, don’t have adequate information about the subject, and quite often don’t know anything about family planning”; “with the anxiety of practicing sex they forget everything including contraceptive methods”; “quite often adolescents act in an irresponsible way because they don’t consider the future consequences of their sexual behaviour, they think that the bad things only happen to others”; “sometimes girls don’t use the pill because they are ashamed to go to Health Centre or to buy it at the Pharmacy”; “quite often boys don’t use a condom because they think that by using condoms they will feel less pleasure”; or “sometimes girls don’t ask boyfriends to use a condom because they are afraid that he might think that she is very sexually experienced or she is afraid that he has a STI”.

On the other hand these students defended that some causes of this problem were related to their life conditions and specifically with their families and social environment: “sometimes girls are pressured and in order not to lose their boyfriend they have sexual relationships”, “they quite often go to discos, drink and then do not know what they do and as a result the boys take advantages of them; “due to the influence of bad company they have sexual relationships without condoms”, “because they feel inferior to their older colleagues who have already had sexual relationships, they also have sex”; or “the freedom that most of our parents give us makes us commit many mistakes”.

Starting from these causes, students thought about how to gain control over their own life. They decided that in order to reach this objective they need to increase their practical knowledge regarding the use of contraceptive methods and how to acquire them; improve their personal abilities to talk with their partner about contraceptives and safer sex; and lose their shame and fear of going to the Health Centre or buying contraceptives at the Pharmacy. They also established the idea that in order to influence their environment it was necessary to improve the access of condoms and the pill and improve the dialogue regarding these issues with parents and teachers.

Visions as an important precondition for developing action competence

The students thought creatively to find solutions for changing their lifestyle and life conditions. They manifested the desire to increase their competences to talk with

their partner and parents about sexuality, resist the pressures of others and gain access to the pill and condom. They also manifested the desire to change the location of the Youth Consultations Office in the Health Centre and change the habit of drinking alcohol in discos.

Actions should always be part of teaching: students acted as change catalysers of colleagues and parents

In order to attain their visions, they planned actions to be carried out in school. The first one was to develop a practical session with an invited doctor and a nurse to present to their colleagues what they had learned in the project and teach them, with the help of the specialists, how contraceptive methods work and how to gain access to them through the Youth Consultation Office in the Health Centre. They also planned a roundtable for parents coordinated by students and specialists. The students presented their dreams of increasing dialogue with parents regarding adolescent sexuality, and the specialists helped them to promote a final debate with parents in order to elaborate a contract regarding parent/ student dialogue.

Existing barriers

Several students said that much more effort was required in this project than with any other one that they had been involved in throughout their school life. Most of them did not see this as a negative characteristic of the project, but as a necessary condition to achieve their objectives. The students from secondary education also highlighted, as the main barrier to the development of projects of this type, the problem regarding the lack of time to develop them due to two main reasons: (1) because the marks obtained in the subjects were decisive to their entrance in university and as the contents of such subjects were generally very extensive, requiring a lot of time to study after classes and (2) because the development of projects of this type did not have any official value (only personal and informative) regarding their school success and, therefore, it was rather difficult for the other colleagues, teachers and parents to collaborate on because they thought they were wasting “time” which should be left for studying.

The negative aspect of the project most mentioned by the teachers was the great expenditure of time and extra work that they had at school with the project,

nevertheless, such teachers were the ones who revealed to be more committed towards the project and revealed more interest in continuing it in the future. The barriers faced by the teachers included: parents' myths and fears; students' myths and fears; teachers' concerns regarding parents; teachers' concerns regarding students; teachers' concerns regarding themselves; and teachers' concerns regarding the definition of the pedagogical strategy. The perception of most of the teachers was that parents thought that sex education was only talking about sexual behaviour (85,1%), it encouraged the beginning of sexual relationships (85,1%) and it was a responsibility that only belonged to parents (78,2%). Some of the teachers were concerned with the parents' possible absence in sex education activities at school (27,6%), with the fact that they wouldn't collaborate in the sex education activities that students took home (37,9%) or that they would say that teachers were wasting school time by talking about sexuality instead of teaching the curriculum of the subjects.

The concerns of some teachers concerning students included not meeting their expectations (46,0%), not being interpreted correctly by students (23,0%), not allowing students to expose in public their intimate feelings regarding sexuality involuntarily (21,8%), promoting situations that led students to create different sexual values from the ones of their parents, which could originate conflicts between parents and adolescents (36,8%), they were afraid that sex education encouraged the beginning of sexual relationships (6,9%) and afraid that some of the students could be shocked with their colleagues' questions or by the way teachers answered, for not being at the same level of affective and sexual development.

Conclusions and implications for the future

All the students mentioned that the publication of the projects online according to the S-IVAC methodology strengthened the effect of the reciprocal effect of participatory and action-oriented teaching/learning and the collaboration among schools. On the one hand, it facilitated and encouraged a discussion regarding the consequences, causes and change strategies related to the problems that were or are being worked on among the students participating in the project. This result is consistent with the research published by Simovska & Jensen (2003). On the other

hand, the fact that there are previously programmed activities which students may or may not select online in order to interact in the construction of their action-oriented knowledge was recognised by all students as a great incentive towards the sharing of knowledge.

The participation of students during the development of the S-IVAC project in the school, and specifically in the visions and action experience phases of the project, was considered by teachers and students as being crucial to the development of conscience regarding health problems, the possibilities of individual and collective actions to solve them and the social responsibility of contributing to their resolution. Similar results were reported by Simovska, Jensen (2003), Jensen, Simovska (2005), and Egumenovska (2005).

The Sub-Forum Sexualities, to solve students' doubts or problems anonymously, with specialists within the health area or with a psychologist, was considered by students and teachers as one of the greatest potentials of this project to help solve personal problems in the short term. All teachers considered this Sub-Forum as a good indicator of the students' real problems. Therefore they emphasised the necessity to create a debate regarding peer influence in the personal decision making of students from the 7th to 9th grades (which many students consider decisive in most of their decisions, in detriment to the message of the doctor, the psychologist or the teachers) as crucial for future projects.

The efficiency demonstrated by the application of the S-IVAC methodology in sex education in the development of students' action competence suggests that this methodology should be taught to teachers in training, as well as the paradigms of education for moralistic and democratic health and the broad and positive concept of health within a methodological approach which creates conditions to build the four dimensions regarding action-oriented knowledge. This training should be included in pre-service teacher training, in all teaching degrees, considering the obligation of sex education in schools. Partnerships among schools, Health Centres, City Halls and other entities or reference institutions in the community should be created, so as to plan health education and promotion projects in the community which could integrate the school

plan within, and in collaboration with the community (e.g., in the ambit of the Municipal Council of Education).

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