

STUDENTS' PERCEPTIONS ON A PROBLEM-BASED LEARNING (PBL) APPROACH USED FOR INTEGRATING A HEALTH EDUCATION ISSUE IN A HUMAN ANATOMY AND PHYSIOLOGY MODULE

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Resumen

The aim of this study is to investigate the impact on students' learning experience of an active learning approach, used to deal with topics regarding human biology and health education.

Students in four classes of Italian secondary schools experienced PBL approach during a module concerning circulatory and respiratory systems and effects of smoking.

Along six weeks inputs were given to students to promote brain storming activities and to foster them to research information. Scientific contents were not given previous to the discussion. Questionnaires were administered to students to assess their perceptions after the module was completed.

Findings show that students report enjoyment of what was done and this appears to be related to a greater engagement with lesson activities and to the higher autonomy they have been given.

Purpose

The aim of this study is to find out a good way to adapt PBL method in the Italian secondary schools situation, and to integrate HE issues in the curriculum. This could give indications to teachers on a possible alternative way for organising the teaching-learning process during their biology lessons.

Framework

Health Education (HE) is a life-long process that helps people to make informed choices towards healthy habits (Katz & Peberdy, 1998).

“Adolescence is a critical period for engaging the population in health. New health behaviours are laid down that are maintained into adulthood and influence lifelong health.” (Viner & Barker, 2005).

Knowledge of the physiological processes and awareness of the consequences that behaviours have on one's own health might encourage people to avoid unhealthy habits. As preaching what is good and what is not does not seem to be an effective educational strategy, school instruction should transfer this scientific knowledge in a way that enables students to apply it for reasoning on the processes and for discovering the consequences.

Recent reports stress that “Developing and extending the ways in which science is taught is essential for improving student engagement” (Osborne & Dillon 2008) and suggest that the use of inquiry-based science education methods would improve student interest (Rocard *et al.*, 2007).

Problem-based learning (PBL) (Woods, 1995; Barrows, 1998; Torp & Sage, 2002) resulted to enhance students' motivation because, starting with a problem, students get interested in exploring the topic and in researching about it.

The integration of HE issues in the biology curriculum can provide scenarios for the PBL approach, thus increasing students' interest both because of the method and the health issue. This would have a positive impact both on pupils' motivation for studying sciences and on prevention of unhealthy habits.

Methods

During fall 2008, 81 students in four classes of Italian compulsory secondary schools (15 to 16 years old) experienced the PBL approach to deal with human biology topics (circulatory and respiratory systems) related with a HE issue (effects of smoking). Problems were prepared by the researcher, who acts as tutor during the module, together with the four teachers.

Two hours lesson per week took place during a six weeks period. In each lesson students were given inputs aimed at promoting brain storming activities. Coherently with the PBL method, the discussions were never preceded by teaching scientific contents.

Students, with the tutor's help, chose what they thought to be important to learn and what kind of information they would need to search for the following lesson. The retrieved information was then presented and collaboratively elaborated with the tutor's contribution. The emerging new issues made the concern for the follow up work.

The evaluation of the effectiveness of the described strategy was carried out by submitting two questionnaires to the students. One included multiple choice, yes or no, and open-ended questions, was submitted at the end of the module. The second one, containing a four-point Likert scale, was submitted a

week after. Parts of the two questionnaires probed the same aspects to the end of checking the coherence of students' answers.

Results

The questionnaires were filled up by 81 students, with answers to 99% of multiple choice questions and 89% of open-ended questions.

We positively point out that 64% of students stated that they would like to use this method more frequently. In addition, the analysis of the students' and teachers' answers highlights the following findings.

With regards to students' motivation, interest, engagement, 58% of pupils think that the PBL approach can arouse more interest than the traditional method, while only 7% of them think the opposite. Moreover 80% of students consider interesting the activities proposed during the module.

In the open answer, though students say they dislike "having more homework to do", "having too much information to search", aspects they like are more frequent and profound: "having the possibility to express my opinion", "being more engaged during lessons", "looking for information by myself and not only studying on textbook", "autonomy and responsibility given", "reasoning on the topic", "discussing among students and with the teacher", "laboratory activities", "having dealt a topic of high concern to me".

Some of these perceptions were confirmed also by the second questionnaire, which allows us to add quantitative data. In this questionnaire students partially or fully agree with the following sentences: "module has been made more interesting than usual because of the scenario used to introduce the topic" (67%); "related social aspects helped me to understand the reason why we studied the topic" (72%); "the work done enabled me to learn scientific knowledge which can be applied to everyday life" (77%); "the discussion was important to improve my reasoning skills" (76%); "the topic was interesting" (77%); "I would like to treat more topics related to health issues" (73%).

All these opinions are likely to have had a positive impact on students' engagement during this module. In fact, about 65% of pupils say their participation was more active than usual, and 40% of them report to have worked more than usual at home, while less than 20% declare the contrary.

It's important to notice that students appreciated aspects of the teaching-learning process that required a more active participation in which they feel more responsible of their own learning. Some answers also stress out the importance of health related topics to arouse their interest of the subject.

Whit regards to impact on learning, 61% of the students believe they can remember the topic better than usual, more than 86% think they have a sufficiently clear understanding of what they learnt, and 47% of pupils say that understanding was made easier, while 16% of them stated the contrary. They report difficulties in information searching (44%) and in selection and synthesis of the important aspects (26%). About the latter, however, they think that the method have been useful for improving the related skill (65%). Difficulties are reported also in the open answer, where students wrote: "it is not very clear what we had to study" and "too much material made me confused".

With regards to pupils' attitude towards smoke, we got evidence that one third of the students of these classes smoke, although 30% of them smoke less than once a day. 24% of the smokers declare they will

stop smoking while 44% of them declared the intention of reducing the number of cigarettes.

It is difficult to foresee students' attitudes in the long term, but it's interesting to underline that 94% of the students say that after the module they know more than before about smoking consequences and 72% of them affirm that the module made them think about their attitudes towards smoke.

Conclusions

These results suggest teachers to go ahead with the use of PBL approach to enhance pupils' motivation during biology lessons.

However, further adaptation should be experimented to reduce the problems evidenced by students, especially concerning lack of clarity. This point can be critical in compulsory secondary school, where pupils may not have developed appropriate skills, though the difficulties might be reduced whether the active learning approach is used more often. And this would be another aspect to investigate in the long term.

Bibliography

BARROWS, H. S. (1998). *The essentials of problem-based learning*. *Journal of Dental Education*, 62, 9, 630-633.

KATZ, J. & PEBERDY, A. (1998). *Promoting Health: Knowledge and Practice*. London: MacMillan.

OSBORNE, J., & DILLON, J. (2008). *Science Education in Europe: Critical Reflections*. London: The Nuffield Foundation.

ROCARD, M., CSERMELY, P., JORDE, D., LENZEN, D., WALBERG-HENRIKSSON, H., & HEMMO, V. (2007). *Science Education NOW: A renewed Pedagogy for the Future of Europe*. Luxembourg: Office for Official Publications of the European Communities.

TORP, L. & SAGE S. (2002). *Problems as Possibilities, Problem-Based Learning for K-16 Education*. Alexandria, VA: Association for Supervision and Curriculum Development.

VINER, R.M., & BARKER M. (2005). *Young people's health: the need for action*. *Br Med J*, 330, 901–903.

WOODS, D. R. (1995). *Problem-based Learning: resources to gain the most from PBL*. Waterdown, ON, Canada: Donald R. Woods Publisher.

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