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Experiences for learning veterinary public health in an interactive way (Experiencias aplicadas al aprendizaje de la salud publica veterinaria de forma interactiva)

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ABSTRACT
The manuscript describes the learning strategies used during the last years in a group of courses designed to improve the knowledge in Veterinary Public Health (VPH) of the health professionals maded in the Veterinary Faculty of Zaragoza University (Spain) as an alternative to the classical methodology. The applied strategy is based in the use of case studies that must be solved by the participants working in small groups and the discussion and resolution of these cases by means of posters show, expert commitees work and classroom presentations. Also results of the first years of application of the methodoly and some comments about the positive and negative aspects of the strategy are presented. Finally the possible application of the method in veterinary degree disciplines and on interactive course is argumented.

KEY WORDS
Veterinary public health, Case study, Emerging diseases.

RESUMEN
El artículo presenta las estrategias de aprendizaje utilizadas en una serie de cursos realizados durante los últimos años en la Facultad de veterinaria de la Universidad de Zaragoza (España), y que tenían por objetivo el adquisición y perfeccionamiento de conocimientos y modos de intervención de los profesionales veterinarios desde la perspectiva de la Salud Pública Veterinaria (SPV). Las experiencias se han desarrollado apoyándose, de manera especial, en el uso de estudios de casos que deben ser resueltos por los participantes mediante el trabajo en pequeños grupos y la posterior discusión de los resultados de cada grupo usando posters que se elaboran por los mismos alumnos, el trabajo en comités de expertos y la elaboración de exposiciones orales de los casos. El artículo se completa con algunas reflexiones y comentarios sobre los resultados obtenidos mediante el uso de este método según nuestra experiencia, y

una valoración sobre la posible aplicación de esta metodología, o parte de la misma, en algunas disciplinas de la licenciatura de veterinaria o en otros cursos similares que puedan ser diseñados en el futuro.

PALABRAS CLAVE
Salud Pública Veterinaria, Estudio de casos, Enfermedad emergente

INTRODUCTION

In the last decade, it is growing the idea that it is necessary to change the face of the VPH for the society to understand his role [1]. This means that a new concept of VPH should be defined, and at this level, the understanding of the risk for zoonotic diseases as a consequence of the interaction between humans and animals is critical, because a 75% of the human emerging diseases are zoonosis[2]. This problem increases because it has been demonstrated that microorganisms are in permanent evolution, having fast media adaptation and changing their transmission routes [3,4,5] .

The understanding of the necessity of this new concept is not enough, also it must accepted that the role of VPH is not the same in developed countries, where food and feed hygiene or new zoonosis associated to antibiotic resistance or climatic change have lesser importance than those in developing countries where classical zoonosis associated to natural disasters or livestock animals diseases are critical decreasing human feed [6,7,8].

But this is not the society's point of view about this discipline that consider more important the clinical aspect of the veterinary activities [9]. The change of this point of view means to understand that today the health is a unique concept, "ONE WORLD, ONE HEALTH". The first consequence of this new concept is the need for an interaction between human and veterinary medicine. Following this idea, different organizations such as the World Health Organization (WHO) and other projects are trying to change the professional and social understanding of the VPH (http://www.sapuvetnet.org/, http://www.ecvph.org/index.aspx) [10,11] .

In order to increase the sensitiveness of proffessionals and students for the new VPH perspective, we have designed a course called HEALTH EMERGENCIES AND EMERGING DISEASES INVOLVING VETERINARY PUBLIC HEALTH based on new mixed teaching technologies and group working strategies where case studies are the base, it tries to introduce

the participants in the searching of solutions for emerging diseases affecting humans and animals such as: zoonosis associated to natural disasters, diseases caused by animal movements, diseases related to food hygiene or residues and antibiotic resistance associated diseases. In every case, the participants will play the role of VPH specialist.

This course is included in the Veterinary degree of Zaragoza University as free configuration credits (5 credits in all). In agreement with the regional government, it is admitting a 10% of places for VPH specialized professionals (program UNIVERSA- ARAGÓN GOVERNMENT). Mixing professionals and students will show two different points of view, the theoretical point of view of the students and the practical point of view of the professionals.

METHODOLOGY

With the idea of a new strategy for an innovative university in mind and understanding that this requires a different way of learning to be offered to the students, we have designed this course mixing some tools that previously were tested in other curricula by several universities [12, 13] (http://en.aau.dk/, http://eciu.web.ua.pt/.).

Procedure and participants-

The course is organizaed as a part of the UNIVERSA program of Zaragoza University and the Governement of the region (Aragón). The course is being taught along one month consisting on 50 hours of “in room” activity and 10 hours of_”in house” activity. In room activities include lecturer presentations and computer program explanations (10 hours) and case studies (40 hours), while in house activities consists in computer program based problems solving.

A proportion of 70% of the participants are last course Veterinary students using free configuration credits, 20% are students of another health curricula linked to VPH such as: medicine, or chemistry and the last 10% are veterinary professional working for the Government of the region.

Until now, 3 courses during the years 2007 and 2008 have been given. In each course a maximum of 25 participants were accepted. The lecturers involved in the course are specialists in Preventive Medicine, Epidemiology and Infectious Diseases.

Tools

In every part and topic of the course we use different tools that have been previously described as interesting activities for a good learning [14, 15]

1- ***Web site***- It includes all the theoretical material elaborated by the lecturers, and also recommended readings and other resources. These are documentation made by the lecturers or by international organizations that can help the participants to understand the topics of the course and solve the cases. The most important material of the course, the "CASE STUDIES" can also be found in the website.

The course web site is embedded on the OPEN COURSE WARE for the University of Zaragoza (http://ocw.unizar.es/ocw) as a part of the Open Course Consortium on which this University is involved (http://www.ocwconsortium.org/). The web site is free domain letting anybody access the course material. The course untitled "MEDICINA PREVENTIVA Y ENFERMEDADES EMERGENTES EN SALUD PÚBLICA VETERINARIA"can be found in the module "CURSOS" ("courses") of the web site.

2- ***Computer programs and solving problems***- Two computer programs usually applied in diseases outbreaks investigations are being used. The first one is WINEPISCOPE, used as epidemiological tool that was designed by a group of European Universities (University of Wageningen-The Netherlansds and University of Edinburg-United Kingdom, University of Zaragoza-Spain). The second program is EPI INFO, program designed by the Center for de Diseases Control and Prevention (CDC). Both programs are of free domain.

Also problems to be solved using by the computer programs is provide to the participants. These problems include their solutions being the "in house" activity of the course.

3- ***Case studies-*** This is considered the reference tool of the course. It is composed by cases of different emerging diseases that must be investigated and solved by the students. In order to work with them, the students are divided in groups with 4 participants. The groups are formed by students and one professional in order to have the different points of view of both type of participants. Each group has to develop 3 different type of activities: posters design, work in expert committees and case presentations.

a- Posters design- In this activity all groups have to work with the same case. The participants must design the strategy that they will apply to investigate the case. At this level, it pretends to know the way in which the group is going to study the case and the epidemiological tools that they want to use, it does not look for the solution of the case. Subsequently, they have to prepare a poster in a DinA3 documment that will be exposed in the wall of the room. The next steep is the analysis of all the posters by all groups and a final discussion with the lecturer in order to design a FINAL POSTER that will include the strategies defined by

all the groups as a tool for working along the rest of the course. Also, according to this final poster, each group makes the corrections that they believe necessary on their poster.

b- Work in expert committees- In this activity also the same case study is used for all groups. Each group reads the case and defines the topics and tools that they believe are important in order to solve the case, ie: diagnostic, survey, preventive strategies.., and a general discussion about these topics is made including all the groups and the lecturer. After a general definition of the topics, each group selects the person that will be involved in each topic ("the expert"). The experts of every group are mixed in order to create the EXPERT COMMITTEE (EC) of the topic (4 or 5 expert committees by case). Every EC collet the information and make the conclusions to work its topic. In the next steep, every expert return to the original group with the information and conclusions achieved in their EC, and their groups will prepare a new POSTER on which the conclusions of the ECs will be included.

c- Case presentations- In the third part each group receives a different case. Everyone of these cases represent a different situation on which veterinarians must be involved as experts on VPH. Each group must solve 3 or 4 cases depending on the time they spend to solve every one. The cases are divided in three parts that are delivered to the participants in three different moments according to the advances made in the solution of every part. At the end, the students have received all the necessary information to explain the case and to know the critical points in order to solve it.

Finally each group must prepare a small presentation in "power point" on which they have to explain the origin and evolution of the case and the proposed measures to solve it. The last day of the course, it takes place the presentation of all the cases. Each group expends 10-15 minutes to expose to the rest of the groups their solved case. This strategy lets get a general view of the working methods and proposed solutions at the same time that the students can see the different areas on which VPH is involved: residues, antibiotic resistance, natural or men caused disasters, new and unknown zoonosis, human and animal movement associated diseases, animal hoarding and others (see the different case studies in the course in OCW web).

During the process of solving cases, the students get information from material and documents hanged up in the web site of the course (OCW), in GOOGLE and MEDLINE, and also they make consultations in books.

All the cases have been elaborated by the lecturers using real cases obtained from PROMED mailing list, from the web sites of projects on which the lecturers are involved (SAPUVETNET project and also from web

sites of international organizations as are the World Health Organization (WHO) and the World Organization for Animal Health_(OIE).

RESULTS AND DISCUSSION

Troughout the last two years we have tested these methodologies involving 60 participants in the course. Near 80% of them were students of the Veterinary degree of the University of Zaragoza coursing the free optional credits of their curriculum. At the end of the course the organization distributes to the participants a questionnaire to evaluate the course. Nowadays, the course has received the maximum score, which suggests that this methodology is well accepted and considered of great educational level by the students.

The main results of the questionnaire emphasized four positive aspects:

1- *High level of learning*. Working in groups that have to solve real cases allows the students enter in direct contact with real problems and introduce them in the field of taking decisions in group to solve them

2- *Interaction between participants*. When it is being proposed to the students to work in a group with persons with different points of view (specially when the students and professionals are mixed), they had the opportunity of knowing the different perspectives on which the diseases could be studied and also they learn about the necessity of getting an agreement in the group in order to achieve a final decision about the way to solve the case.

3- *Learning to give a public presentation.* The presentation of their results to the rest of the groups helps the students and professionals to gain the ability to explain one veterinary public health problem and to defend their criteria about the way to solve it.

4- *Dynamic work.* The activities in groups and the mixed expert committees, let the students to work with a permanent interaction with the rest of the participants in the course, interactions on which the discussion is promoted.

Together with the use of case studies, another interesting tool is the homework of solving problems which lets the participants to apply epidemiological concepts (surveys, sampling, risk analysis…) and to learn the applications of the computer specialized programs in the professional activities.

The students have to look for the information by themselves in the library or diving in the net using tools like MedLine. This work let them learning

on getting the information and being critic in the selection of this information that will be used in the case study.

This methodology contributes to an active learning, helps to understand the significance of a working group and stimulates the students in taking the initiative for selecting the strategies to be applied in the solution of the cases.

Also the lecturers can be beneficiary of this methodology because it allows to have different perspectives about the way of working and the knowledge of the students, their abbility to take decisions and their activity in groups, which means a more realistic information than one theoretical or practical exam.

But also we have detected some problems associated to the methodology. One important objection is that working in group can be masked the non active students and the lecturer must be in permanent alert in order to detect the more and the less active people of each group in order to inform them about their situation with the objective of recovering the balance in the activity of the group. The alternative to deal with this problem is to carry out an individual evaluation into the groups, but our experience indicates that it is difficult.

Another possible problem of applying this methodology is the number of students involved in some disciplines, near a 100 students each year in our case. Probably the solution is not to use the hole of the methodology, but to work with some of their parts probably allows achieving similar results. At this level, in the course 2008-09 we have experienced the work by posters design and case presentations in the discipline Preventive Medicine, on which 90 students were involved (24 groups with 4 students). The experience has been positive as a consequence of the interactivity with the students, but we must no forget that this methodology requires a bigger effort for both, the lecturers and students.

Finally, we want to comment that it is necessary to improve the knowledge in VPH as a key tool of the new concepts of the heatlh on which human, animal and environmental medicine are integrated, One World One Health concept. In order to do it and using new technologies as moddle, the presented strategie to learn in VPH can help to desing courses at multidisciplinary level organized by international organizations as PAHO, WHO or OIE.

REFERENCES

1. Morse, SS. Factors determinants of disease emergence. Rev. Sci tech. Off. Int. Epiz. 2004. 23(2): 443-451

2. King, L.J. The emerging and reemerging zoonotic diseases: Challeges and oportunities. 72nd General session of the International Committee of the OIE. 2004: 11-20
3. OPS-OMS. Memorias del encuentro Salud Pública Veterinaria (SPV). "Para servir, servir". Bogotá, octubre, 2003.
4. Schwabe, C.W. Veterinary medicine and human health. Baltimore/London, 3rd edition. Ed: Williams and Wilkins, 1984.
5. Unwin, N.; Carrs, S.; Leeson, J.; Pless-Mulloli, T. An introductory Study Guide to public health and epidemiology. Ed: University Press. Buckingham. Philadelphia 1997.
6. Baxter, P.. Impacto de los desastres en la salud pública. Eric K. Noji (Editor), OPS_PAHO pubbl., 2000. p: 178-203.
7. Domenech J, and Eddi, C. New competencies required for veterinarians with a focus on international careers. Seminar "challeges in responding to New International and Societal demands on the Veterinary Profession. OIE. Minneapolis. 2005.
8. Hugh-Jones, M and Brown, C.C. Accidental and intentional animal disease outbreaks: assessing the risk and preparing an effective response. Rev. Sci. Tech. Off. Int. Epiz. 2006. 25 (1): 21-33.
9. Anonimous; Changing the face of Veterinary public health. News and reports. The Vet. Rec. 161: 580. 2007
10. World Health Organization. Global strategy for health for all by the year 2000. Geneva. Ed: WHO. 1981.
11. World Health Organization. Technical Report Series 907. Future trends in veterinary Public Health report of a WHO study groups. Geneva, Ed. WHO, 2002.
12. Klomos, A; Fink, F.K., Krogh, L. The Aalborg PBL Model-Progress, Diversity and Challenges. Aalborg University Press. 2004.
13. Sancho Gil, J. M; Hernandez, F.. El Portafolio: la evaluación como reconstrucción del proceso de aprendizaje. MOT, Mayo, 1996: 463-464.
14. Fink, F. K. and Norgaard, B. The Methodology of Facilitated Work based Learning. IACEE World Conference on Continuing Engineering Education. Vienna. 2006.
15. Woods, D. R. Problem-based learning: how to Gain the Most from PBL- McMaster University press. 1994.

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