PRE-SERVICE STUDENTS' ASSESSMENT OF TEACHING METHODS IN DIFFERENT SUBJECT AREAS

Mirela SAMFIRA[1], Mirela FĂRĂGĂU-DRAGOȘ[2]

[1]Banat s University of Agricultural Sciences and Veterinary Medicine King Michael I of Romania from Timisoara
[2]University ofAgricultural Sciences and Veterinary Medicine Cluj-Napoca
samfiramirela@yahoo.com

Abstract. *This paper is a "scan" of students' satisfaction regarding the teaching methods used in different subject areas. The fact that the subjects (undergraduates) enrolled in the Psycho-pedagogical module makes us believe that their choices are well funded and that they understand why a teacher chooses certain teaching methods and not others that seem easier to apply but that are less effective. To measure the satisfaction level, we used the Likert scale with five level items. Statistical processing shows that the teaching methods most appreciated are Debate, Experiment, Problematisation, and Application, while the less appreciated are Lecture and Programmed instruction.*

Keywords: *Communication methods, Exploration methods, Efficacy*

INTRODUCTION

Modern pedagogy supports and promotes a teaching methodology that is both diversified and flexible, providing a very wide range of teaching-learning methods. The large number and the great diversity of teaching methods used in modern pedagogy provides opportunities for the enrichment and development of the teachers' teaching and educational expertise. A teaching method is "an effective way of organising and guiding learning, a common way of procedure that unites a teacher's and a students' efforts." (I. CERGHIT, S. CRISTEA AND O. PÂNIȘOARĂ, 2008, p. 254) A teacher's creativeness and personal development level determine how these teaching methods are used and combined. (MIHAELA OROS, 2011)

Modern active teaching methods, though dominating the first half of the 20th century, were not the response to their initiators' expectations (M. MONTESSORI, J. DEWEY, C. FREINET, ED. DEMOLINS, AND THE ROMANIANS G. G. ANTONESCU, I. NISIPEANU, I. C. PETRESCU (CERGHIT, 2008) because applying them requires effort and creativeness from both the teachers and their students. Modern education should aim at moulding people "adaptable" to the changes that occur at high-speed rates never seen before. However, to do so, teachers need to adapt to changes and to up-date.

All individuals, no matter the age, learn, but each of them responds differently to the different teaching strategies and teaching methods. Traditional school relied on the display of information and knowledge by the teachers who used expositive, verbal teaching methods based on reproduction. Modern school, in exchange, focuses on the student: this is why teaching depends on the development of the student's creative potential and the teaching methods used rely on action, exploration, intellectual work, and self-education (ILIE, 2007); its role is "to (re)build up an educational relationship": this generates positive, realistic self-interpretations that, in turn, regulate individual behaviour for further evolution. (CULDA, 2004) Students see the teacher as a trainer and supporter of performance maximising strategies. There is no established teaching method of approach that can be followed or adopted since explaining or forecasting certain phenomena is a mixture of logical thinking and imagination. (TOPLIS, 2011) Teachers' and students' opinions on the teaching methods and curricula can differ

greatly (TAYLOR, 2000): it is fully wrong "to build up a system – the educational one – without consulting the educational target." (COOK-SATHER, 2005, IN COLLINS, 2011)

You can tell whether a man is clever by his answers. You can tell whether a man is wise by his questions. (NAGUIB MAHFOUZ, Nobel Prize Winner).

MATERIAL AND METHOD

The sample in our study consisted of 100 undergraduates enrolled in the Psycho-pedagogical module. The respondents were picked up from the 2nd, 3rd, and 4th years (in the 1st year, the curricula do not contain psycho-pedagogy related subjects) – from the Faculty of Agriculture, the Faculty of Veterinary Medicine, the Faculty of Farm Management, and the Faculty of Animal Science and Biotechnologies.

The teaching methods were grouped into nine groups: Expositive teaching methods using oral language (Description, Explanation, Storytelling, Lecture), Conservative teaching methods using oral language (Heuristic conversation, Debate), Communication teaching methods using oral-visual language (Visual, Audio, Audio-video Aids Education), Communication teaching methods through problematisation (Education through Problem-solving), Direct exploration teaching methods (Guided observation, Independent observation, Experiencing, Experimenting), Demonstrative teaching methods (Demonstration through Experimenting, Demonstration through Real Phenomena, Demonstration through graphs, Demonstration through Audio Aids, Demonstration through Audio-video Aids), Effective action teaching methods (Application, Case Study, Practical Work in the Laboratory), Simulated action method (Education through Simulation Games), and Programmed education teaching methods (Education through Built-up Response Programmes, Education through Multiple-choice Response Programmes). The last item is open to allow the students share information on a teaching method not previously mentioned and that they totally disagree with.

Of the 150 teaching methods mentioned by "The Centre for Teaching and Learning", we have chosen, for this study, only 25 that we believe are most used in the teaching practice. The research method we have used is the questionnaire (25 items) and the Likert Scale with five level items to capture as accurately as possible the importance of each teaching method to the students.

RESULTS AND DISCUSSION

The responses to the question related to the category "Expositive teaching methods through oral language" show that "Lecture" is the least appreciated by the students because it is not a participative teaching method (the students cannot ask questions or supply supplementary information) (DULAMĂ, 2006) as represented graphically in the histogramme below (Figure 1).

The graphical representation of the group "Expositive teaching methods through oral language" is a histogramme of the four types of teaching methods. The values corresponding to the Likert Scale were summed for each value depending on the options of the respondents as shown in Figure 2.

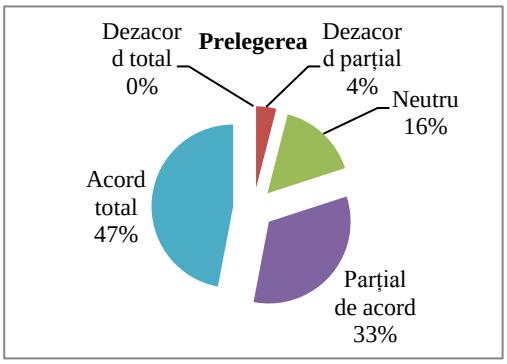

Fig. 1. Distribution of the responses regarding the "Lecture"

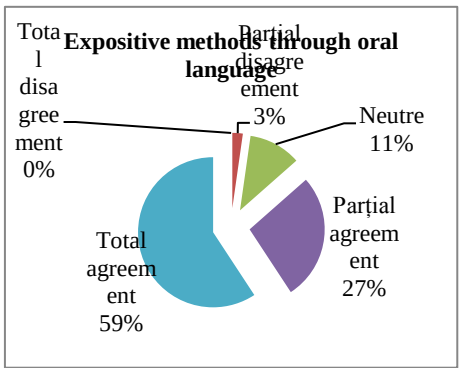

Fig. 2. Distribution of the responses regarding the "Expositive teaching methods through oral language"

As for the "Conservative teaching methods through oral language", the graphical representation was made by considering the representation histogramme of "Heuristic conversation" relative to the total number of respondents as shown in Figure 3. We can see that most respondents (46%) partially agree with this teaching method because it does not involve student's creativeness: the main figure here is the teacher, but WATTS AND JESUS (2011) suggested developing this teaching method shifting from the students to the teacher to help the former develop the techniques of asking questions. Teacher's response to the questions asked by their students (reserved, anxious, open, encouraging) generates in the classroom a "culture of the questions", a concept labelled by WATTS AND JESUS (2011: 93) as "quoughts" (i.e. thought questions).

Of the total respondents, 73% totally agreed with the "Debate" (see Figure 4 below). The responses reflect the students' interest in the teaching methods providing the opportunity to expose their points of view and to make their arguments starting points in the continuation of the conversation, which helps developing critical thinking skills (the strength of democratic debate). Developing these skills within social science classes helps accumulating knowledge, developing problem-solving skills in different fields (social, political, economic, or ethical) (RYDER, 2001), and removing difficulties in the debates with colleagues having different points of view. To develop argumentation skills, we need to develop a set of basic skills avoiding the tendency to select those evidence that confirm what each students has established previously since he/she is tempted to ignore the evidence that do not meet his/her points of view or to drop directly to conclusions (GARCIA-MILA AND ANDERSON, 2008, in SIMON, 2011). Using argumentation effectively in class has positive effects on both students and teachers (ERDURAN *et al.*, 2004), but there are studies that claim that it sometimes develops "destruction" techniques of the process of argumentation (SIMON *et al.*, 2006).

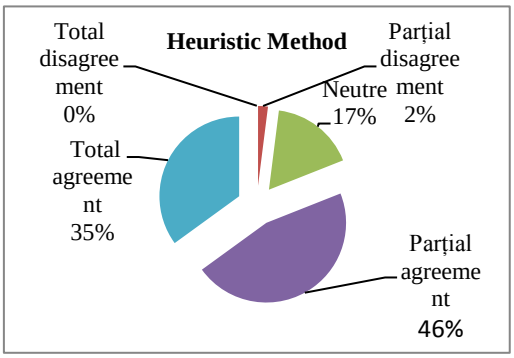

Fig. 3. Distribution of the responses regarding the "Heuristic conversation"

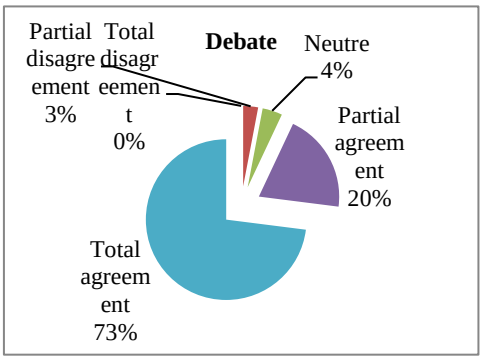

Fig. 4. Distribution of the responses regarding the "Debate

Among the "Communication teaching methods through oral-visual language", the most appreciated by the students are "Visual Teaching methods" (75%) (Figure 5.

Figure 6 shows the graphical representation of the group of "Communication teaching methods through oral-visual language": 65% of the students totally agree with this teaching method, while 28% partially agree with it: these results support the use of technology in the introduction of information because it allows the filtering of information from different disciplines (PETRUȘ, 2012). The values corresponding to the Likert Scale have been summed up for each value apart depending on the repondents' options.

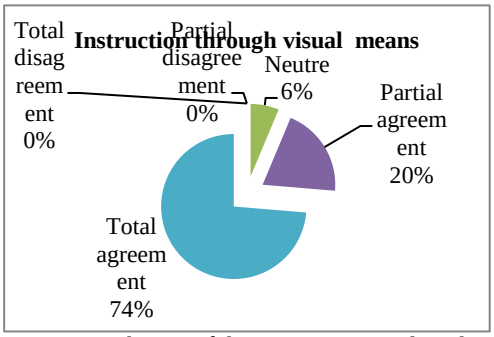

Fig. 5. Distribution of the responses regarding the "Visual aids education"

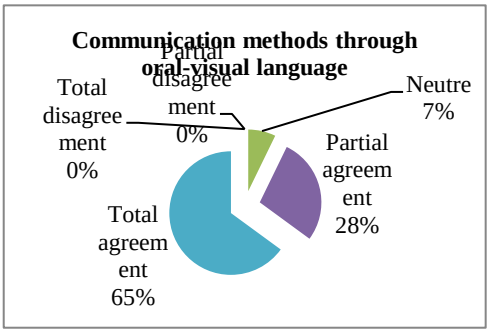

Fig. 6. Distribution of the responses regarding the "Communication teaching methods through oral-visual language"

The responses to "Problematisation" (i.e. education through problem-solvoing) cover the entire range: 3% of the respondents totally disagree with this teaching method, which can reflect, on one hand, the lack of problem-solving skills, of acknowledgement/formulation of the problem, or the rejection of the cognitive effort generated by the search for solutions generating continuous learning or by the justification of the responses. (DELEUZE, 1995; MARȚIAN AND SUCIU, 2009; DIACONU AND BOCOȘ, 2009) Eighty-five percent of the respondents had a positive attitude towards this teaching method as shown in Figure 7.

Among "Direct exploration teaching methods", the most appreciated by the students is "Experiencing" (90%), which could reflect the students' interest in involving in investigation and not just observing an event or the environment: it develops the spirit of observation

through the identification of essential elements and of the complexity of the environment (CERGHIT, 2001) without intervening effectively.

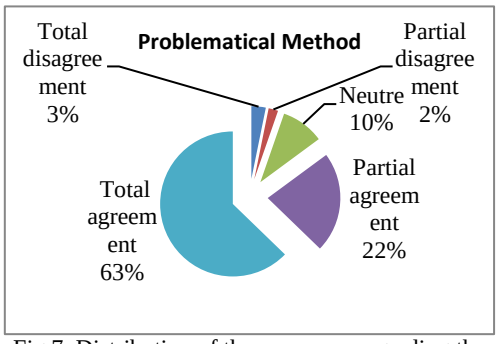

Fig 7. Distribution of the responses regarding the "Communication teaching methods through problematisation"

This is representing graphically in Figure 8. Figure 9 represents graphically the group "Direct exploration teaching methods": the values corresponding to the Likert Scale have been summed up for each value depending on the respondents' options.

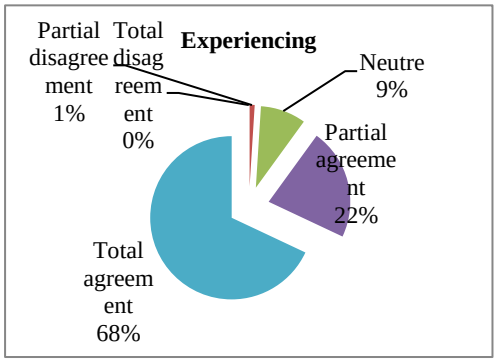

Fig. 8. Distribution of the responses regarding the "Experiencing

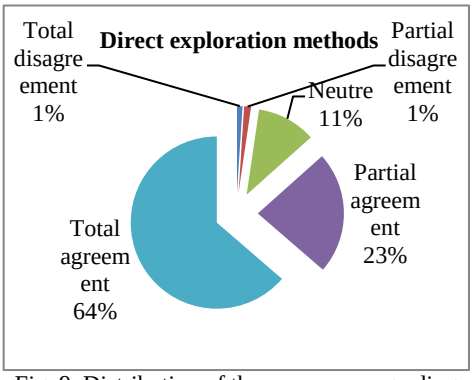

Fig. 9. Distribution of the responses regarding the "Direct exploration teaching methods"

Of the "Direct exploration emthods", "Demontration through Real Phenomena" (Figure 10) is of great interest among the respondents (95%), which reflects their interest in the real world and not only through graphs or audio-video equipment. Figure 11 below is a graphical representation of the group "Demonstrative teaching methods": the values corresponding to the Likert Scale have been summed up for each value apart depending on the respondents' opinions.

Within the group "Effective action teaching methods", the most appealling teachign method was "Application" (see Figure 12). It is a teaching method that maintains the students' motivation and interest at a high level, with positive results on the teaching-learning activity. (BENNETT AND LUBEN, 2006) The graphical representation of the group "Effective action teaching methods" is shown in Figure 13 below. The values corresponding to the Likert Scale have been summed up for each value apart depending on the respondents' opinions.

In order to develop scientific skills and knowledge, practical skills developed within the study of different disciplines have a real potential stimulating and motivating effect on the students (LUNETTA *ET AL*., 2007, IN COLLINS, 2011): the study underlines the need for finding a balance between "making" and "learning" – teachers need to spend more time in class on helping the students use their idea depending on the subject area studied (ABRAHAMS AND MILLAR, 2008).

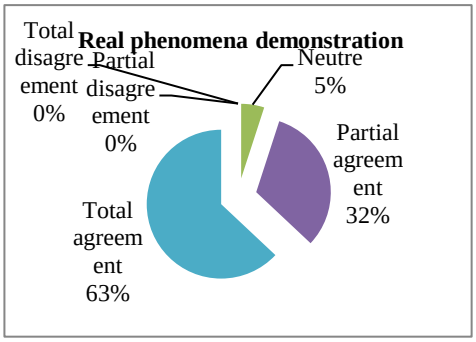

Fig. 10. Distribution of the responses regarding the"Demonstrarea cu fenomene reale"

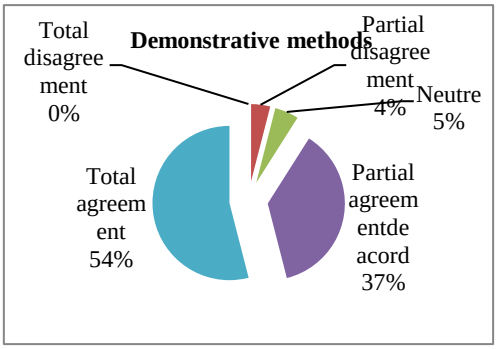

Fig. 11. Distribution of the responses regarding the "Metode demonstrative"

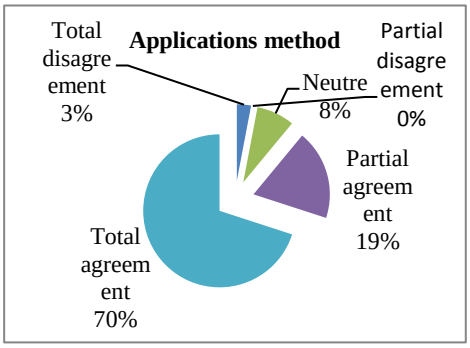

Fig. 12. Distribution of the responses regarding the "Efectuarea de aplicații

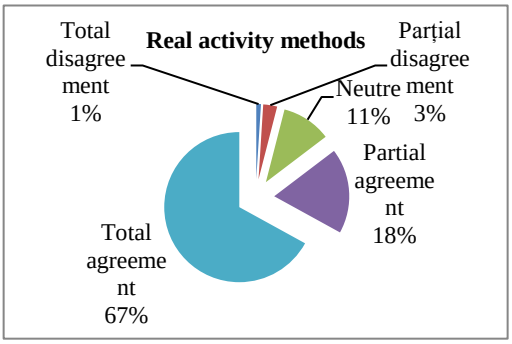

Fig. 13. Distribution of the responses regarding the "Metode de acțiune efectivă"

Work during laboratory classes is a unique component in both the study of a science and the students' opportunity of getting involved in true activities. There are also multiple benefits in the learning activities outside the school, together with a well-being state (both physical and psychical) (RICKINSON *ET AL*., 2004); this activity should be practiced even during pre-service period to prepare the teacher for the benefits of such a teaching method to be practiced with his/her students. (OSBORNE AND DILLON, 2010)

"Education through simulation games" is a teaching method that is little appreciated by the students (6%), particularly by shier students for whom this teaching method is too challenging; another 88% agree with this teaching method being used in the teaching process because it makes them "play" during the class (this tendency to play is appealing to pedagogy nowadays). (POPOVICI AND CHICIOREANU, 2003) All this is graphically represented in Figure 14, which considers the histogram relative to the total number of respondents. There were

positive in the teaching of such socio-human disciplines as Psychology. (POORMAN, 2002), Sociology (SIMPSON AND ELIAS, 2011) (IN SHAPIRO AND LEOPOLD, 2012) Role-play helps the students "communicate and exteriorise their feelings and enrich their vocabularies." (MOGOS AND POLITI, 2008: 101)

"Programmed education teaching methods" are not appreciated by the respondents (3%), which reflects their reticence towards very new teaching methods.

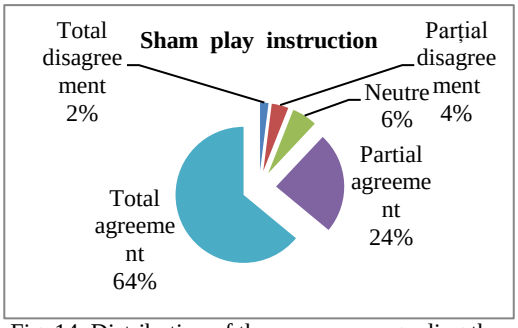

Fig. 14. Distribution of the responses regarding the "Education through Simulation Games"

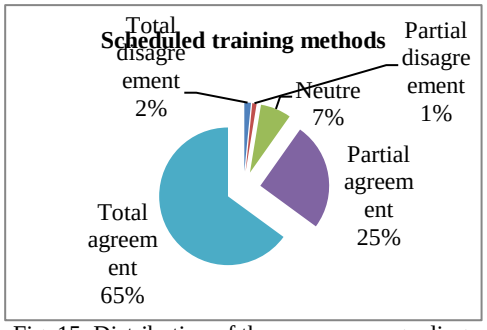

Fig. 15. Distribution of the responses regarding the "Programmed education teaching methods"

The results are represented graphically in Figure 15. One of the advantages of the "Programmed education teaching methods" is that it provides permanent feedback (it allows note-taking or writing answers in the instruction programme). The disadvantages are that they do not reproduce reality properly: reality here lacks affectivity and the stimulation of some senses (smell and touch) in the disciplines in which they are necessary. (OPREA, 2000; ROSINSKI AND SQUIRE, 2009)

The teaching methods using the computer or another technology are part of a teacher's or student's work: WISHART (2011) proposes a change in pedagogy consisting in the introduction of interactive ITC in the curriculum because it supports and develops scientific observation both at school and at home, understanding, and analytic skills.

CONCLUSIONS

Different approaches in teaching highlight different parts of the problem-solving process: the students have almost all the time a world vision that supports them in the process. Allowing the students to ask questions is allowing them to restructure and develop their own way of explaining other phenomena as well and helps them better understand the situations and problems they are confronted with. New, modern teaching methods can cause a certain degree of confusion among the students; this is why JUSTI AND GILBERT (2002) recommend a combination of the attributes of different teaching methods.

5. BIBLIOGRAPHY

ABRAHAMS, A. AND MILLAR R. (2008), Does practical work really work? A study of effectiveness of practical work as a teaching and learning method in school science, *International Journal of Science Education*, 30(14), 1945-1969

BENNETT, J. AND LUBBEN, F. (2006), Context-based chemistry: The Salters approach, *International Journal of Science Education*, 28(9) 999-1015

Cerghit, I., Cristea, S. and Pânișoară, O. (2008), *Metodologia procesului de învățământ.* În *Pregătirea psihopedagoigică. Manual pentru definitivat şi gradul II didactic*, Editura Polirom, Iaşi

CERGHIT, I., NEACŞU, I., NEGREŢ-DOBRIDOR, I. AND PÂNIŞOARĂ, I. O. (2001), *Prelegeri pedagogice*, Editura Polirom, Iaşi

COLLINS, SUE, (2011), What do students think about science, in TOPLIS, R. (ed.), *How science works: exploring effective pedagogy and practice*, Routledge, New York

CULDA, L. (2004), *Potenţele fiinţei umane,* Editura Licorna, Bucureşti

DELEUZE G. (1995), Diferenţă şi repetiţie, Bucureşti: Babel

DIACONU, MONICA AND BOCOŞ, MUŞATA (2009), Problematizarea. Utilizarea metodei în didactica universitară, in The Journal of Didactics, 1(1), pp. 104-132

DULAMĂ, ELIZA, (2006), Metodologie didactică Cluj-Napoca: Clusium

ERDURAN, S. SIMON, S. AND OSBORNE, J. (2004), Tapping into argumentation: developments in the application of Toulmin's Argument Pattern in studying science discurs, Science Education 88(6), 915-933

GARCIA, MILA AND ANDERSON, C. (2008), *Cognitive foundation of learning argumentation*, in S.

ERDURAN, AND M. P. JIMÉNEZ-ALEIXANDRE (eds.) *Argumentation in Science Education: Perspectives from Classroom-Based Research*, Heidelberg: Springer

ILIE, V. (2007), Constructivismul şi instruirea, în E. Joiţa (ed.), *Profesorul şi alternativa constructivistă a instruirii*, Editura Universitaria, Craiova

JUSTI, R. AND GILBERT, J. K. (2002), Modeling teachers' views on the nature of modelling, and implications for the education of modellers, *International Journal of Science Education* 24(4), 369-387

MARŢIAN, NICOLETA AND SUCIU, LIVIA (2009), Philosohical and Didactic Perspectives on Problematization, in The Journal of Didactics, 1(1), pp. 1-12

MOGOS, K. AND POLITI, F. (2008). The creative second language lesson: The contribution to the role-play technique to the teaching of a second language in immigrant classes, RELC Journal, 39(1), 96-112

OPREA, C. (2000), Pedagogie. Alternative metodologice interactive, Bucureşti: Edit Universităţii

OSBORNE, J. AND DILLON, J. (2010), *How science works: what is the nature of scientific reasoning and what do we know about students' understanding* in J, OSBORNE and J. DILLON (eds.) *Good Practice in Science Education. What Research Has to say* (2nd edition), Maidenhead: Open University Press

PETRUŞ, RALUCA (2012), The Use of Audio-Visual Resources to Enhance the Aquisition of Cultural Knowledge, in Journal of Didactics, 3(1&2), pp. 30-42

POPOVICI, M. M. AND CHICIOREANU, DANIELA (2003), Proiectarea didactică, Bucureşti: Printech

RICKINSON, M., DILLON, J., TEAMEY, K., MORRIS, M., CHOI, M. Y., SANDERS, D. AND BENEFIELD, P. (2004). A Review Research on Outdoor Learning, Preston Montford: Field Studies Council

ROSINSKI, PAULA AND SQUIRE, MEGAN (2009), Strange Bedfellows: Human-Computer Interaction, Interface, Design, and Composition Pedagogy, in Computers and compositions, 26(3), 149-163

RYDER, J. (2001), Identifying science understanding for functional scientific literacy, *Studies in Science Education*, 36, 1-44

SAPHIRO, SHAWNA AND LEOPOLD, LISA (2012), A Critical Role for Role-Playing Pedagogy, TESL Canada Journal 29(2), pp 120-130

SIMON, SHIRLEY (2011), *Argumentation*, in Toplis, R. (ed.), *How science works: exploring effective pedagogy and practice*, Routledge, New York

TOPLIS, R. (2011), How science works: exploring effective pedagogy and practice, Routledge, New York

WATTS, D. M. AND PEDROSA DE JESUS, H. M. (2011), *Questions and Science*, in TOPLIS, R. (ed.), *How science works: exploring effective pedagogy and practice*, Routledge, New York

WISHART, JOCELYN (2011), The role of information and communications technology, in TopliS, R. (ed.), *How science works: exploring effective pedagogy and practice*, Routledge, New York