

VALENCES OF INVESTIGATION METHOD APPLICATION IN THE STUDY OF BIOLOGY AND AGRICULTURAL SCIENCES

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Abstract: *The purpose of this paper is to render perspicuous the results of an ascertaining research on student perception regarding the way in which didactic methodology employed in the study of biology and agricultural sciences meets their study needs. Currently, the Romanian academic environment inter alia is thoroughly preoccupied with the quality of the instructional-educational process in relation to the rate of employment subsequent to the graduation on the work market. In this sense, organising the didactic and strategic activities applied in the instructive-educational process is of paramount importance. In order to carry out the research under scrutiny, an inquiry based on the questionnaire were chosen as operational tools with the purpose of collecting information. They were applied to students majoring in Agriculture and Horticulture. Aspects regarding the study of science in general, as well as aspects specific to the study of biology and agricultural sciences were analysed. What is more, we have elicited some aspects regarding the different learning styles of students, didactic strategies, learning motivation in students, as well as the valences of scientific investigation use. This research project, through its highlighted results, contributes to the evaluation of the didactic process carried into effect at university level, to the reiteration of certain actions regarding the perfecting of didactic methodologies applied in the study of biology and agricultural sciences, as well as to the holistic organisation of the educational process. The conclusions drawn from the investigation point towards the success of science learning at a superior quality level through the direct involvement of the students in research and active learning.*

Key words: *didactic methodology, learning styles, scientific investigation*

INTRODUCTION

A major and constant concern of Romanian, as well as other experts in the education field is the quality of the training-teaching process. When taking into account the employability level of agricultural higher education graduates on the labour market, increasing the quality of the training-teaching process becomes an important objective. The modernization of the Romanian higher education and the increase in quality of the teaching process is made possible by intervening on all components of the teaching process.

Each teacher desires to get the best results from his students, thus one of his main concerns is the continuous perfecting in the scientific field and the improvement of teaching strategies applied in teaching-learning-evaluation. A first step in this direction is the diagnosis of the teaching process at higher education level with the help of teaching methodology used by teachers when teaching speciality disciplines, which contributes to the foundation of actions meant to modernize teaching methodologies applied in the field of biology and agricultural sciences, and to make these more efficient. Simultaneously, learning the intellectual development level of one's students, their personality traits, their interests and learning motivation, contributes to underlying teacher decisions regarding the development of proper teaching strategies. The research of numerous experts in the educational field, but also practitioners from higher education, have tried to identify the factors which influence success in learning, factors influencing learning motivation, as well as ways to modernize applied teaching methodologies (JOITA, E, (2005). CERGHIT, I. (2002, 2007). IONESCU, M. &RADU,

I.(coord.) (2004), ȘOITU, L. & CHERCIU DIANA (Coord). (2006), POTOLEA, D. et al. (2008), RADU, I.(coord). (2001))

METHODS

The paper at hand tries to highlight the way in which students perceive certain aspects of the teaching process they are directly involved in, starting from the idea that, in order to modernize and improve the teaching activity quality, teachers need to identify those teaching strategies which best respond to the students' learning needs. Thus, the objectives of our study refer to the way in which students relate to learning activities, learning motivation, student learning styles, the forms of teaching activity organization, as well as the teaching methodology used by teachers when teaching speciality disciplines.

The sample in our study consisted of 64 undergraduates enrolled in the Psychopedagogical module at BUASVM Timișoara, in the academic year 2013-2014. The respondents were picked up from the 1st, 2nd and 3rd years from the Faculty of Agriculture and the Faculty of Horticulture and Forestry.

In order to highlight the way in which students perceive the aspect of the ongoing teaching process for the speciality disciplines, we applied a questionnaire based inquiry. The questionnaire applied to the participant students contains 25 questions, calibrated as a measure instrument on a five level Likert scale (from strong agreement to total disagreement). The questions referred to: the students' perception of science learning in general, the students' perception regarding the importance/necessity of learning biologic/agricultural sciences, the forms of teaching activity organization, applied teaching methodology. 28 teaching methods were chosen, considered to be the most useful in teaching-learning of biologic and agricultural sciences, grouped in 8 categories, as follows: oral communication methods, written communication methods, oral-visual communication methods, direct reality exploration methods, indirect reality exploration methods, real action methods, fictional or simulated reaction methods (simulation methods). In order to identify learning styles preferred by the students, we applied a learning style identification questionnaire

RESULTS AND DISCUSSIONS

The data obtained after applying the questionnaire were processed statistically, by analyzing the results for each item separately.

Thus, the results obtained outlined the students' opinion regarding science study in general, 92.18 % indicates the fact that science study in general has stimulated their interest for the living world and for its research, 51.56 % of the students totally agreeing with this statement, and 40.62% partially agreeing with it. Of the total questioned students, 46.87% totally agreed with the fact that natural science study helps them better understand the living world and 28.12% partially agreed with the statement. Regarding the importance of the study of natural sciences and technologies for the society, 40.62% of the students are in total agreement and 37.50% are in partial agreement. Regarding the way in which students relate to the difficulty level of the science study, in general, as well as the satisfaction brought by this study, the data collected after applying the questionnaire revealed that 45.31% of the students partially agree with the statement, 20.31% totally agree with it and 28.12% neither agree, nor disagree with the statement. Only 9.37% of the students appreciate that science study is not facile and pleasant. 32.81% of the answers indicate the fact that students consider laboratory activities interesting, they do not get bored, 17.18% partially agree, while 28.12% of the students are undecided (neither agree nor disagree). 12.50% show opposing opinions, partially agreeing with finding laboratory hours mostly boring and 6.25% of the students totally agree that they mostly get bored during laboratory hours. As many speciality studies explaining the

factors which lead to pupil/student learning success have shown, the affective-attitudinal component is especially important in learning, numerous authors (ROGERS & FORD, 1997; PROKOP *ET AL.*, 2007; MELISSA COOK & THALIA M. MUHLVIHILL, 2008; CAMILLA SCHREINER & SVEIN SJØRBERG, 2004), OSBORNE, J. (2003), focusing on the study of the importance of affective-attitudinal factors in the context of natural science study.

Regarding the way in which students from the Faculties of Agriculture and Horticulture and Forestry relate to the importance of the support which teachers offer during the study, 32.81% (total agreement) and 28.12% (partial agreement) stating that they rely on the teacher's support for learning during classes, while 7.81% (partial disagreement) and 4.68% (total disagreement) consider they do not need this support. From the questioned students, 50.00% (total agreement) confirmed that they plan their teaching process alone during class, as well as at home, 32.81% partially agreeing, and 4.68% of the students indicating that they do not plan their learning activity alone. 34.37% of the students state that they learn better at home than in class (total agreement) and 21.87% (partial agreement), while 18.75% neither agree nor disagree with this statement, 7.81% partially disagree and 6.25% totally disagree. With regards to the way of organizing teaching activities, students state in a 68.72% percentage (total and partial agreement in equal shares) that they mostly work in small groups during laboratory hours, 40.62% state they work individually (20.31% partial and 18.75% total agreement), while 28.12% neither agree, nor disagree with the statement. A 67.18% ratio of the students' answers indicates the fact that they believe they are often put in a situation to look for information on their own, 39.06% partially and 28.12% totally agreeing with the statement.

Regarding the students' perception about the teaching methodology used during current speciality hours, the following was established:

- oral communication methods – 56.25% of the students consider that this methods (lecture, explanation, conversation etc.) are mostly used during course, seminar, laboratory hours, 26.56 % are in partial agreement and 3.12% are in total disagreement with the statement;

- written communication methods – in equal shares, of 32.81%, answers indicate student agreement regarding their involvement in working with the textbook or books, information or documentation, and 3.12% of the students are in total disagreement with the statement and 4.68% are in partial disagreement;

- oral-visual communication methods – regarding the use of oral communication methods accompanied by diagrams, schematas, images, patterns, didactic film etc., a 39.06% percentage of the answers indicates the students' partial agreement and 35.93% total agreement, while 4.68% of the students are in total disagreement, considering that teachers mostly do not use these teaching methods.

- interior communication methods (personal reflection) – the students' opinion regarding the teacher's use of personal reflection indicates the fact that 50% consider they are involved in this type of activity (26.56% partial and 35.93% total agreement);

- direct reality exploration methods – the use of learning methods through discovery, research, experiment etc., was indicated by 40.62% of the students, 25.00% of the students are in partial agreement that these methods are mostly used, 18.75% are neither in agreement nor in disagreement with the statement, 9.37% indicating partial disagreement.

- indirect reality exploration methods – using methods like the demonstrative ones, shaping etc. was indicated by 35.93% of the students (partial agreement) and 28.12% (total agreement);

- real action methods – methods such as the exercise, project development are considered to be mostly used by 40.62% of the students (total agreement) and 25.00% (partial agreement); 9.37% of the students are in partial agreement with this statement.

- simulative action methods (teaching games, role-playing, simulation) – of the questioned students 35.93% (35.93% partial agreement) consider that these methods are often used, 12.50% are in total disagreement with this statement, only 9.37% of the students indicate the fact that these methods are mostly used.

CONCLUSIONS

Based on the results obtained during our research, we may consider that, as a whole, a positive positioning of the Agriculture and Horticulture and Forestry students is observed, regarding the learning activity, expressed by a positive perception regarding the importance of the biologic/agricultural sciences study, as well as the interest for the learning activity. The teaching methodology used by the teachers while teaching speciality disciplines, is based on oral communication methods, direct reality exploration methods in equal shares with the direct action and oral-visual communication methods. Although students consider that they are mostly put in the situation to find information on their own, they do not indicate personal reflection among the most used methods. During laboratory activities, the students mainly work in small groups and individual activities, relying on teacher learning support. In this context, we may conclude the fact that, from the point of view of the teaching methodology used in the higher agricultural education, an adaptation to student learning needs is required in the sense of using new active and interactive teaching strategies, based on effective student involvement in the learning process.

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