THE STUDY OF EFFICIENCY LEARNING IN AGRICULTURAL SCIENCES USING POWERPOINT AND VIDEO PRESENTATIONS. CASE STUDY

Daniela TRIFAN, Nicoleta AXINTI
“Dunarea de Jos” University from Galati, Engineering Faculty from Braila, 29 Calarasilor Street, Braila, Romania
dana.trifan@yahoo.com, nico@kvs.ro

Abstract: The study was during two years and the subjects were students from Department of Agriculture, Faculty of Engineering Braila, from two different years, and several agricultural sciences disciplines. In the first year, the manner of teaching was classic, using exposure, conversation, demonstration, comments, etc. In the second year, has used a modern manner of teaching using PowerPoint and video presentations. This study highlights the results of students in these two types of teaching, being named the differences, the advantages and disadvantages for each of them.

Keywords: efficiency learning, PowerPoint and video presentations

I. INTRODUCTION

In the current trend to reform education, internationally and especially nationally, we can see increasingly that, overall, the educational content is focusing more on formative learning than theoretical learning. Thus, there was a shift from centering action learning educational content for advanced educational skills training, in other words, from the verb “to know” at the verb “to know how to do it”; “to know how you should be”, “to know to become” and, not least, “to know how to drive another people”.

If in the past prior were “to learn to know”, in contemporary modern society is “to learn how to do it”, to overcome the difficult moments that occur in the transfer of students to the production process. Most employers want the new employee or job candidate to know practical things, can analyze and synthesize, to accommodate early in the production process and integration into a new community.

Of course, priorities in such learning must be established in terms of difficulty, time and necessity, to the guidance of teachers.

II. MATERIALS, METHODS AND RESULTS OF STUDY

2.1. Materials and Methods

This study was conducted over two academic years, analyzing the results of students from the Department of Agriculture, following the use of two types of instruction.

In the first year we were used classical techniques, traditional teaching: lecture, demonstration and evaluation, and in the second year were used modern methods of teaching with PowerPoint and video presentations.

A number of disciplines in the agricultural sciences are applied and require many more hours for demonstrations, than we could achieve in classes. It is therefore necessary modernization of teaching methods by which students can view phenomena and microscopic processes, technology and laboratory. In the first year of study, we used the teaching methods: lecture, laboratory layouts and
educational materials, typescript material on the works of Botany, Soil Science and Culture of Medicinal Plants.

In the second year, we used modern methods of instruction, including exposure to video and PowerPoint presentations. The study was conducted on three different groups of students, that first year for Botany, year II for Soil Science and year III for Culture of Medicinal Plants discipline.

2.2. Results of study

Option to paradigm focused on the student performance determined the option for a broad methodological freedom of the teacher. In terms of modern curricula (master plan, flexible disciplinary curriculum, alternative textbooks, assessment based on the quality of skills acquired by students), the teacher is obliged to make decisions.

This resulted in increasing use of the term “teaching-learning strategy “, a term which tends to replace older references in inventory methodology.

The study is based on the analysis results obtained by three groups of students at three disciplines in two years running in the first year using the classical method of teaching and second year in a modern way using PowerPoint and video presentations. Groups of students had the following structure:

- in first year - 21 students: 6 female students and 15 male students;
- in second year - 16 students: 4 female students and 12 male students;
- in third year - 17 students: 5 female students and 12 male students.

In the first year of study, regular schedule of teaching methods was the kind of figure 1.

![Figure 1 Strategy teamwork of students in first year of study](image)

Thus, setting tasks was done by lecture and dictation, and then working groups were set every 2 or 3 students, feedback from students about their discoveries and observations, summary of their knowledge and, finally, verification and correction of observations and / or calculations made by students.

In the second year of study, the scheme was the teaching method represented in Figure 2, stages in team strategy are: PowerPoint presentation on the theoretical part, the part video presentation application, specifying each stage of the experimental protocol, training of work teams feedback to students; own findings, summary of key points of laboratory work followed by checking and correcting the observations and calculations made by students.

![Figure 2. Strategy teamwork of students in second year of study](image)

To exemplify the modern manner of teaching in second year of this case study, we present below a teaching strategy to discipline Soil Science Laboratory: “The conditions, soil characteristics
and recognition of class Cernisoluri (CER)”, mentioning that the same stages of work strategy has been completed and the other two disciplines also.

1) PowerPoint presentation - includes explanations of the theoretical work (Fig. 3)

2) Video presentation - including explanations of the applied work, achieving soil profile, differentiation of diagnosis horizons and staging of work to determine the type of soil.

3) Students work individually or in groups of two for the recognition of soil profiles in the paper Applied (images) and their classification taxonomy.

4) Student feedback and summary of key points, namely: main soil types from Cernisoluri class, their distribution worldwide, European and national levels, the main areas of the country where there are these soil types studied, characteristics of the soil profile for each type and morphological physical and chemical properties, and references on fertility for each type.
5) Check and correct taxonomic placement made by students for each soil type studied.

The results obtained by students in the two years of further study, the three disciplines pursued in the present study are framed in Table 1.

**TABLE 1 RESULTS OBTAINED BY STUDENTS TO ASSESS KNOWLEDGE, THE THREE DISCIPLINES IN THE TWO YEARS OF STUDY**

<table>
<thead>
<tr>
<th>Disciplines</th>
<th>Teaching methods</th>
<th>Classic manner</th>
<th>Modern manner</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Class evaluation</td>
<td>Female students</td>
<td>Male students</td>
</tr>
<tr>
<td></td>
<td></td>
<td>A %</td>
<td>A %</td>
</tr>
<tr>
<td>Botany (year I)</td>
<td>Insufficient</td>
<td>1 16,7</td>
<td>2 13,3</td>
</tr>
<tr>
<td></td>
<td>Sufficient</td>
<td>3 50</td>
<td>7 46,7</td>
</tr>
<tr>
<td></td>
<td>Well</td>
<td>1 16,7</td>
<td>4 26,6</td>
</tr>
<tr>
<td></td>
<td>Very well</td>
<td>1 16,7</td>
<td>2 13,3</td>
</tr>
<tr>
<td>Soil science (year II)</td>
<td>Insufficient</td>
<td>-  -</td>
<td>2 16,6</td>
</tr>
<tr>
<td></td>
<td>Sufficient</td>
<td>1 25</td>
<td>5 41,6</td>
</tr>
<tr>
<td></td>
<td>Well</td>
<td>2 50</td>
<td>3 25</td>
</tr>
<tr>
<td></td>
<td>Very well</td>
<td>1 25</td>
<td>2 16,6</td>
</tr>
<tr>
<td>Medicinal plants culture</td>
<td>Insufficient</td>
<td>-  -</td>
<td>1 8,33</td>
</tr>
<tr>
<td></td>
<td>Sufficient</td>
<td>2 40</td>
<td>7 58,33</td>
</tr>
<tr>
<td></td>
<td>Well</td>
<td>2 40</td>
<td>3 25</td>
</tr>
<tr>
<td></td>
<td>Very well</td>
<td>1 20</td>
<td>1 8,33</td>
</tr>
</tbody>
</table>

Note: Classes are equivalent assessment following notes: insufficient = under 5; sufficient = 6 to 7, well = 8 to 9 and very well = 10.

Results of each discipline are represented in figures 4, 5 and 6. With the classical manner of teaching at Botany discipline, in the first year, 13 students got insufficient and sufficient qualifications, while in the second year, with the modern manner of teaching, only 6 students were ranked lower, so the number of students with good and very good results were doubled.

![Figure 4 Results of Botany discipline for each manner of teaching](image-url)
For Soil Science discipline, results of students were 8 insufficient and sufficient ranked in first year, with classical manner of teaching and only 4 in second the year, with modern manner of teaching.

![Figure 5 Results of Soil Science discipline for each manner of teaching](image)

About Culture of Medicinal Plants discipline we can noticed that students given better results in second year, when we used modern manner of teaching (PowerPoint and video presentation), their rating was : well and very well results for all female students and 50% for male students. It can be noticed that girls are more interested about some disciplines than another else, because in the second year, for example, at Culture of Medicinal Plants disciplines they obtained only well and very well results.

![Figure 6 Results of Culture of Medicinal Plants discipline for each manner of teaching](image)

It can see that results of students were much better in the second year, when the manner of teaching was made using video and PowerPoint presentations from all three disciplines considered for the study.
III. Conclusions

1. We conclude that modern manner of teaching is more advantageous for several reasons:
   - it stimulates interaction between students;
   - generate feelings of acceptance and sympathy;
   - encourages conduct facility success of others;
   - reduce anxiety over school; positive attitudes towards teachers.

2. Also we noted that the percentage of female students have achieved much better results than male students, because applying the modern method of teaching, probably due to more pronounced visual memory, but this will be the subject of another study.

3. Largest percentage differences were obtained from subjects at soil science and culture of medicinal plants disciplines, where very good rating class (= 10) suffered a double by applying modern teaching methods:
   - from 25 to 50% at Soil Science discipline for female students;
   - from 20 to 40% at Culture of Medicinal Plants discipline, for female students;
   - from 8.3 to 16.6% at Culture of Medicinal Plants discipline for male students.

4. The limits of this modern manner are:
   - working in groups, through collaboration, not preparing students for life, which is very competitive;
   - active - participatory applied in the team work are time consuming and requires expertise from the teacher;
   - students need sometimes time to familiarize themselves with this new learning, it takes repeated efforts and encouragement to convince that something is expected of them.

5. The modern manner of teaching described above promotes collaboration between students, in the same time with competition between work teams, which actually help increase efficiency in the learning process.

6. Not in the last time, to become a more effective learner is to use relational learning, which involves relating new information to things that you already know.

References