Results of Using Internet as an Academic Tool for Learning in the Drawing Course at the Level University

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Abstract: - This applied research was aimed to determine whether Internet use is effective as learning strategy in a module of engineering drawing. It was determined on the basis of the knowledge and skills in Internet usage, the perception of students toward the course and student achievement. The sample consisted of 70 students who were distributed into two groups, the Experimental Group (EG) and the Control Group (CG); 32 students (45.71%) were female and 38 (54.28%) were males. The results for the profile of students involved in research, both belonging to the CG as in the EG, show that groups were equivalent in the input variables, average age, length of use of computers, average hours a week of Internet use, Internet knowledge and skills in managing the Internet. Regarding the perception of course, the experimental group had a better perception on the student instructional module that the average perception of students in the control group. When comparing the average variable academic achievement among students in the experimental group and the control group, using statistical parametric test Student \( t \), it was determined that there was no significant difference in the average academic performance between groups. However, the results of the average ratings of both groups show that the average scores for students in the EG was 11.88% higher than the average scores for students in the CG. The results showed that the use of the Internet as a tool for academic learning contributes to improving academic performance, but with no significant differences with regard to traditional improve the perception of students on an academic year and reduce the hours of class attendance.

Key-Words: - Internet, Perception, Technology Uses in Education, Learning, Teacher Education

1 Introduction

This applied research was aimed to determine whether Internet use is effective as learning strategy in a module of engineering drawing. In the context of the curriculum of careers in engineering and architecture, the course offers students drawing cognitive tools that enable a proper understanding of problems of industrial and graphic nature of regulations, such understanding is necessary to interpret, conduct and directed the development of flat pieces, structures, electrical networks, fluid handling and architectural details of the plants in which conducts its work.

The host university for this research is a public university in nature, experimental, scientific and technological, provincial, located in the Bolivarian Republic of Venezuela. The university started academic activities from the year 1974, under guidelines contained in a document called the Master Plan or the Comprehensive Development Plan (CDP), which provides engineering as careers in industry and science of agriculture. In its early years this university has implemented a program teaching-learning system called Experimental Studies Led (ESL), established during the years 1975-1983, which consisted primarily in non-traditional courses, through mentoring group and individual tutoring, printed and audiovisual material, during the first three semesters of each career. Since 1983, the instruction is given so attendance, with a system of study per semester in all their careers, targeting an estimated 10,000 students. Studies conducted in this institution covering various areas such as agricultural engineering, environmental engineering, architecture, electrical engineering, industrial engineering, computer engineering, engineering mechanics and animal production in engineering. In
addition, postgraduate programs in the areas of management, education, engineering and medicine. All the plans and curricula are organized from stationary series of subjects that pupils must study at 10 semesters which includes a graduate thesis.

Thus, linking the use of technology with a pedagogical approach, has led this research on the effectiveness of using the Internet as a tool in the teaching-learning process of the drawing course, to improve academic performance, the perception towards the course, knowledge and skills in Internet use of the students.

2 Problem Formulation

The drawing course was extended in the first half of all engineering careers. Classes are taught completely in a face to face, using chalk and the blackboard, the student receives indications by the professor's area and in turn is assisted by a coach, which is an outstanding student who works under the supervision of professor, with those students with poor performance in this area. Given this fact, because of the role and function of a university professor, must raise other teaching-learning methodologies, that reform and bring in something new at the university education. One of them is to exploit the possibilities offered by educational systems, which constitute a challenge for any learning environment. In this regard, Area [1] identifies four factors that impact directly on the need for innovation: a) rapid increase of information and its fragmentation and relativism, b) the demand and quest for quality education in universities masses, c) integration and pedagogical use of new technologies in university teaching, and d) the introduction of teaching-learning models.

Within this context, according to Behrens [2] it is important to consider that the technological resources, such as the Internet, are available but success depends on its implementation of educational projects which are conducive to learning and to enable the development of critical spirit and creative activities; resort alone does not guarantee innovation, but that depends on a well-structured project, supported by teachers and students who are users. In other words, innovation is not restricted to the use of technology, but also how the teacher will be appropriated for those resources to create projects that exceed methodological reproduction of knowledge and lead to their production. Based on these factors arises the importance of introducing pedagogical practice in the use of technologies like the Internet, in teaching the drawing. Thus, one could evaluate the impact of this experience in the environment where the author develops this investigation, thus enabling the new generation of students with educational content and context of the same. Faced with the problem of student achievement and the need to expand the academic offerings are used in the form of distance education, incorporating the Internet as a medium for transmitting instruction and teaching as a resource in support of the teaching-learning process. According to Estebanell and Ferrés [3] Internet is: An open window that allows classrooms to communicate with the outside world to increase the volume of information available, foster the exchange of experiences among people with common interests, contact the training field with that of professional practice, which enables attribute great educational potential.

Because of its application, the Internet is being used in universities, based on educational models that focus on the student and technology platforms that give them access to professors and students to multiple sources of information and the possibility of being able to find all the specific programmes learning from each of the courses taught under this model. The success Internet in its virtual environment encourages the active participation of members of the course according to Garcia [4]. This is due largely to the possibilities of interactivity between teachers and students, between students and their learning environment, which allows students to share their experiences and establishing communication enriching instances on what they're assimilating. As for the advantages of using the Internet in education can be noted, among others, the following: a) flexibility geographical and temporal, b) practicality as a learning tool, and c) the possibility of consulting with experts to problem solving. Alike, allowing the incorporation of interactive pages with publication content in digital format, interactive classes, audio files and PowerPoint presentations, which facilitates independent learning, in line with their own interests, needs or personal rhythm [5].

The need to expand the academic offerings has boosted the use of distance learning modalities with the incorporation of modern technologies such as Internet, which are used as a means of transmitting instruction and teaching as a resource to support the teaching-learning process. The possibilities of applying new technologies in education has changed in the educational field, because it has the potential to contribute to improving the quality of teaching and learning, especially in this era characterized by the knowledge revolution and information [6]. The new and rapid advances in new information
technologies in recent years have identified some changes in the relations of production, social relations and how to generate knowledge, to teach and learn. And it is a matter of taking advantage of technological advances that bring us to win the quality in training, optimizing the investment that these technologies require. That is why in different Venezuelan universities that offer training attendance are beginning to use new technologies as a resource and as a teaching tool to ease the teaching-learning environments. The challenge for the future is that universities make changes not only their technology, but also their ideas and teaching practices, which means changing the model of university education as a whole [1].

For the application of digital technologies is essential to think in the educational system as a whole, they are not just tools to be used in the system presence, but are a potential to produce learning, generating schemes organization to be analysed and understood themselves to assess their impact [7]. Thus, many educational organisations have penetrated in distance education and have their own web site, which has helped them meet a new student population and break the barrier of time and space [8]. The use of the Internet as a tool of education offered to students and educators’ valuable services, such as sending and receiving e-mail, read news, search and consult documents and information, have access to databases and catalogs of online booksellers. Educators can plan varied activities that allow the student to develop a diversity of skills needed to succeed in today's society; develop capabilities for research, problem solving, critical thinking, communication and information management, among others [9]. The student's responsibility as architect of his own performance has to do with the environment around it and the facilities it offers its environment, participating actively in defining the goals, methods and assessment of learning. For the student achieve a high level of academic performance, must be an adult and mature, able to adapt the curriculum to their personal needs and take responsibly their enrollment, must possess skills which enable it to the independent study, must show a genuine interest in harness, with its own motivation, academic events that are offered in their environment and, not least, must identify with your school. Faced with this university initiative to develop new mechanisms for teaching in order to improve the quality of teaching and open up new modes of teaching, can raise incorporate the Internet as a tool for teaching drawing, so to provide the student opportunities to learn new ways of accessing knowledge and put them in the face of technological reality in which we live. It also adds a style of collaborative learning, where students can develop their skills and individual and group synchronous asynchronously to assess performance in the subject.

2.1 Purpose of investigation
During recent years there has been a series of circumstances that have driven distance education and the use of new technologies in the academic exercise, which seems to give adequate response to increasing social demand, flexibility in the traditional education system and the difficulties of university students for further studies without the requirements of space, time and attendance. Thus, linking the use of technology with a pedagogical approach, has led this research on the effectiveness of using the Internet as a tool in the teaching-learning process of drawing the course, to improve academic performance, the perception towards the course, knowledge and skills in Internet use of their students.

2.1.1 Consideration of the problem
According to statistics provided by the unit of evaluation and control during the period 2000-2 and 2002-1, shows the percentage students who withdrew from the area drawing three weeks after the semester started, and the percentages of delayed after the completion of the entire subject in each period, as it is detailed in Table 1.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Retired</th>
<th>Delay</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000/3</td>
<td>19</td>
<td>14</td>
<td>33</td>
</tr>
<tr>
<td>2001/1</td>
<td>17</td>
<td>16</td>
<td>33</td>
</tr>
<tr>
<td>2001/2</td>
<td>17</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>2001/3</td>
<td>18</td>
<td>16</td>
<td>34</td>
</tr>
<tr>
<td>2002/1</td>
<td>22</td>
<td>18</td>
<td>40</td>
</tr>
</tbody>
</table>

In analyzing the data shown in Table 1, detailing that the percentage levels of withdrawal of subject during the past five semesters have varied from 17% to 22%, and the percentage of pupils postponed have varied from 12% to 18%. This leads to a large number of students withdrawn and postponed each semester and, hence, increases the demand for each half-hour sections and teacher.

3 Problem Solution
The research on the use of Internet in the process of teaching in the drawing course allowed addressing one of the challenges that universities have to
incorporate information technology in education and hence ensure efficient training programmes and training for students. Therefore, the introduction of information technology at universities becomes a necessity prevailing, not only as a contribution to the quality university itself but also as one of the main avenues of social integration to knowledge and use of these technologies [10]. The results of this study were collected under three measuring instruments, which were as follows a) the questionnaire knowledge and skills in managing the Internet, b) the perception survey on student learning environment, and c) proof of knowledge applied at the end of treatment. With the questionnaire knowledge and skills in handling Internet, data were collected on the variables relevant input for the study groups, with the aim of establishing statistically equivalence between the groups on age, gender, knowledge of the Internet and skills in managing the Internet. In addition, with this instrument were collected data required to answer the first question investigative What effect has incorporated the Internet as a tool in the learning process in the knowledge and skills of the subject drawing students in the first half of engineering? To answer the second question investigative What is the perception of students by incorporating Internet as a tool for teaching the subject drawing? The data was collected by the opinion poll on perception of student learning environment. With this survey was measured variable perception on the instructional method for students in the EG and CG. To assess the perception of both groups in the survey were contemplated the following dimensions: a) perception toward planning module, b) to the methodology, c) to the assessment, d) to work, and e) to the professor. It added dimension perception towards the Internet in the survey applied to the experimental group. The instrument used a 5 point Likert scale of 1 (strongly disagree), 2 (agree), 3 (neither agree nor disagree), 4 (agreement) and 5 (completely agree). The numerical value assigned to each response was used to determine statistical results. Finally, to answer the third question of research, To what extent can affect the incorporation of the Internet as a learning tool in the academic performance of students in the subject drawing? Data were collected with four evaluative activities: participation (10% weighting), individual work (15% weighting), teamwork (10% weighting) and written assessment (65% weighting). The final written test was considered the most important activity to assess the knowledge available throughout the module, which is why, he was assigned a weighting of 65%.

The sample consisted of 70 students who participated in the study and constituted both the EG as the CG 32 subjects (45.71%) were female and 38 subjects (54.28%) were males. The results for the profile of students involved in research, both belonging to the CG as in the EC, show that groups were equivalent in the input variables as were the average age, period of time of use of computer, average hours per week of Internet use, Internet knowledge and skills in managing the Internet (see Table 1).

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>EG</th>
<th>DE</th>
<th>CG</th>
<th>DE</th>
<th>Value</th>
<th>Sig</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age</td>
<td>19.0</td>
<td>.92</td>
<td>19.03</td>
<td>.82</td>
<td>.27</td>
<td>.34</td>
<td>.91</td>
</tr>
<tr>
<td>Use computer</td>
<td>2.26</td>
<td>.78</td>
<td>2.40</td>
<td>.69</td>
<td>-.81</td>
<td>.44</td>
<td>.60</td>
</tr>
<tr>
<td>Average Hrs Internet</td>
<td>2.54</td>
<td>1.01</td>
<td>2.63</td>
<td>.88</td>
<td>-3.79</td>
<td>.35</td>
<td>.86</td>
</tr>
<tr>
<td>Knowledge Internet</td>
<td>2.20</td>
<td>1.08</td>
<td>2.17</td>
<td>.78</td>
<td>0.13</td>
<td>.13</td>
<td>2.31</td>
</tr>
</tbody>
</table>

Also, in Table 2 shows the performance of students, this research was directed basically to answer the following questions: What effect has incorporated the Internet as a tool in the learning process in the knowledge and skills of the drawing course for students in the first half of engineering? What is the perception of students by incorporating Internet as a tool for teaching the subject drawing? and How is the academic performance of students pursuing drawing if the Internet is used as a tool for teaching the subject? To give answers to the questions of research, applied measurement tools to evaluate the variables, features input groups and student achievement average. Thus, after the inferential statistical analysis using the test procedure assumptions and significance, with the purpose of deciding whether statistics on the assumptions is accepted or rejected, was used method for estimating mean differences with Student t test. The results were obtained when comparing the average variable academic performance among students in the EG and the CG, using statistical parametric test Student t indicate that there was no significant difference in academic performance among average groups. However, the results of the average ratings of both groups show that the average grades of students in the EG was 11.88% higher than the average scores for students in the CG. This finding is particularly useful because although Internet use has been increasingly applied in a more frequent for education. Studies have shown that the scores
obtained in standard performance tests for students in line were between 5% to 10% higher than for students who carried out the program face to face at the campus [11]. The results were found when comparing the average student variable perception among students in the EG with those in the CG, showed that there were significant differences in perception on the student instructional module. Students in the EG had an average student perception significantly higher instructional module on the perception that average students in the CG. This means that the treatment had a positive effect on the perception of students in the EG, therefore, interprets the degree of perception significantly higher average student in the remote module on the module with traditional format is due to presence of the Internet as a learning tool. This finding is consistent with the approach of Organista & Backhoff [12], which confirmed that the use of new digital technologies to support the teaching-learning process are well received by students in higher education.

4. Analysis of data on academic performance average. The description of the scores for the variable average academic performance (average scores) of students in each group were collected with the instrument test of knowledge or summative assessment rate, with a rating scale of 1 to 9 points, managed to EG 35 students and 35 students of CG. The average score for the participation of EG was 8.06 points (= 0.87) and 6.03 points (= 2.08) in the CG, found a difference between the group averages 2.03 points, representing an increase of 25.55%. With regard to individual work, the average rating was 8.26 points (= 0.67) in the EG and 6.09 points (= 1.01) in the CG, presenting a difference of 2.17 points between groups, representing an increase of 24.11%. With regard to teamwork, the average rating was 7.66 points (= 1.26) in the EG and 4.94 points (= 1.43) in the CG, with a difference of 2.72 points between groups, representing an increase of 30.22%. And on the written test, the average rating was 5.37 points (= 1.40) for EG and 4.64 points (= 1.18) for the CG, this difference of 0.73 points represents an increase of 8.11%. Finally, we analyzed statistically the final qualifying average, which was 6.31 points (= 0.91) for EG and 5.03 points (= 0.88) for the CG, showed a difference of 1.07 points representing an increase of 11.88%.

Also, in Table 3 shows the performance of students according to rates approved and condemned in both groups. In the 35 subjects approved GE (100%) and failed zero (0%), while in 28 subjects approved GC (80%) and seven failed (20%). According to the results and comparing them with intervals of college performance, is evidence that both groups are within the range of students performing well, but GE's performance was an 11.88% higher than the CG.

5 Conclusion

The fact that students in the EG had a better perception regarding the methodology applied, allows us to indicate that the use of the Internet as a learning tool will allow us to access new ways of
learning. It is therefore possible to provide the student with the necessary tools to enable access to learning drawing at their own pace and provide students with new elements of motivation for learning. These results are consistent with the approach of Lewis & Hedegaard [13], who indicated that Internet technology rather than a tool for learning specific knowledge is in itself an apprenticeship that allows the development of cognitive skills and creative in students, which are offered as an alternative for their learning. Finally, the results on the academic performance of students of the Drawing course with Internet use show that it was equally effective for the acquisition of knowledge that a traditional class. This is based on the assertions made by Barry & Runyan [14], who noted that the results show that the achievement of students in the course using the Internet as a tool for distance learning is comparable to the achievement of students in the course face, namely the results are similar. The results captured in the first part of the initial questionnaire characteristics of the groups managed to 35 students per group, were as follows: a) for the size of groups, the EG was formed by 35 students (50%) and the CG consisting of 35 students (50%), b) the EG was formed by 18 (51.40%) males and 17 (48.60%) women and CG 20 (57.10%) males and 17 (48.60%) Women, c) the average age at EG was 19.09 years (SD = 0.51) and the CG of 19.1 years (SD = 0.82), d) for variable length of use of computers, students of EG was of 2.26 years (SD = 0.78) and the CG of 2.40 years (SD = 0.69), and e) the average number of hours per week of Internet connection, was for students of EG to 2.54 pm (= 1.01) and for the CG of 2.63 hours (SD = 0.88). To measure the variable knowledge of the Internet was used a Likert scale of 4 points 1 (none), 2 (little), 3 (regular) and 4 (good). The numerical value assigned to each response was estimated mean differences with the Student t test. One trial was conducted bilaterally or two tails to estimate mean differences, as it is an assumption that only distinction between the groups to compare, without stating which of the groups favors the difference, with a significance level of .05 or confidence level of 95%. So was established as a statistical assumptions: Assumptions void Ho: EG = CG and alternative hypothesis H1: EG ≠ CG where is the average of the group. To test the hypothesis was adopted rule of decision to accept the hypothesis void if t is within the interval - t .025 at .025, which for 68 degrees of freedom is the interval - 1.96 to 1.96, extracted from the table distribution Student t rejecting the null hypothesis otherwise. It appears that the distribution of scores of both groups follow a normal pattern and that the variances are similar, as well as the values of t all statisticians are tested within the range - 1.96 to 1.96, the null hypothesis is not must be rejected, namely, the difference between the two half of each of the statistical tested is not significant (p> .05). Depending on the results, we conclude that the groups are equivalent in the relevant input variables selected for the experiment, thus, is guaranteed the internal validity of the experiment.

References:


