



## Using the Cornell System for Notetaking at Pedagogical High Schools Students

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### Abstract

**Keywords:**

Pedagogical disciplines;  
improving school performances;  
skill for individual studying;  
note-taking subskill;  
Cornell system

This article intends to establish to what extent introducing a modern note-taking technique (Cornell system), as an instrument in forming and developing the skill to study individually, can lead to an increase in the school performances of the students from pedagogical high schools. In this accomplished research, designed to be conducted as a psycho-pedagogical experiment, we have developed the experimental situation with the following phases: the observational phase, baseline data gathering / pre-experimental phase; the proper experimental phase, with a developmental purpose; the final phase, results assessment, the post-experimental phase or post-test. The quantitative and qualitative interpretation of the data obtained through the analysis of the tests and of the notes taken by the students proves that the usage of the Cornell system is considered an appropriate intellectual exercise and also a challenging element for pupils, from a cognitive standpoint. Note-taking using the Cornell system leads to the development of the skill to study individually and contributes to: the improvement of the school performances of the students from the pedagogical high schools at the "Classroom management" discipline, and the development of an effective individual studying style.

### Zusammenfassung

**Schlüsselworte:**

pädagogische Fächer;  
Verbesserung der Schulleistungen;  
Individuelles Studium /Selbststudium ;  
Notiznehmen ;  
Cornell System;

Die vorliegende Arbeit möchte feststellen, wie weit die Einsetzung vom Notiznehmen (Cornell System) als Instrument für die Bildung und Entwicklung des Selbststudiums zur Erhöhung der Schulleistungen der Schülern aus pädagogischen Schulen beitragen könnte.

Im Rahmen dieser pädagogischen Forschung wurden 30 Schullehrer sowohl Frauen als auch Männern, von verschiedenen Altersgruppen und mit unterschiedlicher Erfahrung im Arbeitsfeld (Arbeitserfahrung zwischen 2 und 20 Jahre) die unterschiedliche Fächer unterrichten, vom Gymnasium „Horea, Cloșca și Crișan“, aus Abrud eingestetzt.

Die Zahl der in der Forschung eingesetzten Schülern (sowohl in der Feststellungsphase als auch bei der Experimentphase selbst und Endphase) beläuft sich auf 29 Schüler, aus der elften Klasse, Fachrichtung Pädagogie, Spezialisierung Lehrer-Erzieher, vom Gymnasium Liceul „Horea, Cloșca și Crișan“, aus Abrud. Die angewandten Methoden könnten folglich gruppiert werden: Methoden für die Untersuchung der Daten aus dem Lebenslauf und anderer Schuldokumenten, Methoden für die Sammlung der Daten (Umfrage führen), Methode der pädagogischen Experiments, Methode der Prüfungen und anderer schriftlichen Bewertungen, Methode der Messung von Forschungsdaten.

Im Rahmen der als einer psychopädagogischer Experiment durchgeführten Forschung, haben wir für das Experiment folgende Phasen entwickelt: die Feststellungsphase, die Phase der Datensammlung/die vor dem Experiment selbst; die Versuchsphase selbst, für Bildungszwecke; die Endphase, die Bewertung von Ergebnissen und die nach der Bewertungsphase oder die Postbewertung. Die quantitative und qualitative Bewertung der Daten durch das Prüfen von den Arbeiten und Notizen der Schülern beweist, daß die Anwendung des Cornellsystems eine nützliche und intellektuelle Übung als auch eine kognitive Herausforderung für die Schüler ist. Das Notiznehmen mit Hilfe des Cornellsystems führt zur Entwicklung der Fähigkeiten des Selbststudiums und trägt zur Verbesserung der Schulleistungen der Schülern aus den pädagogischen Gymnasien im Fach: „Das Management/die Leitung der Schulstunden“ und Entwicklung einer eigenen und effizienten Methode des Selbstlernens.

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## 1. Introduction

The way that parents communicate with their children is decisively influencing their process of development. According to C. Cucuș (2002, p. 49)

Individual study, like any other complex human activity, must be learned. The individual learning includes a certain technique, implies certain organizing, assimilation and control skills that are developed through imitation, guidance, exercise.

In 2013, Bocoș, M. was referring to the fact that the active student is that student that is aware that “learning to learn” new cognitive strategies does not require just the preparation of an appropriate fertile field for the seeding, sprouting and blossoming of new knowledge, but also a permanent and systemic restructuring of the existing acquisitions and cognitive schemas, a continuous reorganization and hierarchy of these acquisitions and schemas, in order to give meaning to the knowledge, to possess declarative, procedural and strategic knowledge; also, it is about adopting a metacognitive attitude in learning and about being interested in perfecting one’s own metacognitive strategies (M.-D. Bocoș, 2013).

Researches have noticed that most of the students and courses participants manage to write down only 50% of the essential problems and ideas that are presented to them, but, in turn, they record over 60% of the more or less significant details. More often than not there appears day-dreaming, the flow of ideas and other pursuits that distract one’s attention.

### 1. Methodology elements, sampling and research design

**The purpose** that we have assumed in the present research was to establish to what extent introducing a modern note-taking technique (Cornell system) – as an instrument in forming and developing the skill to study individually – can lead to an increase of the school performances of the students from pedagogical high schools.

During the unfolding of the investigative activity we started from the following **research objectives**:

- analysis of the learning activity of the students during Pedagogy classes, (Classroom Management);
- investigating the skill for individual studying and the subskill of note-taking in students.

**Independent variable:** using the Cornell system for note-taking at the Classroom management discipline.

**Dependent variables:** the quality of the individual studying style, the level of school performances.

This pedagogical research has involved a **sample** of 30 teachers from the “Horea, Cloșca and Crișan” High School, Abrud, Romania, males and females, with a diverse distribution regarding age and work experience in the field (seniority in the field of education being between 2 and over 20 years) and teaching various specialities. The teachers sample was established through stratified random sampling.

We have chosen the within-subjects experimental design, which implies following the same group during all the stages of the experiment. The students involved in this investigative endeavour (both in the observational and the proper experimental phases, and also in the final phase) were 29 students from the eleventh grade, pedagogical profile, primary-school teacher - educator specialty, from the “Horea, Cloșca and Crișan” High School, Abrud, Romania.

The used methods can be classified in the following manner: research methods for the curricular documents and for other school-related documents, methods used for data gathering (survey based on questionnaires), pedagogical experiment method, testing method and other means of written assessment, research data measuring methods.

In this accomplished research, designed to be conducted as a psycho-pedagogical experiment, we have developed the experimental situation with the following phases:

- the observational phase, for baseline data gathering / pre-experimental phase;
- the proper experimental phase, with a developmental purpose;
- the final phase, for results assessment, the post-experimental phase or posttest.

The observational phase had in sight the following objectives:

- analysing how students study individually in general and specifically at Pedagogy discipline;
- inquiring how students take notes and use them in learning;
- analysing how teachers stimulate individual studying and the personal reflection of the students during classes.

The conclusions that emerge directly are the following: students identify individual studying with the studying done at home. In most of the cases, they assign 1-2 hours per day for individual studying, time that, in my opinion, could be considered insufficient. At the disciplines that they consider the

most important, students prefer reading the lessons as the main form of studying. The time assigned for individual studying at Pedagogy is 50%-75% of the time assigned to individual studying. Regarding the studying style at Pedagogy, students prefer reading the lessons. Students usually take notes, consider them important, but they do not have a specific technique that they use constantly.

As a conclusion after applying the questionnaire to the teachers we can assert that:

- teachers consider that the note-taking process plays an important role in the students' learning activity;
- the questioned teachers stimulate the individual studying in students and the personal reflection of these students during classes;
- although they ask students to take notes, the questioned teachers do not mention that they would use specific techniques for the development of this skill.

For this research phase we have pursued the following operational objectives:

- to analyse how students take notes and how they use them during pedagogy classes;
- to establish if the differences between the results obtained in the pretest phase and those obtained in the other phases of the experiment are statistically significant, regarding the level of school performance at the Classroom management discipline.

For the pretest administration phase we have pursued the following operational objectives:

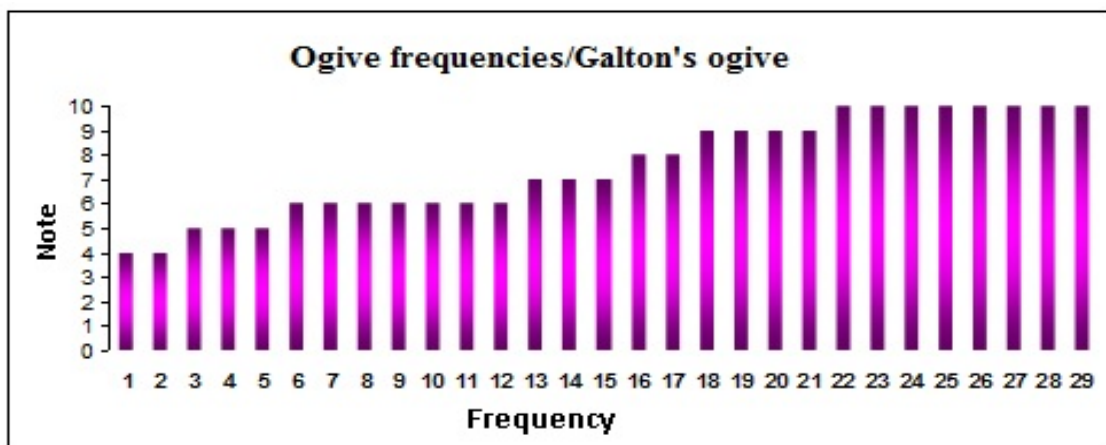
- to analyse how students take notes and how they use them during pedagogy classes;
- to establish if the differences between the results obtained in the pretest phase and those obtained in the other phases of the experiment are statistically significant, regarding the level of school performance at the Classroom management discipline.

During the first hour when the experiment began, some suggestions and general rules for note-taking were presented to the students, rules that they were asked to write down and apply during classes and the Cornell system for note-taking and versions of this system were also presented. The theoretical aspects were also detailed: construction, structure, advantages, disadvantages, the importance of note-taking through Cornell system, and the students were asked to take notes at the Classroom management course using this system.

During the post-experimental phase was used the same methodology as in the pretest sequence.

The data obtained by students after posttest administration are graphically represented below, using the frequencies' ogive / Galton's ogive.

Figure 1. The data obtained by students after posttest administration



**Statistical significance, in the phase of the difference between the mean obtained by the students following the administration of the assessment test in the pretest phase and the final assessment test (posttest).**

In our case (pretest – posttest), we consider the two students samples, with volumes of  $n_1 = 29$  and  $n_2 = 29$  respectively, with the values of the means  $m_1 = 5.62$  and  $m_2 = 7.51$  respectively, for which the sums of squares have the following values:  $\sum(x - m_1)^2 = 114.83$  and  $\sum(x - m_2)^2 = 125.25$ .

We intend to establish if the difference between means is statistically significant.  
The value of the  $t$  ratio will be:

$$t = \frac{|m_1 - m_2|}{\sqrt{\sigma^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{|5.62 - 7.51|}{\sqrt{4.28 \left( \frac{1}{29} + \frac{1}{29} \right)}} = \frac{1.89}{0.53} = 3.56$$

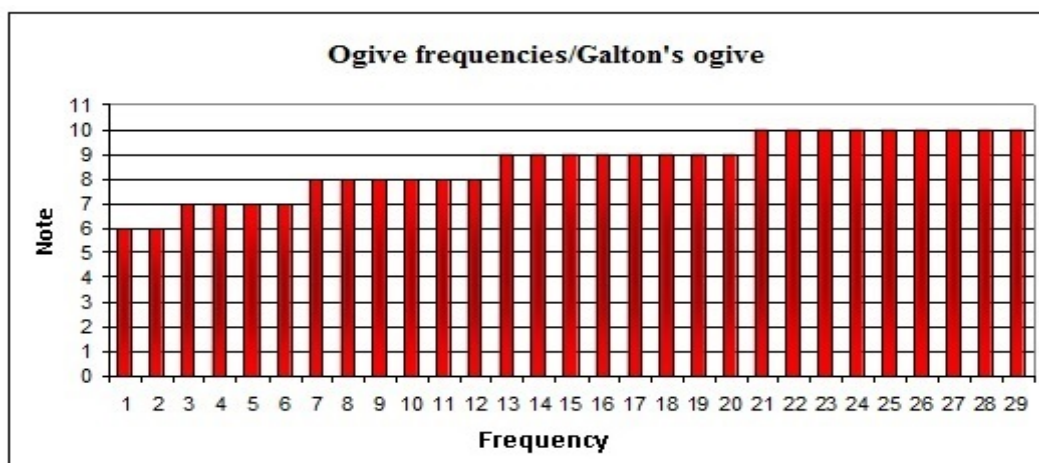
It can be noticed that the value we have computed for  $t$  is much greater than the  $t$  value from the table, corresponding to  $n = 56$  ( $n = 29 + 29 - 2 = 56$ ), at the significance level of  $p = 0,05$  (value which is 2) and also greater than the  $t$  value at the significance level of  $p = 0,01$  (value which is 2,66). Therefore, for the value  $t = 3.56$  that we have computed, we can infirm / neglect the null hypothesis and we can accept the specific hypothesis, considering that the difference between the two means **is statistically significant** at the significance levels of  $p= 0.05$  and  $p= 0,01$ , respectively.

In order to verify the stability in time of the intellectual activity strategies in the students individual study following the ending of the experiment, we have recourse to the retesting of the subjects through an assessment test with a similar structure to those in the pretest and posttest phases.

Practically, our purpose was to verify if there can be established a connection between the Cornell note-taking technique and the knowledge durability/endurance.

The data obtained by the students after the retest administration are graphically represented below, using the frequencies' ogive / Galton's ogive.

Figure 2. The data obtained by students after retest administration



**Statistical significance, in the phase of the difference between the mean obtained by the students after the administration of the distant assessment test (retest) and the final assessment test (posttest).**

Following the computing of the  $t$  ratio, we can determine the probability that the differences between the means can be due only to random factors and the probability with which the null hypothesis is tested, respectively, consulting the table developed by Student – a special table that contains the values of the  $t$  ratio for various significance levels and for various degrees of freedom.

In our case (retest – posttest), we consider the two students samples, with volumes of  $n_1 = 29$  and  $n_2 = 29$  respectively, with the values of the means  $m_1 = 8.62$  and  $m_2 = 7.51$  respectively, for which the sums of squares have the following values:  $\sum (x - m_1)^2 = 44.83$  și  $\sum (x - m_2)^2 = 125.25$ .

We intend to establish if the difference between means is statistically significant.

The value of the  $t$  ratio will be:

$$t = \frac{|m_1 - m_2|}{\sqrt{\sigma^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}} = \frac{|8.62 - 7.51|}{\sqrt{3.03 \left( \frac{1}{29} + \frac{1}{29} \right)}} = \frac{1.11}{0.44} = 2.52$$

It can be noticed that the value we have computed for  $t$  is much greater than the  $t$  value from the table, corresponding to  $n = 56$  ( $n = 29 + 29 - 2 = 56$ ), at the significance level of  $p = 0,05$  (value which is 2) and also greater than the  $t$  value at the significance level of  $p = 0,02$  (value which is 2.39). Therefore, for the value  $t = 2.52$  that we have computed, we can infirm / neglect the null hypothesis and we can accept the specific hypothesis, considering that the difference between the two means **is statistically significant** at the significance levels of  $p = 0.05$  and  $p = 0,02$ , respectively.

### 3. Developing the final conclusions. Valorisation of the research

The experimental endeavour that we have designed and implemented is enclosed in the requirements of the nowadays modern and democratic school, that place in the centre of its pedagogical and didactic reflection, the relations of the students with the knowledge, the progressive building of new knowledge by the students, the development of new epistemological constructions into an integrating and systemic vision.

The results obtained after the deployment of the experiment entitle us to assert the following:

- using the Cornell system during note-taking, the students permanently structure and restructure the information, integrating it easily into their own cognitive schemas;
- the regular usage of the Cornell system in note-taking will lead to the mediation of an active, interactive and even proactive attitude towards the work tasks, towards the pedagogical disciplines and towards knowledge in general among the students;
- the usage of the Cornell system in note-taking contributes to

the improving of the students school performances.

The quantitative and qualitative interpretation of the data obtained through the analysis of the tests and of the notes taken by the students prove that the usage of the Cornell system is considered an appropriate intellectual exercise and also a challenging element for students, from a cognitive standpoint, that leads to the development of the skill to study individually and contributes to: the improvement of the school performances of the students from the pedagogical high schools at the “Classroom management” discipline, and the development of an effective individual studying style. This aspect leads to the validation of the working hypothesis.

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