

Chapter 8 Study Habits and Their Relationship with Academic Performance. A Recap on the Different Methodologies

Capítulo 8 Los hábitos de estudio y su relación con el rendimiento académico. Una recapitulación sobre las diferentes metodologías

PEÑA-ESCALONA, Fleider Leiser¹, VICTORINO-RAMÍREZ, Liberio¹, GONZÁLEZ-GARDUÑO, Roberto^{2*} and VÁZQUEZ-CISNEROS, Christian Alfredo²

¹*Universidad Autónoma Chapingo. Department of Rural Sociology, Chapingo, Estado de Mexico, Mexico.*

²*Universidad Autónoma Chapingo. South Southeast Regional University Unit, Teapa, Tabasco, Mexico.*

ID 1st Author: *Fleider Leiser, Peña-Escalona* / **ORC ID:** 0000-0002-1490-0734, **CVU CONACYT ID:** 953789

ID 1st Co-author: *Liberio, Victorino-Ramírez* / **ORC ID:** 0000-0001-7732-6154, **CVU CONACYT ID:** 10231

ID 2nd Co-author: *Roberto, González-Garduño* / **ORC ID:** 0000-0003-0333-7787, **CVU CONACYT ID:** 35880

ID 3rd Co-author: *Christian Alfredo, Vázquez-Cisneros* / **ORC ID:** 0000-0002-9494-8374, **CVU CONACYT ID:** 1205824

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F. Peña, L. Victorino, R. González and C. Vázquez

*rgonzalezg@chapingo.mx

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Abstract

Habits are behaviors and customs that are learned by repetition. In education, habits are the action mode that students practice in their academic training. The studies carried out on study habits have been oriented toward various academic levels: primary education; secondary education; university careers in various areas of study such as zootechnics, medicine, dentistry, and administration; and others. Many studies have emphasized the importance of study habits and their impact on academic performance, which is the result of learning. There are different scales in study habits, among which the most outstanding are these: Álvarez and Fernández's study habits and techniques questionnaire, Fernández Poza's inventory, Palsane and Sharma's inventory of habits, and others that are modifications of the previous ones and that address physical and environmental conditions, planning, and structuring of time and knowledge of basic study techniques as the main theme. The results show deficiencies in study habits in students, although some other studies have indicated a high relationship with academic performance.

Planning, Qualifications, Study techniques

1. Introduction

Ordinarily, in education, habits are the constant modes of action that students practice in their academic training, that is, the way in which they face academic work on a daily basis, which implies organization in their time, space, techniques, and methods to be used (Sánchez *et al.*, 2016). Habits represent the activities or experiences that are carried out continuously in order to obtain a greater benefit in the learning process (Pineda & Alcántara, 2017). Study habits allow the student to react to new content and to know, understand, and apply it (Mondragón *et al.*, 2017). To acquire good study habits, general recommendations are made, such as: establish study schedules, properly distribute and organize time, review subjects daily, make summaries and outlines, write down main ideas, use the dictionary, and study in a clutter-free place free of noise but with good lighting and ventilation (Ogbodo, 2010; Sánchez *et al.*, 2016). Additionally, there are other aspects that must be taken into consideration, such as taking advantage of study time, achieving ideal conditions, discarding disturbing elements, effectively planning the work, correctly selecting the sources of information and documentation, adequately presenting the results, and mastering the techniques of observation, attention, concentration, and relaxation (Kumar, 2015; Mondragón *et al.*, 2017).

Studies carried out regarding study habits have been directed toward various academic levels, among which we can mention those referring to the basic level in primary school (Ozsoy *et al.*, 2009); secondary education (Sánchez *et al.*, 2016); university courses (Hernández *et al.*, 2012) in various areas of study such as zootechnics (Escalante *et al.*, 2008), medicine (Torshizi *et al.*, 2013), odontology (Castro *et al.*, 2015), and business administration (Mondragón *et al.*, 2017). In all these studies, the importance of study habits and their impact on academic performance are emphasized. The variables that affect academic performance are so many that their study is generally simplified using only one or two of them. The most frequent are gender, age, sociocultural environment, educational center type, study habits, reading habits, and leisure habits. Knowing the factors that affect better student performance is a primary task if you want to design improvement programs to prevent school failure (Capdevila & Bellmunt, 2016).

Academic performance is the result of learning, caused by the pedagogical intervention of the teacher and produced in the student (Sánchez *et al.*, 2016), generated as the result of numerous social variables that act in and from the person who learns, such as institutional, pedagogical, psychosocial, and sociodemographic factors (Montero *et al.*, 2007). The grades of schoolchildren are used to assess the results of teaching, and they constitute a criterion that can define academic performance (Capdevila & Bellmunt, 2016).

Habits are behaviors and customs that are learned by repetition. In general, habits can be classified as good and bad and can qualify different aspects of life, such as health, nutrition, and academic studies. Good habits allow individuals to achieve their goals (Mondragón *et al.*, 2017), while a person with poor study habits will not be able to learn properly. It is generally believed that a student learns effective study habits at school. Therefore, college students are assumed to already have effective study habits. But the environment of school and college is very different, and the need for effective study habits at the college level is higher compared to those required at school (Kumar, 2015).

Study habits enhance and facilitate learning skills; they are key steps to get the most out of learning and to achieve the best performance during academic training (Ríos-Falcón & Ramos-Enciso, 2013). A student with good study habits is able to study on their own, becoming autonomous. As indicated by Ozsoy *et al.* (2009), study habits are the amount and types of study routines that the student uses during a regular period that occurs in their environment. Routines include frequency of study sessions, review of material, self-assessment, rehearsal of learned material, and study in a supportive environment.

It is ordinary to use terms such as “study habits,” “study techniques,” “study methods,” or “learning strategies,” or simply the term “study.” Given all this diversity of concepts and to avoid confusion in terminology, we will speak of study habits as something general, which encompasses both techniques and strategies or study methods (Capdevila & Bellmunt, 2016).

Study skills, study habits, study attitudes, and study motivation play a fundamental role in determining the academic performance of students (Credé & Kuncel, 2008). Some authors have included metacognitive strategies to explain academic performance. Metacognitive strategies or metacognitive control skills consist of mental operations to achieve cognitive goals. The literature focuses on four metacognitive skills: prediction, planning, monitoring, and evaluation (Ozsoy *et al.*, 2009). Study skills are defined as the abilities of students to manage time and other resources to complete an academic task successfully. Finally, study habits and attitudes have been one of the main elements that explain school performance.

a) Some Scales that Measure Study Habits

Study Habits and Techniques Questionnaire (Álvarez & Fernández, 2015)

One of the preferred classifications of study habits is that of Álvarez & Fernández (2015), in which study habits are classified in three ways: with study habits, with poor habits, and without habits. The study habits and techniques questionnaire (SHTQ) has been chosen in several studies for being quick to administer and for permitting adjustment to the needs of the investigations. It has been applied in primary education (Aluja & Blanch, 2004), compulsory secondary (Capdevila & Bellmunt, 2016), and at university level (Enríquez, 2013).

In the methodology, the aspects that directly or indirectly affect the study task are evaluated. The appreciated aspects refer to three general areas: physical and environmental conditions, planning and structuring of time, and knowledge of the basic techniques. These aspects have been broken down into seven scales that make up the instrument: (a) general attitude toward study, which includes everything that refers to the predisposition, interest, and motivation toward the study; (b) place of study, which refers to the physical location that can contribute to greater concentration and performance; (c) physical condition of the students, which refers to situations in their organism that allow for good study performance; (d) the work plan, which includes everything that refers to a good planning and structuring of the time that will be devoted to study, taking into account the number of subjects and their difficulty; (e) study techniques, which offer guidelines on how to study and collect different steps that must be followed for the study of a topic or lesson; (f) exams and exercises, which include the guidelines that should be followed when these are carried out; and (g) works that include the aspects that must be taken into account to do a job (Álvarez & Fernández, 2015).

Pozar Study Habits Inventory

Fernández Pozar’s inventory of study habits (Fernández Pozar, 2014) has been widely used in many areas. Among the studies employing this inventory are a study of compulsory secondary education in students with attention deficit disorder with or without hyperactivity (Iglesias García *et al.*, 2016); a study in university careers with higher education students in physiotherapy (Torres Narváez *et al.*, 2009a, 2009b), mechanical engineering (Bayona & Ricon, 2017), and public accounting in Colombia (Quintana Arevalo *et al.*, 2017); and studies in Peru within faculties of engineering, ecotourism, and education (Ríos-Falcón & Ramos-Enciso, 2013) and within social sciences, engineering, and biomedical sciences (Cárdenas *et al.*, 2018). At the university level, a comparison has been made in three different institutions (Martínez Aguilar *et al.*, 2014) and among students studying for an administration degree in Mexico (Mondragón *et al.*, 2017).

The study habits inventory (SHI) is a test developed with the purpose of detecting to what extent the student knows how to study and in what aspects they are failing, so that the educator has elements that help him or her guide the students in the acquisition of habits. The results of these habits are classified as poor, bad, fair, good, and very good. The purposes of the SHI are to diagnose the nature of the habits, attitudes, or conditions with which the student faces his or her specific study task. The result is to make a prediction about the consequences of the influence of these habits, regardless of the incidence of other variables, and to act based on the diagnosis to modify defective habits or favor the acquisition and increase of those habits considered beneficial (Fernández Pozar, 2014).

The study habits inventory consists of 90 elements distributed as follows: (a) environmental conditions of the student, where personal conditions, physical conditions, and academic behavior are integrated; (b) study planning, which includes the schedules of all the activities and the organization of the materials and elements necessary for the study; (c) use of materials, which includes the management of books, reading, and preparation of summaries; (d) assimilation of contents to determine the degree of memorization and personalization that refers to personal and team work; and (e) sincerity, which considers issues of responsibility, solidarity, and punctuality (Fernández Pozar, 2014).

Palsane and Sharma Habits Inventory

The Palsane and Sharma habits inventory has been applied frequently to college students from India (Illahi Bhat & Khandai, 2016), in dentistry (Gilavand, 2019), and especially in medical sciences, in places like London (Trockels *et al.*, 2019) and in the Middle East, such as in Iran. The Palsane and Sharma study habits inventory consists of eight areas: (a) time division, (b) physical fitness, (c) reading ability, (d) observing, (e) learning motivation, (f) memory, (g) exams, and (h) well-being. It consists of 45 elements (Rezaie Looyeh *et al.*, 2017).

Other Classifications

In other cases, inventories of study habits and motivation have been modified, making use of the instruments used by other authors, including the Francisco Pozar inventory (Hernández *et al.*, 2012). These inventories have broken down habits regarding (a) interest in studying, (b) organization and planning for study, (c) attention and effort in class, (d) memorization, (e) comprehension of reading, (f) studying at home, (g) having controls for exams, and (h) intrinsic motivation for learning.

In other classifications, habits are indicated as bad, good, or excellent (Torshizi *et al.*, 2013). However, other scales have been associated with the success or failure of studies, as indicated by Escalante *et al.* (2008), who listed these factors associated with study habits: hygiene strategies, which allow for maintaining and promoting health, both physical and mental; material conditions, where all the resources and materials necessary to address the subject content are considered, in addition to considering the physical space and its characteristics; study strategies, which is the form of study that the person adopts to acquire knowledge (creating the study habit integrates the will, motivation, and psychological isolation); and study capacity, which includes all the mental actions to improve learning, including observation, association, and synthesis.

Although many of the topics that study habits address are similar, many variants have been generated in which the scales and aspects are grouped differently. In one study by Nonis & Hudson (2010), a seven-point scale was assigned for initially two study habits: schedule activities on a regular basis and concentration capacity (ability to pay attention in class). Later, a third habit -access to notes- was integrated. Access to a good set of notes was critical and also the starting point when learning or studying outside of class.

Study habits have been associated with study attitudes, which were evaluated in Turkey through the administration of a survey of study habits and attitudes, organized with four subscales: work methods, avoid delay, teacher acceptance, and educational acceptance (Ozsoy *et al.*, 2009).

In another study by Castro *et al.* (2015), seven items were used to evaluate study habits: (a) environmental factors, (b) physical and emotional health, (c) study method, (d) organization of plans and schedules, (e) taking exams, (f) search for information, and (g) motivation for to learn.

Another type is Rao's study habits inventory, which consists of 40 items that cover the six dimensions of study habits: (a) planning, (b) effective reading habits, (c) noting the preparation and review, (d) motivation and interest, (e) concentration and clarity, and (f) academic neuroticism (Khan, 2016).

Another study (Montes, 2012) applied the Gasperin study habits test, which measures behaviors and displays linked to student work in light of its six subscales: independent study (11 items), reading skills (10 items), time management (10 items), concentration (5 items), place of study (4 items), and information processing skills (10 items).

The objective of this study was to investigate the different methodologies on study habits and their relationship with academic performance in a study case with agronomic students.

2. Methodology

The study habits and techniques questionnaire of Álvarez & Fernández (2015) was used to identify the study habits of 343 students (203 men and 140 women; average age 19.2 ± 2.8 years). The students were selected using non-probabilistic convenience sampling. Four groups of Texcoco campus, coursing the third year of agricultural high school, were evaluated ($n = 36$, $n = 37$, $n = 40$, and $n = 44$, by each group respectively). Two propaedeutic groups from the Unidad Regional Universitaria Sursureste (URUSSE) in Tabasco ($n = 19$ and $n = 40$); one propaedeutic group from the Centro Regional Universitario Peninsula de Yucatán (CRUPY) in Mérida ($n = 40$); and two groups from the Centro Regional Universitario de Oriente (CRUO) in Huatusco, Veracruz ($n = 42$ and $n = 45$) were selected. An Excel database was created, and the information was analyzed using the SAS program. The Descriptive statistics was applied to preparation of interpretation scales (SAS, 2017).

3. Results of Study Habits in Agronomy Students

In a previously published case study by Peña Escalona *et al.* (2021) in high school students of the Universidad Autónoma Chapingo (UACH), differences between scales were observed, and the correlation with respect to qualification was obtained. Among the scales, the lowest score was planning, which implies that students must organize their academic activities and plan the time they will dedicate to each subject and their rest periods to improve their academic performance.

Table 1. Average of the Scales of Study Habits in Upper Secondary Education Students of the Universidad Autónoma Chapingo

Variable	LUG	PLA	ATE	TEC	ACT	TRA
Average	60.6	34.0	73.0	68.3	77.3	57.7
Standard deviation	18.2	22.4	16.1	17.2	16.9	20.6
Coefficient of variation	30.0	66.0	22.1	25.2	21.9	35.7

LUG: Place of study. PLA: Planning. AT: Attention. TEC: Study techniques. ACT: General attitude. TRA: Work

Source: Peña Escalona *et al.* (2021).

The results showed great uniformity in two different periods and Table 2 shows the averages in a subsample of 68 students to whom the same instrument was used before and after the COVID-19 pandemic.

Table 2. Average of the Scales of Study Habits in Upper Secondary Education Students of the Universidad Autónoma Chapingo Before and After the COVID-19 Pandemic

	LUG		PLA		ATE		TEC		ACT		TRA	
	A	B	A	B	A	B	A	B	A	B	A	B
Median	62.5	62.5	25.0	37.5	72.7	72.7	69.2	69.2	80.0	80.0	60.0	60.0
Average	60.1	60.1	31.2	39.5	73.1	71.6	67.2	72.2	77.2	75.7	57.9	61.0
Standard deviation	19.5	21.5	25.3	24.6	12.3	15.7	16.9	17.3	16.7	17.3	20.3	22.9

LUG: Place of study. PLA: Planning. AT: Attention. TEC: Study techniques. ACT: General attitude. TRA: Work. A: After pandemic, B: Before pandemic.

Source: Own

Compared with the results obtained in the present study, other results of study habits in students from primary school resulted in scores less than 51% in the scales of environment, exams and exercises, study techniques, and practical activities. While the scales general attitude toward study and time planning obtain less than 61%, and in the scales referring to the physical condition of the student was obtained less than 33% (Aluja & Blanch, 2004). For high school students, the study habits observed were higher, since except for time planning (46.4%) the other scales were between 58% and 71%, and the highest value corresponded to the study environment with 85% (Capdevila & Bellmunt, 2016).

In the correlations between study habits and academic performance, a very low coefficient was observed in all cases without exceeding 28% (Table 3). In the study habits scales a highest correlation occurred between TEC and TRA.

In other studies, an important correlation has been observed between academic performance and the scales for general attitude, time planning, place of study, study techniques, and homework. This implies that, for example, the conditions regarding the place of study are positively related to academic performance, regardless of the study techniques that are applied or the attitude that one has toward study (Capdevila & Bellmunt, 2016). Some of the modifications in the study habits scale were those indicated by Sánchez *et al.* (2016), who from 86 items developed a nominal scale from 1 to 10, with which it is possible to numerically relate study habits and academic performance. Using this scale, the researchers found a 40% relationship between these two variables.

Table 3. Spearman Correlations Obtained Between the Scales of Study Habits in High School Students (Higher) and Propaedeutic (Lower)

		High school students (N = 157)							
		Age	score	LUG	PLA	ATE	TEC	ACT	TRA
propaedeutic (N = 186)	Age	1	-0.09 ^{ns}	-0.02 ^{ns}	-0.06 ^{ns}	-0.06 ^{ns}	-0.13 ^{ns}	-0.21*	-0.20*
	score	-0.21*	1	0.20*	0.14 ^{ns}	0.28**	0.18*	0.20*	0.26**
	LUG	-0.10 ^{ns}	0.22**	1	0.17*	0.19*	0.25**	0.38**	0.32**
	PLA	0.07 ^{ns}	0.12 ^{ns}	0.12 ^{ns}	1	0.21*	0.34**	0.36**	0.42**
	ATE	-0.02 ^{ns}	0.15*	0.23**	0.22**	1	0.35**	0.42**	0.29**
	TEC	0.05 ^{ns}	0.14 ^{ns}	0.13 ^{ns}	0.35**	0.38**	1	0.32**	0.45**
	ACT	0.03 ^{ns}	0.17*	0.22**	0.30**	0.33**	0.25**	1	0.42**
	TRA	-0.13 ^{ns}	0.12 ^{ns}	0.29**	0.31**	0.31**	0.49**	0.28**	1

LUG: Place of study. PLA: Planning. AT: Attention. TEC: Study techniques. ACT: General attitude. TRA: Work. **: Highly significant ($p < .01$), *: Significant ($p < .05$), ns: Not significant ($p > .05$). Above the diagonal high school correlations, below the diagonal correlations of the propaedeutic

Source: Own.

In other scales, positive correlations have been found among assertiveness, communication, general study methods and techniques, task performance, exam preparation, class notes, and study accompaniment, finding high correlations between communication and each of the dimensions of study habits (Cunza & Quinteros, 2015).

Contrary to the results of study habits observed before and after the COVID-19 pandemic, in which the values of study habits did not change, another trial shows advantages in the academic performance of students who used different virtual platforms (Sozzi, 2022). Some studies have found a positive relationship between study habits and academic performance.

A low level of habits generates the absence of skills and strategies for study and learning, with deficits in planning and organization and assimilation of content. The results of the research show the existence of a statistically significant relationship between the levels of study habits and the levels of academic performance of students who take algebra (Pineda & Alcántara, 2017). The academic performance presented by the students in many cases is poor, there is little interest, motivation and dedication to study, what is more, the academic performance decreases as they have greater difficulties in making truly important learning (Ríos-Falcón & Ramos-Enciso, 2013). Conversely, it has been indicated that academic performance has been improved through tutoring (Gonzales, 2022).

Some authors have showed concern about the results obtained from study habits (and the variables that comprise it), since higher education shows a clear deterioration which is related to the high rates of disapproval and desertion of the school. Given this, it is common to find propaedeutic or study methodology courses that in some way seek to establish in incoming students a series of habits considered important to face the demands of the university. However, it is assumed without further evidence that study habits largely explain student performance (Montes, 2012).

Low study habits (meeting the minimum level for approval) were found among students of the zootechnical agricultural engineer career of the Center for Professional Studies of the Superior Agricultural College of the State of Guerrero (Escalante *et al.*, 2008). A similar situation has been found in other countries such as Iran, where the average score of students' study habits was 45.07 (± 7.81) out of 90 (maximum score). In this study, 32.8% of students had poor study habits, 31.1% had study habits around average, 14.3% were good, and 21.8% had excellent study habits (Torshizi *et al.*, 2013). Another study showing low results in study habits in administration students (Mondragón *et al.*, 2017).

In this case study habits were not related to academic performance, because students attended school only to get good grades; they had no interest in learning to learn. Instead, they only memorized the information as requested by the teachers, as a result of participating in a traditional education. It is worrying when 60% of the students only sometimes clearly understand the content of what they study, and 43% only sometimes distinguish what is really asked of them, which shows that they do not have adequate study habits to be self-sufficient in learning. Most of the respondents had not carried out correct bibliographic searches, did not know how to discuss homework, and did not know the structure of scientific work (Castro *et al.*, 2015). However, a study carried out in Turkey (Ozsoy *et al.*, 2009) shows a high score in habits with a value of 60 to 70% of the score in all the scales evaluated.

Nonis & Hudson (2010) showed that scheduling had a negative relationship with academic achievement, implying that students who waited until the last minute to study performed better. Even if this is contrary to popular belief, waiting until the last minute can be an effective study strategy for some students and in certain courses. In summary, the results suggest that the amount of time spent studying influences academic performance modulated by a third variable, the study habits used by students (Nonis & Hudson, 2010). Another study, however, showed that, in general, students memorize a large amount of information to pass a subject, studying a day before the evaluations, and retaining the information for only a short time; thus they must return to study for subsequent exams. There is little experience in learning methodologies, especially in secondary education, which causes students to memorize knowledge through repetitive reading, preventing the achievement of meaningful learning (Sánchez *et al.*, 2016).

Results by Hernández *et al.* (2012) showed that students have problems with the organization and planning of study, memorization techniques, reading comprehension, studying at home, and the lack of strategies to increase motivation and self-esteem. In that study, 75% of management engineering students were found to have good study habits that allowed them to maintain control over the exams they had to face. This was true for a lower proportion of students from logistics and ICT careers. Overall, just over half of the boys surveyed said they only sometimes review material, study notes trying to figure out possible test questions, plan their time to prepare for their tests, and apply strategies for taking them. Motivation for reading is one of the main factors that improve academic performance (Chura, 2022).

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5. Conclusion

Study habits have been observed to depend on various factors that need to be taken into account in the analysis because the scales by themselves do not reflect a relationship with academic performance. A few studies have reported high correlations between study habits and academic performance, so they indicate that if students improve their habits, they will perform adequately, and their academic performance will be optimal. However, many other studies, including among agronomy students, have showed low correlations between these variables.

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