



## Self-management of learning in students of pharmaceutical services: results and proposal to promote academic autonomy

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### Abstract

Study habits involve autonomy and a student's decision on his own criteria to prepare himself by means of managing and prioritizing his time in an autonomous educational context. As part of the research carried out within the doctoral program in Educational Sciences, the objective is to characterize the state of self-management of learning in students of the Short Cycle Higher Education in Pharmaceutical Services of the Faculty of Nursing and Health Technology, University of Medical Sciences of Villa Clara, Cuba. The empirical method of document review was used (normative, curricular and methodological of the subject); the analytical-synthetic theoretical method was also taken into account. Among the main results, the following stand out: inequality in academic progress, need for additional support, need for differentiated pedagogical approaches, and diversification of teaching strategies, which allow students to manage their own learning. It is concluded that the reality manifests itself differently from what is expected in the proposed professional model, because students are not able to manage their own learning, since what they learn does not meet the objectives proposed in the subject Pharmaceutical Services.

**Keywords:** Academic autonomy; Self-management of learning; Students; Pharmaceutical services; Villa Clara

### 1. Introduction

The current educational modalities require different factors that favor the student's understanding from a purely cognitive point of view, seeking to lead and engage him/her in the elaboration of knowledge (Bonilla *et al.*, 2014), through active participation and the development of his/her cognitive independence (Calcines *et al.*, 2017).

Managing one's own learning, involves a complex process (Valiente *et al.*, 2020) in which factors associated with internal (personal, family and economic) and external (institutional and academic) aspects intervene, influencing students' lives (Núñez *et al.*, 2021a).

Self-management of learning is related to other concepts investigated, such as: directed learning, self-directed learning, self-developed learning, self-regulated learning, self-management of knowledge, autonomous learning, among others

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(Balbás *et al.*, 2011; Calcines *et al.*, 2017; Azpilicueta, 2020), which intend independence, responsibility and motivation to learn and prepare (Barría *et al.*, 2017).

The educational model of the Short Cycle Higher Education in Pharmaceutical Services, as proposed by the Ministry of Higher Education, implies a new concept of education and its implementation; in addition, a different way of approaching science by students, which poses new challenges for teachers and students (MHE, 2018). The review and methodological analysis of the study plan, training documents, development of independent work of students and academic results, carried out by the authors of the research, from their critical position have been able to verify, that for the development of the teaching - learning process of the subject Pharmaceutical Services:

The student of the Short Cycle Higher Education in Pharmaceutical Service manifests deficiencies in independence to manage his learning, which prevents him from successfully performing various tasks and responding to complex demands. This hinders the development of their competencies and affects their future care work. The development of independent work reveals a lack of quality in the deepening of knowledge in the different forms of teaching, the revision of the bibliography made by the students is insufficient, and what they learn from it does not satisfy the proposed objectives.

Therefore, it is important to deepen the state of independence in self-management of learning by means of scientific methods, hence, the objective was to characterize the state of self-management of learning in students of the Short Cycle Higher Education in Pharmaceutical Services of the Faculty of Nursing and Health Technology, University of Medical Sciences of Villa Clara, Cuba.

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## 2. Material and methods

### 2.1. Object of study and methods used

The research approached the object of study from a dialectical-materialistic viewpoint due to its complexity and richness. As a logic of the process, we proceeded according to the requirements of the qualitative and quantitative methodology, from the foundation, ordering, interpretation, analysis and processing of the information.

The empirical method of document review was used, with a view to knowing the requirements of the process, the proposed professional model and the professional competences declared in the training, which refer to the students' self-management of learning. The normative, curricular and methodological documents of the subject Pharmaceutical Services as part of the study plan were also reviewed.

As for the analytical-synthetic theoretical method, it was used to specify the social requirement in relation to self-management of learning, as well as the part that the subject should assume. Two methods were used to evaluate the degree of independence in the self-management of learning in this subject.

The first method consisted of the application of a specific survey for this purpose. The second was based on the review of the refereed papers presented by students in three previous academic years as a requirement for completing the subject. The combination of these two evaluation strategies made it possible to obtain a comprehensive and comparative view of the degree of independence achieved by the students.

For the collection of information using both methods, criteria adapted from those used by Banda (2019) were applied. This facilitated the appropriate selection of the data collection instruments and to carry out the process of operationalization of variables. In turn, it made it possible to define specific problems and measure the variable under study in its most concrete, specific and observable aspects.

The procedure followed for the operationalization of variables was as follows:

- Determine the variable to be measured.
- To divide the variable to be measured into indicators, so that they are expressed in directly observable traits or characteristics.
- Establish the values to be taken by each of the indicators, which express the degree of their manifestation.

The indicators made it possible to prepare the survey questions, as well as to determine the aspects to be evaluated in the referative work.

For data processing, the bar graphs of descriptive statistics were used to arrive at conclusions; in addition, the theoretical methods of comparison and the analytical-synthetic method were applied. A comparison was also made between the demands of science education, for the achievement of the proposed professional model, the professional competences declared in the training, which refer to the students' self-management of learning, and the current state presented according to the results of the empirical instruments applied. For the processing of the information, descriptive statistics bar graphs, 2 x 2 contingency tables and percentage analysis will be used.

Finally, the Objective Regressive Regression (ORR) methodology was applied to interpret the categories obtained by the students in relation to the ability to access information and self-management of learning. This score was modeled as if it were an analysis in time, where each student is a unit of time, it was also determined which of the questions influenced more in the categorization of the total score.

## **2.2. The Objective Regressive Regression methodology (ORR)**

In a first step, dichotomous variables DS (Sawtooth), DI (Inverted Sawtooth) and NoC are created, where:

NoC: Number of base cases,

DS = 1, if NoC is odd; DI = 0, if NoC is even, when DI=1, DS=0 and vice versa.

Subsequently, the module corresponding to the Regression analysis of the statistical package SPSS version 19.0 (IBM Company) is executed, specifically the ENTER method where the predicted variable and the ERROR are obtained. Then the autocorrelograms of the ERROR variable are obtained, paying attention to the maximums of the significant partial autocorrelations PACF. The new variables are then calculated according to the significant Lag of the PACF. Finally, these regressed variables are included in the new regression in a process of successive approximations until a white noise in the regression errors is obtained. The ROR methodology, based on a combination of Dummy variables with ARIMA modeling, where only two Dummy variables are created and the trend of the series is created, requires few cases to be used and also allows the use of exogenous variables, with the possibility of modeling and forecasting in the short, medium and long term, depending on the exogenous variable.

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## **3. Results and Discussion**

### **3.1. Social Demands on Short Cycle Higher Education in Pharmaceutical Services**

From the systemic analysis of the educational process that is designed and executed, it is agreed that it is a system, where the origin of the primary problem does not arise in it, but outside (Álvarez, 1999).

However, it is not alien, the need to solve the primary problem to fulfill the social task, acts as an external factor shaping the system, as recognized by Leyva & Guerra (2014), in the genesis of the educational process and this in turn, is the motive that satisfies it.

Therefore, the primary problem reveals a deficiency in the individual at the social level, then the fundamental transformation that must occur, as a result of the functioning of the system, is the change of the educational state of that individual; therefore, the solution of the primary problem will generate an educational process, whose characteristics will be determined by those changes (Leyva & Guerra, 2014).

The secondary problem reveals, like the primary problem, a deficiency that refers specifically to the individual who is or was part of the process and whose educational state was transformed in order to solve the primary problem. Therefore, it is pointed out that the secondary problem appears due to deficiencies in the educational process itself and consequently it is internal to the system due to its origin. The need for a solution leads to the redesign or readjustment of the process, with a view to making the necessary transformations, so that it satisfies the social task (Leyva & Guerra, 2014).

Pharmaceutical services are redefined by PAHO (2017) and as: "the set of actions in the health system that seek to ensure comprehensive, integrated and continuous care of health needs and problems in the population, both individual and collective, where the medicine is an essential element, in such a way as to contribute to equitable access and rational use" (PAHO, 2017).

The Professional Model proposed for the Cuban Pharmaceutical Services responds to the demands of society, prepared to assume the role of health promoter, perform the technical procedures for dispensing, preparation and monitoring of the critical route of medicines, with great communication skills and perception to interrelate with patients, family members and members of the health team, with high humanistic values and moral and ideological principles governing the National Health System (MINSAP, 2018).

On the other hand, Resolution 47/22 in its Chapter I General aspects of the training of professionals, Section one of the fundamentals of the training process of professionals, allowed to state that the professional problems are conceived according to the current needs and perspectives of Cuban social development and refers to the fact that the graduate of these trainings should:

Achieve the effective integration of academic, labor and research activities, throughout the training process, and for which actions must be designed to favor motivation for the profession, critical analysis, independent reflection and teamwork, the ability to learn to learn, the acquisition of professional practical skills and others related to scientific work (Travieso *et al.*, 2018; MHE, 2022; Morales *et al.*, 2022).

In Annex 1 of Resolution No. 98/18, it states that "the characteristics of the curricula and programs of Short Cycle Higher Education, must have a flexibility that allows them to adapt to the changing needs of production and the use of modern teaching methods" (MHE, 2018; Ruiz, 2019).

The program of each subject is the document that reflects the most important characteristics and constitutes the systematic, hierarchical description of the general objectives to be achieved and the essential contents to be assimilated. They should promote flexibility in the curricula and adapt to the changing needs of the services, as well as attend to the differences of students coming from different sources of income.

The Teaching Process Plan for Short Cycle Higher Education in Pharmaceutical Services consists of a base curriculum, a specific curriculum and/or an optional curriculum. Among the subjects of the basic curriculum is the subject Pharmaceutical Services, which is taught in both periods of the first year. The design of the program responds to the interest of contributing to the formation of a student capable of performing in the different areas of community and hospital pharmaceutical services (FFI, 2012; MINSAP, 2018).

In its design, special emphasis has been placed on the didactic principle that promotes the link between theory and practice (MHE, 2022). This is materialized in the subject through direct attention and training in the services, with the objective of facilitating an active and conscious assimilation of the knowledge acquired in the health service itself (MINSAP, 2018).

In addition to dispensing medications, graduates are expected to perform functions that integrate them into the health team and encourage interaction with patients. This implies the need for a continuous process of independent improvement (Travieso *et al.*, 2018), supported by access to computer media connected to the Internet.

In summary, the social task in the training of the Pharmaceutical Services professional is focused on preparing students to play an integral role in primary health care. The pharmacist, in addition to providing services related to the availability and quality of pharmaceutical products, is expected to make an explicit commitment to patient wellness. This approach goes beyond the simple dispensing of medicines and implies the performance of actions that contribute to comprehensive, integrated and continuous care of the population's health needs and problems (Vera, 2020).

### **3.2. Characterization of Self-Management of Learning**

The program of the subject Pharmaceutical Services, requires different factors that allow, study habits that involve the student and show independence to make decisions, issue criteria and prepare by managing and prioritizing their time adapted to an autonomous educational context (Balbás *et al.*, 2011; Cabrera & Soto, 2020), this situation is integrated to the idea of learning to learn, responsible for the control of their learning (Villardón & Yániz, 2011; Ruiz, 2019). Self-management of learning requires the use of different cognitive, motivational, metacognitive, behavioral and affective processes that have as their purpose the construction of new knowledge or strengthening a previous one (Chaves, 2016; Valiente *et al.*, 2020; García, 2023).

However, the reality manifests itself differently because students fail to manage their own learning. To scientifically argue this claim, a study was conducted on two samples of students according to the stated methodology.

The first sample included 21 students distributed according to the first two academic years; 11 in the first year and ten in the second year, to whom a survey was applied, with the purpose of evaluating the degree of independence for self-management of learning in the context of the subject Pharmaceutical Services.

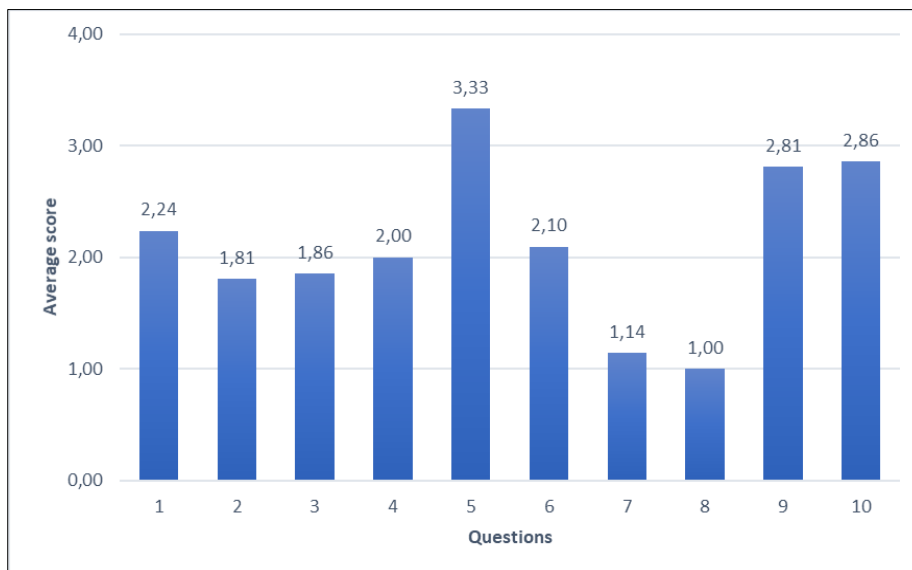
The survey questions were prepared based on the adaptation of the criteria of Banda (2019) stated in the previous paragraph. In the table 1 provides the results obtained from the application of these criteria prior to the elaboration of the survey questions.

**Table 1** Operationalization of the variable: independence for the self-management of learning

Variable measure	to	Indicators	Values
Independence for self-managed learning	for	1. Satisfaction with the information provided in class. 2. 2. Search for complementary information to that provided in class. 2.1. Carries out the search. 2.2. Consults the bibliography as a source of external information. 2.3. Use of events for the dissemination of scientific results as a source of external information. 3. Resolving doubts about content. 3.1. Takes action to clarify them. 3.2. Consults classmates or teacher to resolve them. 3.3. Consults external sources of information to resolve them.	- all the time -almost always - sometimes - rarely - never

Some of the indicators were matched to more than one question with the intention of changing the form of the question to ensure a better understanding by the students.

When answering the survey questions, each student reflected on and evaluated his or her personal situation, which made it possible to select the box that corresponded to him or her, according to the five response options: Y (if he or she always does it), HH (if it is almost always), OE (if it is sometimes), OV (if it is rarely) and N (if he or she never does it).



Source: self-made.

**Figure 1** The average score assigned to the 21 students according to their answers to the ten survey questions

Analysis of the survey results by question reveals certain trends that, as visualized in Figure 1, can be grouped into three ranges:

*Questions with low scores*

Questions 7 and 8 show the lowest scores, indicating that students may have difficulties in seeking additional information for learning, and in their view about events and seminars, as they do not conceive them as a source of learning for their professional training.

*Questions with moderate scores*

Questions 1, 2, 3, 4 and 6 have moderate scores, suggesting moderate affectation in the degree of independence in self-management of learning.

The attitude of the students with respect to question 2 regarding conformity with the information provided in the classes is striking, even when they know that they need to learn more. This directly justifies the results obtained in the rest of the questions located in this range.

*Questions with high scores*

Questions 5, 9 and 10 stand out with higher scores; indicating that these are probably the aspects that least hinder independence for self-management of learning. They are: they are not embarrassed to ask questions, they can use the internet, and the information they receive is not accepted uncritically. These areas can be considered strengths that could be used to achieve the self-management of learning under investigation.

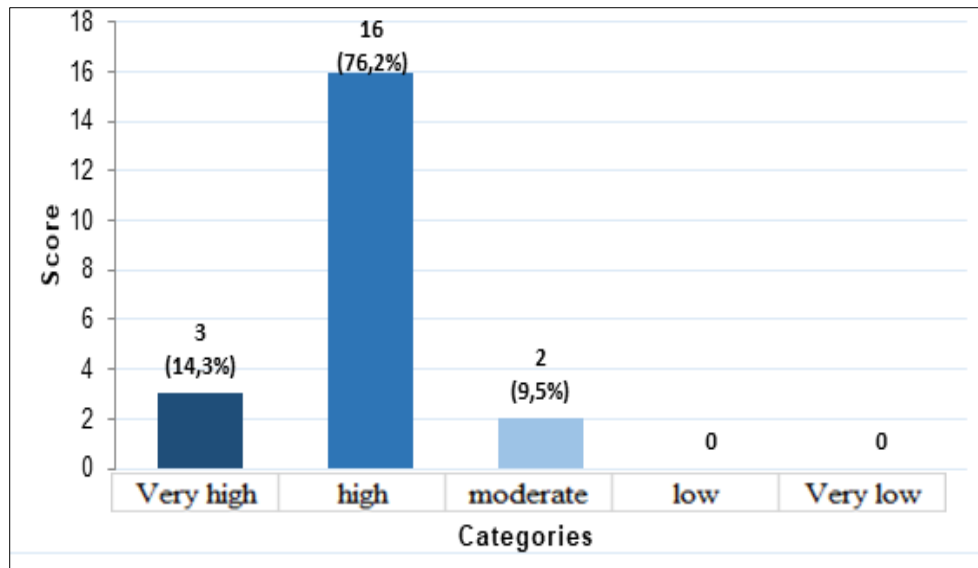
Overall, the analysis suggests that there are opportunities to improve self-management of learning in certain aspects, so it would be beneficial to deepen the analysis of the responses to understand the reasons behind the scores, and to develop specific strategies to strengthen the areas identified as weaker.

To perform the analysis per student, each response option was assigned a value in increasing order (1-5). The sum total facilitated the awarding of the categories presented in table 2.

**Table 2** Range of points according to the categories to be awarded to each student regarding independence for self-management of learning

<b>Evaluated characteristic</b>	
<b>Independence for self-management of learning</b>	
<b>Point range</b>	<b>Categories</b>
10-17	Very low
18-25	low
26-33	moderate
34-41	high
42-50	Very high

The results obtained are shown in figure 2.



Source: self-made

**Figure 2** Distribution of sample students by categories

In the very low category, there were three students (14.3%). The low category was the most represented, with 16 students (76.2%). The regular category was reached by two students (9.5%). None of the 21 students in the sample were in the high and very high categories.

The fact that 18 students out of 21 placed in the lowest categories suggests a marked lack of independence in self-management of learning. This deficiency has significant negative implications for the learning process (Travieso *et al.*, 2018; Ruiz, 2019; Leyva *et al.*, 2022), underscoring the need for specialized teacher intervention. Some of the consequences of this problem are presented below.

### 3.2.1. Inequality in academic progress

Students with very low levels of independence may face significant difficulties in learning, which can translate into uneven academic performance.

### 3.2.2. Need for additional support

Those with low and moderate levels may require specific interventions and additional support strategies to develop independence in self-management of learning.

### 3.2.3. Impact on participation in self-study activities

Students with low levels of independence may be less likely to engage in self-learning activities, limiting their ability to explore topics beyond the established curriculum.

### 3.2.4. Readiness for learning and professional life

A low level of independence in self-management of learning may affect students' ability to successfully meet future academic and professional challenges.

### 3.2.5. Need for differentiated pedagogical approaches

Educators may need to adjust their pedagogical methods to address the different needs of students in terms of self-management of learning.

### 3.2.6. Diversification of teaching strategies

Diversification of teaching strategies, including approaches that promote self-management and autonomy, may be beneficial in improving student independence.

### 3.3. Interpretation of the results of the survey by means of the mathematical model

In order to corroborate the results of the survey applied to the 21 students who were part of the sample, we started from the total points obtained by each student, according to the answer selected in the ten items or questions of the survey, which were given the corresponding value on the scale of (1-5), results shown in Table 3. The score obtained was modeled as if it were an analysis in time where each student is a unit of time, and it was also determined which of the questions had the greatest influence on the categorization of total learning.

**Table 3** Score obtained per student according to the response to the survey items, with respect to the ability to access information and self-management of learning

Students	Points for questions/items										Total
	I	II	III	IV	V	VI	VII	VIII	IX	X	
A	2	1	2	2	4	1	1	1	3	3	20
B	2	1	2	2	4	1	1	1	3	3	20
C	2	1	2	2	4	1	1	1	3	3	20
D	2	1	1	1	3	2	1	1	3	3	18
E	2	1	1	1	3	2	1	1	3	3	18
F	2	1	1	1	3	2	1	1	3	3	18
G	2	3	2	2	4	1	1	1	2	3	21
H	2	3	2	2	4	1	1	1	2	3	21
I	1	1	1	2	1	1	1	1	2	2	13
J	1	1	1	1	1	1	1	1	2	1	11
K	1	1	2	1	1	1	1	1	1	1	11
L	1	2	2	3	4	3	1	1	3	3	23
LL	1	2	2	2	3	3	2	1	3	3	22
M	3	2	2	2	4	3	1	1	3	3	24
N	3	2	2	2	4	3	1	1	3	3	24
Ñ	3	2	2	2	4	3	1	1	3	3	24
O	3	2	2	2	4	3	1	1	3	3	24
P	3	2	2	2	4	3	1	1	3	3	24
Q	3	2	2	2	4	3	1	1	3	3	24
R	4	3	3	4	3	3	3	1	4	4	32
S	4	4	3	4	4	3	1	1	4	4	32

The total score was taken to make a model that represented the survey and to corroborate which items were the most significant.

First, the total was modeled by means of the Objective Regressive Regression (ORR) methodology (Osés & Grau, 2011), where a model was obtained that explains 98.2 % of the VARIANCE, with an error of 4.45 (Table 4); these results are very similar to those obtained by other authors in previous years (Osés *et al.*, 2017; Osés *et al.*, 2018; Fimia *et al.*, 2023).



**Table 4** Results obtained with the ROR model

Summary of the modelc, d					
Model	R	R-squaredb	R-squared corrected	Standard error of estimation	Durbin-Watson
1	0.982a	0.965	0.959	4.450	0.756

- Predictor variables: NoC, DI, SD
- For regression through the origin (the model without an intersection term), R-squared measures the proportion of the variability of the dependent variable explained by regression through the origin. The above CANNOT be compared with R-squared for models that include an intersection.
- Dependent variable: Total
- Linear regression through the origin

Fisher's F was 155.6 significant at 100% (Table 5).

**Table 5** Model results with the application of ANOVA

ANOVA c, d						
Model		Sum of squares	gl	Quadratic mean	F	Sig.
1	Regression	9245.297	3	3081.766	155.597	0.000 <sup>a</sup>
	Residual	336.703	17	19.806		
	Total	9582.000 <sup>b</sup>	20			

- Predictor variables: NoC, DI, SD
- This total sum of squares has not been corrected for the constant because the constant is zero for regression through the origin.
- Dependent variable: Total
- Linear regression through the origin

The model in question can be seen in Table 6. The trend (NoC) is increasing, so we can affirm that learning tends to increase.

**Table 6** Results of the application of the model as a function of learning

Coefficients <sup>a, b</sup>						
Model		Unstandardized coefficients		Typified coefficients	t	Sig.
		B	Typical error	Beta		
1	DS	13.445	2.510	0.434	5.356	0.000
	DI	14.667	2.369	0.474	6.191	0.000
	NoC	0.621	0.173	0.365	3.586	0.002

- Dependent variable: Total
- Linear regression through the origin

Although the model is good, we went on to refine it, for this we decided to include all the items from I to X, and to see which final model was left, we used the STEPWISE method, or step by step so that statistically the best model would be selected. The final model was therefore obtained with 4 predictors and an explained variance of 100%, with an error of 0.64 smaller than the initial model (Table 7).

**Table 7** Final model with predictors, variance and error

Model summary <sup>f, g</sup>					
Model	R	R square <sup>b</sup>	R square corrected	Standard error of estimation	Durbin-Watson
1	0.993 <sup>a</sup>	0.987	0.986	2.578	
2	0.999 <sup>c</sup>	0.998	0.997	1.146	
3	1.000 <sup>d</sup>	0.999	0.999	0.720	
4	1.000 <sup>e</sup>	0.999	0.999	0.640	2.314

- Predictor variables: X
- For regression through the origin (the model without an intersection term), R-squared measures the proportion of the variability of the dependent variable explained by regression through the origin. The above CANNOT be compared to R-squared for models that include an intersection.
- Predictor variables: X, NoC
- Predictor variables: X, NoC, III
- Predictor variables: X, NoC, III, DS
- Dependent variable: Total
- Linear regression through the origin

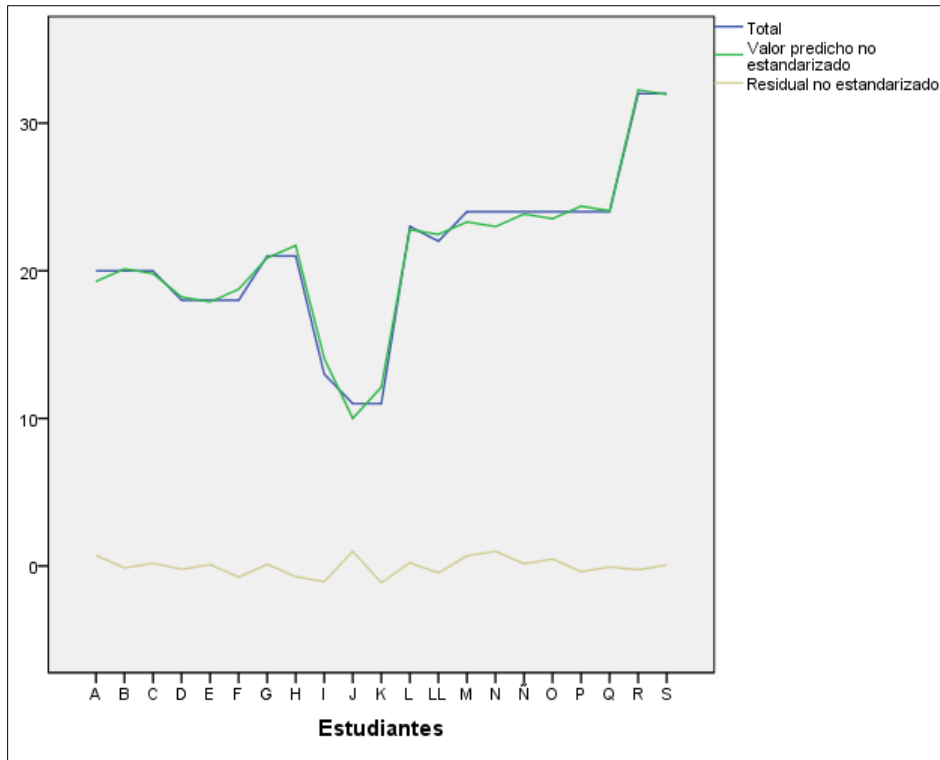
The final model was the ROR and the best set of items in terms of importance were X and III, as the best set to model the total survey, again the trend of learning is increasing, at 0.3.

**Table 8** Final result of the ROR model in relation to the items included in the study

Coefficients <sup>a, b</sup>						
Model		Unstandardized coefficients		Typified coefficients	t	Sig.
		B	Typical error	Beta		
1	DS	-.583	0.282	-.019	-2.066	0.054
	NoC	.266	0.029	0.153	9.254	.000
	III	2.437	0.358	0.217	6.816	.000
	X	4.906	0.192	0.662	25.492	.000

- Dependent variable: Total
- Linear regression through the origin

Finally, the graph of the total score per student and the predicted value together with its error is presented (Figure 3). It can be appreciated the great coincidence between the values, we can also see that student J is the one in which the model makes the greatest error, although all the errors are very small, very close to 0.



**Figure 3** Total scores, predicted value and error of the survey model

The Objective Regressive Regression (ORR) model applied to the total of the points obtained allowed us to have an assessment of the survey trend, which is positive, and at the same time to measure the impact of the variability of the data of the sawtooth variable (SD), which has a negative coefficient, indicating that this variability in the ability to access knowledge tends to decrease according to the results of the survey.

In general, understanding the distribution of independence in self-managed learning provides valuable information for personalizing instruction, identifying areas for improvement, and developing effective strategies to support each student's learning (Núñez *et al.*, 2021a, b).

### 3.4. Results of the review of the students' referative papers

**Table 9** Operationalization of the variable: independence for self-management of learning

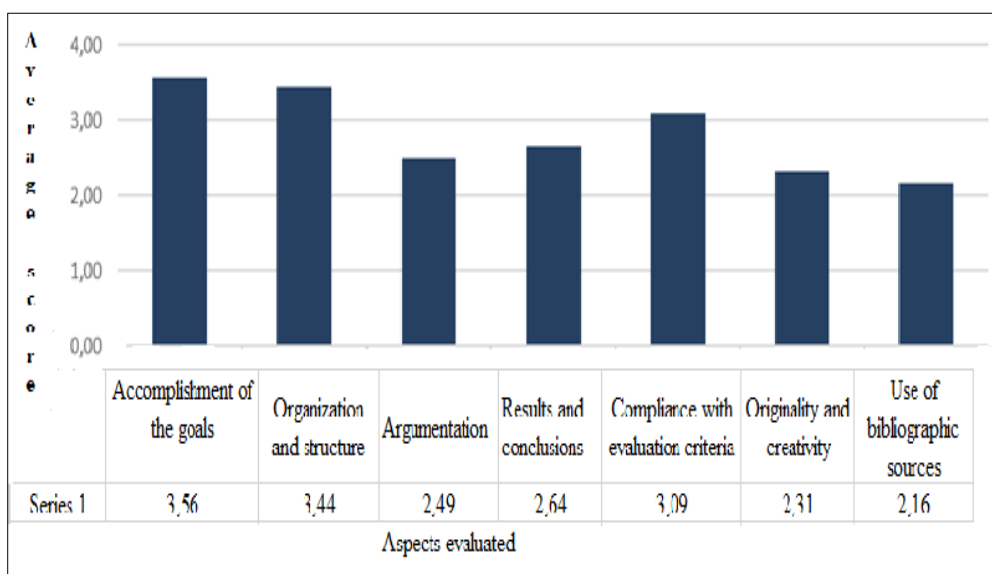
Variable to measure	Indicators	Values
Independence for self-management of learning	<ol style="list-style-type: none"> <li>1. Fulfillment of the objectives set, showing initiative and self-direction in the achievement of established goals.</li> <li>2. Organization and structure of the report, evidencing the ability to plan and manage time independently.</li> <li>3. Adequacy of argumentation, reflecting the ability to develop ideas and defend one's own points of view.</li> <li>4. Relevance of findings and conclusions, showing the ability to make informed and critical decisions.</li> <li>5. Compliance with evaluation criteria, indicating the ability to follow instructions and established criteria in an autonomous manner.</li> <li>6. Originality and creativity, highlighting the ability to generate innovative ideas and novel approaches.</li> <li>7. Use of bibliographic sources, demonstrating the autonomy to search, select and use academic resources in an effective and responsible manner.</li> </ol>	Excellent (5) Good (4) Fair (3) Poor (2)

For the second study, a sample of 45 referative works elaborated independently by students was chosen as part of the requirements to culminate the subject over three consecutive academic years (2019-2020, 2020-2021 and 2021-2022).

To determine the aspects to be evaluated, the ways in which the referative works elaborated by the students reflected their degree of independence for self-management of learning were analyzed, according to criteria adapted from Banda (2019) described in epigraph 1.1.

Table 9 reflects the results of the operationalization that led to the definition of the aspects considered.

The criterion related to the use of bibliographic sources was the most affected (Figure 4), since it was detected, that students include few sources and some of them are not pertinent (Hernández *et al.*, 2020). It is followed in importance by originality and creativity (Figure 4), an aspect in which a lack of interest in the work and the learning process is observed, which is reflected in the absence of contributions beyond what was received in class. The difficulties in argumentation are centered on the fact that students tend to extract or copy in a literal and inappropriate manner the most relevant ideas, resulting in work that is poorly documented and lacks depth (Llanga *et al.*, 2019; Azpilicueta, 2020; Chang *et al.*, 2023).



Source: self-made.

**Figure 4** Average score assigned to the aspects evaluated in the reference works prepared by the students

The results and conclusions turned out to be an affected aspect in referative work in terms of three evidences detected during the evaluation (Figure 3). First, it was observed that the conclusions were poorly substantiated or imprecise; students may have had difficulties in interpreting the data collected and analyzing them. Second, the coherence and relevance of the conclusions were affected, which could be due to a lack of connection between the results obtained and the research questions initially posed. Thirdly, there was a lack of depth in the analysis of the results and the absence of a critical discussion of their meaning (Reyes *et al.*, 2023; Umpierre *et al.*, 2023).

#### 4. Conclusion

From the characterization of the state of independence for self-management of learning in students of the Short Cycle Higher Education in Pharmaceutical Services of the Faculty of Nursing and Health Technology of the University of Medical Sciences of Villa Clara, it is concluded that the reality is manifested differently from what is expected in the proposed professional model, because students do not manage to manage their own learning, since what they learn does not meet the objectives proposed in the subject Pharmaceutical Services. Understanding the distribution of independence in self-management of learning provides valuable information to personalize teaching, identify areas for improvement and develop effective strategies to support each student's learning. Diversification of teaching strategies, including approaches that promote self-management and autonomy, can be beneficial in improving student independence.

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## Compliance with ethical standards

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No conflict of interest exists among the Authors.

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