

Dynamics of academic fraud in virtual undergraduate programs: an analysis in UNAD - Colombia

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Abstract

Academic fraud in virtual programs has been widely evidenced in multiple studies, due to the students' ease of finding information on the internet and presenting it as if it were their own. In the present study, a pilot test is designed and developed as an approach to academic fraud behavior. To carry out the test, a survey was adjusted, considering the form designed, applied, and validated by McCabe for the analysis of fraud in universities. The type of sampling applied in this study is non-probabilistic sampling, where a group of voluntary subjects was used. The sample consisted of 52 undergraduate students at the School of Basic Sciences, Technology and Engineering of the *Universidad Nacional Abierta y a Distancia* (UNAD). As a result, it is obtained that one of the factors that most influences the occurrence of the phenomenon of academic fraud is the unawareness and the incorrect interpretation of the norms. Effective ways for academic integrity policies have been done in teaching courses for university life, student regulations, student counseling, teacher awareness's, events organized by the school and the institution's website. In conclusion, we can show that the scarce information of the students, the non-application of punishments and the perception by the students that fraud is not a problem, are the elements that cause them to incur this fault in a repetitive manner. Additionally, this study will assess the effectiveness of current regulations as a preventive measure of the occurrence of academic fraud.

Keywords: Computer aided instruction, Engineering education, Mentoring, Plagiarism.

I. INTRODUCTION

Academic fraud is a phenomenon that has been studied for several years because a student who commits fraud can be an ill-prepared professional and possibly someone who will be willing to break the rules to make some profit. Due to this and mediated by the risk factors of fraud of university students in virtual mode, it is necessary to propose strategies that help prevent this phenomenon rooted in our academic communities. In this sense, it is proposed the design and application of a pilot test to analyze the dynamics of academic fraud in virtual programs taking as a reference to the undergraduate academic

programs of the School of Basic Sciences Technology and Engineering (ECBTI) of the UNAD. The research results will allow to validate the measuring instrument and the way in which the data are collected and analyzed in such a way that the quality of the research can be improved.

In recent years, the increasing complexity of the demand for personnel which requires more training every day, increasing competitiveness among students in higher education programs since, to access better academic and professional opportunities, it is not enough to have a university degree. Additionally, it is necessary for the student to stand out with their academic achievements from the undergraduate level, making it necessary for adequate regulation and control by higher education institutions in their learning processes [1].

To address the concept of Academic Fraud, we can begin by considering those behaviors recognized as fraudulent in the environment and particularly in the university environment. There are multiple investigations addressing this type of behavior [2]-[11]. Some of these behaviors consist of taking ideas or words written by others without directly recognizing having done so, presenting as their own a work in part or totally without being the author of said work, buying and selling works, copying in an exam or test, copying, and pasting from the Internet without reference, impersonation in the presentation of exams, use of aids not allowed in exams, among others. On the other hand, technological advances, and easy access to all kinds of internet content through different devices, has made it easy for students to copy information from the internet without properly referencing the sources. This affects the quality of the teaching and learning processes since a student who copies is a student who does not acquire the necessary skills to be a good professional, with which the institution loses the student and society [12].

However, although universities have rules that penalize this type of behavior, the results of these studies show that these rules are not a persuasive force for the prevention of this problem [7]. In addition, the studies found have focused on academic programs offered in the face-to-face modality and none of these studies addresses the problem considering the very complexity of virtual academic programs. Because of this, it seeks to address the problem of academic fraud in the virtual programs offered by the UNAD and will begin with a pilot test

that allows to know the dynamics of academic fraud in virtual university programs and identify the main variables that affect this phenomenon. The results of this study allow us to know the phenomenon and determine a possible roadmap to address the problem, in such a way that its occurrence and impact are minimized.

Although in the literature there are various definitions of "fraud", as well as studies on the subject, which address it from different disciplines. For the present research work, we start from the definition of "fraud" as an act of bad faith, which seeks to deceive someone to obtain an advantage or an undue profit [13]. While "academic fraud" is defined as the event that occurs, when a person misappropriated the knowledge, ideas or discoveries made by someone else, with the aim of obtaining a personal benefit [14].

Academic fraud is a dishonest practice that can trigger bad practices in professionals. Hence the importance of generating strategies to mitigate their presence in the country's higher education institutions. Although studies have been conducted on academic fraud since 1950, these studies have focused only on the description of the phenomenon in face-to-face training. To address the problem, a pilot test was designed and applied, taking as a reference the virtual undergraduate academic programs of the School of Basic Sciences, Technology and Engineering (ECBTI), of the UNAD.

In this test, a survey was designed and applied to students who responded to the invitation to participate anonymously. This allowed to know the current state of the problem in these programs and identify the most important variables that influence their dynamics. The results of this pilot test allow us to identify some strategies and methodologies that must be followed to mitigate the occurrence of the phenomenon under study.

This allowed to validate the measuring instrument, and the way in which the data are collected and analyzed, so that the quality of the research can be improved in the next phase. These results will allow the development of the next phases of research to universities that offer virtual programs and know the dynamics of fraud in these programs as a starting point to attack this problem.

II. PROBLEM SITUATION

This section will provide a description of the different definitions of plagiarism, an approach to the methodological construction of sampling as a tool for measuring surveys and a methodological process that describes in detail the elements necessary for the analysis of the problematic situation.

Plagiarism Definition: Academic plagiarism defined as "giving the character of original to a work that is not" [3] is undoubtedly a problem that has been presented in recent years in higher education institutions [9], despite the controls through the anti-plagiarism software within which they are found:

Ephorus®, Plagium®, Approbo®, PlagScan®, Compilatio® or Turnitin®, this bad habit continues to be incurred by students, in which they present activities, tasks, images, videos among

others, passing them off as their own and putting in between said the good name of the universities [15], especially when it comes to documents that will be used as research articles before the academic community [16]. However, the definition has varied over time, therefore a set of definitions of plagiarism is presented in Table 1.

Table 1. Plagiarism definitions.

Author	Definition
Gómez de Liaño [3]	Give the character of original to a work that is not.
Diekhoff, G. LaBeff, E., Clark, R., Williams, L., Francis, B., Haines, v. [4]	Fraud is influenced by several characteristics of individuals including age, gender, grade point average, peer influence, institutions' academic integrity programs and policies, and the perceived severity of penalties for cheating.
Mavisakalyan, and Meinecke. [5]	It is seen as the absence of mechanisms to control corruption and integrity in universities, making it a major challenge in addressing the highest levels of corruption.
Díaz González and Carmona [7]	Academic fraud is a very frequent dishonest practice, widespread in the university environment, in which the values and the sense of responsibility with the academy and its professional training are affected, which will be reflected in a possible malpractice.
Díaz G. [6]	Distortions in the definition of authorship, which include both omissions and undeserved mentions; the non-declaration of conflicts of interest, both by authors and reviewers; redundant, fractional, or inflated publications; the violation of confidentiality, among others.
Gwin, H. [17]	Manufacture, falsification or plagiarism in the proposal, development, or review of research or in the reporting of research results
Roquet, G. [8]	Derived from the Latin <i>fraus</i> : means bad faith or deception, defined as the act to circumvent, or circumvent the rights of a person or a community. From the Greek <i>plágios</i> , means oblique or deceptive. From the Latin <i>plagiare</i> , it means to copy or imitate a work of others, especially literary or artistic, presenting it as their own, in America it is synonymous with kidnapping. The concept popularly receives other synonymous names such as: shooting, hacking, copying, cloning, cyberplagiar, among others.

III. METHOD

From this, cyberplagia is entering higher education students minimizing ontological culture, as well as a way out of an academic commitment to the belief that the work will not be reviewed [16]. That is why it is important to train students in ethical values and social responsibility and, especially in the study through the virtual modality, the competences development is relevant as it is the use of the normativity used in the exercise of academic production in different semesters and with it the reputation of the student learning to perform a paraphrase exercise in a correct way given that the dynamics and versatility of the virtual study modality demands it.

A. Non-probabilistic sampling

As this is a pilot study, the sample size should not be large, but it should be representative in such a way that the results of the study provide relevant information on how decision-making should be guided in relation to the study of the problem.

In this case it is appropriate to apply a non-probabilistic type of sampling. In this type of sampling, the samples are called directed or intentional samples and the choice of sample size does not respond to probability techniques but to conditions such as access, the availability of individuals, convenience, which does not ensure the full representation of the population under study also all subjects have the same probability of being chosen for the study. Due to the above, these samples are considered as lax and lacking theoretical bases. However, this type of sampling is appropriate in cases such as when you want to carry out a case study, of very different populations or studies targeting very specific populations and groups, where it is necessary to make careful and controlled choice of the participants in the study [18], [19].

B. Methodological process

This research is based on previous theoretical and empirical results to analyze the dynamics of academic fraud in the virtual university programs of the UNAD. In this case, for the pilot test, a thirty-five-question survey was designed, based on the questionnaire "Academic Integrity Rutgers University Student Survey" developed by McCabe [20], applied and tested for three years in a row, where the survey was applied to more than 80,000 students and 12,000 professors in the United States and Canada. In this case, as in the case of reference, the surveys were conducted through the web. The questionnaire was applied to students of the School of Basic Sciences, Technology and Engineering ECBTI of the UNAD, from different regions of the country. Students were contacted by different means such as e-mails, social networks and through other students (See Appendix 1).

The methodology with which this research was developed is as follows: a) Literature review on the most important variables that end the dynamics of academic fraud in higher education institutions, and especially in the programs offered under the virtual modality, and on the techniques of analysis of the problem of fraud. b) application of anonymous surveys as a tool

to obtain real information on the phenomenon of fraud in virtual university programs. The survey is adapted and then applied to students. The questionnaire was developed using an online tool to create forms. c) For the selection of the sample the following procedure was followed: students from different careers and semesters were invited to participate Those students who agreed to participate in the study were sent by different means the document "Informed Consent", which describes the conditions under which the study is carried out, their purposes and the treatment that would be given to the information provided by them through the instrument. Students from different regions of the country were considered, considering the national character of the UNAD. And d) The information provided by the participants in the study was analyzed through different graphs and descriptive statistics of the results obtained from the application of the survey.

IV. RESULTS

As results, a procedure for interpreting the applied survey is followed. Relationship between the answers to questions 1 and 2: Question 1 asked "How would you rate, the severity of the penalties for cheating in academic activities, in the UNAD?", and the following options were given; to. Very low, b. Low, c. Medium, d. High and e. Very high. While in question 2, it asked "How would you rate your degree of knowledge regarding the university's policies regarding cheating in academic activities?", with the following answer options; to. Very low, b. Low, c. Medium, d. High and e. Very high.

The aim of comparing the answers of these two questions is to identify if the students who answered in the first question "very high" or "very low", really have criteria to give this type of answers, this criterion can be supported by question 2 that shows what degree of knowledge the student has about the phenomenon.

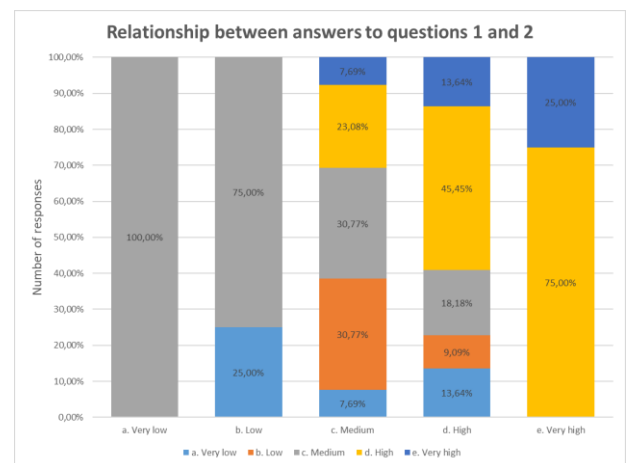


Fig. 1. Relationship between answers to questions 1 and 2.

Figure 1 shows that, of the people who opined in the second question that the degree of knowledge regarding the university's policies regarding cheating in academic activities is very low, 100% had stated in question 1 that the severity of

the penalties for this type of behavior is very low. This shows that, if you do not have knowledge about this type of policy, you cannot issue a concept regarding the severity of the sanctions defined for this type of behavior.

Similarly, of the total number of students who reported having a very high knowledge, with respect to the university's policies regarding cheating in academic activities, 75% say that the degree of severity of the sanctions is High, while 25% say that the severity of the sanctions is "Very high". This indicates that, while there are policies, and these are recognized as severe by students who know it, those who are unaware of its existence, has a belief that these behaviors are little punished. This gives an indication that one of the factors that influences the occurrence of the phenomenon is ignorance of the rules.

Relationship between the answers to questions 7 and 8: Question 7 asked that, if they had replied

"Yes" in question 6; "Have you received information about academic integrity or fraud policies at UNAD?" you ask "where and how much did you receive the information about these policies?" The answer options in the case of question 7 are a. Induction programs to university life, b. University website, c. Student regulations, d. Student Counseling, e. Other student(s), f. School (e.g., discussed in class, course programs, or career contours), g. Teachers and h. Other (please specify). On the other hand, in question 8, he asked; "With respect to information received about academic integrity or fraud policies at UNAD? Consider that: a. He learned little, b. He learned something, c. He learned a lot."

The objective of comparing the answers to these two questions is to identify the effective means of dissemination.

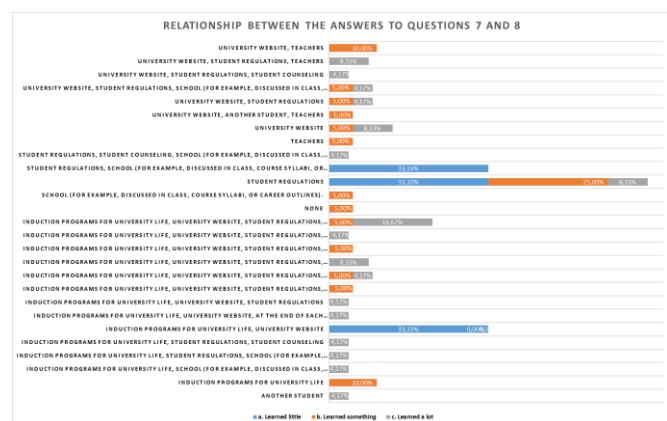


Fig. 2. Relationship between the answers to questions 7 and 8.

Figure 2 shows that, of the students who expressed in question 8, they have learned a lot about the policies around fraud and academic integrity of the UNAD: 16.67% found out through programs of induction to university life, University website, Student Regulations, Student Counseling, and Professors; 8.33% through College Life Induction Programs, University Website, Student Rules, School; 8.33% through student regulations; 8.33% through the university's website; 8.33% through the university's website, student regulations and professors. From the above, it is concluded that the effective

means for the dissemination of the policies of fraud and academic integrity of the UNAD have been the programs of induction to the university life, the student regulation, student counseling, the professors, events organized by the school and the website of the university.

Relationship between the answers to questions 9, 10, 11 and 12: Comparing the answers given by students in questions 9, 10, 11 and 12, allows to identify which are the policies most discussed by the tutors of the UNAD regarding fraud and academic integrity. Thus, question 9 is "In the last year, how often, on average, his tutors discussed policies related to Plagiarism, a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often"; question 10 is "in the last year, how often, on average, your tutors discussed policies related to Guidelines on Group or Collaborative Work: a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often"; question 11 is "In the last year, how often, on average, your tutors discussed policies related to Citation/appropriate references from bibliographic sources: a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often"; and question 12 is "In the last year, how often, on average, your tutors discussed policies related to falsification/manufacturing of laboratory and research data: a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often."

Frequently, e. Very often"; and question 12 is "In the last year, how often, on average, your tutors discussed policies related to falsification/manufacturing of laboratory and research data: a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often."

From Figure 3, 51% of respondents report that their tutors told them "Frequently" about policies related to citation, and appropriate references from bibliographic sources; 46.81% say that "Frequently", the tutors told them about the guidelines on group or collaborative work; 40.43% say that "Frequently" the tutors told them about policies related to plagiarism. The above indicates that these three topics are the most discussed by tutors with students.

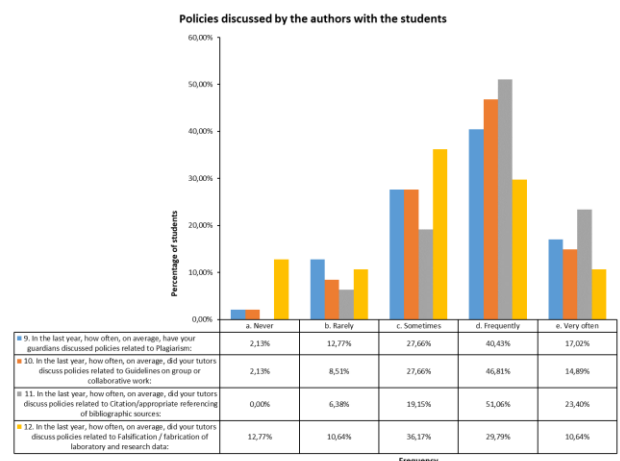


Fig. 3. Policies discussed by the authors with the students.

In addition, 17% say that "Very often" the tutors told them about policies related to plagiarism, 14.89% that "Very often" their tutors told them about "Guidelines on group or collaborative work", and finally that, 23.4% say that "Very often" the tutors told them about "Policies related to citation, appropriate references from bibliographic sources.

Relationship between the answers to questions 16 and 14: Comparing the answers given by students to questions 16 and 14, will allow to know, of which students who believe that "cheating during tests or exams" is a phenomenon that occurs in the UNAD how often has witnessed the occurrence of the phenomenon. In question 16, he asked "How often have you seen another student cheat during a test or exam at UNAD?; a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often." While in question 14, he asked, "How often do you think the phenomenon of "Cheating during tests or examinations" occurs in the UNAD? a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often".

From Figure 4 we have that of the students who state that they believe that "Very often" the phenomenon of "cheating during the tests or exams in the UNAD" occurs, 20% say that they have witnessed "sometimes" the occurrence of the phenomenon. Similarly, of the students who say they believe that "Never" the phenomenon occurs, 80% say that they have "never" witnessed the occurrence of the phenomenon of "cheating during tests or exams".

Relationship between the answers to questions 13, 14 and 15: Question 13 asked "How often do you think "Plagiarism of jobs" occurs in the UNAD?; a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often"; in question 14 "How often do you think the phenomenon of "Cheating during tests or examinations" occurs in the UNAD?; a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often"; and finally, in question 15.

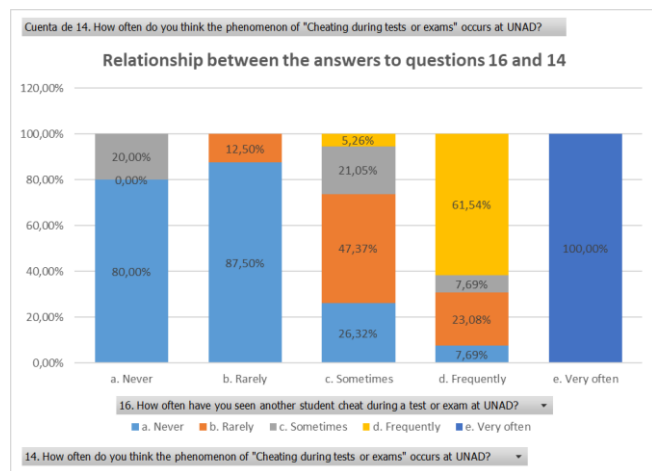


Fig. 4. Relationship between the answers to questions 16 and 14.

"How often do you think the phenomenon of "Inappropriate exchange of work in group activities" occurs in the UNAD?; a. Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often."

Comparing the answers given by students to questions 13, 14 and 15 will allow to know which of the following phenomena, students believe occurs most frequently in the UNAD; Plagiarism of works, cheating during tests or rehearsals, inappropriate exchange in group activities.

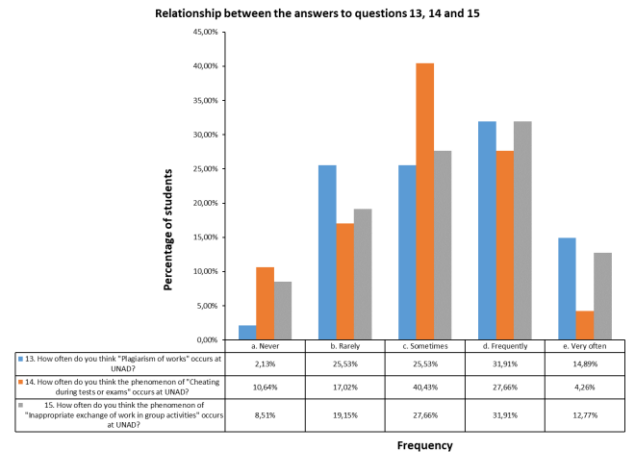


Fig. 5. Relationship between the answers to questions 13, 14 and 15.

Figure 5 shows that, for students, the phenomenon of plagiarism in papers is the phenomenon that presents the most frequency of occurrence, given that 46.8% of the respondents believe that the phenomenon occurs "frequently" or "very often". On the other hand, 44.68% of the students interviewed believe that the phenomenon of "inappropriate exchange of jobs in group activities" occurs "frequently" or "very often". Finally, about 32% of the students who participated in the study, say that "frequently" or "very often", the phenomenon of "cheating during tests or exams" occurs in the UNAD. This shows that, for students, it is less frequent to cheat in exams than in the works, however, they recognize that the three phenomena analyzed occur in high, low, or medium frequency.

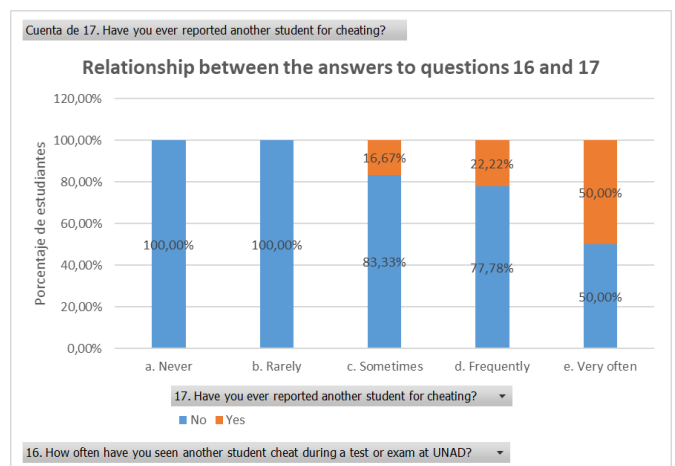


Fig. 6. Relationship between the answers to questions 16 and 17.

Figure 6 shows that students who report having "frequently" seen another student cheat during a test or exam, 77.78% say they did not report the case. While, of the students who say they have seen another student cheat "very often" during a test or exam, 50% say they did not report the case. On the other hand, more than 83% of students who say they have seen another student "sometimes" cheat during a test or exam, say they did not make any kind of complaint. This indicates that the

percentages of complaints among students when observing another student cheating on an exam are low, ranging from 16% to 50%. In addition, question 16 asks the student "How often have you seen another student cheating during a test or exam at UNAD?"; Never, b. Rarely, c. Sometimes, d. Frequently, e. Very often"; while in question 17 "Have you ever reported another student for cheating? a. yes, b. no." By comparing the answers given by students in questions 16 and 17, we seek to determine whether students who claim to have seen another student "cheating" report or not.

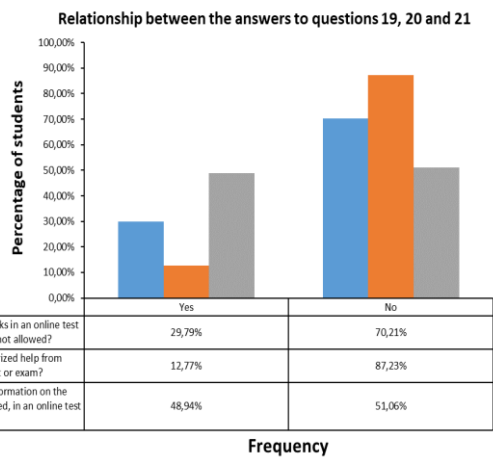


Fig. 7. Relationship between the answers to questions 19, 20 and 21.

By comparing the answers given by students to questions 19, 20 and 21, we seek to determine the most common type of academic fraud among students, and the percentage of students who admit to having committed some fraud type.

Figure 7 shows that 29.79% of the students who participated in the study admit to having used notes or books in an online test or exam, even though it was not allowed. While 12.77%, admit to having received unauthorized help from someone in an online test. On the other hand, 48.94% of the students who participated in the study, acknowledge that they searched for information on the internet when it was not allowed, in an online test or exam.

This shows that the type of fraud most committed when it comes to submitting exams is to search the internet, when it was not allowed during the presentation of the test. The least common type of fraud when taking exams is receiving unauthorized help from someone. On the other hand, 70.21% of the students who participated in the study, say they do not use notes or books in a test or exam, 87.23% state that they did not receive unauthorized help from someone in an online test or exam, while 51.06% say they did not have searched for information on the internet when it was not allowed during the presentation of an online exam.

Relationship between the answers to questions 22 and 16: When comparing the answers to questions 22 and 16, we seek to establish whether there is any relationship between having seen another student cheat during a test or exam and the possibility of reporting such behavior in the future.

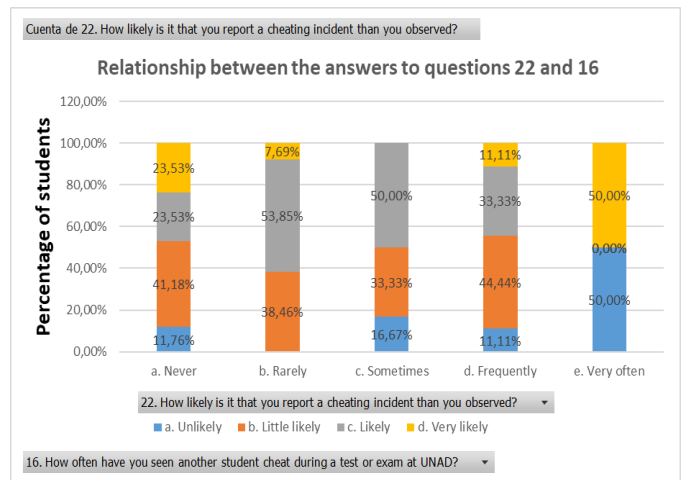


Fig. 8. Relationship between the answers to questions 22 and 16.

Figure 8 shows that, of the students who report having seen another student cheat during a test or exam, 50% responded that they were very likely to report an observed cheating incident, while the remaining 50% say they are unlikely to report it. Students who stated that they have never seen another student cheating during a test or exam, 22% say they are very likely to report an observed cheating incident; 22% say they are likely to report; 44% who are unlikely and 11% who are unlikely to report an observed cheating incident. This shows that more than 50% of those who have never witnessed a cheating event will most likely never report it.

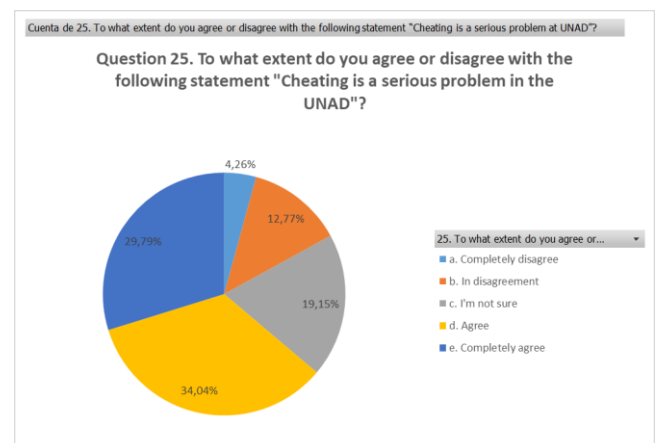


Fig. 9. Question 25. To what extent do you agree or disagree with the following statement "Cheating is a serious problem in the UNAD"?

Figure 9 shows that 29.79% of the students who participated in the study "completely agree" that "cheating" is a serious problem at UNAD; 34.04% agree that "cheating" is a serious problem for the university. 19.15% are not sure that cheating is a serious problem for their university, while 17% say they do not agree with the statement "Cheating is a serious problem in the UNAD".

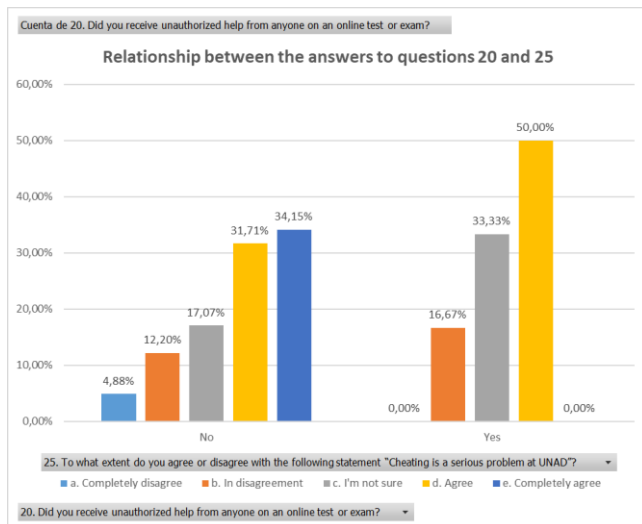


Fig. 10 Relationship between the answers to questions 20 and 25.

Figure 10 shows that of the students who responded that if they had received unauthorized help from someone on a test or exam, 50% say they agree that "cheating is a serious problem at UNAD," 33.33% are not sure if cheating is a serious problem at UNAD, while 16.67% disagree with the statement that "cheating is a serious problem at UNAD." Of the students who answered No, to the question of whether they received unauthorized help from someone on an online exam, more than 60% agree that "cheating is a serious problem at UNAD."

In contrast to the above, comparisons are made of the answers to questions 20 and 25, as a way of identifying whether those students who admit to having made cheating, consider that doing so is ok or not. Since, if in question 20 a student answers that, if he has cheated in an exam, and in question 25 he responds that he disagrees with the statement "cheating is a serious problem in the UNAD", it is because he considers that cheating in exams is not bad and is normal. In question 20, the student was asked "Did you receive unauthorized help from someone on an online test or exam? a. Yes, b. No", while in question 25, he asked, "To what extent do you agree or disagree with the following statement "Cheating is a serious problem in the UNAD"? a. Completely disagree, b. Disagree, v. I'm not sure, d. Okay, e. Absolutely."

V. CONCLUSION

The variables that influence the behavior of the phenomenon of academic fraud in the virtual undergraduate university programs offered by the UNAD are, among others: the ignorance on the part of the students of the norms with respect to academic fraud and of the sanctions contemplated, the ignorance of the existence of the phenomenon of academic fraud and of the behaviors that can be typified as such. Since, while there are policies and these are recognized as severe by students who know it, those who are unaware of its existence, have the belief that these behaviors are little punished.

Effective means for the dissemination of the policies of fraud and academic integrity of the UNAD have been induction

programs into college life, student regulations, student counseling, faculty, events organized by the school, and the university's website. As for the types of academic fraud, the most frequent is plagiarism in jobs (46.8%), followed by the inappropriate exchange of work in group activities (44.68%), cheating during tests or exams (32%). It is important to note, that it was asked independently about the occurrence of each phenomenon.

Among the findings also must, students who say they have seen "frequently" another student cheat during a test or exam, 77.78% say they did not report the case. While, of the students who say they have seen another student cheat "very often" during a test or exam, 50% say they did not report the case. On the other hand, more than 83% of students who say they have seen another student "sometimes" cheat during a test or exam, say they did not make any kind of complaint. The above indicates that the more frequent the phenomenon, the fewer complaints are filed, which may be an indication that the student gets used to the phenomenon of fraud in academic activities as he observes it more frequently.

The most common type of fraud committed when taking exams is searching the internet, when it was not allowed during the presentation of the test, and the least frequent is to receive unauthorized help from someone. In addition, values greater than 50% of students who have never witnessed a cheating event, state that most likely, if they witness it, they will never report it. A large percentage of students who commit fraud are aware that they are committing an irregularity (50% say they agree that cheating is a serious problem in the UNAD), while, on the other hand, a lower percentage, close to 17%, have received unauthorized help from someone in a test or exam and do not consider cheating to be a serious problem for the UNAD.

Once the pilot test has been completed, and the analysis of the results obtained has been carried out, it is recommended, based on the most important variables that affect the dynamics of the phenomenon identified in this study, to design a survey with statistical rigor in which the behavior of these variables is instilled into the behavior of these variables, this, as a way of validating the results obtained in this first test and of serving as a starting point for the construction of the simulation model, in the next stage of the research project in which this work is framed.

ACKNOWLEDGMENT

This research is part of the research project: " *Dinámica del fraude académico en los programas académicos de pregrado ofrecidos por la Universidad Nacional Abierta y a Distancia UNAD; una prueba piloto*" developed by semillero de Investigación, Tecnología y Desarrollo INTED.

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