Influence Of A Chatbot To Improve The Resilience Of University Graduates

Edward Flores, Justo Solis, Jose Rosales, Jose Pastor

Abstract: The present work implements a virtual assistant to reduce the resilience of the graduates of the Faculty of Electronic Engineering and Computer Science of the National University Federico Villarreal at the time of carrying out the formalities of the academic degree of bachelor and professional title. Its general objective is to determine if a chatbot will allow to increase the level of resilience in the students of the first year of studies of the Faculty of Electronic Engineering and Informatics of the National University Federico Villarreal, as the first specific objective it determines if a chatbot will allow to improve the leadership in the students graduated from the Faculty of Electronic and Computer Engineering of the Federico Villarreal National University and as a second specific objective to determine if a chatbot will improve motivation in the students graduated from the Faculty of Electronic and Computer Engineering of the Federico Villarreal National University. This proposal is based on the communication capabilities of a chatbot, guaranteeing timely information that allows improving the resilience of graduates who need to carry out all the corresponding procedures to obtain their bachelor's degree and later their university degree, guaranteeing reliable information and better option of timely and permanent communication.

Index terms: Chatbot, virtual assistant, resilience, graduate students, motivation, leadership, artificial intelligence.

1 INTRODUCTION

This research work refers to the resilience process that most students who graduate from the university environment go through, for this research the graduates of the Faculty of Electronic and Computer Engineering of the Federico Villarreal National University will be considered, this The process is part of a situation of change that students experience when they finish their studies and later graduate from university, which is increased by remote environments due to covid-19, at the end of their studies they experience a substantial change, where what they knew previously on a regular basis no longer allows them to understand university processes, as well as the different contexts and even the terms most used in academic management. The main characteristic of this research works on the field of resilience, which is the ability of a person to face their problems, from which two variables have been determined for this study, such as leadership and motivation. This is because university graduates always have high expectations after having passed a rigorous selection and study process, in the same way, it is sought that students can adapt as soon as possible and feel safe and motivated. A study analyzed how communication changes when people communicate with an intelligent agent as opposed to with another human. We compared 100 instant messaging conversations to 100 exchanges with the popular chatbot Cleverbot along seven dimensions: words per message, words per conversation, messages per conversation, word uniqueness, and use of profanity, shorthand, and emoticons. A MANOVA indicated that people communicated with the chatbot for longer durations (but with shorter messages) than they did with another human [2].

The cognitive factors that a resilient person presents are achievement motivation, the feeling of self-sufficiency and confidence that problems will be solved. [12] Additionally, [2] and [11] agree that people with resilience attribute the origin of their behavior to their own effort, that is, they present an internal locus of control. Of the variety of characteristics that resilient young people can develop, motivation to achieve is emphasized as skills of cognitive origin that involve specific forms of self-regulation and that have a strong impact on academic performance ([3]; [4]; [13]).

2 METHODS Y MATERIALS

2.1 Population.

The graduates of the Faculty of Electronic and Computer Engineering of the Federico Villarreal National University from 2020 onwards will be the universe of this study, according to the requirements provided and due to the situation in which we find ourselves due to covid-19, the population of graduates of the faculty has been determined at the discretion of researchers from years prior to the year of studies 2020. According to Fisher [8] the size of the sample should be defined based on two criteria: 1) Of the available resources and the requirements that the research analysis has. Therefore, a recommendation is to take the largest possible sample, the larger and more representative the sample, the lower the sample error. Therefore, for the present study it has been determined that the sample is at the discretion of the total population of graduates of the Faculty of Electronic and Computer Engineering of the Federico Villarreal National University, this due to the situation in which We entered the product of SARS-COV-2 and that has caused a significant change within the processes required for the care of graduates. For the present study, it has been determined that the unit of analysis is the students who graduated mainly from the School of Computer Engineering of the FIEI-UNFV.

2.2 Instruments

Questionnaire: The questionnaire is: “the survey modality that is carried out in written form using an instrument or paper format containing a series of questions. It is called a self-
administered questionnaire because it must be filled out by the respondent, without the intervention of the interviewer. "[1] For this study, a questionnaire will be carried out applying the Likert scale to students entering the Faculty of Electronic and Computer Engineering of the Federico Villarreal National University. Virtual assistant (Chatbot): Initially coined as “ChatterBot” [10], it saw its beginnings in the artificial intelligence laboratories of MIT (MIT Artificial Intelligence Laboratory) with the ELIZA project in order to demonstrate the “superficiality” that exists between the communication between man and computer [14]. The type of research is applied, since its objective is the generation of knowledge with direct and medium-term application in society or in the productive sector. [9] the research design is experimental, since it is based on a control situation in which one or more independent variables are intentionally manipulated to analyze the consequences on one or more dependent variables. [5], in his Book Research Methodology refers to experimental design as follows: "Experimental designs are used when the researcher tries to establish the possible effect of a cause that is manipulated." Campbell and Stanley (1966) classify experimental designs into three classes: a) pre-experiments, b) "pure" experiments, and c) quasi-experiments. [5]. For the present case study, it is considered of a pre-experimental type, since it allows us to see at the end what level was had with respect to the initial group. To measure the level of responses within the questionnaire, the Likert scale will be considered. [6]. The results obtained will be subjected to inferential statistics to determine the relationship between the variables of the present study, using Cronbach’s alpha for reliability and Pearson’s correlation to determine the dependence between the study variables. For the present study, the present questionnaire that determines the assessment of leadership and motivation has been taken into account

<table>
<thead>
<tr>
<th>Preguntas:</th>
<th>Preguntas:</th>
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<tbody>
<tr>
<td>Motivation</td>
<td>The interface is friendly</td>
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<tr>
<td></td>
<td>Provides constancy guidance</td>
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<tr>
<td></td>
<td>Provides guidance for bachelor’s degree and degree</td>
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<tr>
<td></td>
<td>Gives general guidance for graduate procedures.</td>
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<tr>
<td></td>
<td>It allows other procedures of my interest.</td>
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<tr>
<td>Leadership</td>
<td>Provides guidance for graduation certificate.</td>
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<tr>
<td></td>
<td>Provides guidance for proof of pre-professional practices</td>
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<td></td>
<td>It allows consultations on simple documents.</td>
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<tr>
<td></td>
<td>You have adequate answers to my questions.</td>
</tr>
<tr>
<td></td>
<td>It allows to identify the payments to be made</td>
</tr>
</tbody>
</table>

**Table 1: Assessment instrument.**

3. RESULTS

Next, the interface built for the present study is presented, which consists of a virtual assistant to attend the queries and demands of questions from the graduates when requesting information to obtain the professional title, which has been programmed in Python[15]:

In the figure shown, the graduates will be able to make their queries repeatedly and on various topics so that they can be answered 24 hours a day, taking into account the pre-loaded information to start their activities, the virtual assistant can respond appropriately to the requested consultations, allowing to reduce the attention times in the procedures to be carried out:

In the same way, it allows the interpretation of various similar commands for a better understanding and use of the information:
To validate the instrument, the information with which the faculty currently works has been entered, so that the students who graduated from the last year before going backwards, who go through a process of change and ignorance when having to carry out the various procedures to obtain the academic degree of bachelor and professional title can use the virtual assistant to validate and compile previous results. This information was entered into the system in order to measure the degree of acceptance of human-computer interaction and to allow obtaining the information repeatedly, at any time. For the present study, a sample of 25 participants has been taken, who have used the application and then the described instrument has been applied to them, through a Google form in virtual form, due to the current situation in which we we found because of the covid-19.

The instrument loaded in the following form in Google is shown below:

Instrument reliability

The validity establishes the relationship of the instrument with the variables that it intends to measure and, the content validity relates the items of the applied questionnaire with the theoretical statements and the objectives of the research so that there is consistency and technical coherence, through expert judgment. The reliability criterion was measured with the Alpha Cronbach coefficient, the instrument is reliable when the coefficient is equal to or greater than 0.70. The reliability criterion of the instrument is determined in the present investigation, by the Cronbach Alpha coefficient, developed by J. L. Cronbach, requires a single administration of the measurement instrument and produces values that oscillate between one and zero. It is applicable to scales with several possible values, so it can be used to determine the reliability of scales whose items have more than two alternatives as responses. By reliability we understand the degree to which the questionnaire is consistent when measuring the variables it measures. For the case of the present study, Cronbach's alpha coefficient was 0.784 for the experimental group and 0.777 for the control group.

Graph 1: Pre-test and post-test of the total of the experimental groups.

According to the results of the graph, it is perceived that 8% of the students surveyed, both in the experimental group and
in the control group in the pre-test, found a low level before the experiment, while in the same way 92% of students in both groups are at the intermediate level.

**Graph 2:** Comparative results of the pre-test of the experimental group and the post-test group for the specific hypothesis 1

According to the results, it is perceived that 8% of the students surveyed, both in the experimental group and in the control group in the pre-test, find themselves with a low level before the experiment, while in the same way 92% of students in both groups are in the middle level.

**Graph 3:** Comparative results of the pre-test of the experimental group and the post-test group for specific hypothesis 2.

According to the results, it is perceived that 8% of the students surveyed, both in the experimental group and in the control group in the pre-test, find themselves with a low level before the experiment, while in the same way 92% of students in both groups are at the intermediate level.

**4. CONCLUSIONS**

It is concluded that the proposed methodology to improve resilience in the graduate students of the study sample, if it presents favorable results for the leadership and motivation variables at the time of evaluating the present study, taking as a frame of reference the current situation due to the covid-19 to seek alternative solutions to continue carrying out the necessary procedures such as certificates, cover letters, payments, among others, in the same way, it reduces the response time in the attention since the students who have used the chatbot can do all the prior consultations and in this way, students can carry out their procedures efficiently, feeling motivated and leading the activities to be carried out.

**REFERENCES**


Machine Translation.


