Statistical Report as Formative Assessment Strategy

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Abstract

The paper presents the results of teaching experience developed in the program of Financial Management and Technical Programs of the Faculty of Agronomy of the University of Tolima, which is the inclusion of the statistical report and assessment strategy concepts and methodology basic statistics. Generally it established a study on the statistical report and how to interpret and argue written or statistical stories, then, relate the statistical report as a strategy in the communication of information.

By prior preparation of a checklist, which has to do with the structure of the statistical report, involving the technical elements of the development of the statistical report and aesthetic and ethical conditions of the evaluation, an educational agreement is set for the carrying out the activity.

Keywords: Argumentative text, statistical report, checklist, statistical evaluation

1. Introduction

The issue of assessment of learning, has become an object of study, and as a discipline within the sciences of education or as a subject of analysis within each of them. It particularizing, in mathematics education evaluation, is another broad field of investigative action. And if we further develop these issues as in the case of the statistic becomes even more specific, as objects of study of statistics are different from the objects of study of mathematics. Thus, consider establishing an
evaluation strategy for statistical concepts, it is reasonable and very relevant in our daily work of teaching statistics.

The statistical report as a strategy for evaluating statistical concepts, can tackle in a row, dynamic and alternative basic statistical procedures. You can start by teaching agreement expressed in a checklist, where the preconditions for the development of statistical report describing.

Thereafter, the significant experience we had when using this methodology in the development of a statistics course in Financial Management software and technical programs of the Faculty of Agriculture, University of Tolima described.

2. Assessment of Statistics

According to the Curriculum Guidelines [3], the domain of the random thoughts and data systems (Statistics) it must initially be aimed at the exploration, representation, reading and interpreting data in context; the qualitative analysis of regularities, trends, growth rates and an intuitive approach to the possibilities. The student should be familiar with some forms of representation of numerical information and be able to interpret these performances.

In the upper grades of secondary education and of course in college, you must be enhanced drawing inferences and arguments, using measures of central tendency and dispersion to analyze data, interpret reports and draw conclusions.

Following the objective of the statistics, Acevedo [1] states:

It is very interesting to propose assessment activities that favor teamwork. In the management of information, for example, the collection of interesting and relevant information for the group, to investigate how the average student of the course or institution; questions to determine characteristics: age, height, eye color, type of music or television show preference, number of people the family. These activities require students to construct a suitable survey instrument in order to obtain the data and, once established these instruments, proceed to collect, aggregate and analyze data and information, guiding this exploration with questions like; What most appears in the data ?, What trends are seen in these ?, are significant endpoints ?, how ?, what can be interpreted difficulties could arise if generalize to other similar problems ?, What We may collect additional data to verify or refute the conclusions that have been drawn from these data? (P. 138).

The assumed as a scientist, it is one of the advantages given at random and statistical framework, as a way to scout, the student may risk throwing hypotheses and conjectures, inside and outside the classroom and in any area of knowledge, in this regard Acevedo [1] states:
In this field, contexts and real situations are rich sources of exploration, because in them the students can generate new data and investigate a wide range of assumptions or guesses, even within the same institution, managing data classmates PE: length of breaks, time taken to traverse a given distance; or keep records of the prices of some items of the basket sold in outlets of the district for a period of time, to study their variations. Study the nature of the relationship between pairs of variables such as weight and height of children, age and heart rate, temperature and heart rate; record information, build two-way tables and study the behavior of the variables. Working with reports of statistical type (scientific, economic, social, political, sports) that appear in the media, as a matter of discussion in class, interpret the information they present and motivate inferences from them (p.138).

The support of new information and communications technology (ICT), available in educational institutions and households, facilitate the calculations of statistical measures, graphs and tabs, i.e., better management of exploratory data analysis. Prevailing analyzing synthetic information and objective manner and thus get a different to face the problems view.

The way to access statistical information is practical, because the students live daily in context, since energy bills, water and gas, among others, who come to their homes thus forming the basis Data that students also use the information provided in the DANE (National Administrative Department of Statistics), which is free to use, as well as the databases of the Bank of the Republic; network also is a lot of information that supports to support the entire theoretical and practical information of statistics. You can also make use of statistical simulation modeling processes information when it needs it.

Considering the above, the teaching and learning of statistics is rich in options, allowing simple and basic themes addressed at the early stages, from descriptive problems to complex situations simulation and or modeling information to enable it to inferences and solve more complex problems involving information.

3. Statistical Report

Governmental bodies at international or national level (INE in Spain or DANE in Colombia) presented its users methodologies for presenting the results of their studies and reports, these studies are too technical and specialized, however, there are other documents that allow disseminate statistical freely and are commonly used as the two documents published by the United Nations, UN [4], "How to understand the data, Part 1: A guide to writing stories about numbers" and "How to understand the data, Part 2: A guide to presenting statistics ".

Below we present the statistical report as a handy tool to help students to use text, tables, graphs and other information with the aim of bringing statistics to everyday life using effective writing techniques.
The characteristics of a good report are also described. For this it is not just a result of a product or a task at the end of the course. He must take exhaustively and clearly, the whole process of teaching support from start to the end of the course.

Based on the proposal of Cassany [2], the statistical report shall contain the following minimum elements:

A. Title: You must give a clear idea of the subject studied. As far as possible it should be clear, specific and appealing to the reader.

B. Summary: The purpose is to provide the non-specialist reader, the most relevant facts and conclusions of the study, without going into the statistical details. Keep in mind that readers may belong to different technical areas, so it may be less interested in these aspects of the report. However every effort should be made to ensure that they have included all the relevant information.

C. Introduction explains why the study and the need to formulate a course of action is performed. It describes the nature, purpose and scope of the problem.

D. Methods: Describes how to get to the results. The report should allow another person to repeat the experiment or exercise only on the basis of the structure of the report.

Summarizes:
- Source of data used as a basis and participants.
- Tools that were used to prepare the study. If any was designed especially for this job, you must be long enough for another experimenter to build or obtain detail.
- Design contains the definition of the variables.

E. Result: Sets what was found.
- They are preferably presented as graphs using tables only if they are essential.
- This is the step where the statistical analysis itself takes place, be it descriptive and inferential.
- The information presented should be included only once, either in the form of tables, charts or written text.
- Tables or graphs should be self-sufficient and not force the reader to refer to the text to understand them.
- Present calculations with the rigor required to validate the test statistic but not include information that is unnecessary.
- Do not interpret the data until next section.
F. Analysis: Interpret study findings and makes recommendations arising therefrom. The format for expressing the results of an inferential analysis should mention the value p (probability), IC (Confidence Interval) and the power of the study (especially in non-significant).

G. Conclusions: Part of this final step is used in the above summary of the report, but here the researcher explains the conclusions. If there are a number of tests or procedures at work, you may want to combine the C and D sections titled: Results, Analysis and Conclusions. This would allow better continuity in reading.

The importance of the findings observed by implicitly repeats three times: in summary, in the introduction and conclusions here.

The Statistical Report can be located between descriptive and argumentative texts. It is descriptive paraphrase Perez [6] because the descriptive text relates the characteristics or properties of an object; its structure is essentially organized on the spatial dimension. The description is always a form of analysis, since it involves the decomposition of the object into parts or elements and the attribution of properties or qualities; also has the following features: Detailed use of language, which is why there are as many adjectives. The description can be of two types: objective, through which it is expressed how it is the object of the description from the inclusion of constituent parts and subjective (own literary language) expressing personal perception it has the object described. The relationship is to be established between the statistical report and the descriptive text and argumentative, is that uses language for describing and analyzing more easily and appropriate information, in addition to the statistical report is considered an argumentative text.

Considered Sanchez [7], it is distinguished argumentative text presenting ideas or opinions is solely to persuade or convince and it uses the approach of assumptions and arguments intended to demonstrate that contribute to its validity or disproof. This is the kind of texts in which the reasons for or against a particular "position" or "thesis" in order to convince the interlocutor through different arguments taking a stand for or against are presented. It is fundamentally, but not exclusively, of judgments, positive or negative assessments about the above: Good, bad, ugly, beautiful, valid, invalid, appropriate and not appropriate. This in relation to data and information found from them, allowing decisions.

That is, the statistical report will summarize these two types of textual expressions, showing an order in the exposition of ideas, consistent presentation of data, use of specific terms and clear and persuasive language in a way that makes it comprehensible results problem posed.
4. Development Topic

It should start with the establishment of the checklist, it should clearly describe the guidelines presented in the statistical report should give an idea of the general criteria for report writing. However, you should always take into account their particular context of writing in each of the disciplines.

Whatever your writing context, you should always keep their purpose and whom it is addressed. Start by asking yourself: What do you want to accomplish with your report? What are your main goals? Who will read your report and for what purposes? What is its origin? How are you familiar with the topic? What basic information needed? You expect me not be receptive to its findings and recommendations? What might expect in terms of content, level of detail and the format of your report?

The checklist allows to give a course of development of the statistical report, the list allows you to track real-time statistics course activities, from initial formulation of the subject under study, going through each of the phases of the statistical process until the final product is the communication of results.

5. Experience at the University of Tolima

During the last four (4) semesters in technical programs in agronomy and Financial Administration, it has involved the statistical report transversely, as an articulating subject of other topics, i.e., there are some basic issues such are:

• General: History of Statistics, Variables and ranking.
• Exploratory Data Analysis: Measures of central tendency and dispersion, graphs and tables.
• Fundamentals of probability: counting techniques, definition of probability, conditional probability and Bayes theorem.
• Distribution Functions: Binomial Distribution of Possion, Normal and t-student.
• Statistical Inference for the mean and the mean difference

Based on a problem formulated by students in teams, this is being developed in a systematic and parallel to the development of the course guide thematic way. The Statistical Report is a coordinating resource in that it allows each to systematize the contents developed in class. For example, the classification of variables, making
frequency tables and statistical graphs, calculation and interpretation of the measures of central tendency and dispersion.

Conclusions

Statistical report structure is presented as a proposal to be used in statistics courses, since experience allows us to state that this methodology proves to be an educational resource for the evaluation of teaching-learning process of concepts in formal courses in statistics. In it allows us to follow a progressive appropriation of basic concepts of statistics, determining levels of information analysis and analytical skills of students.

References


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