

Evaluation of the quality (norm ISO 9126) in applications educational multimediales

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The applications multimediales are important tools for the educational process, because they help to the appropriation of the knowledge on the part of the student; for this reason, one carries out the evaluation to a series of software multimedial used in different educational establishments, the results of this process are shown document presently. The process of evaluation of the quality one carries out whereas clause the parameters of the norm ISO 9126: functionality, efficiency, reliability, mantenibilidad, portability and usability. The results of this evaluation show in general form that the applications managed multimediales to the education largely fulfill the demand of the norm, aspect that assures that this tool supports indeed to the educational process.

Keywords: quality; ISO 9126; NTICs; Applications multimediales

Las aplicaciones multimediales son herramientas importantes para el proceso educativo, especialmente porque ayudan a la apropiación del conocimiento por parte del estudiante; por esta razón, se realizó la evaluación a una serie de software multimedial utilizado en diferentes establecimientos educativos, los resultados de este proceso se muestran en el presente documento. El proceso de evaluación de la calidad se realizó considerando los parámetros de la norma ISO 9126: funcionalidad, eficiencia, fiabilidad, mantenibilidad, portabilidad y usabilidad. Los resultados de esta evaluación muestran en forma general que las aplicaciones multimediales dirigidas a la educación cumple en gran parte con la exigencia de la norma, aspecto que asegura que esta herramienta apoya efectivamente al proceso educativo.

Palabras claves: calidad; ISO 9126; NTICs; Aplicaciones multimediales

1. Introduction

The norm ISO 9126 [1] it is the international standard that provides important parameters to assure the quality of the applications; whereas clause that the main purpose of the applications multimediales is the transmission of information through different means like audio, video and text; it is necessary to offer to the end user a product software with a high grade of quality, so that this it has the impact that is expected. In the context of the education, the applications multimediales are part of the new computer technologies and of communications (NTICs), where their purpose mediator of the process teaching. learning demands bigger effectiveness and efficiency.

The evaluation of the quality is a complex process, especially because it involves a sinnúmero of subjective aspects, for such a reason, the International Organization of standardization (ISO) it has constituted the norm ISO 9126 that it supports the realization of this process, defining to the quality like "A Group of Attributes of the Product Software through which the quality is described and evaluated" [1]. The quality of the software can be evaluated by means of internal attributes (measure of intermediate products), external attributes (behavior of the code when it is executed) and the objective of the product, by means of its use (point of view of the user about the quality of the software) (Fig. 1).

In the current educational process, the applications multimediales especially those designed for this context, constitute in stocks talkative fundamental whereas clause the Theory of the talkative action of Habermas [2]; whereas clause this importance, the applications should fulfill the characteristics of the norm ISO 9126 that it assures their quality, that which implies that the product software is constituted in an educational tool of high effectiveness.

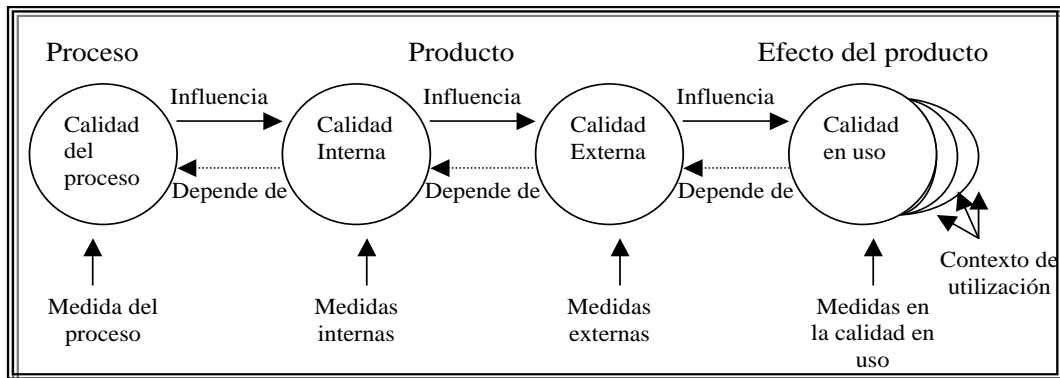


Fig. 1. Quality in the cycle of life of the software [1]

Through this paper it is sought to give to know the process of evaluation of the quality with base in the norm ISO 9126 carried out to a series of software multimediales of educational character; for the evaluation you has the collaboration of educational and students providing bigger objectivity to the study; the results of this investigation show the importance of elaborating educational applications in the teaching process. learning.

2. Methodology

According to the norm ISO/IEC 8402 [3] the quality is the group of estates and of characteristic of a product or service that confer him aptitude to satisfy some explicit or implicit necessities. That is to say, the term quality contains a series of related characteristics that you look for to assure in integral form the user's satisfaction. In this sense, the quality is a multidimensional concept, since it can be synonymous of efficiency, flexibility, correction, dependability, maintenance easiness, portability, use easiness, security, integrity, etc. [4].

The process of evaluation of the quality of the applications multimediales begins with the estimate of the characteristics that you/they will use, the norm ISO 9126 it considers the following ones characteristic: functionality, reliability, usabilidad, efficiency, mantenibilidad and portability; and to give bigger objectivity to the evaluation the norm it includes a series of subcaracterísticas. el following outline:

To carry out this evaluation in an integral way, besides the norm ISO 9126, you also analyzes different theories on the evaluation of educational software (you Save TO and Thomas G., Miller L and Burnett J., Coburn P and Squires D. and McDougall A.), this allowed to define in the following way the characteristics to evaluate:

Functionality: Group of attributes that refer to the functions and their specific estates, the functions satisfy some implicit necessities [5]; in the educational context the application multimedial should be adjusted to the thematic one, to allow the interaction with the students, to use a pedagogic model, to satisfy the necessities, to use videos and appropriate sounds [6], [7], [8], [9].

Reliability: Group of attributes that refer to the capacity of the computer applications to maintain their low-yield level some specific conditions during a defined period [4]. At level of applications multimediales in the educational context the reliability you can appreciate in the frequency of appearance of errors, in the recovery of the information and in the time it limits of use of the software [6], [7], [8], [9].

Usability: Group of attributes that refer to the necessary effort to use it, and about the individual valuation of such an use, for a group of defined or implicit users [4]; this characteristic is very important for the achievement of the objective of the application multimedial in the teaching process. learning, therefore, is necessary to consider the following aspects: the uses of an appropriate language, the existence of to comprehensible help and the it cheats of learning of the application [6], [7], [8], [9].

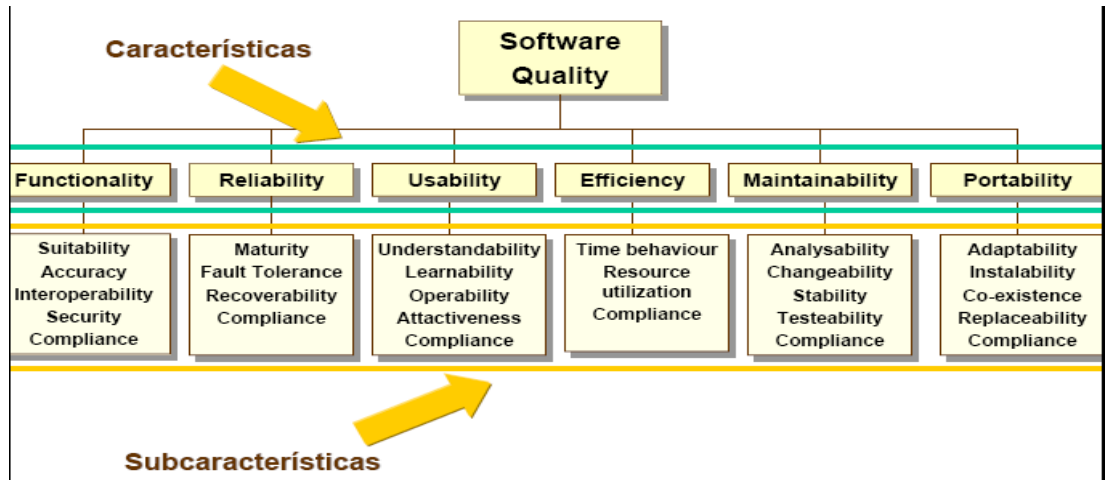


Fig. 2. Características and subcaracterísticas for the evaluation of the quality according to the ISO 9126 [1].

Efficiency: Group of attributes that refer to the relationships between the level of yield of the application and the quantity of utilized resources under defaulted conditions [4], to evaluate in the efficiency of an application multimedial in the educational context it should be considered: the time in carrying out the activities and the environment requirements that he/she needs the application for their correct operation [6], [7], [8], [9].

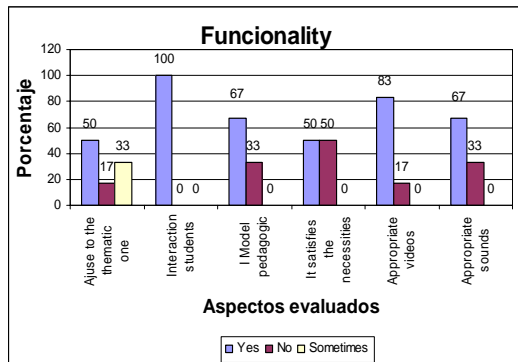
Maintainability: Group of attributes that refer to the necessary effort to make modifications specifies [4]. The application multimedial used in the education should allow to be upgraded with easiness and he/she should have new versions whereas clause that the knowledge this in constant evolution [6], [7], [8], [9].

Portability: Group of attributes that refer to the ability of the software to be transferred from an environment to other [4]; at educational level, the application multimedial should be easy to install and to work in any platform this allows its use in different operating systems [6], [7], [8], [9].

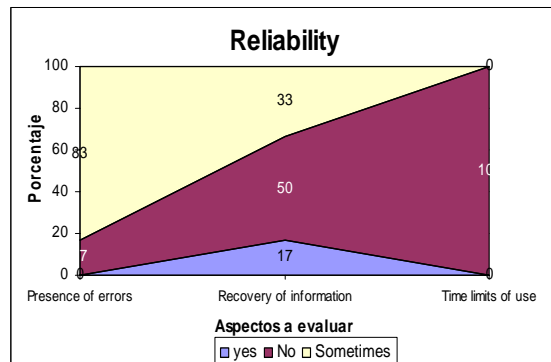
The evaluation one carries out in six educational centers where the following applications multimediales are used: Neo Zool, Talking English, Let's Go, Grammatical Just, English Activities, and Let's Have Fun Possesives; the opinions were obtained through a realized survey to the educational ones that use these applications; whereas clause the necessary opinions.

3. Results

Next the results of the actual evaluation are presented, illustrating each characteristic with their respective valued aspects.



(a)



(b)

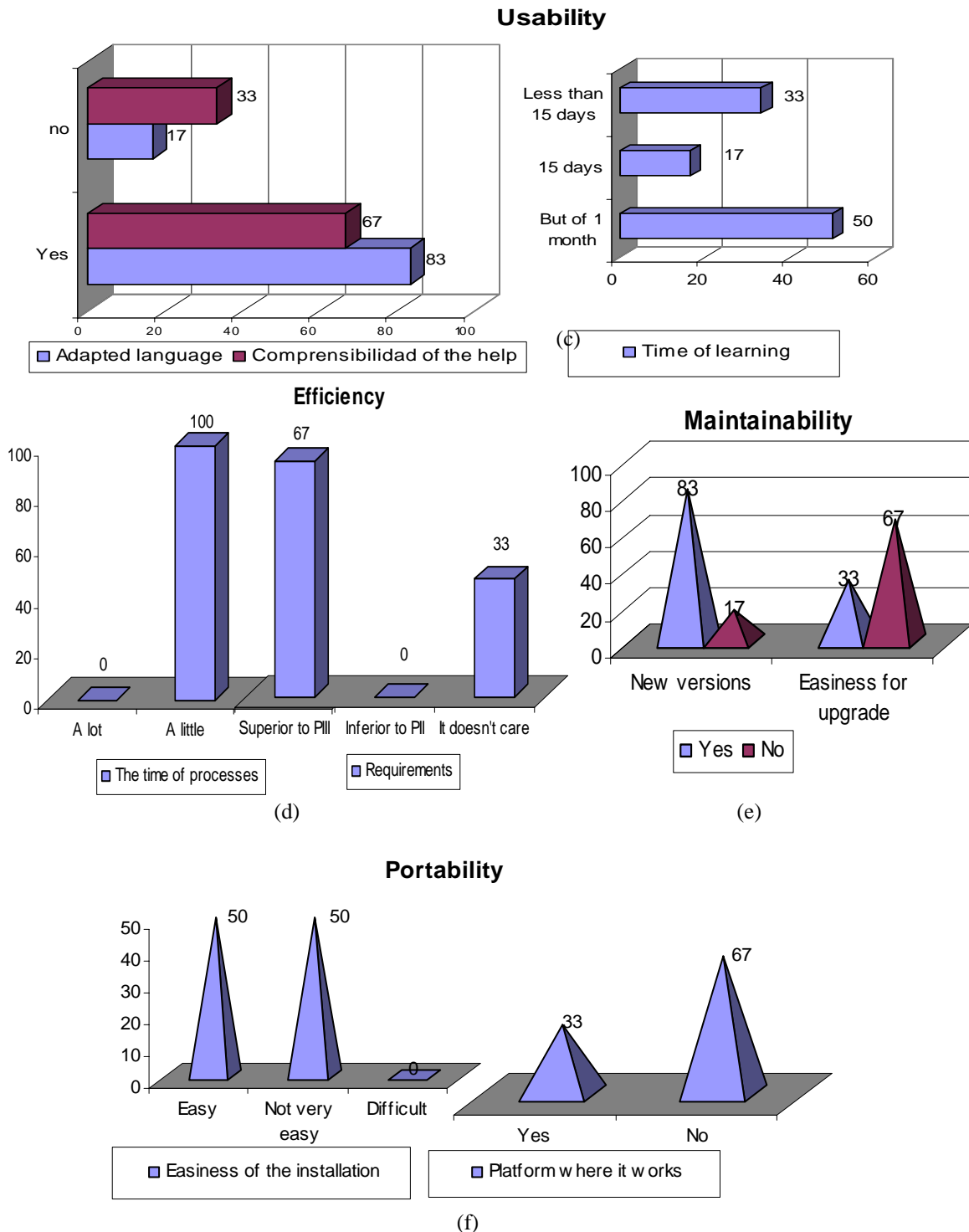


Fig. 3. Evaluación de la calidad según la norma ISO 9126 de aplicaciones multimediales (Neo Zool, Talking English, Let's Go, Grammatical Just, English Activities, and Let's Have Fun Possesives) usadas en seis centros educativos de la ciudad de San Juan de Pasto (Colombia).

4. Discussion

Whereas clause the fig. 3, you can determine that the applications multimediales have an interaction high-level with the user that is an important aspect inside the characteristic of the functionality of the application; on the other hand, they are frequently presented errors in the applications multimediales that which implies distrust in the application. Although the aspects evaluated in the context of the usabilidad none are completed by a hundred percent, it is important to stand out that the applications multimediales have an appropriate language.

67% of the valued software requires a superior processor to Pentium III, that is to say, he/she needs of a considerable investment for the correct development of these applications. Also, the same percentage of applications is not easy to upgrade, aspect that implies difficulty for the educational one when not allowing him to improve its working tools.

Finally, the adaptation of the applications to multiple platforms is one of its weaknesses like one can observe in the fig.3 (f) where you can only use for operating system Windows.

5. Summations

The NTICs, is a very valuable tool for the education of today's world, the software multimedial that allows him to interact the student with the knowledge is among the main NTICs and to the educational one to guide the process with more easiness; this it is the main reason for which the application should fulfill norms of quality like for example the ISO 9126.

The realized evaluation to a series of applications multimediales allows to deduce that the functionality and usabilidad are the characteristics that are fulfilled bigger percentage in their different valued aspects. On the contrary, the software has difficulty as for the efficiency and to the maintenance. It is also necessary to clarify that the realized evaluation you foundation in two fundamental aspects as they are the international norm ISO 9126 and pedagogic aspects that you/they help to contextualizar the characteristics suggested in the norm inside the educational context.

Lastly, this study is good as parameters for the construction of an application multimedial, besides being good as relating for the software selection for the educational chore.

Acknowledgements.

To the University Mariana to have offered the space to carry out this investigation and to the different educational centers that offered the corresponding information.

References

- [1] INTERNATIONAL STANDARDIZATION ORGANIZATION "Quality characteristics and subcharacteristics" en Information Technology - Software quality characteristics and metrics, ISO/IEC FCD 9126 -1.2. (1998).
- [2] Gabas, R.. J. Habermas: Dominio Técnico y Comunidad Lingüística. Barcelona: Ariel (1980).
- [3] INTERNATIONAL STANDARDIZATION ORGANIZATION Quality Management System: Fundamentals and vocabulary, ISO/IEC 8402 (1995).
- [4] Piattini M. y García F. Calidad en el desarrollo y mantenimiento del software, Madrid, Editorial RA-MA. (2003)
- [5] LUCERO, M. (2001): "Auditoría de la calidad", en PIATTINI M y DEL PESO E. (eds.) Auditoría Informática, un enfoque practico. Madrid, Editorial RA-MA 2ª. Edición,. 311-333.
- [6] Salvas A y Thomas G. Evaluation of software, Melbourne, Education. Departament of Victoria. (1984).
- [7] Miller L y Burnett J. "Theoretical Considerations in Selecting Language Arts Software", Computers and Education, 10,(1), pág. 159 – 165 (1986)
- [8] Coburn, P., Kelman P., Roberts N., Snyder T., Watt D. y Weiner C. Practical Guide to Computers in Education (2ª ed), Reading Massachusetts, Addison-Wesley, (1985).
- [9] Squires D. y McDougall A. Cómo elegir y utilizar software educativo. Morata. (2001)