

Evaluation of the functional efficiency of applications multimediales

S. Riascos Erazo

Programa of Engineering of Systems, UNIVERSITY MARIANA, Colombia

This document presents the synthesis of an investigation that a model proposes to evaluate the functional efficiency of the applications multimediales, composed by five such general characteristics as: to) Durability of the process, b) Quantity of procedural information, c) Use, d) Reliability and and) Usability; that are discriminated against through different subcaracterísticas that allow to carry out an evaluation with more objectivity. Keeping in mind that the applications multimediales form part of the NTIC's like tools that support the teaching process. learning, is necessary to evaluate you if they fulfill their functions in an efficient way. In this paper the results they are presented from the realized evaluation to five applications multimediales used in different educational centers of the city of San Juan of Pasto (Colombia); where one can observe that the applications fulfill the functions but not in an efficient way.

Keywords: efficiency; functionality; quality; software multimedial.

Este documento presenta la síntesis de una investigación, que propone un modelo para evaluar la eficiencia funcional de las aplicaciones multimediales, compuesto por cinco características generales tales como: a) Durabilidad del proceso, b) Cantidad de información procesada, c) Utilización, d) Fiabilidad y e) Usabilidad; que se discriminan a través de diferentes subcaracterísticas que permitan realizar una evaluación con mayor objetividad. Teniendo en cuenta que las aplicaciones multimediales forman parte de las NTIC's como herramientas que apoyan el proceso de enseñanza – aprendizaje, es necesario evaluar si cumplen con sus funciones de forma eficiente. En este artículo se presentan los resultados de la evaluación realizada a cinco aplicaciones multimediales utilizadas en diferentes centros educativos de la ciudad de San Juan de Pasto (Colombia); donde se puede observar que las aplicaciones cumplen con las funciones pero no de forma eficiente.

Palabras clave: eficiencia; funcionalidad; calidad; software multimedial.

1. Introduction

The evaluation of the applications multimediales has for objective to verify if these work correctly and to identify some defects that he/she can have. A successful evaluation of an application provides trust in the sense that this can be used by the potential users [1]. The trust of an application makes reference to the execution of different characteristic as for example: the integrity, the efficiency, the reliability, the functionality and many others that it can determine the appraiser.

The efficiency of a computer application according to COBIT [2], this refers to the provision of information through the good use (more productive and more economic) of resources; the norm ISO 9126 [3] it defines it as the group of attributes that you/they support the relationship between the level of execution of the software and the quantity of utilized resources under established conditions. On the other hand, Alonso [4] he comments that the efficiency is not only the cost it also influences the satisfaction that can have the user, whereas clause these definitions the valid characteristics they can be determined for the evaluation of the functional efficiency of the computer applications.

The efficient applications functionally are those that complete the functions for which have been created, including to satisfy the user. The functional efficiency of computer applications is included inside the evaluation of the quality; the correct and efficient execution of the functions (functionality) of the application they contribute so that the user is satisfied with the application, since it represents him a

decrease in the effort of his work [5]; the functional efficiency is based in: the norms ISO/IEC 12207 (software Development), ISO/IEC 9126 (software Quality) and the ANSI/IEEE 1028 (process software) that are related with the evaluation of the software. However, these don't mention a specific model for the evaluation of the functional efficiency of the computer applications.

The applications multimediales for the educational environment are part of the NTIC (New Computer Technologies and Communications), where their main function is the one of mediating the teaching process. learning; their educational main users and student, they should be beneficiaries of the efficiency in the development of the functions that he/she should carry out the application multimedial.

Through the present paper it is sought to show the results of the application of the pattern for the evaluation of the functional efficiency of different applications multimediales designed for the educational environment; I process realized with the collaboration of students and educational main users of the software; this process allowed to conclude that the product software has a supremely important function inside the activity of the educational one as facilitator of the learning.

2. Methodology

The evaluation of the functional efficiency of the applications multimediales is carried out whereas clause five characteristics: Durability of the process, Quantity of procedural information, Use, Reliability., Usability; to give bigger objectivity to the evaluation they have been determined a subcaracterísticas series like it is illustrated in the fig. 1.

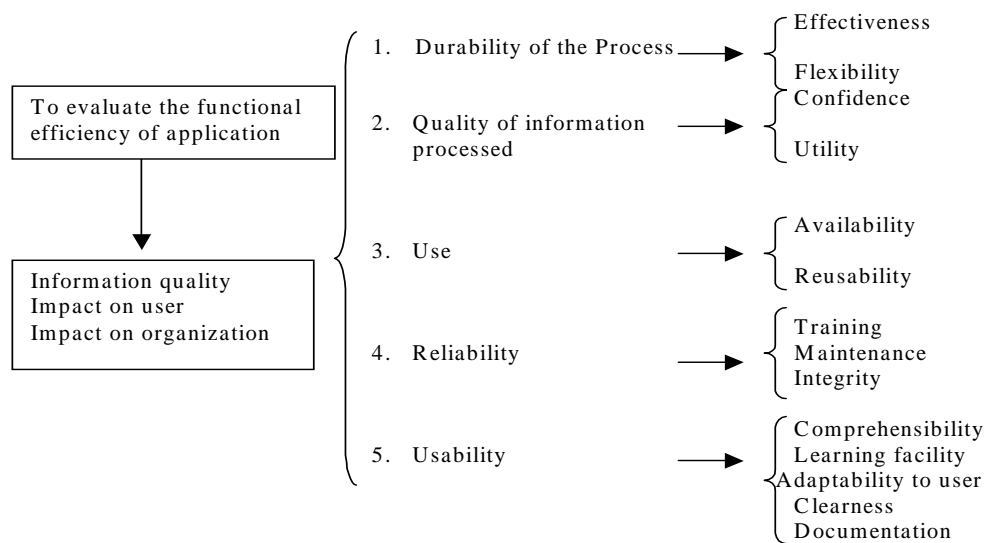


Fig. 1: Model for the evaluation of the functional efficiency of the computer applications [5]

The software multimedial inside the educational environment is constituted in a tool of considerable importance keeping in mind that they support the process teaching. learning; therefore, he/she should be carried out an objective evaluation of the execution of its functions in efficient form. For this purpose, they are described the characteristics that it implies the pattern of evaluation of the functional efficiency of the computer applications used in the educational environment next.

Durability of the process: In this characteristic the time is measured in which the application multimedial is able to provide the student with the required exit. Time from the entrance of the first character until the exit of the first character [6]. To this they have been added the following subcaracterísticas: Effectiveness, it should be demonstrated through the increase of the user's satisfaction and reduction of

costs [7] and Flexibility, is related when the system makes comfortable with easiness to the circumstances [8]. This characteristic in the educational context implies that the application should develop the processes in the smallest possible time.

Quantity of procedural information for unit of time: It refers to the working quantity it is carried out by the system in a period of time [6]. This aspect is supplemented with the following subcharacterísticas: Dependability, according to Shneiderman [9] he is related with assuring the privacy, security and integrity of the data and Utility, The information surrendered by the application is used in a satisfactory way and therefore, it is enough for the success of the process. The application multimedial used in the environment educational debit side to adjust their contents to the curricular objectives, besides being significant from the educational point of view.

Use: it Means the proportion of time that a system is busy, or that the processor, the time is using that the system is working [6], to supplement this characteristic it is considered: the Readiness: it is the grade in which the software remains operable without the presence of shortcomings [10]; Reusabilidad, según la norm ISO 9126 [3] it defines as the possibility that the software is used in another platform. At educational level, he/she refers to that the permanent readiness of the application multimedial without presence of errors that alter the educational process.

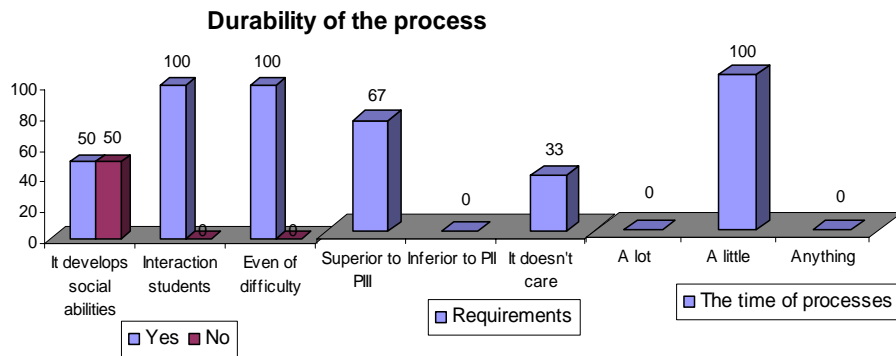
Reliability: It makes reference to the probability the software to operate during a certain period of time of agreement with that foreseen in a certain environment [8]. This characteristic is supplemented with: Training: it allows to reduce the tension associated to the introduction of a new system, besides allowing to familiarize to the user with the application to achieve a soft transition and to minimize the resistance to the change [11]; Maintenance: The ISO 9000-3 [12] it classifies to the maintenance in: to) resolution of problems (software correction doesn't conform); b) modification of interfaces (changes in the software according to the changes of the hardware); c) functional expansion (changes in the software to expand or to improve an existent function or to increase its use); and Integrity: this is refers to the accuracy and correspondence with the user's necessities [13]. The reliability in the applications multimediales used in the educational environment makes reference to the presence of a module to verify the pursuit of a student in the process of educational, assuring this way the dependability of the application.

Usability: it is the perception that an user or user group have of the quality and easiness of use of the software and their efficiency and effectiveness [1], to supplement this characteristic it should be evaluated: Comprensibilidad, makes reference to that the application is easy to understand for user's type; learning Easiness, according to McCall and other [8] when they affirm that the learning easiness implies necessary effort to learn its handling, to prepare the data and to interpret results; Adaptability to the user: he/she refers to the adaptation of the particular necessities that you/they have the end users that will have to interact with the application; Clarity: the application is clear in the grade in that this can be understood without difficulty and Documentation: he/she makes reference to the group of documents, for example user manuals (instructions written for who interactúan with the application at level of: programmers, operators, technical personnel and basic users); screens and design of reports [14]. In the educational context, to evaluate the usabilidad of the application multimedial allows to determine the easiness that has the student or educational to use it, providing this way easiness to consent to the functions that it provides the application.

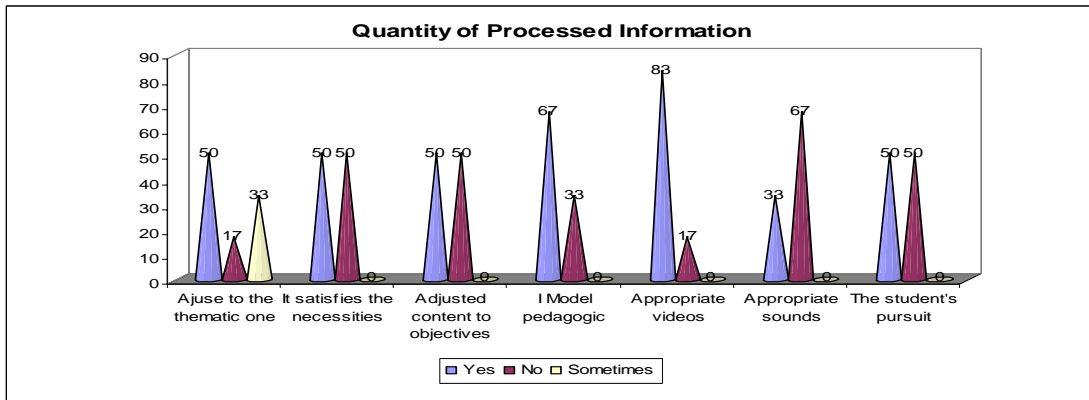
With the collaboration of six educational centers, one carries out the evaluation of the functional efficiency of the following applications multimediales: Neo Zool, Talking English, Let's Go, Grammatical Just, English Activities, and Let's Have Fun Possessives; the opinions were obtained through a realized survey to the educational ones that use these applications; it is necessary to comment that you ratifies the obtained answers through practices carried out with the valued software.

3. Results

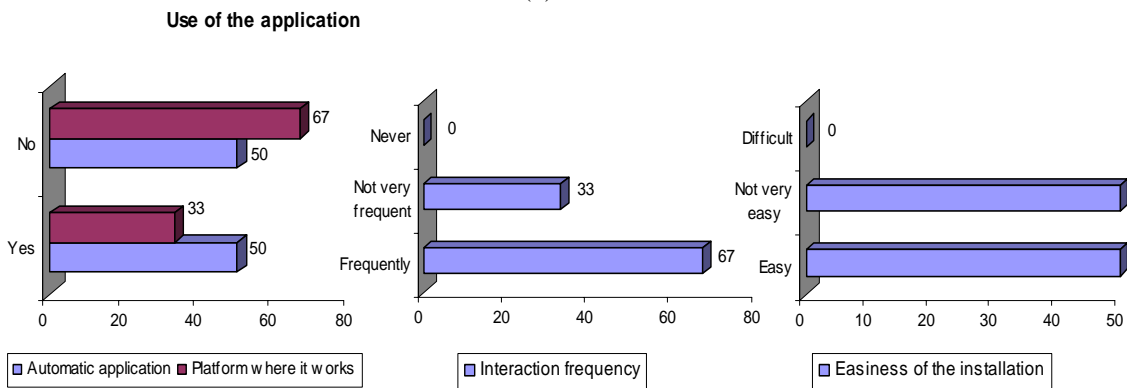
After having carried out the statistical analysis of the opinions given by the users regarding the functional efficiency of the applications we have the following:



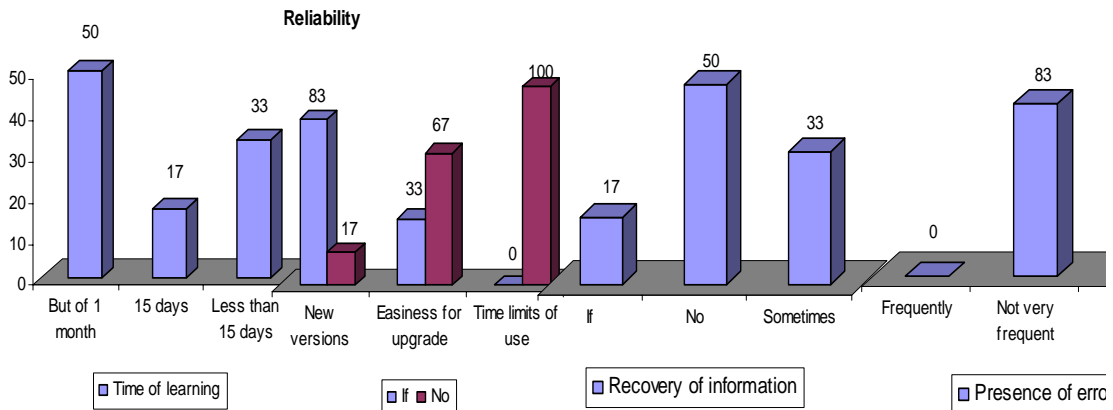
(a)



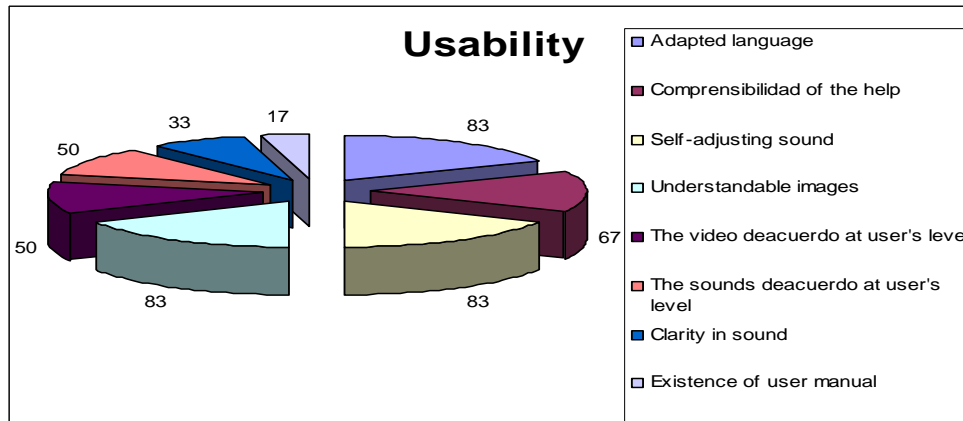
(b)



(c)



(d)



(e)

Fig. 2. Evaluation of the functional efficiency of applications multimediales (Neo Zool, Talking English, Let's Go, Grammatical Just, English Activities, and Let's Have Fun Possesives) used in six educational centers of the city of San Juan of Pasto (Colombia).

4. Discussion

The results obtained in the evaluation of the functional efficiency of the programs multimediales used in the field of the education, present interesting aspects as for example: fig. 2 (a), you can determine that the applications multimediales that have an interaction high-level with the user, all have levels of difficulty and speed in the realization of processes, these aspects provide big advantages in the use of an application multimedial in the educational context.

In the fig. 2(b) one can observe that the characteristic of the quantity of procedural information presents important aspects like for example the presence of appropriate videos to the user and the presence of a pedagogic model in the application. In the fig. 2(c) in the aspect of the use the reliability of most of the applications indicates that they don't have it limits of use (fig. 2(d)), that which allows that these tools can be used in constant form in the teaching process. learning. frequent errors, they are easy to install and of interacting with the user.

Finally, in the fig. 2(e) it is observed that the usabilidad of the valued applications presents appropriate language, self-adjusting sound and understandable images for the user, that is to say, the applications introduce adaptation to the user.

5. Summations

The functional efficiency of the applications multimediales especially the utilized ones in the educational context are related with the execution of the functions of the application in quick and economic form in the teaching process - learning.

The realized evaluation to the applications multimediales allows to deduce that the functional efficiency. it is an important aspect to achieve the objective of the new technologies introduced in the education. For this aspect, it is necessary to identify aspects like: the durability of the process, the quantity of procedural information, the use, reliability and usability of the same one, to obtain an integral evaluation of the same one.

Finally, you can conclude that the applications multimediales are very useful tools to facilitate the educational process in any area of the knowledge, this implies that the educational one should carry out an exhaustive evaluation of the software to use especially in the functional efficiency of the same one.

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References

- [1] O'REGAN G.: A practical approach to software quality. New York, Springer – Verlag. (2002)
- [2] COBIT: COBIT, Resumen ejecutivo. 2ª. Edición. Comité Directivo de COBIT y la Information Systems Audit and Control Foundation. (1998)
- [3] INTERNATIONAL STANDARDIZATION ORGANIZATION “Quality characteristics and subcharacteristics” en Information Technology - Software quality characteristics and metrics, ISO/IEC FCD 9126 –1.2. (1998).
- [4] ALONSO G: Auditoría Informática, Madrid, Ediciones Díaz de Santos. (1988)
- [5] RIASCOS S. y M. A. RAMOS: “Auditoría de la eficiencia funcional de las aplicaciones informáticas en tres centros universitarios” en la III Jornada de Informática, Bogotá. (2003)
- [6] WEBER R.: Information Systems Control And Audit. New Jersey. Prentice Hall. (1999)
- [7] SCHMAUCH: ISO 9000 for software developers, Wisconsin, ASQC Quality Press. (1995)
- [8] MCCALL Y OTROS: “Factors in software quality”, en Rome air development center reports, New York, Griffiss Air Force Bas, 1-3. (1977)
- [9] SHNEIDERMAN, B: Designing the user interface: strategies for effective human-computer interaction, Massachussets, Addison-Wesley, 3a. Ed. (1998)
- [10] RAKITIN S: Software Verification and validation. A practitioner’s Guide, Boston, Artech House. (1997)
- [11] VALLABHANENI R: Auditing Software Development: A Manual with Case Studies, New York, John Wiley & Sons. (1990).
- [12] INTERNATIONAL STANDARDIZATION ORGANIZATION: Quality management and quality assurance standards - Part 3: Guidelines for the application of ISO 9001:1994 to the development, supply, installation and maintenance of computer software, ISO/IEC 9000-3 (1997)
- [13] LONDENSTEIJN B.: “Auditing Quality is Quality Auditing” en PIATTINI M.(ed.) Auditing Information Systems, Hershey, Idea Group,189-215. (2000)
- [14] EDPAA CISA Review Manual: EDP Auditors Foundation. (1991)