ENGLISH

Federal Fluminense University

AURORA DE AFONSO COSTA NURSING SCHOOL

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Review Articles

Observation mediated by computer - professional report

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RESUMO

O estudo consiste na descrição de três pontos: a adaptação de software como instrumento de observação nas investigações; as vantagens de tal uso; e limitações do método. As vantagens notadas são: faz possível uma observação completa das ações dos usuários; grava as ações da tela assim como os sons; complementa e confronta a informação coletada; emite um registro digital das ações do usuário. Relacionado às limitações observou-se que apresenta um custo alto; necessita a atenção do usuário no sentido ativar o software de gravação; depende da confiabilidade do sistema operacional que pode parar e causar a perda das ações gravadas; e os arquivos muito grandes. Conclui-se que o recurso é uma fonte importante para a coleta dos dados considerada singular neste processo.

Descritores: Informática médica, Métodos, Investigação.

INTRODUCTION

The construction of the health's knowledge has been a constant in an area that researches settle as a science. The investigations in health have been diversifying in the measure that professions grow and new focuses of the practice appear. These changes demand the revision of practices and the insert of new methodologies in the daily work. Specifically in the field of the research, new methodologies have been presenting in the last years, capturing countless sympathetic, such as, convergent – assistant research and the sociopoetical research [1,2].

Among the stages of development of a research, it stands out the stage of data collection. Techniques are used for apprehension of the reality to be investigated. Such techniques should provide reliable and trustworthy data [2]. Several authors present classifications and definitions of techniques of data collection, and in a more generic classification we have the following ones: observation, questionnaire, form and interviews [3].

Specifically the observation can be considered an instrument, a technique and an own characteristic of the researcher. While instrument, the observation can follow a pre-determinate route of items to be investigated. As a technique, it is based on the departure of the researcher to the field to know the environment in superficial and visible aspects. Another technique that can be developed is the participant observation that is accomplished by a previous integration with the group assuming, certain point even, and the paper of a member of this. This seek arrives the knowledge of the life of a group starting from the interior of itself [2-6]. The observation can be faced while the researcher's own characteristic, without them important information that they are not directly perceptible, they can be lost.

As all the techniques, the observation presents advantages that include the direct perception of the events without intermediate, placing the researcher in direct contact with the studied phenomenon, it demands less from the researcher than other techniques, it allows the collection of data on a group of behaviors, it depends less on the insight or of the reflection, it complements data that non apprehension for other techniques [2-4].

Limitations also exist that should be considered when using the observation technique. It is on time and space a limited technique, where the phenomenon that happen out of the observation period are not registered; it is a little economical technique because the researcher employs a lot of working hours; the observer's presence can interfere in the observed situations producing little reliable results; and observed it tends to create artificial attitudes that will depend on the observer's perception for its correct registration [4,7-8].

Besides new research modalities, new research fields have been a studied object and application for the health professionals, being the informatics a clear example of that [9-12]. Not just a data collector, the computer comes as a dynamic tool with multiple possibilities, besides as a support instrument to the researcher.

It is valid to point out that, in spite of the several outstanding limitations, the observation is a valuable technique that still today is used. New observation forms are being studied as form of enlarging the potential of it. With the progress of the technology, in terms of apparatuses, some possibilities opened up for the field of the research such as: analogical and digital filming, computerized recordings of sounds and images and digital pictures [13-14].

Like this, the techniques of collection of data can be improved by the use of these new resources. It is important to remind that, independ-

ent of the used technology, some characteristic aspects of such techniques should be preserved as: the respect to the ethical precepts, the technique application definition and the technique implementation form.

With that we felt the need to develop a proposal of use of the computer as a data collection instrument, in researches that turn about the viability of informatics' tools. This culminated with the implementation of what we denominated observation mediated by computer, and that will be described ahead.

METHODOLOGY

The study consists of the proposition of a data collection method denominated observation mediated by computer. The referred proposition is based in the authors' experience that have been dedicating to the improvement of the technique. The observation mediated by computer method will be described in three important points: the use of existent softwares in the market, adapting them as observation instruments in researches; in the report of the advantages of such use; and in the description of the difficulties and limitations of the method. This description comes from our experience in the utilization of such strategy in our researches, and the fact of we have not found other similar reports in researches recently published. Although, it is valid to point out that because it's a recent experience, it is important that the professionals test and evaluate the implementation of this method.

RESULTS AND DISCUSSION

The use of the computer as observation instrument in researches depends on the use of certain existent softwares in the market. Although the softwares are not developed with this purpose, they can be adapted perfectly to our objectives. Two clear examples of these softwares are Asymetrix Corporation´s Webcam and Lotus Screencam. These softwares were developed with the intention of recording the users' actions in the screen of the computer to the development of instructional and educational programs.

The principal objective of that was to create multimedia softwares that taught other users how to use certain program, observing the instructor's actions recorded with those resources [15-17].Our proposal is based on the possibility of use of such softwares, to record the user's actions of a program that is being evaluated, as a form of direct observation of the means, difficulties and strategies presented during the use of it.

This way when beginning the use, the recording software begins the recording of the user's actions saving them in a film file in the specific format of the program, for instance, in Screencam the files have *.scm extension. Besides, if the user wants, these softwares allow to save the file generated in the *.avi format. The advantage there from is that this last format is the standard of the Windows platform, allowing any other person to watch the film independent of having the original software.

Another existent resource is the recording of the sound (chats) of the users, allowing the evaluation of the interaction among the users. It is important to be clear that these softwares record the screen computer and not the user oneself, in other words, it is not possible to see the user's face or one's facial expressions, because these softwares specifically record the screen computer being used. Like this, the observation mediated by computer consists of the use of softwares for recording the user's interactions with the computer.

*Indications of the observation
mediated by computer*

the observation mediated by computer it can be used when one intends to evaluate softwares multimedia. These softwares offer countless attractive resources that can facilitate the learning of a certain theme. However, due to the complex harmony among the several presented medias, the processing of such softwares can be prejudiced, happening execution mistakes, loss timing among films, animations and sounds, and even lock of the program with consequently loss continuity. Unlike what it can be seem, our by experience with the development and evaluation of multimedia softwares, have been showing us that such problems happen in a relatively frequent way.

Another use of this method is as a complement resource for learning evaluation of the users of educational softwares. When recording the interaction of a user of educational software, it is possible to notice details that can influence in this user's learning. For instance: the ways (links) more used, allowing to notice if one has a tendency to learn in a lineal way or making several connections among the topics of the content. It is important to remind that the cognitive science works with a slope of neural connections (ramifications and ideas interrelations) [18], and a great part of the softwares developed for the health that we had the opportunity to use, still present a lineal structure similar to an electronic book, where is not given the freedom to the user to choose the way that better suits him/her [19-20].

Similar to the first use form, the observation mediated by computer it can also be for the evaluation of resources and problems presented by applications softwares. The difference of the first topic is that this type of software executes certain tasks for the user generating a final product.

This type of software is well known by the people in a view that it is a part of the day by day. It is also the principal responsible for a great part of the daily upset. It is enough to remind of the terrible message "Your computer made an illegal operation and it will be closed".

Finally, the softwares that allow the recording of the users' actions can be used for the development of tutorials. These tutorials are, actually, the object that initially stimulated the companies invest in that application type [16-17,19]. It is quite common still today we find at informatics' stores, the sale of Cd-roms that teach how to use a certain program. These Cd-roms show films with the users' actions facilitating the understanding of who attends them.

*Advantages of the observation
mediated by computer*

The first advantage that we noticed with the use of this resource is making possible the complete observation of the users' actions, allowing a better evaluation of the limitations and mistakes of the software that it is being evaluated [21]. This allows a wider vision and not limited to what the user tells. Besides, when recording the actions as in the screen as the sounds (the users' comments), a new data source is introduced to the researcher that can compare the actions with the users' knowledge.

With that is possible complement and confront the information collected through other instruments, in other words, if we have an interview data, those can be confirmed or even denied by the data registered during the observation. This comparison is only possible due to the capacity to emit a digital registration of the user's actions through the generation of a file that can be stored in one's own computer or recorded in a Cd-rom.

The observation mediated by computer is independent in many aspects. It does not depend on the researcher's memory, differently of the other observation types in that the annotations will depend on the only observation of every moment. It does not depend of the individual's perceptions, being able that observation to be accomplished several times by the researcher and even for other involved people, besides the own user. Then, that is observed can be discussed with the purpose of find the best and right conclusions.

Limitations of the observation mediated by computer

As every method of data collection, the observation mediated by computer presents difficulties and limitations. We observed that it depends excessively on the user's peacefulness for the fact of one has his/her actions constantly being recorded. This can take the user's inhibition, above all in discussion terms, harming the registration of the chats and discussions. A solution for that would be the use of the recordings repeated times seeking to reduce the inhibition [13,16]. However, this would endear the research.

Actually, the enhancement of the research perhaps is the main limitation of the method. Notice that, to it use the method would be necessary an informatics' laboratory equipped with computers presenting a hard disk relatively big, a good processor, a CD recorder, sound card and microphone. These would be the more specific hardware items. Besides, it would be necessary personnel qualified to guide the users on the process, to supervise the recorded sessions, as well as, to do the copies of the generated files. This represents a more cost in the development of the research.

Another point to be considered is the need of the user's attention in the sense of activating the recording software that can cause inhibition of one. The softwares that make the recording are not activated automatically. Like this, the user or the supervisor of the session should activate the recording software before beginning it. An alternative for that would be a program creation to generate the autorun (automatic working of the software). However, this requests specialized technical knowledge, what generates a new cost.

Finally, this observation type depends on the reliability of the machine and of the operating system that can stop and to cause the loss of the actions recorded until then. That is deeply irritating and unhappily because it does not allow the recovery of the lost data [14]. Besides, the generated files, as they are films can be very big, needing to be stored in Medias of high capacity as cd-roms or dvd-roms. This storage should be periodic because the accumulation of these files in the hard disk can cart decrease of the memory ROM and complete lock of the machine, needing to turn off the files and consequently loss them.

How to proceed the observation mediated by computer

firstly, the use of the observation method in subject depends on the choice of the appropriate software and its respective installation. Among the several ones existent in the market we have been using, with relative frequency, the Lotus Screencam and Asymetrix Corporation WebCam. Their differences are subtle and limited to the interface change. Some studies used the Screencam in the data collection with a good final result [21-22]. However, nothing impedes that the researcher opts for other softwares.

The second work stage concerns the process of initiating of the recording software that,

as it was already presented before, it can be done by the own user. For so much it will be necessary to teach one how to use the recording software. This process is easy due that these programs introduce a similar interface of equipments of audio recording / video, with stop, progress, setback and recording buttons.

The correct moment of beginning the recording is exactly previously to the beginning of the activities that should be appraised. Like this, it should be requested that the user works the recording software in the moment previously to the use of the multimedia software that will be studied. Soon after, the user should be instructed to use the multimedia software, requesting that him/her saves the recorded film. This last stage, includes the format in that the film should be safe (the programs usually allow to save in at least two formats: avi or a specific form of the program), the place in the hard disk where the file should be safe and the name of the file (avoid repetition of names what would cause the subscription of an old file and consequently loss of the same).

Finished this, it remains to the responsible for the recording session to do backup copies of the films. That is of extreme importance even in computers with great storage capacity, because an unexpected problem in the computer can cart the loss of the recorded files. It is also remarkable the use of a schedule to write down the possible problems during the session, for instance: computers that stop, and the possible loss of part of the recording of the sessions; interactions not recorded and its respective reasons; a same user's films recorded in different computers and general information on the session as number of present users, used computers, theme of the session and other points that the researcher considers important for his/her final work.

FINAL CONSIDERATIONS

The use of this resource represents another progress of the informatics' resources in the research area. Very little time ago, the use of the computers in the aid to the research was limited to the compilation and analysis of the data. The initial stage of data collection continued to be dependent of the already consecrated instruments of collection of data. These, the observation for itself, seemed to be always renounced to a second plan, due to the subjective character of it.

The crescent development and evaluation of softwares in the health's area, above all educational originating from post graduation courses, this new possibility is shown as an important source for collection of data considered singular in this process. It is also true that it cannot be seen as the panacea of the problems of data collection in researches. An important other resource should be considered for those that are interested in develop and validate softwares for the teaching and work in health.

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