SEEKING AND READING PATTERNS OF SCHOLARLY ARTICLES: A STUDY WITH BRAZILIAN GRADUATE STUDENTS IN EDUCATION

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ABSTRACT

This article presents part of a larger study on the use of reference sources to perform bibliographical search by graduate students in Education. Data relating to the use of the scientific journals by these students are presented and discussed. Sixty Education graduate students, 28 Master degree and 32 Doctoral, answered an electronic questionnaire. The students indicated the types of articles usually read and the importance attributed to each one. For each of treated themes in the electronic questionnaire, data are initially presented and analyzed in the set of the 60 participants of the study and then compared between master and doctoral students. Were used the Chi-squared (χ^2) test, the Fisher exact test and the Spearman's correlation coefficient. Research reports were more frequently pointed out but less valued in comparison to articles referring to critical review and theoretical essay. Methodological articles, appearing in fourth position according to reading frequency and importance attributed, are more valued by doctoral than master students. The students read these articles using different procedures. The possible reasons for the students valorizing the articles of critical review and theoretical essays are discussed. The present study intends to offer a contribution to understand the use of scientific information by students, describing some graduate students' habits related to information seeking in scientific journals, and reading of the articles published.

Keywords: Informational Behavior; Information Seeking; Brazilian's Post Graduation; Education; Information Scientific.

INTRODUCTION

The bibliographical research represents an important and fundamental stage in the development of any research project. In this way, the researcher will be able to define rigorously his/her object of investigation, contextualizing it adequately in the scenario of produced knowledge about the phenomenon he/she intends to study. A

well done bibliographical research is essential in insertion of any investigation into a collective production of scientific community, taking into account what has already been produced about the object of study. The study of how individuals develop information seeking and usage to perform this task, that is, their information behavior, brings an important contribution in the construction of the systematized knowledge about the reality to which it is applied.

The nature of the literature used by a researcher in the theoretical foundation of his/her project, and the research report may provide a reference on, and in some way, even determine the quality of developed work. So, the analysis of the citations may be valuable to the evaluation of study performed by a researcher; to the knowledge and evaluation of scientific production in a certain area or author(s); and also to identify the preferential information sources of different areas of knowledge or groups of researchers. Noronha (1998) analyzed the references of 350 Master thesis and Doctoral dissertations defended in three graduate courses in public health, totalizing 35,505 citations, and concluded that articles from journals are the most commonly used sources, corresponding to 46.7% of citations.

Articles from journals correspond to one of the most referred scientific literature sources due to the nature of knowledge reported in them. The most recent findings of researches, including conflicting data, and not consistently systematizable, are reported in articles of journals. Books bring more systematized knowledge, usually based on research reports published in journals. Thus, books may not bring the contribution of the most recent results, essential to an adequate and updated description of state of art on studied phenomenon. However, it is known that the preference for the kind of source used in the performment of researches, and also to the communication of results varies among areas, according to Meadows (1999).

According to Calva Gonzalez (1999) and more recently Nederhof (2006), monographies (books and theses) are the main information sources for researchers in Humanities and Social Sciences areas, followed by journals. Mueller (2005) investigated the scientific production published between 1995 and 2002 from 226 professors in graduate courses of several Brazilian States. Results showed that "[...] researchers from Applied Social Sciences preferred national journals and books, and

they also published, but less, in foreign journals, national congresses and chapters of books. They just minimally published in Annals of foreign congresses".

The bibliographical research aims to give the researcher the most recent knowledge about the phenomenon that will be studied. It should be performed in sources in which these research reports may be located. A good bibliographical revision certainly begins with the competent use of the most varied information sources existing in university libraries physically or by available resources. Nowadays, there is a great availability and variety of information sources in different supports. Besides the traditional printed paper there are countless database, which may cause a laborous search to some students and researchers not acquainted with electronic means or even to those acquainted, but without the information abilities to use the most formal sources as database. Difficulties may be related not only to the equipment operation, but to the underlying logic required in the interaction between the user and sources of electronic information (seeking strategies), to the choice of source among those countless available, besides the language, since many of these sources are in English.

Nowadays a source of extreme relevance is the Internet, whose domain may remarkably extend the possibilities of information seeking. Its use by students and researchers, in the performment of his/her bibliographical research may increase the possibilities of information seeking, but at the same time, it may introduce new difficulties and require new competences, emphasizing ability to choose good and reliable texts, with all scientific distinction. The search for indexed and properly recognized scientific journals by evaluating organs reduces this necessity, since texts are published here after competent analysis of distinction by experienced researchers. Nevertheless even after the distinction evaluation by pairs, an article published in a good journal is not completely immune of occasional conceptual or methodological errors. Thus, it is necessary to maintain a critique attitude when reading published articles in journals as advised by Fisher (2000).

Given the increasing complexity and relevance of consultation of information sources, some studious researchers have been arguing and investigating difficulties presented by users. A survey carried out by Ondrusek (2004) in database Library and

Information Science Abstracts (LISA) between 1980 and 2000, for example, exposed the existence of 270 published articles on the theme only in English. The research carried out with graduates at Unesp, campus of Marília, confirms students' difficulty in performing searches in database (GARCIA; SILVA, 2005).

A bibliographical research requires abilities normally learned, specially in graduate courses, although the ideal would be to begin this learning in the undergraduation, avoiding student reaching the graduate courses unprepared (CAVALCANTE, 2006). To know how graduate students behave in performing of this activity is of great relevance, because such knowledge may generate important implications in the way professors conduct their guidance activities and therefore in the students as well as librarians learning. Studies describing such behaviors and/or suggesting procedures to their effective teaching have usually been found in literature. Those studies that approach researchers' behavior of Humanities and Social Sciences areas, like the subjects here reported, have been less studied (CALVA GONZALEZ, 1999), specially those involving brazilian researchers.

The way the user borrows information when consulting an information source, however, has been less explored. A survey carried out on Scopus and Web of Science bases refering to last five years (2004-2009) pointed out the existence of few studies about the theme (KING; TENOPIR; CLARCK, 2006), (BANOU; KOSTAGIOLAS; OLENOGLOU, 2008), (TENOPIR; KING, 2008) e (TENOPIR; KING; SPENCER; LEI, 2009). These and several previous studies in general have focused the time dedicated to reading type of reading material, purpose of this reading and, more recently, the support used for reading. The way of reading or reading procedures of articles have not been approached.

The present study intends to offer a contribution in this way, describing some graduate students' habits related to information seeking in scientific journals, and reading of the articles published. The questions elicited by this research are relevant, because, according to Cope and Phillips (2006 *apud* BANOU; KOSTAGIOLAS; OLENOGLOU, 2008, p.489), "In the hybrid environment, where both the printed and the digital publication co-exist, and at a time when reading tactics and habits are being re-defined".

The study described here belongs to a wider research about the use of information sources in the performment of bibliographical research by Education graduate students. This has additionally proposed a complementary objective, which was to compare two versions of the employed questionnaire as a research tool: a printed and an electronic version (OMOTE; PRADO; CARRARA, 2005). Considering the special relevance of published articles in specialized journals, the present study focused specifically in graduate students' habits related to the use of these sources.

2 METHOD

Sixty Education graduate students participated, 28 Master degree and 32 Doctoral. Their ages ranged from 23 to 56 years (mean age of 37 years and standard deviation of 8.2). Fourteen were male and 46 female. Eighteen hold a BA in Pedagogy, four in Pedagogy and another course, 12 in Psychology and the remaining 26 distributed in several undergraduate courses, including Speech Therapy and Audiology, Physical Therapy, Occupational Therapy, Social Work, Languages, Nutrition, Medicine, Business Administration, Social Sciences, Architecture, Law, Nursing, Philosophy, History and Mathematics.

Each participant was individually received in a furnished room containing a computer which was used to present items composing the questionnaire (see description below) and respective data collection. One of the authors informed participants about the technical aspects inherent to the use of the program. Each session lasted approximately 20 minutes.

The program, called Electronic Questionnaire, was developed in Visual Basic[®][i]. The questionnaire was elaborated to ensure the instructions were rigorously performed, avoiding completely the possibility of error. Items were elaborated in a way that characterize participants' habits about the use of information sources in the performment of bibliographical research. The answers automatically fed a database made with MS Access[®] which maintains an interface with MS Excel[®].
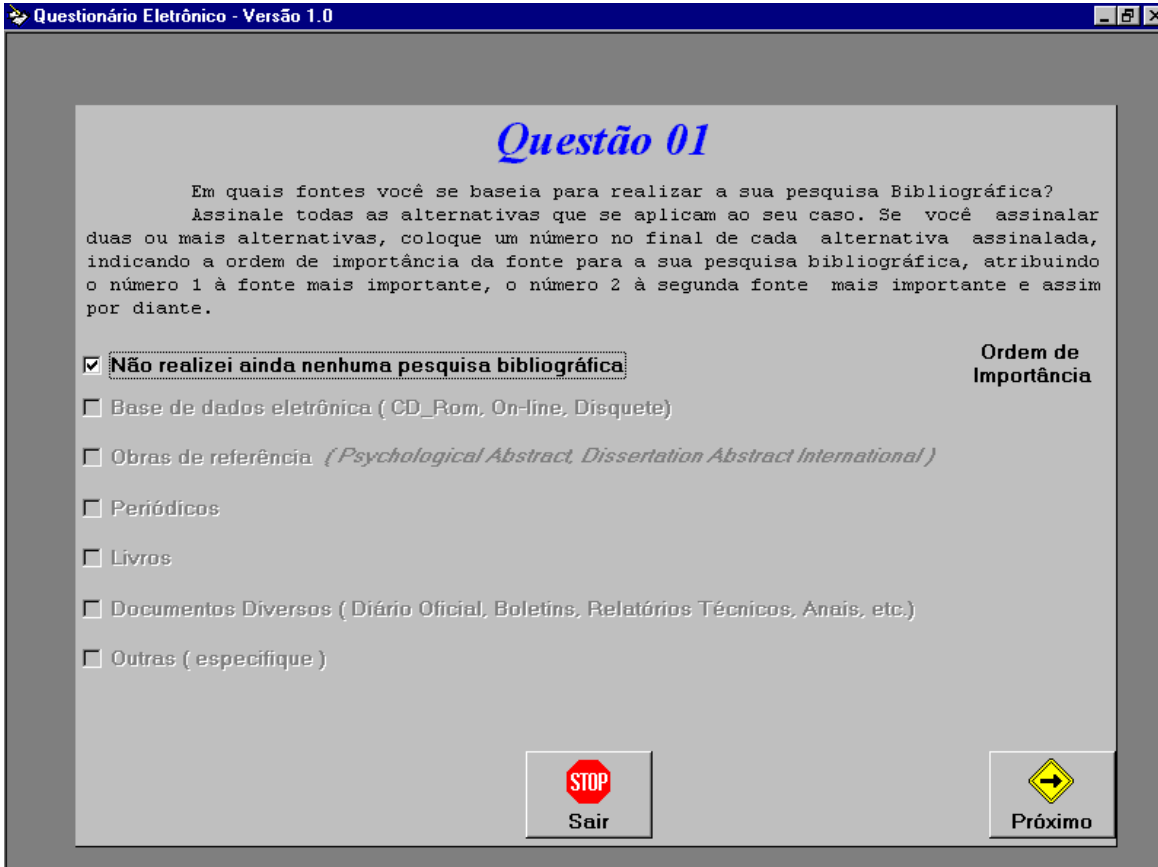
The questionnaire considers different aspects of using information sources and resources usually available in good university libraries, as well as the

manipulation of retrieved information by the participant in his/her work of bibliographical research. The items, presented in different formats (as described below), approach varied themes among which we will specially emphasize one: the use of journals, including the type of articles usually sought in them (research report, review text of an area or subject, theoretical essay, methodological or technical article etc.), reading procedure, analysis of research reports and articles in general.

When the Electronic Questionnaire began, its interaction with the user was as follows: the initial screen contained a text with a brief explanation about the research purpose, the information that there were no correct or wrong answers, and it was not a kind of evaluation. The text also required special attention from the participant to answer the questionnaire only based on his/her habitual behaviors when using information resources, and at the end ask the participant to fill out of a chart with information, which was presented immediately following, if the participant clicked on the "Start" option. The other available option was: "Exit", which presented a dialog box with the warning "to exit from electronic questionnaire, all saved information until now will be 'lost' and the question "Do you do want to exit from questionnaire?" with alternatives "Yes" or "No". Choosing the alternative "Yes" produced said warning and, if it was "No", the dialog box closed. "Exit" was in all following screens.

"Start" presented an application to characterize the participant, with spaces to be filled out with personal data: name, date of birth, sex, background, and identification of the course to which he/she belonged: master or doctoral degree (in this case, one of the alternatives should be marked by clicking on corresponding button), and the initial year. At the bottom of the application there were the options: "Exit from questionnaire", whose selection instigated the described action above, and "Start the questionnaire". Having chosen the latter, the program checked the inserted information of the participant, seeking occasional "errors", as, for example, blank spaces, date of birth incorrectly typed, which should follow the *dd/mm/yyyy* pattern, the non indication of master or doctoral degree. If any error was detected, the program immediately presented a dialog box, indicating it. A click on the rectangle

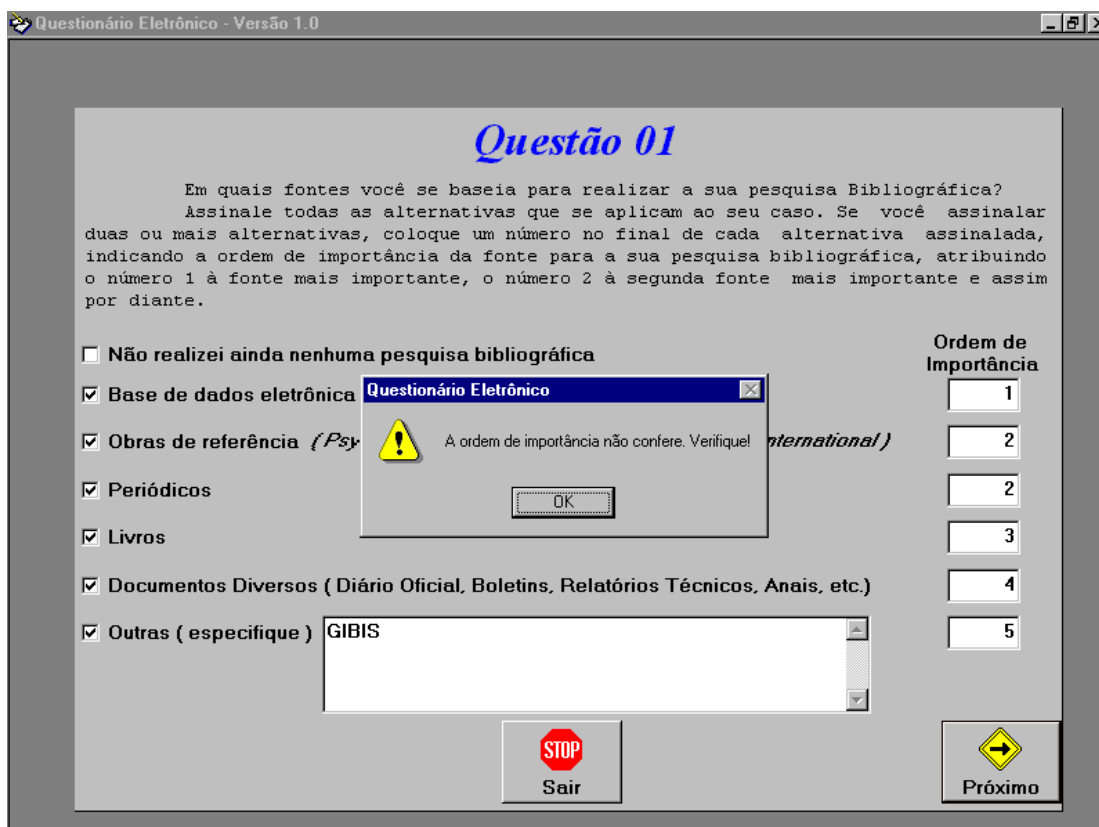with "OK" closed the dialog box, in a way that the participant could correct the application.

Figure 1: Screen Reproduction of Electronic Questionnaire.
Source: Prepared by the authors.

The choice of the option "Start the questionnaire" led to the first question, whose screen is presented in Figure 1. All items are presented in the same way as to the form: the question was presented on the top of screen, followed by instructions as to procedure to be adopted in inserting the answers; at the bottom the alternatives were presented as well as other spaces to be filled out. As to the item number at the top of the screen (Figure 1), it was in increasing order, beginning from 1. However, it is important to emphasize that, since some of the following items were only presented accordingly to marked alternatives in the first item (see below), participants do not answer all of the same items and therefore these were in different numbering for each one. In Figure 1, none of the alternatives is marked but the first. Its indication

would go directly to the end of the questionnaire, giving the participant the option to save or not the inserted information.

Figure 2 produces a screen in which all alternatives (except the first) were marked. Note that the indication of each alternative opened a corresponding dialog box, in column "Order of importance", in which a number expressing the importance assigned to the item by the participant should be inserted, with number 1 corresponding to the major importance, number 2 to the second major importance, and so on. For example, the figure illustrates a hypothetical case in which to the same position was attributed two alternatives. The program was elaborated in a way to not permit "errors" of this type, in this particular case, a tie. In Figure 2 all alternatives (except the first) are marked and all spaces activated. Due to a "tie" in order of importance attributed to two items, a dialog box informs the "error" to the user, and the advance is blocked. In this situation, click on "Next" would produce a presentation of a dialog box, as in Figure 2, informing the error to the user. The advance to the next item was only possible if all information was inserted rigorously correct.

Figure 2: Screen Reproduction of Electronic Questionnaire.
Source: Prepared by the authors.

Subsequent items to be presented to each participant in particular depended on marked alternatives in the first item. We described in short all items presented to participants that marked "Journals". One of them was: "To perform the bibliographical research directly from journals, how do you proceed?" The alternatives were "Do you perform regressive systematic search, that is, from the most recent number, do you analyze all numbers until a determined year?", "Dou you perform guided search, that is, do you follow specifically certain numbers, volumes or years?", "Do you perform asystematic search, that is, do you analyze journals without defined criterion?", "Do you usually visit the library to analyze recent numbers of determined specific journals, independently from studied subject at the moment?", and "What about other procedures (specify)?" It is convenient to emphasize that when "others" appeared, its indication opened a text box to the specification about the participant's procedure, habit etc.

Another item was "In the bibliographical researches performed in journals, what type of article are you used to analyzing?" Available alternatives were "Review article of an area or subject". "Article or theoretical essay", "Research report", "Researcher's declaration or interview", "Professional's declaration or interview", "Methodological or technical article", Researcher's biography" and "Other type of text (specify)". In this case, if more than one alternative was marked, a number should be inserted in the appropriate place, showing the order of importance attributed to the item by the participant. The instructions were in the title of the item.

Indication of "Research report" showed several other related items. One of them was "When analyzing a research report, do you usually follow rigorously the sequence of the text, that is, in the order in which different parts of the article appear?" with alternatives "Yes", "No" and "Depends on the text". Another was "List each part of the article, showing the order in which you usually perform the reading to analyze the research report" Corresponding alternatives should be marked and receive a number showing the order in which the participant read different parts of an article. They were: "Title", "Abstract", "Introduction", "Method" (subjects, material, and

procedure)", "Results (tables, graphics, statistical analysis, qualitative analysis)", "Discussion" and "Bibliographical references". Besides this item inquiring about the reading order of parts normally constituting an article, another item requested to attribute positions showing the importance of each part. Presented alternatives were the same of the previous item. Another item about article reading was "When reading an article, how do you proceed? Mark alternatives applied in your case. If you mark two or more alternatives, put a number at the end of each alternative marked, showing the order of frequency in which you use the reading procedure referred to in the alternative, attributing number 1 to the most frequent, number 2 to the second most frequent, and so on." Alternatives were "You do the reading in the sequence in which different parts of the text appeared", " You do the reading skipping some parts and/or returning to parts already read", "During the reading, you search other text(s) for some additional information", "During the reading, you analyze in bibliographical references the authors' quoted work in the text" and "Other procedures (specify)".

And the last item about article reading in journals was "If the read text deals with the subject in a way that interests you, do you go back to this reading at another moment?" The alternatives were "Yes" and "No", with the detail that, when marking the former, three others were presented: "About [.....] times" (brackets represent the space in which the participant should insert a number), "Completely" and "Only interesting parts".

3 DATA ANALYSIS

For each of treated themes in the electronic questionnaire, data are initially presented and analyzed in the set of the 60 participants of the study and then compared between master and doctoral students. It is considered that the most advanced stage in which the doctoral students are in the researcher's background process, compared to master students, may imply a distinguished way of using journals.

In comparing the groups of students, the nature of data demands the application of the statistical tests. This comparison was made for each category of

answer, taking into account the frequency of respondents giving this answer, and those who did not mark it. Chi-squared (χ^2) test is suitable to this kind of numerical data, but when low frequencies advised the Fisher exact test was used.

To analyze the order of importance or the frequency of use given to different categories of answers, ranks attributed by respondents were considered. Such analysis may show that a certain alternative, even marked by an increased quantity of respondents, may not be considered especially important among all possible alternatives. Always the necessity of comparing groups of students was checked, related to this order of categories of answers, the Spearman's correlation coefficient and the respective probability of rejection of null hypothesis were calculated.

4 RESULTS

Such as explained in the method description, the use of journals in performing bibliographical research was widely explored in this study, considering that the most recent scientific productions may be found in this means of propagation. Out of the 60 participants, 53 informed the use of journals as the information source for performing bibliographical research (23 master and 30 doctoral students). In this way it was investigated how they proceed to do their searches directly from journals. Data related to search habits are in Table 1.

Table 1: Indication, in frequency and percentage, of different seeking habits to perform bibliographical research in journals.

Procedure	Master Students		Doctoral Students		Total	
	Freq	%	Freq	%	Freq	%
Guided search	14	26.4	20	37.7	34	64.1
Progressive search	7	13.2	14	26.4	21	39.6
Usual visit to library	7	13.2	9	16.7	16	29.9
Regressive search	5	9.4	8	15.1	13	24.5
Asystematic search	5	9.4	3	5.7	8	15.1
Other procedures	0	0.0	3	5.7	3	5.7

The major part (34) indicated preference for *guided search*, addressing specifically to certain numbers, volumes or year of publication previously known. Twenty-one of them preferred seeking progressively, that is, from a certain year until the most recent number, since 16 usually visited the library to analyze recent numbers of determined journals, independent of the subject they were studying at the moment. *The retrospective search*, that is, from the most recent number until a certain year, *the asystematic search*, that is, without defined criterion, and *other procedures* were indicated by 13, 8 and 3 participants, respectively. The competent statistical analysis showed no significant difference between the master and doctoral groups in any of the seeking procedures. The nature of articles usually examined was also investigated. Data are in Table 2.

Table 2: Indications, in frequency and percentage, of type of analyzed articles. Indexes of the column "Mean rank" are the average of the order of importance attributed by participants to each type of article: the lower the number the greater the attributed value and *vice versa*.

Article Type	Master Students		Doctoral Students		Total		Mean Rank
	Freq	%	Freq	%	Freq	%	
Research report	20	37.7	27	50.9	47	88.6	2.38
Critical review	19	35.8	23	43.4	42	79.2	1.67
Theoretical essay	14	26.4	25	47.2	39	73.6	2.10
Methodological Article	13	24.5	25	47.2	38	71.7	3.37
Researcher's interview	7	13.2	9	17.0	16	30.2	4.00
Professional interview	6	11.3	7	13.2	13	24.5	4.69
Biography	4	7.5	3	5.7	7	13.2	4.86
Others	0	0.0	0	0.0	0	0.0	–

Out of the 53 participants that informed the use of journals as sources for performing bibliographical research, 47 marked that they usually examine *research reports* (20 master and 27 doctoral students). The difference is entirely insignificant according to Fisher exact probability test ($p = 1.00$). Participants that marked two or more alternatives noted the order of importance attributed to each type of indicated article. *Research reports*, although they were quoted by more participants than other type of articles, received the mean rank of 2.38, third most valued type.

Critical review articles of an area or subject are examined by 42 participants (19 master and 23 doctoral students). The numerical difference between these two students groups is not statistically significant according to Fisher exact probability test (p = 0.74). Critical review articles are the most valued by participants, receiving the mean rank of 1.67.

Thirty nine participants, 14 master and 25 doctoral students, usually examine *theoretical essay* articles. Although there were almost two times more doctoral students than master students to analyze this type of article, this difference is not statistically significant (χ^2 = 3.38; p > 0.05). The mean rank obtained by *theoretical essay* articles is 2.10, occupying second place of importance.

Critical review articles of an area or subject, and those of *theoretical essay* may be of special interest to students in constructing a theoretical referential to his/her research. *Methodological or technical articles* may be of interest to those specially concerned about methodological questions. This type of article was usually examined by 38 participants, 13 master students and 25 doctoral students. More doctoral students expressively search methodological articles. The numerical difference between the two students groups, searching for methodological articles, is statistically significant (χ^2 = 4.61; p < 0.05). The mean rank reached is 3.37, indicating the fourth position in terms of importance.

In some journals, it is common to publish researchers' or professionals' declarations or interviews. Sixteen participants, 7 master and 9 doctoral students, indicated the *researchers' interviews* or *declarations* text. The difference between groups of students is virtually null (χ^2 = 0.00). The mean rank attributed is 4.00. Similarly only 13 participants, six master and seven doctoral students, informed the *professionals' interviews or declarations* text. The difference between the groups is also virtually null (χ^2 = 0.05). The mean rank attributed is 4.69.

Another type of text presented in some journals is a researcher's *biography*. Only seven participants, four master and three doctoral students, informed the using of this type of text. The difference between the groups is not significant according to Fisher exact probability test (p = 0.45). The mean rank attributed is 4.86.

None of the participants indicated any other type of text published in journals as being the object of usual analysis in their bibliographical research.

Particularly, for the 47 participants that informed that they usually examine research reports when doing bibliographical research directly from journals, it was required to show the order of importance attributed to different parts of a research report. Mean rank, according to the order of importance attributed to different parts of a research report, are in Table 3.

Table 3: Order of importance attributed to each part of a research report published in journal. The lower the number the greater the attributed importance to the item and *vice-versa*.

Parts of Research Record	Master Students	Doctoral Students	Total
Title	3.15	4.48	3.91
Abstract	2.75	4.04	3.49
Introduction	3.35	3.56	3.47
Method	3.50	2.85	3.13
Results	4.65	3.59	4.26
Discussion	4.70	3.93	4.26
Bibliographical References	5.90	5.19	5.32

Values of mean rank, attributed by master and doctoral students to different parts of a research report, are not much widely variable. They varied from 2.75 to 5.90 for master students and from 2.85 to 5.19 for doctoral students. Considering that seven are parts to be ranked (without forgetting that the program did not permit repetition of ranks), the perfect consensus would be expressed varying from 1 to 7, since the total absence of consensus would not produce any variation, that is, there would be only a common mean rank for all seven parts of the article. Thus, the data suggest there was no great consensus among participants belonging to each group of students. Different trends may be suggested with each group considering the value of these different parts of research report. The order of importance, according to master students, obeys, in a general way, the proper order in which these parts appeared in the text. Doctoral students seem to tend to give more importance to

Method and afterwards virtually similar importance to *Introduction* and *Results*. *Discussion* and *Abstract* received mean rank of importance very close to and above *Introduction* and *Results*. It is remarkable that both master and doctoral students had attributed less importance to *References*, which are the source for the *citation chasing* technique, that is, to verify text citations considered relevant (BARRET, 2005).

Following the comparison of the mean rank of importance attributed to different parts of research report by master students, with the mean rank attributed by doctoral students, and by Spearman's correlation coefficient, the value 0.11 (p > 0.05) was obtained, showing the absence of linear dependence relation among sets of compared values. Thus, it may be suggested that the importance attributed to different parts of an article of research report by master students does not obey the same order of attribution made by doctoral students.

In relation to research reports published in journals, additional questions were included in the electronic questionnaire aiming to obtain more detailed information about the use made by participants in this study of this type of article. The first of these questions was about the reading sequence of different parts of a research report. Data may be visualized in Table 4.

Table 4: Indications relating to ways of reading research report.

Reading in Sequence	Master Students		Doctoral Students		Total	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**
Yes	15	32.0	16	34.0	31	66.0
No	3	6,4	1	2,1	4	8.5
It depends on the text	2	4.3	10	21.3	12	25.5

Out of a total of 47 participants that informed they usually analyze research reports, according to Table 1, 20 are master and 27 are doctoral students. Among the master students, 15 read different parts of a research report in the sequence they appeared in the text; three do not read in the sequence and two follow or not the sequence depending on the text. Among doctoral students, 16 read different parts of a research report in the sequence they appeared in the text; one does not read in the sequence and ten follow or not the sequence depending on the text. Adding the

adjoining categories "No" and "It depends on the text" to compare with the category "Yes", no statistically significant difference was verified between groups of students (χ^2 = 1.27; p > 0.05).

For those who do not read the different parts of a research report in the sequence they appeared in the text, and for those who follow the sequence or not depending on the text, it was required to show the order they used to read these parts. Table 5 shows the medium position attributed to each part of research report by five master and 11 doctoral students. Although the individual answers given by 11 doctoral students show they do not follow rigorously the order in which different parts of record appear in the text, the group's mean rank obeys the sequence these parts usually appear in the body of published articles in journals.

Table 5: Indications of usual reading order of each part of a research report. The value of numbers varies according to the order in which each part is read.

Parts of Research Report	Master Students	Doctoral Students	Total
Title	1.00	1.09	1.06
Abstract	2.00	1.91	1.94
Introduction	5.20	3.73	4.19
Method	3.80	3.91	3.88
Results	4.60	5.27	5.06
Discussion	5.80	5.82	5.81
Bibliographical References	5.60	6.27	6.06

It is the group of five master students that presents a visible change in reading order. These students tend to read *Introduction* after *Method* and *Results*, and *Discussion* in last place. *Introduction* and *Discussion* deal with theoretical questions, and the author of the record seeks an integration of his/her findings with knowledge already produced about studied phenomenon. Maybe the concern with theoretical questions are not so present in some researchers in initial background.

Despite this, Spearman correlation coefficient between mean ranks of master students and doctoral was 0.86, which is statistically significant (p < 0,05). It is worth to say that the mean reading order of different parts of a research report article by

master students is not statistically different from mean rank related to the doctoral students reading.

Different type of articles published in journals, whose distinguished use and value were described from the constant data in Table 1, may be read in different ways. So, an item from the Electronic Questionnaire looked to identify different ways in which these articles and other texts are usually read by participants in this present study, as well as the order of frequency in which these different ways of reading are used by them. Texts may be entirely or some parts read, following or not the sequence in which different parts appeared in the text, searching for other texts during reading, etc. Data related to this survey are in Table 6[ii].

Table 6: Ways of performing reading of articles in journals.

Ways of Reading	Master Students		Doctoral Students		Total		Mean Rank
	Freq	%	Freq	%	Freq	%	
Reading in sequence	22	36.7	26	43.3	48	80.0	1.50
Skipping parts	10	16.7	15	25.0	25	41.7	1.80
Analyzing references	24	40.0	26	43.3	50	83.3	2.16
Searching for other texts	13	21.7	16	26.7	29	48.3	2.48
Others	00	–	02	03.3	02	03.3	–

The majority of participants read articles in the sequence in which different parts of the text appear, and this is the more commonly adopted way. This modality was referred by 48 participants, being 22 master and 26 doctoral students. The difference between these groups of students is virtually null ($\chi^2 = 0.07$). The mean rank, in terms of order of frequency in which the reading is performed in this way, is 1.50. Thus, the most common way in which the majority of participants read an article is following rigorously the sequence of the text.

The reading may also be done, specifically in several re-reading of the same text or searching for specific information, skipping some parts or eventually returning to parts already read. This way of reading is used by 25 participants, 10 master and

15 doctoral students. The difference between these groups of students is far from being statistically significant ($\chi^2 = 0,77$; p > 0,05). The mean rank attributed is 1.80, showing to be the way of reading commonly used by these 25 participants.

The way of reading that may be specially productive, in particular when one is searching to know important works or emphasized authors in a determined area, is to analyze authors' works quoted in the text (*citation chasing*) in the references. Fifty participants, 24 master and 26 doctoral students, informed they perform the reading in this way. Groups of students are nearly identical in this case, according to Fisher exact probability test (p = 0.74). The mean rank, in terms of frequency of use, is 2.16.

During the reading of a text, situations may appear in which there is the necessity of searching for information in other texts. So, some readings may require seeking other texts for some clarification. Twenty-nine participants, 13 master and 16 doctoral students, informed they use this procedure of reading. Groups of students almost do not differentiate regarding to the use of this way of reading ($\chi^2 = 0,08$). The mean rank attributed is 2.48, suggesting to be the less common way of reading used by these students.

Only two doctoral students informed they also used other ways of reading a text. They are answers that refer to very specific ways of performing readings which are used in some special situations.

Depending on the nature of the text, studious researchers come back many times to it. Asked about that, all participants informed that, if the text deals with the subject in a way that concerns them, they come back to its reading at another occasion. Although it was certainly difficult to establish an estimation, they were required to give an approximate number of times they usually come back to the reading of this type of text. Answers vary from one to nine re-readings, with a mean of 2.8. According to 13 participants, these re-readings are usually done in its entirety and only in parts of interest, according to 47 participants. Results are in Table 7. Proportionally there are more doctoral students that come back to the entire reading of the same text than those from master's, but this difference is not statistically significant ($\chi^2 = 3.71$; p > 0.05).

Table 7: Ways of re-reading important texts.

Ways of Re-reading	Master Students		Doctoral Students		Total	
	Freq	%	Freq	%	Freq	%
Its entirety	03	05.0	10	16.7	13	21.7
Only important parts	25	41.7	22	36.7	47	78.3

5 CONCLUDING REMARKS

Using an electronic version of the questionnaire as a data collection instrument for research, programmed to avoid data that were not used due to "errors" of answer, this study has presented a survey of bibliographical research habits in journals by students of a graduate course in Education. Comparisons were made between master and doctoral students. A specially interesting result was obtained related to different type of examined articles. In the list of different type of articles, a methodological or technical article is included. According to Table 2, this type of article is usually analyzed by 38 participants from 53 that informed they perform the search directly from journals.

One of few differences between the master and doctoral groups, concerning behavior seeking information to perform the bibliographical research, refers to the use of methodological articles. Significantly, there are more doctoral students that examine this type of article when performing bibliographical research directly from journals, compared to master students ($\chi^2 = 4,61$; $p < 0,05$).

Our experience of working together with advisors of graduate course in Education allows us to see that the master students' difficulty with methodological questions of research is a recurrent finding. The researcher's background is a crucial purpose of the *stricto sensu* graduate course. So, the result found may be announcing an important learning that occurs during graduate course, leading doctoral students, more than master students, to appreciate and seek articles that deal with methodological questions.

Some support for this interpretation may be found in the described data in Table 3. For doctoral students, the most important part of research report is the method description (mean rank = 2.85), while for master students this part is only the fourth most valuable (mean rank = 3.50). Together, different parts of the research reports are not valuable in the same order for master and doctoral students (ρ = 0,11; p > 0,05).

Another interesting finding concerning the great valuation given by participants to articles of critical review and theoretical essay, comparatively to research reports, as in Table 2. Articles of critical review and theoretical essay, even though deal with conflicting data, may be presented to participants of this study as systematized and organized texts with a consistent theoretical body, more than articles of research report. We have also verified (OMOTE; PRADO; CARRARA, 2003) that books constitute the most frequently employed and valued research sources by graduate students in Education. This result is coherent with the great valuation given to articles of critical review and theoretical essay.

The most recent researches also confirm this preference among components in the same graduate group. The citations analysis from 187 master dissertations defended between 1999 and 2004 in the graduate program in Education, reveals that this area presents a great variety of quoted sources type, a total of 12, in comparison with other analyzed areas. The four types of the most quoted source are: books and/or chapter of a book with 75% of citations (out of a total of 1344 citations), the article of journal appears in 17% of citations; thesis and/or dissertations in 5% and annals of event in 3% of citations (OLIVEIRA; SILVA, 2006). In another research (SILVA, 2009), the journal appears in third place as preference of used sources by graduate students of Humanities and Social Sciences to do their research projects, following books and Internet.

Such results may be particularities of Humanities and Social Sciences by the critical and controvertial nature of the theoretical discussions. Noronha (1998) identified, in dissertations and thesis in area of Public Health, that articles of journals were the most frequently used sources. He did not inform what type of article was the

most frequently used by master and doctoral students in this area. Articles relating empirical researches may be the most commonly used by those students.

Following in this reasoning, it is possible to suggest the hypothesis that our participants, graduation students in Education, prefer texts with relatively systematized knowledge to research reports, which may appear to these readers as relatively disorganized texts. This preference may be related to the researched problem or research type. Perhaps a theoretical research of reflective character leads the student to a relatively natural search for texts that bring relatively systematized knowledge about the problem of research. This preference may also be related to the student's conception of bibliographical research or theoretical base. These are questions that require new investigations.

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[i] The research data collection reported here was conducted in 2003, when there was no availability of resources as that currently, the example of electronic questionnaires available at specialized sites. For this reason, the instrument used was developed by two authors with the aid of a computer professional, using the programming language Visual Basic 5.0 ®.

[ii] This item was answered by all 60 participants, including seven that initially did not refer journals as sources of reference for the performment of bibliographical research, because the question applies to the reading of any scientific text.