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Finding and reading reports of research: How academic librarians can help students be more successful

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Abstract

This exploratory study used analytic induction to examine the content of seven

prominent library research journals in terms of the characteristics evidenced in reports of

research. It examines questions such as: How does one differentiate a research report

from other types of scholarly writing? What are issues that impact success in effectively

searching for and finding a report of research? Where might students encounter stumbling

blocks in successfully reading and understanding a report of research? Implications from

the findings of this study are generalized into recommendations for how academic

librarians can apply their professional skill sets to aid students whether undergraduate,

graduate, professional or doctoral to effectively find and successfully read reports of

research.

Keywords: finding research reports, analytic induction, scholarly writing practices,

reading research reports

Introduction

As three library and information science (LIS) faculty who teach a semester-long graduate research methods course required for the Master of Library and Information Science (MLIS), we began this project with questions that arose from our own experiences and those of our students. Key elements of the course we teach include helping students learn to find, read and analyze reports of research in the LIS literature. However, we noticed that in trying to find reports of research, students were floundering. A simple request to find and read an experimental study met with confusion and frustration. This was not completely due to failure to understand the characteristics of experimental research. Rather it was also due to:

- discrepancies and inconsistencies in the infrastructure of search engines, databases, and controlled vocabulary that may interfere with finding reports of research.
- variations in social and cultural conventions of writing in the research reports themselves.

In addition, conceptual knowledge required to critically read and analyze different types of research reports varies widely. From issues of reliability and validity to issues of trustworthiness, credibility and transferability-- novice readers of research reports have considerable new knowledge to acquire, build, and practice. These social and cultural conventions influencing the writing and publishing of research reports also affect the skills needed to find and read reports of research.

While our questions began with graduate students in a School of Library and Information Science, we realized that students of all types may also struggle with the same questions and same complaints regarding reading research: "It's boring." "I just read the findings." "Why can't researchers write so people can understand them?" "It's too esoteric." "They're just proving what we already know." "Why waste the time?" "I can't find any research on the subject I need, so why bother?" With this study we aim to help academic librarians in their conversations with students regarding why finding and reading reports of research may be a valuable and useful practice (in addition to getting a good grade). We set forth a few possibilities here:

- Developing learning agility through practice reading difficult and complex materials.

- Improving search strategies toward finding more relevant and scholarly materials to answer not only academic questions but questions from all parts of life.

- Successfully completing a master's thesis or doctoral dissertation.

- Writing grant proposals and requests for funding.

- Making decisions, which need support and justification.

- Keeping up to date on interesting ideas and new concepts.

Through examining articles in seven library research journals we explored commonalities across different types of research designs and research methods in terms of challenges that might cause readers difficulty in understanding or interpreting the value and relevance of the research they read.

Conceptual Foundation of the Study

In this study we applied analytic and inductive processes towards examining a broad and general question: How might characteristics of research literature be related to successful experiences in reading reports of research? We were interested in characteristics and features that might create challenges to motivation and to practice with reading reports of research. For the purposes of this study, we adopt a definition of the term research that foregrounds the processes of defining questions and conducting research studies aimed at improving practice in the information professions (Wildemuth, 2009, p.3).

Through examining and discussing the data for this study we realized the process of reading a research report is comprised of two distinct components: finding and reading. The precursor skill to this process is being able to find a relevant research study matching some criteria the searcher has in mind. Therefore, we developed the following conceptualization:

> The first steps in successfully using a report of research are
>
> the skills of *effectively finding* and *critically reading* the
>
> research.

When students attempt to find reports of research, they may not only experience difficulties because of structural barriers that present themselves in databases and other institutional repositories, but they may also experience difficulties because of the way they have been socialized to understand the idea of research itself.

When younger students are asked to carry out research in grade school it often amounts to search and retrieval. This fact-finding approach has been criticized by some

scholars for promoting plagiarism and diminishing critical thinking among students

(Loertcher, Koechlin & Zwaan, 2004). This criticism has become even more heightened

with the onset of online searching where students can easily retrieve and copy

information and pass it off as research. To that end, a study conducted by the Pew

Research Center (Purcell et al, 2012, p.4) notes that "for today's students, 'research'

means 'Googling'." As a result, some teachers report that for their students, "doing

research" has shifted from a relatively slow process of intellectual curiosity and discovery

to a fast-paced, short-term exercise aimed at locating just enough information to complete

an assignment.

Undergraduate students bring these ideas of research from their early experiences

into the higher education arena. This common conception of research is about a

generalized process of finding, evaluating and using information. The type of research

discussed in this study is research that is often labeled as empirical or systematic: A study

where data is collected and analyzed and results of the study are presented.

Compounding the problem of ambiguity in the conceptualization of research is

what academic librarians, as information professionals, may have previously learned

about research. In their undergraduate or master's programs academic librarians may

have been trained within a research tradition (e.g. quantitative or qualitative) or with one

tradition being privileged. In other words, if one has only been exposed to a single

research tradition then there may be limitations in helping students across the disciplines

find and read other kinds of research reports. Those who are trained in qualitative or

rooted in interpretivist epistemologies would have similar difficulties. For example, an

academic librarian may struggle to identify relevant research related search terms in order

to construct a successful inquiry for a student of anthropology when the librarian's

background is in chemistry. Disciplines such as anthropology and chemistry use different

types of research methods and research designs. The above are a few of the structural and

social challenges that may present themselves when academic librarians are presented

with helping students find and read a report of research. The current study seeks to

illuminate other characteristics that academic librarians can consider and apply to help

their students become successful users of research reports.

Research Methodology

The research method used to explore these research studies was analytic and

inductive (e.g. Spurgin & Wildemuth, 2009). Data collection and analysis led to further

questions, sometimes calling for additional data and finally the drawing of conclusions.

The process is described below:

- The research began with all three researchers reading reports of research in the

  seven library research journals chosen for this study: College and Research

  Libraries (C&RL), Journal of Education for Library and Information Science

  (JELIS), Journal of the Medial Library Association (JMLA), Library and

  Information Science Research (LISR), Information and Culture (formerly

  Libraries and the Cultural Record), Library Trends (LT), and Library Quarterly

  (LQ).

- As the reading progressed we realized a need to narrow our conceptual frame and

  focus on critical areas where academic librarians could apply their professional

  skills to aid students.

- Narrowing the conceptual frame helped us understand that while we were focused on reading research reports, finding reports was also part of the process. This realization resulted in collecting more information than that supplied by only reviewing journal articles.

- The new information resulted in additional understanding and new questions that took us back to the research reports.

While the bulleted points above imply a linear progression, this process was iterative and interactive. These are not "steps" but rather action components that comprise the systematic process leading to the results of this study.

Journal Selection Process

The journals chosen for this study were based on a purposive sample. We were looking for high quality research journals that focused on library content. The reason we were focusing on library content was twofold:

1. The LIS field has two somewhat differing components: Library and Information Science. Historically the research methods for each come from varying traditions and focal points. While there has been considerable merging of the fields contemporarily we wanted to partially eliminate the confounding which might take place when combining the two areas.

2. Initially this study was to help us help our LIS graduate professional students become more effective consumers of research. However, through the analytic induction process used in this study of reading, reviewing and reconceptualizing the data we realized the characteristics we were observing could generalize to other areas and disciplines. These understandings might be particularly relevant to

academic librarians who, similarly to the three of us, need to help students find

and read reports of research.

To identify high quality research journals we used the Nisonger & Davis (2005)

evaluation of research journals by library deans and directors and Institute of Scientific

Information (ISI) (2012) ratings. ISI provides a list of journals in specific disciplines

ranked by their impact factors. We chose the first seven journals with the word "library"

in the title of the journal to represent library-focused journals. There was considerable

variability in the types of research designs represented across the seven journals chosen

although studies related to the scientific disciplines were less represented than the

humanities and social sciences.

Preliminary Identification of Relevant Characteristics

As we read through the research reports, we took notes and asked questions

regarding characteristics we thought would influence the understanding of research

reports. Many discussions, iterations and ways of organizing the categories and

information were tried before we settled on the diagram below (See Figure 1). For

example, at one point the structural component was designated Structural/Technical. A

decision was made that technical was a subset of structural and thus removed. In like

manner other initial categorizations resulted in revisions until the model below was

decided upon:

[Insert Figure 1 about here.]

This figure encapsulates the characteristics we discovered into two large

conceptual areas: Structural and Socio-Cultural. Some of the characteristics related to

understanding research reports have to do with structural issues. These characteristics

pertain to accessibility decisions that occur behind the scenes, which affect how end-users find (or do not find) the research studies they are seeking. In this study, structural characteristics became associated with configurations of electronic journal publication platforms and with decisions authors make while writing a research report, which may affect its accessibility. Other characteristics are socio-cultural in nature and can be associated with normative conventions, practices and procedures regarding the writing and publishing of research reports.

Characteristics in both categories could be related to finding and reading research. For students, however, structural considerations were more prevalent when examining how reports of research can be found. Social and cultural characteristics were more relevant to understanding how to critically read reports of research. We do not address "context" as a socio-cultural component because we were examining across all disciplines and research types looking for commonalities not differences. This was specifically related to commonalities in clues readers need to understand what they are reading, not commonalities among the various research designs, theories or methods.

[Insert Figure 2 about here.]

Two brief examples are provided to demonstrate how structural and socio-cultural characteristics may interact. Tables of Contents (TOCs) can be a structural challenge, if they do not provide sufficient information to clearly identify an article as a report of research. However, the choice of language and vocabulary used in TOCs can be linked to cultural conventions. For example, a brief communication might refer to short research articles in one journal and to a short news item in another. In like way, the use of controlled vocabulary to find a research report could be considered a structural

consideration. However, the development of the process and procedures for assigning

subject headings has cultural components based in historical and social aspects of the LIS

profession (e.g. Olson, 2007; Olsrud & Tellman, 1993).

In this section, we presented concepts and relationships, which were initial results

of the research study conducted. The following sections discuss intermediate findings and

additional data that was collected. Both the initial results and the intermediate findings

are integrated into the narratives that follow in each of two sections:

- *Effectively Finding Research Reports* where we examine structural characteristics.

- *Critically Reading Research Reports* where we examine socio-cultural

   characteristics.

Effectively Finding Reports of Research

From our own and our graduate students' experiences we discovered that

conducting a search in a professional database for a specific type of research study (e.g. a

factor analysis of attitudes toward e-books) often resulted in no findings: Even though we

knew such an article did exist (i.e. Revelle, Messner, Shrimplin & Hurst, 2012). These

experiences brought about the development of two questions to focus our exploration

regarding finding reports of research:

- What happens when a student tries to find a specific type or kind of research

   report (e.g. a study using focus groups, a research article that uses the everyday

   information seeking model, etc.)?

- What are the characteristics of the search process?

What follows is a story illustrating the confounding aspects of this type of search.

The three of us began this study by looking at the journal: *Library and Information*

Science Research. As an intermediate finding, this review resulted in a fairly consistent

agreement regarding the identification of what was a report of research. We later realized

this convergence was more due to the nature of the journal we chose (one that

predominantly publishes reports of research) than actual agreement and understanding

regarding what constitutes a report of research. However, since we appeared to have a

common set of beliefs regarding a research report, we divided up the other journal titles

and each individual reviewed one year of a title. As we compared our reviews of these

other titles it became apparent that what constituted a research report was more complex

than we had first considered.

　　　To illustrate the problem with an example: Not one of us was an experienced

historical researcher. This became relevant as we read articles from *Information and*

Culture (I&C), which has a high proportion of historical articles. In looking at "Books

and Reading in the Connecticut Western Reserve" (Stiffler, 2011) we did not know

whether or not to classify this article as an historical research study. We all knew, to

some degree, that to identify an historical report of research we needed to be able to

accurately answer a question such as: At what point does an article tip the scale from

being an historical research project using primary sources to being a narrative literature

review using some primary and some secondary sources? We asked a colleague who is

an historical researcher to help and were provided with a third possible category:

historiography.

　　　As experienced researchers we were able to articulate a question that might help

us resolve our uncertainty regarding whether or not an article was research. However, our

experiences with graduate students indicate that often they can not clearly find a concrete

question to pose. They also might not have a friend, peer or personal resource

knowledgeable about research methods. This example is one of the reasons we have

chosen not to provide even a working definition of a research report, research study or

research article. What constitutes a research report differs based on disciplinary norms,

cultural conventions and epistemological considerations. In some fields an

autobiographical narrative might be considered research where in other areas of study it

would not. This leads to the question: How do academic librarians help students find

clues to choose articles relevant to their academic needs?

Our previous experience and associated conversations regarding how to identify a

research report brought about the development of two sub-questions regarding *effectively*

finding reports of research which will help answer the question posed above.

- How do journals help readers identify articles as research studies? For

  example, are headings provided in the TOC or is information regarding

  research method required in an abstract?

- Can reports of research using specific methods be found by using

  controlled vocabulary (subject headings) supplied by article database

  developers?

How do journals help readers identify articles as research? With the advent of

online databases and online access to articles, readers often do not have easy access to a

journal's TOC. One of us thought that at least one of the journals we were reading clearly

identified articles as "research" in the TOC. We decided to collect information from the

various TOCs for all of the journals and see what type of clues they might provide. In

attempting this we discovered that electronic TOCs and print TOCs for the same journals

and issues were not necessarily the same.

No consistent method or set of words was used by publishers in their TOCs to

clearly differentiate research articles from other types of articles. In addition, categories

such as "Articles" could contain many different kinds of writing even though these

journals are acknowledged as top research journals in the field.

Some journals do clearly identify articles as "research" by labeling them as such

in the TOC (e.g. *JELIS*). Other journals have section titles such as "case studies" (e.g.

JMLA) or "brief communications" (e.g. *LISR*), which may be inferred to represent

research studies. In addition, there were differences in how research articles were

identified in the print versus the electronic version of a TOC. *C&RL* had "scholarly

communications" in the print TOC but this did not appear in the electronic version.

Library Trends is an example of a journal that at one point provided no labels or words to

describe the types of articles in the TOC and now does.

The problems in the library literature regarding identifying articles as research

through listings the in the TOCs may not be as relevant in disciplines where there are one

or two predominant research methodologies. However, these findings will be applicable

to fields, disciplines and professional areas where research encompasses an extensive

range of research methods and research designs. The variations in the publishing industry

regarding labeling articles in TOCs makes it difficult for readers to clearly identify

whether or not they will be reading a report of research. In addition, readers may not be

able to recognize the type of research method being used. Academic librarians can

develop familiarity not only with how library journals label research within a TOC but

also practices in other disciplines and fields. This is an extension of an information skill

set already held by academic librarians and it will allow for more effective help in finding

research reports for students from across all disciplines.

Further, journals do not always provide detailed guidance on what constitutes an

abstract. As a result, abstracts may not include pertinent information about the research

design, such as the data analysis method or the theoretical foundation of the study.

Because of missing information in the abstract, it may not be of help to students in

finding specific and relevant research reports. As both consumers of research reports and

interpreters of research reports to their user base, academic librarians can begin to think

about where indicators for the research method might be if it is not in the article abstract.

Can reports of research be found using controlled vocabulary (subject

headings)?

We also examined subject headings looking for general identifiers (e.g. research

study or research report; experimental research; focus group). Controlled vocabulary

typically focuses on the subject or content of research articles rather than the methods

used when conducting the research study. For example, when the assigned subject

heading is "focus groups" the article typically is about the concept of focus groups, not a

research study using a focus group methodology. This idea of how to find research

reports then became a critical area we needed to address when talking about reading

reports of research. If, as trained information professionals, it was difficult for us, how

much more difficult must it be for students for whom research methods and research

vocabulary are relatively new? Helping students identify effective subject headings or

keywords for finding reports of research is one area where the professional search skills of academic librarians can be particularly relevant to student success.

To help answer this question regarding controlled vocabulary we collected additional data regarding the subject headings assigned to the articles we read by looking in two subscription databases. Both had subject search capabilities: yet the fields that could be searched differed. In particular, one only searched on titles, abstracts and subjects while the other also searched on full text. Here, the lack of controlled vocabulary to aid the searcher was even more problematic than how research journals organize information such as with TOCs. It is not just academic researchers who are looking for a true experimental study or historical research on a topic. Many undergraduates and graduate students would like to look at a range of research types on a particular topic and would like to have searchable vocabulary or metadata to help in these efforts.

In this section we have examined questions related to finding research reports and characteristics that may help (or hinder) readers understanding of how to effectively find and identify reports of research. In the next section we address socio-cultural characteristics related to critically reading reports of research.

Socio-Cultural Characteristics related to Reading Reports of Research

Socio-cultural characteristics can be described as both issues within reports of research and issues related to reading the text. These characteristics encompass both readers and writers of research reports. Whereas structural issues were primarily associated with readers interacting with retrieval systems, socio-cultural issues are associated with readers experiencing writers and text. In this next section we look at the following questions:

- What are the types of characteristics that affect critically reading reports of research?

- How might these characteristics be categorized or organized so individuals new to reading research (e.g. undergraduates or new graduate students), would be able to identify them and develop effective strategies for understanding?

Socio-cultural characteristics refer to the normative writing practices authors assume based on the foundational knowledge and beliefs they inherit from their academic disciplines. We identified two general categories of characteristics that we discuss and provide examples of below: 1) Social conventions regarding writing in general; and 2) Cultural expectations regarding the content of a research report. Examples of social conventions include such things as naming, citing and vocabulary use. Examples of cultural conventions include organization of the research report including expected components such as literature reviews, discussion of limitations, reliability and validity (or equivalents) and explanations regarding research methods and/or theory use.

Social conventions of scholarly writing. Higher education aims to prepare students to participate in academic communities of practice through various teaching and learning endeavors. An important part of this education is socializing students into academic culture. Part of this process occurs through introducing students to the conventions of scholarly writing practices. For example, academic librarians have all received a graduate education and have been through this socialization both in their bachelor degree programs and their MLIS programs of study.

According to Coffin *et al.* (2003, p.1), an important part of higher education is to "identify and demystify the conventions and practices associated with academic writing."

However, academic writing is often an invisible dimension of the curriculum and when readers lack familiarity with these conventions "the assumption is often held that they will 'pick it up' as part of learning" (Coffin *et al.,* 2003, p. 3).

Connell (2010) offers additional guidance and states that a well-done literature review benefits both the researcher and reader. More specifically, the process of doing a literature review gives the researcher and readers alike a thorough grounding of the subject matter (Connell, 2010). The conventions and norms of scholarly writing are formalized through academic programs and writing expectations are articulated in the academic literature. When these conventions and norms are not met, confusion can arise. Three examples which can provide inexperienced readers with difficulty are discussed below: citations, naming conventions and the use of jargon. It should be noted that it is not the role of this paper to identify and comment on the quality of individual studies but rather to identify trends and directions as a whole. Therefore, in the sections below we speak in general terms and do not specifically cite individual studies.

Citations. Not all of the authors who published in the journals represented in our sample adhered to the commonly shared scholarly writing practice of providing complete and accurate citations. For example, missing and incomplete citations were observed. As a result, the lack of proper and complete citations can become problematic for readers of research reports. When reading a research report, the adequacy of documentation, accuracy of sources, and correctness of interpretation of sources are important criteria to consider (Connaway and Powell, 2010). Therefore, authors should consistently provide full and complete citations in their scholarly work. When they do not it is particularly problematic for readers.

When writers of research use complete and full citations, they can demonstrate a thorough knowledge of their discipline thereby helping readers to better comprehend how the writer's research contributes to the discipline. Readers will be able to more easily recognize the disciplinary tradition and framework from which the research draws. For these reasons, providing complete citations is paramount to helping readers understand how a particular research report builds upon and contributes to a research area as a whole.

Naming conventions. Sometimes practiced researchers do not clearly identify the research design or research methods they are using. Perhaps they believe it is obvious they are conducting a true experimental study using random assignment and a control group. However, the naming of all of the components of a research design is not only relevant to novice readers, it also is a marker for experienced readers. If the use of random assignment to a group is not clearly indicated it would be difficult for any reader to know whether or not this had actually taken place.

In some cases components are named, such as a theory that is mentioned in the literature review, but then that theory is not revisited, explained or considered anywhere else throughout the research report (see Kumasi, Charbonneau, & Walster, 2014 for a more extensive discussion). In this case the naming may become confusing and create an unclear understanding of what type of research is being conducted.

Another explanation might be that a theory is familiar to many within one area of a discipline or field but not another. For example, berrypicking (Bates, 1989) may be a classic and well known concept to many in the LIS field but perhaps not to all. Use of this concept in a research report may require a brief explanation or citation to relevant

literature to make clear where the idea originated and how it is being used for a particular

research study.

Use of jargon. Writers sometimes use terms that are not necessarily well known

to the audience who is reading the report of research. For example, using a technical

phrase such as "screen scraping" with no definition. Even from context it can be

challenging to discern what this process might consist of and what the data product might

be. When a phrase is from a technical area many more general readers will have limited

to no familiarity. A disconnect between the writer's knowledge and the readers can create

understanding problems beyond failing to recognize one word or phrase.

Cultural expectations regarding the content of a research report. Reports of

research respond to the conventions and cultural expectations of the field or discipline

within which they are written. Since LIS is an interdisciplinary field which draws from

many research traditions, the cultural expectations for research reports seem to be more

dictated by the individual journal policies and editorial procedures than by the field as a

whole. Some journals are very specific about the content and order of items in the

research reports they publish. Whereas, other journals allow their articles to be more

loosely configured.

Even with the differing types of research reports that were published across the

seven journals we addressed, limitations and problems based on cultural conventions

whether related to scientifically based literature, qualitative inquiry or historical research

were present:

- Authors did not address limitations of the study.

This is an expected scholarly writing practice no matter what type of research is

being conducted.

- Authors would confound analysis methods or data collection processes with the

   overall research design.

Sometimes "interview" was indicated as a research method when in fact interviews

can be used in a wide range of different research designs. Interviews are a data

collection process.

- Authors would not provide discussions of reliability and validity for quantitative

   studies or trustworthiness, credibility, etc. for qualitative studies.

This can be a controversial topic but where cultural expectations require discussion

these elements should be provided.

- Authors create a proliferation of research methods.

 Rather than a mixed methods design it is more a mixed-up methods design (Yeaman,

personal communication, 2011).

- The literature review discusses theory but does not apply the theory or theories

   directly to the design, development or analysis portions of the research study.

There are many cultural conventions regarding the use of theory in research studies.

However, when theory is used, a general convention is that it should be consistent

throughout the research design.

- Authors do not return to acknowledge the beginning of an article's content at the

   end.

Construction of a research report needs some type of symmetry and consistency from

the beginning through the middle and to the end.

To summarize, socio-cultural factors directly impact the ability to critically read reports of research. These factors are interactions among the cultural expectations and practices of writers of research reports, publishing companies and readers of research. The issues will be compounded for academic librarians who help students across disciplinary boundaries which represent different research traditions with varying beliefs about what constitutes acceptable research practices.

Discussion

In this study, we have presented ideas for academic librarians to consider when helping students to *effectively find* and *critically read* reports of research. We propose the challenges can be divided into two large categories—structural and socio-cultural. What follows is a discussion of the strategies academic librarians might consider toward helping students develop success in their use of research reports based on implications from our exploratory findings.

Considering structural characteristics

One of the primary structural characteristics we noted were the discrepancies in how research reports are listed in print and online versions of the same item. To overcome this challenge academic librarians could help students become proficient at finding research reports by looking for inconsistencies in the print journal's TOC and the publisher's website version of the same issue. This could be a useful for recognizing there are legitimate reasons why there is difficulty in locating research reports. Such an approach could help build awareness that TOCs may vary between print and online versions.

Similarly, we found that different database systems do not typically embed research methods into the controlled vocabulary of their records, which makes it difficult for searchers to locate articles that employ a particular method (e.g. ethnography). Most often the controlled vocabulary describes the topic of the study (e.g. group-psychotherapy) rather than the method it employs. Prior to helping students conduct a search for a research report, academic librarians could become familiar with research methods commonly used in the student's field of study (e.g. for inventories in LIS see Eldredge, 2004; Chu, 2015). By looking more deeply into disciplinary research methods this will help academic librarians increase their own research vocabulary and expand search strategies for helping students. It is also imperative for authors of research reports, such as academic librarians, to include the study design in the abstract or include the research methods within the supplemental key words so these terms become searchable for those seeking research reports.

Academic librarians can help themselves and others craft appropriate search strategies to locate research reports in the scholarly literature by completing full text searches for unique phrases or markers such as "independent variable" if one is looking for an experimental study or "trustworthiness" if trying to find a qualitative study. Our findings suggest that subject headings do not necessarily reflect the methodology, research design, or the name of a theory in a given article. With this in mind, academic librarians may need to help students practice carefully constructing keyword searches in full text as one strategy to discover related research articles given these structural obstacles.

Considering social and cultural challenges

Part of effectively reading research reports is unraveling the complicated aspects of the research process. Related to this is getting beyond the perceived "hardness" of research based on preconceptions about not being able to do math or being afraid of statistics. For example, we found some author's used jargon when describing research related terms (i.e. screen scraping) that might be intimidating for novices to read and understand. However, readers with limited backgrounds in research methods and statistics can still produce adequate evaluations of research reports if they know they how to ask the right questions. For example, when individuals read about t–tests they often are confused about how the t-test is calculated and the relevance of the p value. A simple and prudent question regarding t-tests is to ask, *why* is this test being used? Helping students understand how to ask conceptual questions rather than getting bogged down in minutia can be an effective strategy for academic librarians.

When reading research reports it is also critical for authors to define and operationalize the conceptual terms they introduce in their writing. Academic librarians can help students by suggesting they look for these definitions and conceptualizations as a way of understanding the basic framework of a research report. Asking questions such as those we have suggested helps to acquire a critical disposition towards academic writing that creates a more equal footing with the authors whose research is being consumed. There are guideline texts that also discuss the structure of research reports that can be consulted for further ideas. (e.g. Pyrczak, 2013).

Another socio-cultural characteristic we identified were the expectations for what should be included in a research report. For example, having a section that addresses the

limitations of the study is an expected scholarly writing practice. Yet, not all journals

explicitly require authors to include this information.

Academic librarians can learn more about the social conventions of scholarly

writing and help teach this knowledge to their users. Learning about scholarly writing

norms and practices begins with building an understanding of how research articles are

structured. As noted, there may be some variability to the structure of research articles

based upon disciplinary norms and research traditions. However, research texts often

demonstrate where to commonly locate information about the research methodology or

research design within research reports (e.g. Patten, 2014; Pyrczak, 2013). Knowing

where to locate essential information within research reports will be helpful in the event

the research methodology or design is not specified within the abstract.

Limitations of the Study

We consider the characteristics in Figures 1 and 2 to be preliminary for a number

of reasons. The selection of journals and articles was limited in terms of the content of

the journals (library science focused) and date (2009-2012). In addition, the three

members of the research team have similarities in research background, areas of interest

and approaches to research. These similarities may have influenced the interpretation of

data. Each of us has library work experience and none of us are information science

professionals. While our Ph.D.s are in different areas, Educational Communications and

Technology, Curriculum and Instruction and Sociology, we all fall within the parameters

of the social sciences and not the humanities or the sciences. These limitations need to be

considered as part of the preliminary and exploratory nature of the findings.

Conclusion

By isolating two distinct areas (*effectively find* and *critically read)*, this study creates two manageable elements academic librarians can use as a framework for helping students. This study contributes to the existing literature by describing characteristics useful in finding and reading research reports and offering guidance for academic librarians to help their students understand reports of research. Academic librarians can apply their searching and information literacy skills to help students learn how to locate and critically read different types of research reports with a specific eye towards identifying the various structural and socio-cultural factors that have been raised in this study. Overall our conceptual approach also supports academic librarians in their own work as developers and consumers of research.

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Figure

Figure 1: Characteristics affecting the ability to find and read research reports
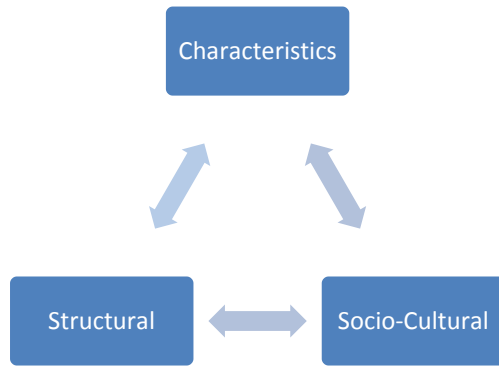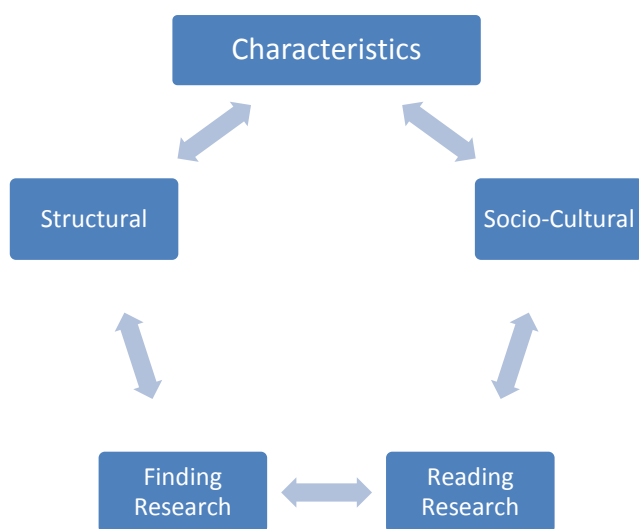
Figure

Figure 2: Relationships among finding and reading research and associated characteristics

Finding and reading reports of research: How academic librarians can help students be

more successful

Dr. Dian Walster, Dr. Deborah H. Charbonneau, Dr. Kafi Kumasi

Response to Reviewers

p. 5 a working definition has been provided

p.6 the change has been made

p.8 an explanation of ISI has been provided

p.11 the change has been made

p.12 the sentence has been rewritten to improve clarity