

Developing a Comprehensive Literature Review:

An Inquiry into Method

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Abstract

This paper explores methods of teaching students to write successful literature reviews. Prior literature in the area is investigated and a methodology for the collection, analysis and synthesis of literature in specific content areas is presented. Findings from student work applications of the research and writing method are offered, suggesting that use of the methodology results in more complete and well-written literature reviews in both class work and dissertation thesis study. Student self-reporting data suggests that use of the method results in greater initial understandings and longer retention of literature from their field.

Introduction

“Students just don’t write as well as they used to.”

-- A common lament of university faculty.

As a student enters into graduate school, it is most often assumed that she or he has previously written a literature review. It is also often assumed that this student is aware of the purpose of literature reviews and has the necessary skills to effectively critique and present prior research. While graduate level professors may hold these assumptions but they are often unfounded—witness the enduring conversations at faculty gatherings about the poor writing skills of students and the inability of students to comprehend and then synthesize what they are asked to read.

Graduate students entering doctoral and masters programs need help comprehending the importance of literature reviews and need guidance in how to effectively conduct and write a literature review. Interestingly, since every student embarking on the writing of a thesis in the social sciences will be expected to write a literature review as a component of the thesis or dissertation little literature exists on the subject to aid the student. This paper seeks to first explore the existing literature on writing literature reviews and subsequently offers an instructional process by which students may complete the task. Finally, qualitative data are offered that suggest positive results in both student understanding and retention of literature researched by this method.

Literature

Guidance and help for students can begin with an explanation of the purpose of a literature review. According to Rankin (1998), there are four purposes behind the

literature review. First, the literature review helps the writer establish credibility. Next, it allows the writer to set his or her own work in the context of others. Third, referencing of others allows us to accommodate a wide variety of readers. Finally, the literature review establishes the theoretical orientation of what will follow in the presented paper. The literature review allows others a glimpse of where the writer plans to go with his or her ideas while at the same time including all key dimensions of a topic that have been researched, including those dimensions that differ with the view of the writer (Natriello, 2000). Furthermore, a literature review should present all of the important, relevant thoughts on a topic that are in print as proof that the writer has a firm understanding of what has been written before while at the same time showing that the author has something unique to contribute to the field (Natriello, 2000).

Once a student has an understanding of the importance of the literature review, he or she must be guided in his or her writing of it. Students must be guided to avoid certain pitfalls that are common in beginner's attempts to formulate a literature review. One problem that arises is that students often have a poorly defined topic and therefore have difficulty specifying search terms (Custer, 1993; Froese, Gantz, & Henry, 1998). Topics may either be too broad or the opposite in that students choose topics that are too narrow. Also, students have trouble determining what information to include in a literature review (Custer, 1993; Froese, et al; Natriello, 2000). Students may be unaware of major researchers on a topic, may include outdated research and/or irrelevant information or may fail to include research that differs from their point of view. Another common pitfall is that students tend to summarize articles rather than integrating the findings (Froese, et al). According to Granello (2001), beginning graduate students often believe that all

information is of equal value and summarize articles as such. The literature reviews of beginning students often are organized by articles rather than by topic and few or no connections are made between articles. This method leads to a literature review that does not integrate relevant topics and that holds little to no unique thought regarding the topic being studied.

In an attempt to teach students to avoid these pitfalls when attempting to write a literature review, several researchers have proposed different techniques to conduct and write literature reviews (Custer, 1993; Evans, 1998; Granello, 2001; Shields, 1999). Evans (1998) suggests analyzing studies in a four-step format. The purpose of the study should be analyzed, the methodology used should be noted, the results should be reported and inferences should be drawn regarding the significance of these results. Custer (1993), on the other hand, suggests using more steps when reviewing literature. First, one conducts a search of literature and then reads the found literature, marking each reference. One should be taking notes on general themes and repeated points. The material should then be organized by major topic. At this time, the materials should be read again and prioritized. Finally, an outline should be formed based on the major topics found and a first draft should be written.

Shields (1999) proposes a similar method to conducting a literature review, which she terms the “notebook method”. The notebook method likens writing a research paper to managing a project. One starts with a three ring binder, which is organized with a list of articles to be found, articles to be read, a running bibliography, and notes on each article (including author name, year of article and page numbers). From this information

stored in the notebook, an outline should be formed that integrates the notes taken on each article. A literature review will follow from this integrated outline.

Granello (2001) attempts to inform teachers of different techniques that may help students produce a more integrated literature review. She suggests forcing students to restate source material on note cards before it is included in a literature review. That information on the note cards must have a direct link to the topic of the paper in order to be included. Another technique is having students form a detailed outline from the topics they have seen emerge from the source articles. Once students have reached this level, Granello suggests having them objectively rate the source material. These techniques will eventually lead to a higher level of writing.

The purpose of a literature review, as mentioned before, is to form a framework for the research a graduate student will complete. It provides a rationale for the research, while at the same time displaying prior research and findings on the same topic. New graduate students often fall victim to pitfalls such as the inability to find the most relevant articles and writing a literature review that summarizes each article with no integration. Researchers (Custer, 1993; Evans, 1998; Granello, 2001; Shields, 1999) have recommended different processes that should be utilized when writing a literature review in an attempt to teach students effective ways to avoid these pitfalls and in turn, produce a quality literature review. While each recommended process has merit, not one is as comprehensive as the following recommended process in helping newly appointed graduate students write an integrative literature review of publishable caliber.

Toward a New Understanding

Often students view the writing of the literature review as a necessary evil one must endure before getting on to “the real work.” Graduate programs are replete with methods courses—both quantitative and qualitative—that suggest to students that once a methodology of research is understood one is equipped to embark on the process of “doing research.” This is not surprising since often research methods courses are taught outside of the department in which a student carries on their primary research. Students in the social and bench sciences often take research methods from statistics departments and education students regularly study with the educational psychologists. This separation of research methods from the content literature has the potential to lead to disjunctions in understanding the importance of the literature that forms the foundation of a well-written literature review. Many programs have sought to remedy the problems of writing a cohesive thesis by introducing courses focused on the development of research projects leading to thesis and dissertation work. However, even within courses such as these students are rarely instructed on the art and craft of developing a coherent literature review—one solid enough to rest research upon (Froese et al, 1998).

Absent such coursework students traditionally suffer through multiple drafts guided by advise to “tighten this section” or to read the latest researcher in their area of study. In the end, many students abandon the process entirely. Specifically, forty to sixty percent of students who begin doctoral work do not persist to graduation (Bair & Haworth, 1999). However, developing a coherent and comprehensive literature need not be the dreadful experience we have cast it to be. Here we propose a methodology

designed to allow students to both read and analyze the literature with a constant focus toward integrating and synthesizing the material into a conceptual whole.

Collecting Literature

We begin with students by developing a sense of the topic in which they choose to write. As has been noted (Froese et al, 1998) students are often tempted to choose topics of too great a scope. Here we work toward helping a student narrow their work by having them brainstorm their beginning sense of the subject in an exercise designed to help them to think about the knowledge they bring to their study as well as the relationships between the individual pieces of their knowledge.

The exercise rests on Simon's (1991) notions concerning the development of expertise. Simon states that it takes over 60,000 bits of knowledge before one becomes an expert on any subject. Students unavoidably find themselves in the process of developing these knowledge bits of knowledge while engaging in the process of beginning their study. Such a time of exploration inescapably is fraught with the complexities of establishing a clear understanding of the range of a subject as well as the niche one will choose to pursue.

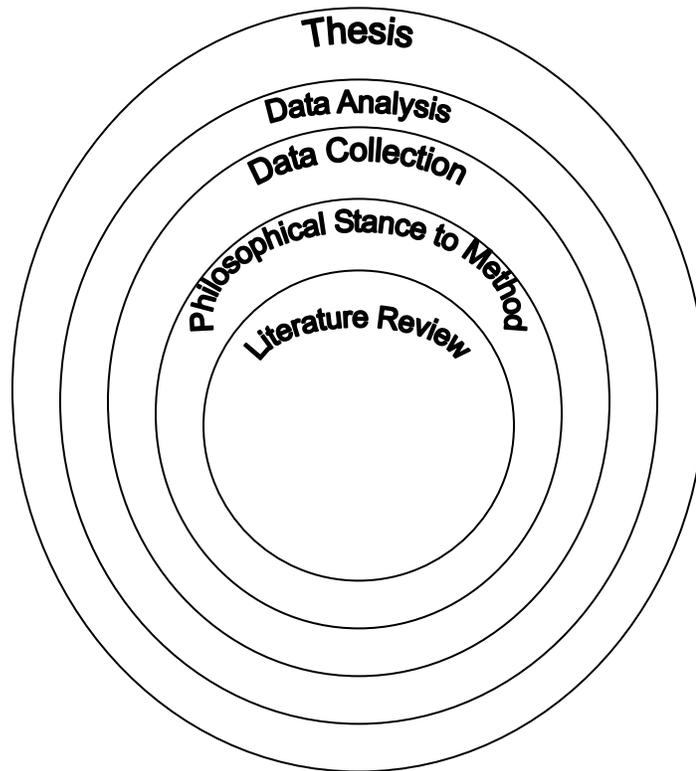
Simply put, the exercise asks students to begin by placing their dissertation topic at one end of a spectrum or at the center of a series of concentric circles. We then request that students identify the layers or points on the continuum that lead up to (or away from) their topic. We refer to this as developing the "six degrees of freedom" or the "Kevin Bacon" diagram. That is, if one plays the bar game where we start with a Kevin Bacon movie Footloose for example, one can link Kevin Bacon to Anthony Hopkins in six steps (i.e. Kevin Bacon was in Footloose with Sarah Jessica Parker who was in Girls Just Want

to Have Fun with Helen Hunt who was in As Good As it Gets with Jack Nicholson who was in Easy Rider with Dennis Hopper who was in Speed with Keanu Reeves who was in Bram Stoker's Dracula with Anthony Hopkins). Similarly, students often become confused when beginning to outline a topic of study by seeing connections between seemingly linked topics and casting too wide a net for the literature review.

So in the case of writing this paper one could imagine that the center of such a diagram would be the literature review, while the outer layer might include writing an entire thesis. Layers in between then include topics such as data collection and analysis, forming conclusions, correct forms of referencing, appropriate methods of study, philosophical approaches to research and others. While these are important topics they do not contribute to the development of the primary objective of the piece we have at hand—writing a literature review. As such, we encourage students to realize that while important issues in need of attention these might not be areas in which they are wanting to place their attention at this juncture. We recommend that students retain the diagram and set out to develop each layer as a distinctly different focus of their attention.

Generally, we suggest that the literature review attend to no more than the inner or first ring information as suggested by the diagram. While it may be necessary for the writer to allude to the potential of other linkages of their chosen topic we find that by asking students to attend to only the first rings results in a far tighter presentation of material.

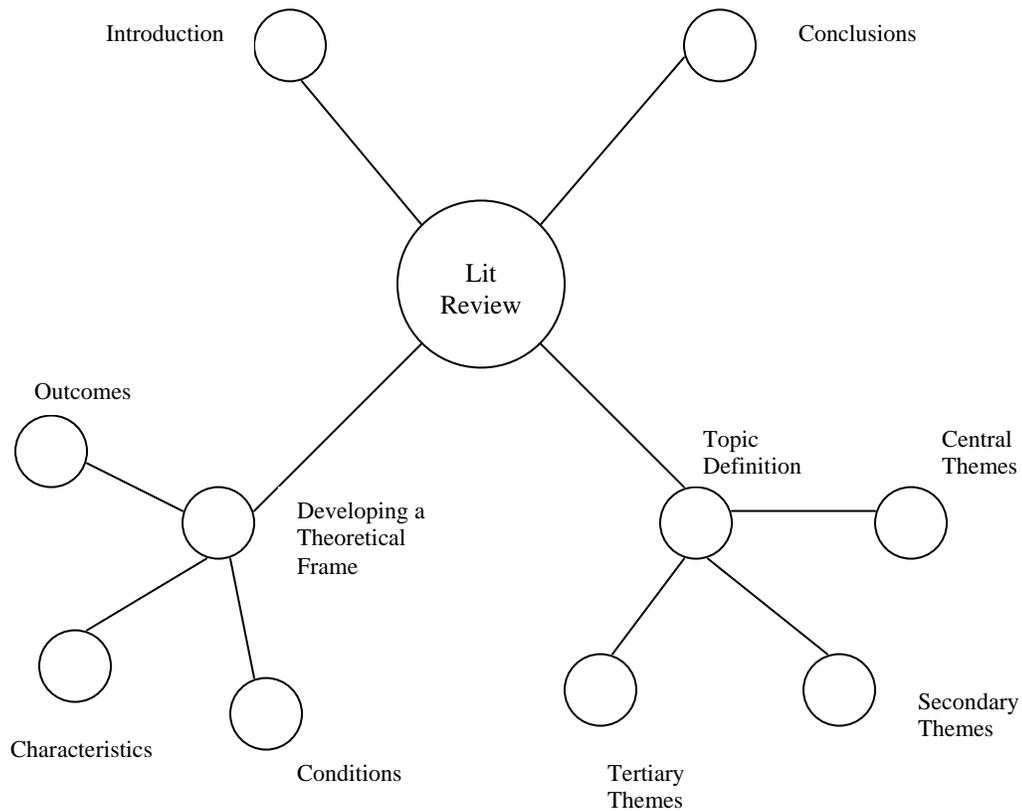
Figure 1: Developing the big picture



From this beginning we then seek to help the student tease out the pieces of the topic at hand—probing for what they know and bring to the focus of study and for what they are aware they do not as yet know and are in need of further work. This exercise more resembles a conceptual web, one in which those topics the student already grasps are more detailed and those with which the student has less acquaintance are less detailed.

Again, using this paper as an example, a web might begin with the central topic of literature reviews with spokes including defining a topic, developing central and secondary themes within the literature and the critique, conceptual models and theoretical frameworks, introductions and conclusions and transitioning between ideas.

Figure 2: Linking Literature Topics



Once such a diagram is begun the student has the ability to literally see the “big picture” of their work. We caution students to view the early drafts of webs such as these as fluid and evolving yet we also advise students to be aware of linking new concepts and theories back to the central foci of the web. If they cannot easily do so we suggest that they add these learnings to the Kevin Bacon diagram—holding them for future work or development while still remaining loyal to the initial focus of their study. As a practical note students often do well to create these first webs on post-it notes and large pieces of tag board. The use of these materials allows for easy movement and change of ideas in the early stages of creation. As the web becomes more solid it is then appropriate to shift it to more permanent forms of archive.

From the point of completing the web we then encourage students to head to the library to collect articles, books and dissertations on the topics. At the majority of institutions of higher learning, students will have access to many on-line information sources that will make this search easier for them. Students in the social sciences will often begin searching for their topic on such search engines such as PsycINFO or ERIC. These search engines will give students journal articles, books and dissertations that relate to their topic. Students may also use these search engines to narrow their topic by using more than one topic heading in their search. Once this search is completed, PsycINFO and ERIC can also show the student whether the articles that were found are available on the world wide web, which allows them to access the full text, or in their university library.

We encourage students to copy everything as practical, develop files for the copied works and to create the beginnings of a bibliography. Following these rather mundane housekeeping tasks students need to begin the process of reading and annotating or abstracting what they have read. According to Custer (1993), students should read articles twice, taking notes on general themes and repeated points. After the second read, students should prioritize the articles, assigning each a number for further reference. Evans (1998) suggests annotating the purpose of the study, the methodology used, the results and the inferences that can be gathered from the results. Finally, Shields (1999) states that students should keep a running annotated bibliography. Also, the notes from each article/book should be organized alphabetically by author's name and should include the year published and the page numbers.

As a part of this process we require students to complete a chart of their readings providing a thumbnail sketch of the reading with specific attention to the citations of the author in developing the theory that underscores the piece, how the study was designed, sample and methods, variables, major findings, conclusions and implications.

Figure: 3 Charting your literature

Author and Year	Theoretical Frame (Who did they read?)	Study Design	Sample	Variables	Major Findings	Conclusions and Implications
Article One						
Article Two ...						

We also stress that this charting system be seen as malleable as well. For example, for this paper we did not explore literature that included true studies and as such only included the author and year, the theory on which they rested their work, major points, topics and ideas and finally implications and summary.

Figure 4: Examples from this paper

Author and Year	Theoretical Frame Used	Major Point, Topics, Ideas	Implications, or Summary
Rodney L. Custer (1993)	Fox, D. J. (1969) Schultz, J. B. (1988) (Only sources)	Review of 10 steps to be used when researching and writing literature reviews 1. Come up with a search strategy—think about what search terms to use 2. Do an overview read 3. Record each bibliographical reference 4. Take note of general themes and repeated points. 5. Organization and synthesis (major themes; careful choices, etc.) 6. There are two stages of lit review—initial exploratory stage and second (more specific) stage 7. A 2 nd thorough reading of the material; prioritize the material; assign a number to each article 8. Review the content outline for additional refinement 9. Prepare a first draft 10. Attempt to retain the dynamic nature of the literature	Establishes a technique for conducting literature reviews
Arnold D. Froese, Brandon S. Gantz, & Amanda L Henry (1998)	Glass, G.V. (1976) Cooper, H. (1989; 1990)	Four specific problems that students have when writing literature reviews are addressed using the meta-analytic model 1. Students select poorly defined topics 2. Students often demonstrate conceptual inadequacies in analysis 3. Students summarize articles instead of integrating the findings 4. Students have difficulty evaluating others' articles	Basic Meta-Analytic concepts may be used to direct students to required analysis, synthesis and evaluation skills for writing literature reviews; Meta analytic model integrates writing and critical thinking
Gary Natriello (2000)	None	Overview of what to include in literature reviews 1. Depends on what journal you are sending it to 2. Up to date literature 3. All key dimensions of the topic (including all sides of the issue) 4. Directly relevant material 5. Should add something to the field; go beyond convention	“A review should balance the goals of being comprehensive, analytic, and relevant to the main content of the journal article” (p. 695).

Elizabeth Rankin (1998)	None	<p>Purpose of the lit review</p> <ol style="list-style-type: none"> 1. Establishes the writers credibility 2. Setting own work in context of others is useful rhetorically 3. Referencing others work is a way to accommodate a wide variety of readers 4. Establishes a theoretical framework for what it is to come in the paper <p>How do we make lit reviews more engaging?</p> <ol style="list-style-type: none"> 1. Use it to establish credibility, meet our readers' needs and to clarify our own theoretical framework 2. Look for good models of lit reviews 3. Include more of ourselves in lit reviews that we write 	Lit reviews are hollow and mechanical; They are needed so ways are presented to make them more purposeful and engaging.
Thomas Evans (1998)	Shulman (1988); Jaeger (1988)	<p>Discipline inquiry is a blending of quantitative and qualitative research practices.</p> <p>Studies should be analyzed using the following format: a) purpose of the study; b) methodology used; c) results reported, and d) inferences concerning the significance of the results</p>	This format for reviewing studies can be used for both quantitative and qualitative studies and helps to synthesize findings into an integrative overview.
Judith Ponticell & Arturo Olivarez (1997)	Kerlinger (1957, 1960, 1964)	<p>Methods myth—gathering data constitutes research</p> <p>Side effects of the practical approach to curriculum</p> <ol style="list-style-type: none"> 1. Social pressure to produce solutions constrains research 2. An increased focus on action research 3. The focus becomes gathering enough data to implement an intervention 4. Student have decreased concern with prediction and control and with understanding complex variables 	<p>The following is recommended for graduate student preparation for dissertation research</p> <ol style="list-style-type: none"> 1. There should be a focus on theory, not just technical competence 2. Students should be involved in theory development, statement of research problems, etc. 3. Students should be educated in both methods courses and in other content area courses about the role of theory 4. The dissertation should be an integral part of doctoral education, not the exit outcome 5. There should be specific benchmarks for a quality dissertation 6. Seminars should be held to help students become expert scholars
Patricia Shields (1999)	Dewey (1910, 1938) Pierce (1958)	<p>This article describes a new method for writing formal research papers—the Notebook Method</p> <ol style="list-style-type: none"> 1. 3 Ring binder—helps keep all the stuff in one place 2. Organizing the Binder 	The notebook method helps students get started, keep organized and keep focused. It transforms writing a paper into managing a project. It facilitates inquiry.

		<ul style="list-style-type: none"> • Time management—includes a things to do list with articles to be read, etc. • Articles/Books to Find (a list) • Other related material—miscellaneous useful information • Running bibliography—keep track of the references as you go • Organizing notes—include author name, year of the article and page numbers; sort in the notebook alphabetically <p>3. Integrated Outline</p> <ul style="list-style-type: none"> • Integrate the notes into the outline • When a reference is useful, it should be inserted into the outline—keeps things neat <p>Pragmatism is philosophy of common sense—students should have doubt as they begin investigation and throughout</p>	
Paul Riley (1997)	None	<p>How to Begin a lit review</p> <ul style="list-style-type: none"> • Determine a research idea • Determine the history of the proposed topic • Determine the type of study to be done <p>Obtaining references</p> <ul style="list-style-type: none"> • Speak with an author in the area of interest • Speak with publishers • Ask teachers • Read a general book • Go to a library and start digging around <p>Extracting Relevant information</p> <ul style="list-style-type: none"> • Read • Relationship of material to the proposed research • The source of material • Recency of publication • Take notes (take note of bibliographical information) <p>Writing the Review</p> <ul style="list-style-type: none"> • Develop a framework of conceptual order • State rationale and significance of research 	The purpose was to give information to novice researchers on how to conduct a survey of the literature

Rodney Ogawa & Betty Malen (1991)		<p>The concept of rigor with multivocal literature contributes to research as follows:</p> <ul style="list-style-type: none"> • Literature bases as data sets • Major sources of bias and error <ol style="list-style-type: none"> 1. Exclusion of data 2. Selective use of data 3. Ambiguity of data • General Standards in Gauging Rigor • Applications of Research Metaphors <ol style="list-style-type: none"> 1. Exploratory case study 2. Meta-Analysis 	<p>The purpose is to extend the discussion of rigor (adherence to principles and procedures, methods and techniques that minimize bias and error in the collection, analysis, interpretation and reporting of data) in empirical literature to rigor in reviews of multivocal literature.</p>
Michael Patton (1991)	Ogawa and Malen (1991)	<p>Utility as a focus emphasizes purpose and the audience</p> <p>Credibility—complex notion that includes the perceived accuracy, fairness, and believability in evaluation</p> <p>Trust, believability and credibility are the underpinnings of overall evaluation validity.</p> <p>Face validity is more important than construct validity.</p>	<p>Looks at multivocal literature with utility being the main criterion instead of rigor</p>

In addition to providing a comprehensive inventory of the work a student has reviewed students have suggested that the development of this chart provides an excellent study guide for comprehensive exams. While we suggest the topics included in the example chart above we realize that all studies do not lend themselves to the categories as provided and we encourage students to shift categories as needed. A student reviewing a highly empirical area may well want categories for both independent and dependent variables, whereas a student working in an area characterized by more ethnographic study may be well suited to include a category for the study site description rather than categories concerning variables.

Furthermore, we are often asked the best way to align the articles within the first chart. Since the chart serves several features—initial repository of readings, study guide and organizing structure—and its eventual use is to allow the reader to see the relationships between the articles they have read we suggest placing articles within the chart in one of two ways. The first asks students to simply build the chart in the order they read the pieces. The second (through the use of word processing sort tools) asks the student to align the literature in a historical manner, most recent to least recent. This allows the student a view of the evolution of their topic. Finally, we suggest that student's evaluate the column that reviews the authors on which these pieces have rested. We ask them to review the citations included and to locate any study or researcher whose name appears more than three (3) times that they have not already read. This assures that no seminal reading has been ignored or that a potentially important aspect of the existing literature is not inadvertently absent.

After completing a critical mass of their initial reading we ask students to pay specific attention to the columns that contain the findings searching for common theoretical themes. In the case of this piece one can see that the prior literature includes comments on the purpose of a literature review, methods or techniques of collecting materials, and other more theoretical concepts related to literature reviews. The careful reader will see these topics reflected in the initial literature for this paper.

At this juncture we require students to complete a second chart organized around the themes present in the existing literature. The second chart looks like this:

Figure 5: Chart 2

Author and year	Theoretical Category #1	Theoretical Category #2	Theoretical Category #3	Theoretical Category #4	Theoretical Category #5
Article 1					
Article 2...					

For this piece given the paucity of existing literature and the differences between writing an entire thesis and a brief article we limited ourselves to three main categories.

The second chart for this piece is offered below:

Figure 6: Chart 2

Author and Year	Purpose	Techniques	Theoretical Aspects
Custer (1993)		Review of 10 steps to be used when researching and writing literature reviews	
Frose et al (1998)			Basic Meta-Analytic concepts may be used to direct students to required analysis, synthesis and evaluation skills for writing literature reviews.
Natriello (2000)	Literature and focus of study and subsequent work	Overview of what to include in literature reviews	
Rankin (1998)	Purpose of the lit review		Presentation as an aspect of building credibility for the work
Evans (1998)		Format for analysis of articles	
Ponticell and Olivarez (1997)			Side effects of the practical approach to curriculum
Shields (1999)		Notebook Method	
Riley (1997)		Beginning a Lit Review	
Ogawa and Malen (1991)			Rigor; Literature as Data
Patton (1991)	Focus; Credibility; Trust; and Validity		

The reader will note that chart two while shorter, allows the writer to organize their thinking and subsequent written work into several concise categories of thought.

The benefit of completing the second chart is that once the reader embarks on the actual written piece they can consider the literature as a whole body of thought, with several sub-categories of support. Once finished with chart two we encourage students to “write down the columns” completing each section before moving on to the next and finally adding a synthetic introduction and conclusion to the final piece.

Conclusions

Our teaching experience suggests that by following the technique outlined in this piece students can develop comprehensive and organized literature reviews. Furthermore, our familiarity with leading students through this process suggests that even the most disorganized student once provided support and this process is able to produce a competent and cogent review. Findings from student work applications of the research and writing method suggest that use of the methodology results in more complete and well-written literature reviews in both class work and dissertation thesis study. Student self-reporting data suggests that use of the method results in greater initial understandings and longer retention of literature from their field.

Our work is based on qualitative content analysis of student work provided in both courses and dissertation theses following work with the method. Clearly, an objective comparison of student work is not possible as students grow in their ability to write as they progress through graduate coursework. However, when students compare themselves as writers they describe their writing is less robust and less well synthesized prior to use with the method. Students also report an increased sense of understanding related to working with the literature and thinking in complex ways about presentation of their ideas.

Synthesis and detail:

“How do you get students to move beyond simply listing each study they read? All they ever seem to do is report the reading, they never seem to make sense of what they know.” (Faculty comment, Fall 2002)

As we have discussed earlier in the paper, students often have trouble moving beyond simple lists of the studies they have read. The literature review provides for many students thorough reporting of student trips to the library, late night study sessions and parsed out information related to the topic at hand. What students often fail to do is to consider how those pieces of information fit together into a coherent whole. This is evident in the comments we heard from students who had used the method when they compared their prior writing to more current work:

“Now I read the literature with the ... a purpose in mind. I know I’m looking for particular ideas, themes, things to put in the boxes [on the chart]. When I look at my old stuff I see that I wasn’t really using the ideas to make a point, my point, any point at all. I was saying what others had said but I wasn’t doing anything with it... The point was in my head—sort of—but I wasn’t getting it on the page... I’d leave things out or put in too much on one topic. Basically I ended my paper when I grew bored of it all instead of when I thought I had said what I wanted to say.” (Student interview data, Spring 2003).

The ability to develop a coherent intellectual whole from what is read is an important cognitive step for a student in developing their thinking on a topic. Without the ability to place new ideas into the larger context students are limited in their ability to demonstrate mastery of their field. Furthermore, as students work to understand that their role as they work with the literature is to “make a point” or demonstrate their

understanding of the literature in ways that offer those who read the work a more clear sense of what a student brings to the study at hand, they grow as scholars. As one student explained her experiences:

“I finally get why I need to do all this reading. I mean I have always known I need to know who did what before I got here but now I get that it’s about my thinking about that work [instead of] just knowing what others say. The details finally make sense. I stopped thinking about it as this random stuff and I figured out that it was my job to organize for myself to learn what I needed to know to eventually graduate knowing as much as I could.” (Student exit interview, January 2003)

Understanding and retention:

“When I started thinking about using this method it seemed like a lot of work. Yet, when I finished I realized that I knew the material—after doing all the charts and thinking about how the ideas went together I had made links, connections between what I had read and what I was supposed to know in my field. It was really worth it in the end.” (Course evaluation response, Fall 2002)

Our work suggests that students who use the charting technique to develop the themes and conceptual linkages between ideas in the literature also create a valued study tool. The task of groups what has been read into a coherent whole by searching for common themes and natural linkages between the works benefits students as they strive to “see the forest for the trees.” For those of us who have studied a field for years the linkages—who agrees with whom, which work builds on other ideas, the items that offer a critique of an older concept—between scholarly pieces are often natural. We forget how we built these connections as they have been professionally and intellectually with

us for so long. Furthermore, as we read new work we do so with a practiced eye knowing where the new piece fits with older work, what ideas it extends or clarifies, and what ideas it challenges or critiques. Students often lack these schema—our experience suggests that by using the charting structures students can be guided into developing schema on their own that supports and strengthens their learning.

“It was like a big Duh for me...it had never occurred to me that all this stuff was somehow related. I mean I knew it all was supposed to work together but it could never find the thing I was supposed to read that did that [pull it together]. I was getting to be like that joke student you know the one, if you can’t figure out what to write to avoid that problem you just read another book. I was that student. Then I got that it was my job to figure out how these ideas all went together ... on my own. Now I could do that, I had a tool. And I could do it because I had ways to think about all this as a group not like separate things to know. It was the grouping ideas that made me learn and remember them.” (Student interview, Fall 2002).

Final comments:

In any college or university setting faculty will continue to suggest that “students just cannot write” and students will persist with their complaint that “faculty just don’t tell us what they want” we suggest that, at least in the case of literature reviews, quality teaching can bridge the gap. By outlining to students the ways in which they might organize the materials they are reading, attend to the larger themes and concepts of the wider literature and work with a conceptual or theoretical end in mind students can embark on their written work with more confidence and skill. Moreover, we suggest that the process provides a unique learning experience for students to work with their

literature, delve into the more subtle aspects of the field and emerge with a more complete and thorough understanding of the issues, concepts and history of their chosen topic.

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