**Helping Students Organize an Increasingly Complex Information Flow:**

**The Literature Review Exercise**

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**Abstract**

Information flow is increasing and growing in complexity. It is often difficult, particularly for our undergraduate students, to organize and interpret this disparate information. This suggests our role as management educators has shifted from simply “sages on stages” towards facilitators of knowledge organization. This paper presents an exercise to help guide students learn a scalable process for creating a literature review, such that students can easily organize various concepts from scholarly literature to gain a holistic view of a topic. The practice of this exercise gives students skills that are transferable to other information flows.

**Keywords:** Student Research, Literature Review Instruction

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**Introduction**

This exercise, designed for undergraduate students is based on a literature review writing technique recommended for doctoral students and junior faculty (Foss & Waters, 2007; Golash-Boza, 2011), to make the process easier and less intimidating. Essentially the technique involves taking electronic notes from scholarly articles and books, leaving double or triple spaces between individual notes, including the citation with each note, printing those notes, and physically cutting the notes into individual pieces of paper (please see Appendix A for an example). Once the notes are cut, they can be easily sorted into themes. The literature review is then written from the theme-organized notes. We have actually adopted this technique to write our own literature reviews, and because we found the system so successful, we wanted to teach the method to our undergraduate students.

**Rationale for the Exercise**

Dr. John Seely Brown delivered a plenary session to the 2016 AACSB Dean’s Conference on the topic of working, learning and leading in the “exponential age” (Brown, 2016). He emphasized that the 20th century era of achieving scalable efficiency in the decades between punctuated evolution has given way to a 21st century era of dynamic and relentless change. He argued that we can no longer predict ahead of time what explicit knowledge students need to learn, educate them in that knowledge, and expect that knowledge to remain relevant for a decade or more. Ultimately, Dr. Brown challenged business schools to rethink how they prepare students for a world of constant and increasingly rapid changes and perhaps even continual disruptions. This exercise provides one way to prepare students for this new era.

We are surrounded by a flow of new knowledge that is being created and re-created all the time. Since this knowledge is created through action, most of it has a strong tacit component (Brown & Duguid, 2001). If knowledge is tacitly constructed, then it is not easy to capture and share. While transfer of explicit knowledge in the classroom remains important, teaching students how to actively participate in knowledge flows, to create new tacit knowledge, and to continuously renew their knowledge is critical in the 21st century. In short, our students need experiential learning activities that support scalable learning.

The methods we have for understanding the world around us have changed in this new era. We used to know how to know something – we found our answers from books or experts – and these answers remained correct. In the 21st century, answers have moved into networks and databases where there’s more knowledge than ever, where topics have no boundaries, and where nobody agrees on anything (Weinberger, 2011). This expanding and ever changing flow of knowledge is affectionately known to faculty as “the literature.” Successful graduates of our schools will need a scalable strategy for making sense of this constantly changing flow of knowledge.

Our students don’t currently appear to have a valid, generalizable, and scalable strategy for making sense of the constantly changing flow of knowledge. In general, we find that undergraduate students often fail to integrate or synthesize the scholarly materials that they read. We find it is much more common for our students to treat each article or book as a canon; when they write each becomes its own paragraph. In so doing, many students never gain a holistic understanding of the literature that they are reading.

A method for making sense of the constantly changing flow of knowledge already exists at the graduate level. Within the social sciences, learning how to conduct a review of the research literature is critical for graduate researchers entering the field. This skill introduces a range of techniques that can be used to analyze other people’s ideas that constitute a body of knowledge, find relationships between different ideas and understand the nature and use of argument in research (Hart, 1998). Unfortunately how to conduct a review of the research literature is less often a point of focus at the undergraduate level.

Undergraduate research is defined by the Council on Undergraduate Research as “an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline” (CUR, 2017). Students often fear conducting research (Bos & Schneider, 2009), and schools have limited opportunities to alleviate this fear. Involving students in undergraduate research opportunities has steadily gained attention and credence as a best practice; however this solution is often framed as an undergraduate research and methods course (Gomez, 2013). While offering a research and methods course with active learning assignments, opportunities for collective learning from integrated cross-disciplinary experts, and interesting projects with real challenges and rewards is an optimal strategy (Pfeffer & Rogalin, 2012), many schools are simply not able to offer a course. This gap creates the need for thoughtful integration of scalable strategies for learning from the research literature into individual course curriculum.

At their core, our business schools bring together students and faculty to create and share knowledge. In an initial attempt to improve our students’ research understanding and writing, our faculty added both reading about writing literature reviews and explicit classroom instruction – to little or no avail. We realized we must instead empower our students by helping them to develop a better sense of their own educational path toward the goals they want to achieve. We need our students to become proficient at collectively reflecting on and learning from the rapidly changing and sometimes contradictory flow of knowledge. We needed to show our students a better way to conduct a literature review.

This exercise provides an answer to Dr. Brown’s challenge to business schools - an experiential learning activity that can be used within the classroom to prepare students for a world of constant and increasingly rapid changes and continual disruptions. First, we provide an overview of an exercise that will help undergraduate students reflect on, organize, and learn from a literature review. Next we report how students reacted to the exercise. Finally, we provide an outline of how the exercise can be demonstrated in 30 minutes.

**Overview of the Exercise**

This exercise was designed for an upper-division undergraduate management course that includes a research component. We used the exercise in a capstone course where students engage in real-world consulting projects in the community. In this course students act as consultants to organizations to solve problems, producing consulting reports to the client with recommendations. As part of this consulting project, students write a literature review related to their client’s issue. We not only wanted to *teach* students about the technique, we wanted them to *experience* it as a form of practice for their own literature review writing.

**The learning objectives for this exercise are:**

1. For students to understand and experience integrating and synthesizing scholarly literature.
2. For student to gain a holistic view of a set of scholarly articles.
3. To decrease some of the intimidation factor of writing literature reviews.
4. For students to fully understand the technique through practice.

**Target Audience**

This exercise was created for an upper-division capstone management course, as an introduction to writing a literature review that synthesizes literature as opposed to simply describing each relevant article/book. However, this exercise can be used in any course where students are assigned an extensive research paper or literature review, and may be useful in some graduate courses.

**Time Required**

The literature review exercise is best suited to a 75 or 90 minute class period, but can be adapted to two 50 minute class periods. The exercise can also be part of a longer class period (i.e., a three hour class); it works well for the second half of such a class, where content might be covered in the first half of the class.

**Number of Participants**

This exercise can work with as few as six students, or as many as 50. The important aspect of the exercise is that students can form teams of as few as three to as large as five. It is important for students to work together in this exercise, to help each other categorize the slips of paper with individual notes on them, and to identify themes. Even if students are eventually to write literature reviews individually, teamwork works best at this point.

**Materials Needed**

Students will need the “Literature Review Notes,” cut into pieces (please see Appendix A for the notes, with indications where to cut into individual slips of paper). Use envelopes with the individual pieces of paper inside – this makes for ease of distribution of the notes to each student group. Additionally, a paper cutter is useful for quickly cutting the slips of notes, but scissors work fine.

**Pre-Exercise Preparation Needed by Students**

No particular pre-preparation is needed by students.

Optional: We had our students read *A+ Guide to Literature Reviews* (Plus, 2013) prior to the class.

**Pre-Exercise Preparation Needed by Instructor**

In advance of conducting the exercise with students, the instructor should:

1. Copy the “Literature Review Notes” (Appendix A) for each student group in the class.
2. Cut the “Literature Review Notes” where indicated.
3. Put the notes slips of paper for each group into an envelope. This is mostly for ease of distribution, but does lend an anticipatory air to the exercise.

Optional: The instructor may want to develop his/her own “Literature Review Notes” pages from his/her own research writings.

**Instructions for Classroom Execution of the Exercise**

Prior to distributing the envelopes of notes, ask students about their past research paper experiences. This takes approximately ten minutes, depending on the size of the class. In our classes of 18-20 students, ten minutes was sufficient. Using this pre-brief is important to the exercise, in that it addresses typical student doubts or qualms about writing research papers/literature reviews (see question 3, particularly).

1. How have you completed research papers in the past? Answers will vary, but most commonly students will talk about gathering research materials, reading the materials, and writing about them. Students also often indicate that when writing a group paper, they tend to “divide and conquer” by giving each group member a section to research and write.
2. How do you write about the research articles? Do you write about them one-by-one? Do you use multiple articles per subtopic? Again, answers will vary, but usually students will indicate that they have written about each article in turn, within subtopics.
3. Do any of you have trouble facing the blank page/getting started with your writing? Many, but certainly not all, students will acknowledge that this is an issue for them.

At this point, inform students that today they will be learning a technique to make writing research papers/literature reviews easier, and that helps with the tyranny of the blank page.

(NOTE: If a more comprehensive discussion on what a literature review entails is needed, please consider using the “Optional Additional Activity” in Appendix B. This activity involves showing two YouTube videos, produced by the University of Maryland University College, which introduce the concept of the literature review, as well as simple debrief questions. The total additional time required for this activity is approximately 30 minutes.)

Before distributing the envelopes with the notes slips of paper, challenge students to think of the literature review as putting together a puzzle. First one needs to gather the pieces of the puzzle (the peer-reviewed, published articles), sort the pieces (synthesize, categorize, and integrate the information contained in the articles), and finally put the puzzle together (write the literature review). Inform students that in this class session they will be doing one step in a five-step process; the rest of the steps will be discussed after the exercise. For this particular class session the focus is on synthesis, categorization, and integration of the information.

Have the class form teams of 3-5 students each. If the student research project is being done in groups, it is best to use those established groups. Explain that each group will be given an envelope with slips of paper inside. Each slip of paper represents a note that was taken from a scholarly article. Note that students may notice several individual notes slips from the same author/article. Each group’s task is to sort the notes slips into themes, and record those themes to share with the class. Communicate that there is no one “right” set of themes. The important outcome of the exercise is to group similar notes, as they see fit. Ensure that the class is clear on the instructions, and distribute the envelopes. Allow 15-20 minutes for the exercise. It is useful to walk around the class, listening to group discussions and to be available for any questions from individual groups.

After the groups have identified themes, have each group list the themes identified on the board (so the entire class can literally see each group’s themes). Give the class time (approximately 5 minutes) to ask other groups about their themes. Ask each group to read one of the notes slips that was associated with one of the themes, merely to give the entire class an idea of the group’s thought processes.

Typical themes (from the notes provided in Appendix A) identified by students include:

* Assessment of academic leadership programs
* The importance of both leadership education and leadership practice in leadership development (occasionally student groups have split leadership education and leadership practice into two separate themes)
* Accountability of leadership programs

Ask students how many different authors are included in each theme. Normally students will have 3-5 authors in a given theme.

Ask students how they would now begin to write the literature review for these notes. Having completed the exercise, students usually understand that they should start with any one of the themes, and use the notes as the basis of their discussion.

Explain to students the procedure that they can use to get to this point in literature review writing process:

1. Collect peer-reviewed, published articles related to the chosen (or assigned) topic.
2. Read each article, taking notes in an electronic format (any word processing program). Each thought, finding, or quote should be a separate note that includes the citation. While taking notes, double- or triple-space the notes.
3. After notes are taken, print out a copy.
4. Cut the notes into slips of paper, each containing an individual note.
5. Physically arrange the notes into themes or concepts.
6. Begin writing the literature review by theme. The introduction can be added later.

**Student Reaction to the Exercise**

Our students reacted quite favorably to the exercise. Virtually all the students were engaged in the exercise. Sometimes there were mild disputes within groups about the themes. Many groups rearranged the slips of paper multiple times to arrive at themes. Feedback from the students indicated that they not only enjoyed the exercise, but it helped them understand how to synthesize multiple articles into themes. They also indicated that they felt the actual writing process would be much easier to start once themes were identified. One unanticipated piece of feedback was that because all of the students were management majors, they felt as though they talk about leadership all the time, and would have preferred a different topic. As an unexpected benefit, students liked that the notes’ citations and references were in APA format (which we require of their literature reviews). They felt that they could imitate the citation formatting in the notes and references. This led to a brief discussion of the difference between citation for ideas from articles versus direct quotes.

**How Exercise will be Demonstrated in a 30-Minute ELA Session**

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| **Activity** | **Time Needed** |
| Introduction & Literature Review Discussion | 5 mins |
| Instructions for the Exercise | 3 mins |
| Conduct the “Notes” Exercise | 12 mins |
| Debrief the Exercise | 7 mins |
| Conclusion | 3 mins |
|  |  |
| **Total Time** | **30 mins** |

**Conclusion**

In this paper, we presented an exercise that gives students an opportunity to practice a particular technique for organizing a literature review. We acknowledge that there are many ways to produce a literature review, and our exercise presents only one method. In fact, instructors could adapt this exercise to their own literature review processes. In whatever way instructors choose to implement this exercise, they are modeling a way to learn. In this way instructors answer Dr. Brown’s charge to prepare students for a world with constant and increasingly continual disruptions. It is our sincere wish that practicing the organization and categorization of information will help our students make sense of the ever-increasing and complex information flow that surrounds them.

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**Appendix A: Literature Review Notes**

Leadership educators need to heed the public calls for more accountability and continuous improvement in higher education – including leadership education programs and education (Goertzen, 2013).

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Dearth of research on assessment of leadership learning in academic settings (Goertzen, 2013).

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Assessment of academic leadership programs happens at one of three levels: assignment, course, and program (Goertzen, 2013).

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Seemiller and Murray (2013) contend that academic programs do not use competency models, but having comprehensive, common leadership competencies would be helpful for leadership education and research.

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Leadership “…competencies are not predisposed and thus can be learned and developed” (Seemiller & Murray, 2013, p. 35).

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One problem with assessing student leadership competencies is that competencies may be too numerous to assess in any kind of meaningful way. Seemiller and Murray (2013) created a Student Leadership Competencies with 61 areas.

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**Appendix A: Literature Review Notes, continued**

Leadership education and development are inextricably linked; what a student learns in the classroom is influenced by leadership experiences, both past and present (Lindsay, et al., 2009). Interpretation of and interaction with theoretical leadership concepts may be influenced by the student’s experiences with other leaders (both good and bad), and the student’s own leadership development activities.

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Although higher education leadership programs have increased, the rigorous and systematic assessment of student leader development has trailed behind (Lindsay, et al., 2009; Rosch & Schwartz, 2009).

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It is important to determine not only where leadership assessment occurs (assignment, course, or program), but also what this leadership assessment measures. Are we assessing learning only, leadership development, individual leadership performance, or some combination of the 3? (Lindsay, 2009). Determining which leadership outcomes are assessed is of paramount importance (Rosch & Schwartz, 2009).

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Best to combine learning and practice (performance) for meaningful leadership development to occur (Lindsay, et al., 2009).

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Lindsay and colleagues (2009) advocate for using Kirkpatrick’s (1994) 4-level training evaluation model, granting the educational (vice training) environment.

**Appendix A: Literature Review Notes, continued**

Some research advocates for assessing *application* of leadership learning, specifically in terms of leadership behaviors (Lindsay, et al., 2009; Rosch & Schwartz, 2009).

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Although discussing leadership training, Allio (2005) makes an interesting division between leadership *literacy* and leadership competency. In order for leadership development to occur, folks must practice leadership; “…performing deliberate acts of leadership” (p. 1071).

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With more public scrutiny and calls for higher education accountability, it is more vital than ever that our leadership development programs demonstrate effectiveness (Goertzen, 2009).

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While some scholars lament the lack of universal leadership outcomes, Goertzen (2009) argues for (advocates that) each institution or leadership program should develop mission-driven leadership outcomes. He advocates that each program should maintain not only its unique mission, but also its own unique characteristics such as experiences and curricular content.

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Various methods of leadership assessment (standardized and locally developed tests, portfolios, focus groups, etc.). Goertzen, 2009

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**Appendix A: Literature Review Notes, continued**

Direct measures (such as tests) are considered better than indirect measures (e.g., self-report of learning) of leadership development. However, self-report of behavioral outcomes are valuable for leadership programs that seek to develop leadership behaviors (Goertzen, 2009). Many of these are criticized for using proxies of leadership such as volunteerism or voting.

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Conger (2013) warns that the impact of leadership education is limited when educators don’t include opportunities for students to apply the material learned, in a realistic fashion.

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Higher education leadership programs are under great scrutiny (Blackwell, Cummins, Townsend, & Cummings, 2007), and more need to legitimize themselves (Ritch, 2013).

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**Appendix A: Literature Review Notes, continued**

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**Appendix B: Optional Additional Activity**

This optional activity helps explain what a literature review is, and how it is different from other research papers students may have written. Use of this activity will, of course, lengthen the time needed for the entire exercise by about 30 minutes. For a 50-minute class, this activity can be performed in one class period, while the rest of the exercise is performed in the second class period.

For this supplementary activity the instructor shows two YouTube videos on writing literature reviews prior to the exercise - *Writing the Literature Review (Part One): A Step-by-Step Tutorial* and *Writing the Literature Review (Part Two): A Step-by-Step Tutorial.* Both are produced by the University of Maryland University College (2010), and details can be found in our references. The total time of both videos is 13:02 minutes.

Indicate that first the class will watch two YouTube videos (13:02 minutes) about writing a literature review, and briefly discuss afterward. NOTE: At this point it may be helpful to explain that a literature review is a type of research paper, taking a comprehensive look at a topic. If your students are not writing literature reviews, per se, explain that the information in the videos will be useful for their research papers (which it will be).

Debrief the videos by asking the class the following questions:

1. How is a literature review different from some other papers you’ve done? Answers (from the video) include:
   1. A literature review is not an essay
   2. A literature review is used to increase understanding and build expertise in a topic

**Appendix B: Optional Additional Activity, continued**

* 1. A literature doesn’t try to prove a point or offer a point of view, but rather explores the topic knowledge that currently exists
  2. The articles reviewed are peer-reviewed published articles (Taylor, 2010).

1. What are some ways to arrange your research in a pattern? Answers (from the video) include:
   1. Chronologically
   2. By advancements in the topic
   3. By use of questions (Taylor, 2010).