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Assessing Academic Discourse
Levels of Competence in Handling Knowledge From Sources

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Knowing how to handle knowledge from sources, the foundation of engaging in academic discourse, is a complex task that can cause college writers great difficulties. After investigating the literature, the authors found that the primary cause of these difficulties is students' lack of knowledge about what exactly is expected of them, namely, the lack of task representation. In order to clarify the task representation of dealing with sources, the authors isolated the criteria and then translated them into a rubric. The rubric focused on the two areas of transformation of knowledge from single sources and integration of knowledge from multiple sources. Each area was divided into levels of competence. Fifteen college research reports were evaluated with the rubric. As expected, no student reached the highest, accomplished level of competence in handling of knowledge from sources, with integration being the most challenging area. Nevertheless, based on anecdotal evidence from students, the

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rubric could be useful as a practical tool to clarify an important part of academic discourse for college writers and their instructors.

Introduction

College faculty often lament the low level of college students' academic writing. Clearly, the nature of academic discourse for students is complex and difficult to achieve (Bartholomae, 1985). Students have been known to move information from outside sources to their own written research papers, without engaging in critical, original thinking. Student writers often engage in what is called a "knowledge-telling" strategy (Bereiter & Scardamalia, 1987) and their writing difficulties often center on what can be called a lack of engagement in academic discourse, based on a weak handling of knowledge from sources.

Academic discourse does not refer to just academic style, language, or "register" (Sperling, 1996). Higher education students learning to enter an academic community of writers need to learn both the conventions and genres of their discipline (e.g., Bizzell, 1982), as well as the "conversations of the discipline" (Bazerman, 1985), namely the current issues of importance in that discipline. Academic discourse involves using academic sources to create knowledge by making a contribution to the understanding of a topic, for example by offering a new conception about the topic (Spatt, 1999; Spivay, 1984; Sternberg, 1998; Veit, 1998). According to Linda Flower (1989a), academic discourse occurs when writers "enter into the academic community by contributing to both a serious, energetic conversation and to a shared body of knowledge. . . . They enter the discourse by offering us research, scholarship, and theory. In addition to these finished thoughts, academic discourse also encourages and values writing which presents new ideas, hypotheses and mysteries, issues for negotiation, and thoughtful reflections" (p. 4).

There are various dimensions that can influence a student's writing, including social-context, affective, and cognitive dimensions (Rose, 1985). Here, we limit our discussion to cognitive dimensions of what a writer needs to know in order to write from sources. Student writers need to do high-level synthesizing of knowledge from sources rather than just transporting it around. Unfortunately, what is missing from the literature are practical tools for students and teachers to identify the criteria and levels of competence in writing from sources. As Flower (1989b) said, "Educators do not work with abstractions; they work with students" (p. 284). If these levels were known by students and instructors, then perhaps we could help college writers produce a better written product and instruct them in "what we know about the seemingly mysterious process of scholarly writing" (Caffarella & Barnett, 2000, p. 40) and equally important, help students assess their own performance (Solomon, 1998).

We began our research by looking at the literature and asking our first question: "Why do students have such troubles dealing with knowledge from sources?" We then moved to addressing these troubles by isolating from the literature those criteria required for writing from sources. This led to our second research question: "What are those qualitative criteria that characterize *accomplished* handling of knowledge from sources?" After isolating those criteria, we worked on translating

them into a practical rubric that could delineate levels of competence in handling knowledge from sources. Thus, our third question was the following: "How can these abstract criteria of writing from sources be represented as a practical rubric that might be used as a learning tool for college students and an evaluation tool for instructors?" Finally, we applied the rubric by analyzing a sample of student academic writing and asked our fourth question: "What is the quality of our college students' academic discourse according to the rubric?"

This article is structured as a response to these questions. We begin by attempting to understand the reasons for the low level of college writers' ability to deal with sources, focusing on the lack of writers' knowledge of what is specifically expected of them (*task representation*). Next, we attempt to clarify the task representation of handling knowledge from sources. Then we present our rubric that delineates levels of competence in handling knowledge from sources. Finally, using the rubric, we report preliminary findings of an analysis of the written research papers of 15 graduating students at an Israeli academic teachers college.

It is our hope that by clarifying the parameters of handling knowledge from sources, determining levels of competence, and looking at some of the difficulties of a sample of undergraduate writers, we will move one step closer to unraveling the mysteries of improving the academic discourse of college students.

Causes of Low-Level Writing From Sources

Why do college students have such trouble dealing with sources? From the literature, we found that there are basically three interdependent causes: (a) lack of explicit task representation of what is expected when writing from sources, (b) lack of guided practice in reading and writing academic discourse, and (c) lack of adequate content knowledge.

Lack of Task Representation

One cannot underestimate the importance of writers understanding what is expected in a specific writing assignment. The goals that writers set and the task that they understand from their teachers' instructions, in other words the way in which writers represent to themselves what is expected in the composing task (the task representation), has a direct and powerful effect on both the process and the final product: "Task representation may matter as much as their experience in writing or their prior exposure to an assigned task" (Flower, 1989a, p. 2). For example, in a study of students, Flower found that those who understood that their task was to "make a creative synthesis of ideas around a central concept" were better able to create a clear and organized structure and integrate their own position into the text. On the other hand, Flower explains that students who understood the task to be to explain the topic to an uninformed reader, explained each original text separately and without representing their own position or including an organizing principle into their text.

Ackerman (1990) emphasizes the importance of specific task knowledge, in that rather than lack of ability in thinking and writing critically, students often have limited knowledge of what is expected and are not aware of their options.

Sufficient task knowledge also includes the knowledge that the process of academic writing from sources entails extensive planning and revision. Students often carry out planning and revision while they are composing their draft, rather than as separate and important activities (Galbraith & Rijlaarsdam,1999). Inexperienced writers often limit their revisions to cosmetic changes of surface features of the text, such as correct spelling.

The literature points to the importance of clear task representation for academic writing, yet tools in the literature, which delineate specific and practical task criteria that instructors and students can use, are basically nonexistent. We mention that there is research (e.g., Fulman & Connor, 1997) that presents criteria for specifically assessing academic writing from sources, but the emphasis is on assessment rather than as a guide for the student or instructor. Such valuable guidebooks such as the *MLA Handbook for Writers of Research (*Gibaldi, 1999), focus on measurable regulations such as how to cite a source. Missing is concern for deeper and harder-to-measure issues such as how to relate to those sources in order to be able to contribute to a deeper understanding of them. Before we address the development of such a tool, we turn our attention to the second cause of low-level academic writing from sources.

Lack of Guided Practice

It is widely accepted that for writing to improve, students at all levels need to have extensive practice and plenty of production of text (e.g., Fairbanks, 1988; Torrance & Thomas, 1994). Unfortunately, students do not always have enough guidelines or practice producing the desired written product (Caffarella & Barnett, 2000; Sperling, 1996). For example, in Hauptman, Rosenfeld, and Tamir (1998), we found that college students did not have sufficient "mileage" in familiarizing themselves with the process or components of dealing with source material and had very limited exposure in recognizing or producing academic discourse before they attempted to write their own final academic papers.

Flower (1989b) writes that in addition to lack of guided practice in academic writing, there is the contributing factor of plain bad habits from previous, incorrect writing practice. She notes, for example, that in high school, emphasis is often placed on summarizing outside source material rather than transforming, integrating, synthesizing, and critically writing about it.

Inadequate Content Knowledge

The third reason for low-level written products is that college students often have less than adequate content knowledge about the topic they are discussing (Ackerman, 1990; Flower, 1987; Greene, 1991; Leedy, 1997). Flower (1987) explains why some undergraduates may find it difficult to rise above the lower levels of just reporting information they have read: "Perhaps one reason that college students have difficulties in engaging in academic discourse is because they often choose topics about which they do not have high-level background knowledge, and they often write about knowledge they are still acquiring" (p. 6).

There are various reasons why college writers have low levels of content knowledge. In Hauptman, Rosenfeld, and Tamir (1999), we found several reasons why our particular college students had low levels of content knowledge. The students (a) often had no previous courses about their chosen research topic, (b) had done only limited in-depth reading of academic sources about the topic when they wrote their final research papers, and (c) did not allow enough time to digest the material that they had read. Additionally, we found that "having adequate content-knowledge" was a rather nebulous concept even when addressed, and particularly difficult for the students and their writing instructors to determine before the writing product was completed. Although control of content knowledge is one of the necessities for academic discourse, the students and instructors in this sample were often only aware of the student's low level of content knowledge when the final written project was turned in for evaluation.

In our present study, we did not focus on improving content knowledge because each student in our sample dealt with a different content area. Instead, we isolated the elements of task representation for handling knowledge from sources and used these elements to create a rubric as explained in the following section.

Analyzing Levels of Competence in Handling Knowledge From Sources

Engaging in academic discourse involves the creation of a written product that is not usually an image of school discourse (Flower, 1989a) and is certainly not an easy task, even for experienced writers: "Academic discourse values invention that occurs at the top levels of the idea structure and such writing is often difficult, even if one has practiced it" (Flower, 1989a, p. 5).

In clarifying what is needed for engaging in academic discourse, we focused on handling of knowledge from sources. We began by delineating those elements that differentiate novice from accomplished writing, elements that are difficult to produce and equally difficult to evaluate (Leki,1995; Sternberg, 1998). We used this differentiation to create a rubric (see Appendix A).

In our rubric, we isolated two areas that form the basis of dealing with sources. The first area involves the writer's competence in *transformation of knowledge from single sources* (Bereiter & Scardamalia, 1987). Transformation refers to text processing, namely interpreting knowledge taken from individual sources. The second area is the writer's competence in *integration of knowledge from multiple sources* (Flower, 1987; Leedy, 1997; Spatt, 1999; Spivey, 1984; Sternberg, 1998). Integration refers to how the writer unites knowledge from multiple sources into some sort of coherent organizational pattern while focusing on the central thesis, with the source knowledge playing a support role for that central thesis. In the following sections we suggest criteria and levels of competence in transformation and integration of knowledge from sources.

Transformation of Knowledge: Text Processing of Single Sources

We delineate three levels of *transformation of knowledge from single sources* and divided each level into *form* and *quality* (see Table 1). The first, or *novice* level is where the writer engages in a "knowledge-telling" strategy (Bereiter & Scardamalia, 1987). This is when writing serves to reproduce knowledge, and where the structure of knowledge is basically unaltered from the original text. On this level, the writer heavily relies on reporting about what he or she has read by quoting or summarizing, does not attempt to prove or disprove a contention in the original text, and remains very close to the original text from the standpoint of content or structure. There is a lack of "a distinctive point of view or evidence of reflection upon ideas" (Galbraith & Rijlaarsdam, 1999, p. 95). Additionally, the reader has difficulties clearly distinguishing between what has been quoted, copied, or paraphrased (see Appendix B, Example 1).

Table 1: Students' Levels of Competence in *Transformation* of Knowledge From Single Sources

Level	Criteria
Accomplished "Knowledge-Transforming" Full transformation: Writer transforms source knowledge and relates it to the thesis (4-5 pts.)	*Form:* The writer: 1. Represents source knowledge concisely. 2. Makes a clear division between source knowledge and the writer's words. 3. Shows an appropriate relation between amounts of interpretations of source knowledge and amounts of direct quotes from a source (should be more interpretations and less quotes) *Quality:* The writer: 4. Represents source knowledge clearly and accurately. 5. Transforms source knowledge (by clarifying, interpreting, refining, expanding, evaluating) 6. Shows the clear relevance of the selected source knowledge to the writer's thesis.
Emerging Partial transformation: Writer partially transforms source knowledge and only partially relates it to the thesis. (2-3.9 pts.)	*Form:* The writer: 1. Generally represents source knowledge clearly and concisely, sometimes with some extraneous information. 2. Includes a few instances of confusion between what is quoted, paraphrased or interpreted. 3. Usually shows an appropriate relation between amounts of interpretations of source knowledge and amounts of direct quotes from a source; occasional inclusion of lengthy quotes.

	Quality: The writer: 4. Includes a few instances of inexact understanding of source knowledge. 5. Generally transforms source knowledge, sometimes on a superficial level (by clarifying, interpreting, refining, expanding, evaluating) 6. Makes the reader struggle to find the relevance of the selected source knowledge to the writer's thesis.
Novice "Knowledge-Telling" Lack of transformation: writer engages in "knowledge-telling, does not transform source knowledge and has no thesis. (0-1.9 pts.)	*Form:* The writer: 1. Often includes extraneous source knowledge. 2. Sometimes includes perhaps unintentional copying or quoting without a reference and shows confusion between quotes and paraphrasing. 3. Shows an over-reliance on lengthy quotes and summaries compared to interpretation of source knowledge. *Quality:* The writer: 4. Sometimes has examples of blatant misunderstanding of the source.

The second level of text processing is considered by Flower (1989a) to be "flexible processing." We chose to call this level *emerging*, because we reasoned that this positive term might give hope to struggling college writers. On this level, the writer has a broader and richer representation of the original text (Flower, 1987) and makes selections from the text based on relevant principles and on his or her goals (Spivay, 1984). Unlike the novice level, on this level the writer discards irrelevant parts of the original text (Leedy, 1997) and has a conceptual structure that is different than that of the original source (i.e. a thesis). However, the reader has to struggle to find the relevance of the selected source knowledge to the writer's thesis.

The third, or *accomplished* level of single text processing is when the writer interprets and evaluates the original text (Spivey, 1991). On this level, the writer achieves *knowledge transformation* (Bereiter & Scardamalia, 1987), where writing serves to refine knowledge and where new understanding of knowledge is developed; on this level, there is a clear relevance of the selected source knowledge to the writer's thesis. Sternberg (1998) adds that transformation clarifies, refines, or expands the original knowledge, for example, by evaluating the theory presented in one source in light of knowledge from another source.

Integration of Knowledge from Multiple Sources

The second area that we addressed is that of integration of knowledge from multiple sources. We differentiated between competence in the correct form of integration and competence in the quality of integration. Regarding the form, we included two aspects: (a) whether the writer uses enough sources to support his or her thesis, and (b) how the writer handles transitions from one source to the next, namely if there is an organizing pattern or rhetorical schema that unites the source knowledge (Flower & Hayes, 1984; Nelson, 1992; Rosenblatt, 1993) (see Table 2).

Table 2: Students' Levels of Competence in Integration of Knowledge from Multiple Sources

Levels	Explanation
Accomplished Full integration: Writer's focus is on his central thesis that is supported by selected knowledge from an organized and sufficient amount of sources. (4-5 pts.)	*Form:* The writer: 1. Uses sufficient/appropriate amounts of sources. 2. Has clear transitions from one source to the next, i.e., shows clear patterns of organization or rhetorical schemas that unite the sources (e.g., "These sources contend this, while others take the opposite view.") *Quality:* The writer: 3. Contributes insightful origination by uniting information not usually joined, by expressing a "voice," a point of view, reflection regarding the sources. (When appropriate, the writer engages in a"dialogue" of sorts between the references.) 4. Focuses on the thesis, with the source knowledge used as a support ("embedded" for the writer's purpose).
Emerging Partial integration: Writer's focus is on selected knowledge from connected and sufficient amount of sources (2-3.9 pts)	*Form:* The writer: 1. Generally uses sufficient/appropriate amounts of sources (occasionally has a long part in the report with only one reference). 2. Generally shows some patterns of organization or rhetorical schemas that unite the sources (e.g., "These sources contend this, while others take the opposite view").

	Quality: The writer: 3. Contributes some some expression of a "voice," a point of view, reflection regarding the sources. 4. Focuses on making order of the source knowledge, rather than on the thesis.
Novice Lacks integration: Writer's focus is on selected knowledge from disconnected and sparse amount of sources. (0-1.9 pts.)	*Form:* The writer: 1. Sometimes has long explanations with no references at all. 2. Relies on the "cut-and-paste" technique of listing sources, with weak or few connections between the sources. *Quality:* The writer: 3. Offers few or superficial comments/thinking that unite the sources. 4. Focuses predominantly on the sources.

Regarding the quality, we included two aspects: (a) whether the writer expressed some origination concerning the source knowledge, for example by being able to "bring together information not usually conjoined and to arrive at an original slant on an important problem" (Booth, Colomb, & Williams, 1995. p. 73), and (b) whether the writer kept his or her focus on the thesis, with the sources used in a support role of that thesis. Flower (1989a) explains this focus:

> There is an important difference between doing a summary or synthesis for its own sake, as a genre so to speak, and embedding those forms in a piece of writing that has its own purpose within a community of readers. Experienced academic writers may *use* a summary to present two points of view or use a source-based synthesis to establish context or their own credibility, but those plans . . . are typically in the service of grander goals, larger motives—in short, they serve the writer's . . . purpose. (p. 28)

On the lowest, or *novice* level of *integration*, the writer makes weak or no connections between the sources. Here, the writer uses the "cut-and-paste" technique of reporting information from sources (see Appendix B, Example 1). Often, there is no apparent logic to the order of the knowledge from sources, or the source knowledge is summarized and then arranged superficially according to the alphabetic order of the authors' last names (Hauptman et al., 1999).

On the *emerging* level of *integration*, the writer shows some sort of logical organization or uses a rhetorical schema for structuring the knowledge from various sources. On this level, the writer is expressing some origination and the reader can sense the writer's "voice" that is heard through the logic of his organization (see Appendix B, Example 2).

These rhetorical schemas can take various forms (Hauptman, 1995; Leedy, 1997; Spatt, 1999):

1. *Multiple perspectives of a topic,* such as different schools of thought from various sources about a topic.
2. *For and against*, where the writer presents those sources that support one side of a thesis as opposed to other sources that support the opposing view.
3. *An argument and proof*, where the arguments and their proofs are supported by the sources.
4. *Comparisons*, such as results of studies conducted in the past as compared to the present.
5. *Chronological order*, where the source knowledge is reported according to the date of the various research studies.

We decided to call the highest level of our rubric the *accomplished* rather than the *expert* level. We reasoned that it was presumptuous to assume that if college students achieve full points for this highest level of dealing with sources, that their academic discourse as a whole would be equal in level of content and quality to the expert academic discourse that one might find in professional journal articles.

On the *accomplished* level of integration, the writer originates by contributing to his or her own, as well as to the reader's, understanding of the topic. We would argue here that this level of origination or "creation of knowledge" by college writers is perhaps not a deep contribution to world knowledge about the topic; nonetheless, each report can and certainly should be a unique creation which expresses the writer's own knowledge together with reflection about the knowledge from multiple sources.

On this *accomplished* level of integration, the writer shows control of knowledge from multiple sources by clearly and consistently organizing that knowledge in his or her paper. The reader does not need to expend energy in searching for the writer's logic in dealing with the sources. When appropriate, the writer takes part in a professional "dialogue" of sorts between the references, for example, when explaining two sources that have opposing viewpoints. He or she also makes a personal contribution to this dialogue, creating an original integration of the sources (Flower & Hayes, 1984; Nelson, 1992; Spatt, 1999; Sternberg, 1998).

In any case, for educators, it is important to note that there is a distinction between an expert writer and expert-level writing. Even if one has the necessary skills and practice, it is difficult and time-consuming to engage in academic discourse. Thus, even an "expert" writer does not always rise to expert-level writing, for example, if the content knowledge is new, or not enough planning and revision have been invested. That having been said, we designed the rubric so that *accomplished-level competence* of writing with sources is understandable and attainable for college writers.

Developing and Pretesting the Rubric

We developed the rubric after intensive study of the literature concerning accomplished writing from sources, and we attempted to include both the form and quality of such writing. Additionally, we utilized our own extensive experience with teaching and assessing college writers' academic writing in order to differentiate levels of competence. To improve the final draft of the rubric, each of us used it to independently check four randomly chosen college reports from the sample of 30 reports. As a result of this pretest, the rubric was corrected and streamlined so that a level of competence profile for each student could be derived. The rubric was designed to establish three levels of handling knowledge from sources, on a 5-point scale. Each subsection had a standard point value for *novice-level*, *emerging-level*, and *accomplished-level* writing. There was also a breakdown into "low and high" for the lowest two levels (see Table 3). The final version of the rubric (see Rubric, Appendix A) was then used to check 15 projects in the sample, as described in the next section.

Table 3: Scoring Key of Levels of Competence

	Level	Points
Accomplished		4 - 5 pts.
Emerging	High	3 - 3.9 pts.
	Low	2 - 2.9 pts.
Novice	High	1 - 1.9 pts.
	Low	0 - .99 pts.

A Rubric Evaluation Study

Population and Background

The students in our study consisted of third-year, preservice teachers in their final year at an academic teachers college of education in the center of Israel. All were female, ages 21-24. Each of 30 students was required to write a lengthy academic paper about action-research that she had designed and conducted with pupils during her fieldwork. Although all of the students submitted a paper, 15 were chosen at random for our study. These students chose a topic, read source material, wrote a literature review, and planned their teaching units based on a theoretical framework supported by the literature review. An example of a topic is: "Improving reading comprehension skills of sixth graders by teaching genres of narratives." The pedagogical dependent variable is "improving reading comprehension." The discipline independent variable is "teaching genres of narratives."

After finishing her theoretical framework, each student was expected to develop unit plans that include a pretest, 10 lesson plans, and a posttest. When the research

was completed with the pupils, the student wrote up the results in accepted academic format, which included an Abstract, Introduction, Literature Review, Methodology, Results, Discussion and Conclusions, and Bibliography.

We designed and taught 60-hour courses in academic writing when this group of students were freshmen at the college. At that time, the rubric had not been developed and the terms a*cademic discourse* and *transformation and integration of source knowledge* were not specifically used. Nevertheless, the freshmen were given extensive training in using text-processing tools such as cognitive mapping and they had extended practice in planning, writing, and editing their own mini-articles, which were expected to have a central thesis supported by knowledge from multiple texts on the same topic. All teaching and written exercises during their years at the Israeli college were conducted in Hebrew, the native language of the students; we translated examples from student papers into English only for the sake of this article.

In their second and third years, these students did not have a separate writing course with us. Instructors from other various content courses may have given sporadic, informal guidance on academic writing elements for their courses, but this was sparse, if at all. For the third-year project, pedagogical advisors gave general guidelines for the final written projects and helped the students with any individual writing problems. The pedagogical advisors were not necessarily skilled in academic writing. When these students completed their third and final year, we investigated their final research reports. When the final 30 reports were submitted, a set of 15 reports was randomly chosen, and we independently analyzed each one, using the criteria of the rubric. In cases where the three of us disagreed by more than 5%, the report was rechecked and discussed until an agreement was reached.

Findings

Slightly more than half of the group (see Table 4) submitted papers where both transformation and integration of knowledge from sources were on the novice level. Slightly less than half of the group had papers on the emerging level. None of the students in the study reached the accomplished level of writing in either the transformation or integration sections of the rubric.

Table 4: Overall Levels of Students' Competence (N = 15)

Level of Competence		Number of Reports Scoring at Specific Levels of Competence	Percent of Reports Scoring at Specific Levels of Competence
Accomplished		0	0%
Emerging	High	5	
	Low	2	46%
Novice	High	6	
	Low	2	54%

We compared the students' handling of knowledge from sources in two sections of their reports—their pedagogy sections (e.g., "Improving reading comprehension" in our example above) and their discipline sections (e.g., "genres of literary narratives"), (see Table 5). We found that their transformation skills were overall lower than their integration scores (low-*emerging* vs. high-*emerging*, respectively), a fact that surprised us because we had expected that integration would be more difficult to accomplish than transformation.

Additionally, we found that in transformation and integration, the students' scores were lower in their discipline sections than their pedagogical sections. We relate to these findings in the following discussion.

Table 5: Comparison of Levels of Competence in the Discipline and Pedagogy Sections of Students' Papers (N = 15)

	Score in Discipline Section	S.D.	Score in Pedagogy Section	S.D.
Transformation				
Form	1.9	1.82	2.57	1.57
	High novice		Low emerging	
Quality	1.9	1.73	2.73	1.53
	High novice		Low emerging	
Average	1.9		2.6	
	High novice		Low emerging	
Integration				
Form	2.4	2.02	3.53	1.74
	Low emerging		High emerging	
Quality	1.8	2.05	2.90	1.85
	High novice		Low emerging	
Average	2.1	3.20		
	Low emerging		High emerging	

Discussion of Findings

According to our findings, our "experienced" student writers were well aware of the formal structure of writing academic reports, such as what constitutes an introduction, the format of a bibliography, and so on, yet they clearly had problems transforming and interpreting knowledge from various sources and supporting a central thesis with source knowledge. In sum, they fell far short of this important aspect of engaging in academic discourse.

We predicted that using knowledge from multiple sources to support a main thesis would be more complicated than transforming knowledge from a single source. Surprisingly, we found that the students had slightly more difficulties in the area of

transformation than in integration (see Table 5). Perhaps one reason that students scored slightly higher in the *integration* part of the rubric as compared to the *transformation* part was that the rubric could assign points for *integration* of sources, even if what was integrated were only quotes, copying, or simple summaries from sources that had not been transformed. A second reason might be that these Israeli students reportedly did not have much guided practice in transforming texts or rising above the level of simple comprehension of the basic informative level of texts; part of the Israeli high school experience is that students often are required to deal with texts that are on a frustratingly high reading-comprehension level.

We also compared levels of academic discourse in the discipline sections as compared to the pedagogical sections of their papers. There were lower levels of *transformation* and *integration* in their discipline as compared to their pedagogical sections. We suggest that this finding supports Flower's (1987) contention that writers have greater difficulties writing about new knowledge that they are still acquiring. This certainly seemed to be the case for these particular preservice teachers in the discipline sections of their reports, as compared to their writing about the more familiar area of pedagogy.

There are many limitations to the rubric evaluation study of our college students' writing. We analyzed the writing of a small group of graduating students from a single teachers college in Israel. The students participated in a formal course on academic writing only in their freshman year, with only sporadic, informal instruction in their second and final years from various content instructors. We certainly cannot generalize our findings to students in other teacher training colleges or academic institutions that have more extensive, formal writing programs.

The research studies that formed the theoretical background for this article were based on native English-language writers. We believe that our native Hebrew-language writers exhibited similar, if not identical, difficulties when dealing with sources, although we did not delve into any comparisons.

Conclusions and Recommendations For Further Research

We believe that the students in our sample fell short of accomplished-level writing from sources for the reasons outlined in our literature review. They lacked clear task representation. They lacked enough guided practice. They had inadequate content knowledge of their discipline. Having studied academic writing in their first year only, the students did not have sufficient writing guidance or practice to enter a community of writers who have learned the writing conventions and genres of their discipline.

Upon completion of this study, we used the rubric to help students practice identifying and assessing levels of competence in transformation and integration in professional journal articles before the students began the complicated process of writing their own reports. We found that when new third-year students understood the specific requirements of academic discourse before writing, the final task became clearer, even if the process may not have become any easier. For example, student comments included the following: "This academic writing stuff is incredibly hard.

I didn't know how much work it is to really integrate sources without just copying" (Hauptman, Rosenfeld, & Tamir, 2001). One student reported that "this is really complicated, but at least now we know what we're supposed to be doing."

After our current research was completed, we anecdotally found that as we as instructors became more clear about the task representation of academic discourse, so did our new students produce better work (see Appendix B: Example 3). Numerous other instructors at our college gave unsolicited comments that final written products were notably better than any previous year from the standpoint of academic writing quality.

We recommend that further research focus on using and testing the rubric with other instructors and on larger and more varied groups of writers. For example, it might be beneficial to use the rubric with a high school population to give guided practice in dealing with a few sources in shorter writing assignments, especially before the students enter college and are overwhelmed with multiple sources. No less important would be gathering data about whether writing instructors become more effective when using the rubric with student writers. Additionally, we recommend using student writing samples (e.g., Appendix B) to clarify the extent to which concrete examples of competency levels can contribute to clear task representation and improved writing.

Writing high-level academic papers involves innumerable, simultaneous skills that require intensive knowledge and practice. Even if the task of transforming and integrating sources are not the only components of academic writing, they are arguably two of the most important. They certainly seem to be among the most complicated of the tasks. We believe that the rubric can help clarify some of the mysteries of academic writing for college students and their instructors.

Appendix A. Rubric for Evaluating Transformation and integration of Knowledge from Sources

Levels of competence in *transformation* of knowledge from single sources:

Form
(1) The writer represents source knowledge concisely.
  ☐ 5 Points (Accomplished): *Consistently*
  ☐ 3 Points (Emerging): *Generally* (there are only a few instances where the writer gives unclear or inconcise representation).
  ☐ 1 Point (Novice): *Infrequently* (many references contain unclear or extraneous information).
  ☐ 0 Points: *Rarely*

(2) The writer makes a clear distinction between source knowledge and his/her own words (the reader can clearly differentiate what is quoted, paraphrased or interpreted):
  ☐ 5 Points (Accomplished): *Consistently*
  ☐ 3 Points (Emerging): *Generally* (there are only a few instances where there is not a clear distinction).

☐ 1 Point (Novice): *Infrequently* (there are many instances where there is not a clear distinction; the reader sometimes suspects some unintentional copying or quoting without a reference, confusion between quotes and paraphrasing).

☐ 0 Points: *Rarely* (basically the writer expresses confusion between source knowledge and his/her own knowledge; the reader suspects plagiarism).

(3) The writer shows an appropriate relation between amounts of interpretations of source knowledge and amounts of direct quotes from a source. (There should be more interpretations and less quotes.)

☐ 5 Points (Accomplished): *Consistently* (there is an appropriate relation between amounts of interpretations and amounts of quotes).

☐ 3 Points (Emerging): *Generally* (there are only a few instances of lengthy quotes).

☐ 1 Point (Novice): *Infrequently* (overreliance on lengthy quotes).

☐ 0 Points: *Rarely* (few interpretations, many quotes).

Quality

(4) The writer represents source knowledge clearly and accurately.

☐ 5 Points (Accomplished): *Consistently*

☐ 3 Points (Emerging): *Generally* (there are only a few instances of inexact understanding of the source knowledge).

☐ 1 Point (Novice): *Infrequently* (there are several examples of the writer's blatant misunderstanding of source knowledge).

☐ 0 Points: *Rarely* (there are many examples of misunderstanding).

(5) The writer "transforms" source knowledge (by clarifying, interpreting, refining, expanding, evaluating).

☐ 5 Points (Accomplished): *Consistently*

☐ 3 Points (Emerging): *Generally* (There are some instances of source knowledge remaining unaltered).

☐ 1 Point (Novice): *Infrequently* (the knowledge-structure and content of the original source often remain unaltered, in a knowledge-telling mode).

☐ 0 Points: *Rarely* (the knowledge-structure and content of the original source basically remain unaltered; there is little or no reflection about the source knowledge).

(6) The writer shows the clear relevance of the selected source knowledge to his/her thesis.

☐ 5 Points (Accomplished): *Consistently*

☐ 3 Points (Emerging): *Generally* (there is relevance but the reader needs to search for it).

☐ 1 Point (Novice): *Infrequently* (the source knowledge is sometimes irrelevant).

☐ 0 Points: *Rarely* (the source knowledge is often irrelevant).

Levels of competence in integration of knowledge from multiple sources:

Form
(1) The writer uses sufficient/appropriate amounts of sources.

☐ 5 Points (Accomplished): *Consistently*

☐ 3 Points (Emerging): *Generally* (sometimes has sections with only one reference).

☐ 1 Point (Novice): *Infrequently* (sometimes has long explanations with no references).

☐ 0 Points: *Rarely* (often has long explanations with no references).

(2) The writer has clear transitions or shows clear patterns of organization or rhetorical schemas that unite the sources (e.g., multiple perspectives of a topic; for and against; an argument and proof; comparisons; chronological order).

☐ 5 Points (Accomplished): *Consistently* (e.g., "Author A writes this, while author B contends that...").

☐ 3 Points (Emerging): *Generally* (shows some organizing principle or schema that unites the sources).

☐ 1 Point (Novice): *Infrequently* (the writer uses the "cut-and-paste" technique of relating to sources, sometimes with unclear transition between the sources).

☐ 0 Points: *Rarely* (no logical connection between the source).

Quality
(3) The writer contributes some insightful origination in the following ways: by uniting information not usually joined, by expressing a "voice," a point of view, or some reflection or critical thinking regarding the sources. (When appropriate, the writer engages in a "dialogue" of sorts between the references.)

☐ 5 Points (Accomplished): *Consistently*

☐ 3 Points (Emerging): *Generally* (there is some insightful origination).

☐ 1 Point (Novice): *Infrequently* (there are superficial comments uniting sources).

☐ 0 Points: *Rarely* (no evidence of origination or critical thinking that unites the sources).

(4) The writer's focus is on the thesis, with the source knowledge used in a support role ("embedded" for the writer's purpose).

☐ 5 Points (Accomplished): *Consistently*

☐ 3 Points (Emerging): *Generally* (sometimes the focus is on making order of the source knowledge rather than on the thesis).

☐ 1 Point (Novice): *Infrequently* (Usually the focus is on making order of the source knowledge rather than on the thesis).

☐ 0 Points: *Rarely* (there is usually little or no connection between the sources and the thesis).

Appendix B. Writing Examples

Writing Example 1
Novice level transformation and integration in this student's literature review
of creativity and creative thinking:
Developing Creativity and Creative Thinking in Children

Just as there are many various definitions of the term "thinking," so are there different aspects to creativity and creative thinking.

Avner Ziv (1990)—"Creativity is an aspect of a person who has a special ability, who can produce a product of high social value. Each creative process brings forth a new creative product. It can also include thinking in a new and unique way."

Freud (1908)—Freud saw creativity as a refined expression of sexuality. He explained that often sexual energy that cannot be satisfied in a relationship finds expression in neurotic outlets or in creativity. He stated that his wish for a creative man was for him to know his inner unknown, the source of which is his sexuality characteristic of age 3.

Jung (1971)—Creativity at its highest level produces products whose message encourages a collective memory and universality. Real creativity is determined by its universality and endurance. Creativity appears mainly in people who concentrate on themselves and on inner processes that happen to them.

Evaluation of Writing Example 1

Transformation—Novice Level:
Form:
1.   Extraneous and irrelevant source knowledge is included from the source (e.g., The writer does not clarify the connection of his thesis and Freud's contentions about man and sexuality).
2.   It is unclear what is copied, quoted, or paraphrased from the Freud and Jung sources.
3.   The knowledge-structure and content of each original source remain basically unaltered; the writing is "knowledge-telling" of the original sources.
4.   Overreliance on quotes and summaries rather than interpretation of source.
Quality:
5.   There is no evidence of the writer's interpretation of any of the sources (no source seems to have been clarified, expanded, or evaluated).

Integration—Novice Level:
Form:
1.   There are no transitions from one source to another, not even alphabetical; the writer uses a "cut-and-paste" technique with a weak pattern of organization between the sources (e.g., *"there are many various definitions..."*).

Quality:
2.   There is no point of view or reflection concerning the source knowledge.
3.   Focus is exclusively on the sources; the writer offers only a superficial uniting of the sources.

Writing Example 2

(As mentioned previously, there were no accomplished-level writing examples in our sample group of college writers; however, we have included two examples of third-year college students who were taught with our rubric in the year following the completion of our research.)

<u>Accomplished-level</u> transformation and <u>high-emerging</u> level integration in this student's literature review of multicultural education:
Increasing Student Mutual Respect with Multicultural Education

Multicultural education has emerged as an umbrella concept that can be defined as "education usually formal, in which two or more cultures are involved" (Sleeter & Grant,1985). Blanks (1985) defines multicultural education as "Programs and practices designed to help improve the academic achievement of ethnic and immigrant populations and/or teach majority groups' students about the cultures and the experiences of the minority groups within their nation."

Another definition is given by Ekstrand (1985): "Multicultural education involves both majority and minority children. Majority children are expected to learn at least one foreign language, and to become acquainted with one or more foreign cultures."

Pusch (1979) provides a different type of definition. Not only does she stress knowledge and awareness of different cultures, but she also includes the practical experience of cultural differences as part of multicultural education.

Professor Covert (1989) offers a working definition of Multicultural Education as an education that "allows all students to reach their potential as learners . . . respects diversity . . . emphasizes the contribution of various groups . . . and promotes world peace and harmony."

Some of the definitions emphasize the need to help the minority groups to assimilate in the majority society, while the others underline the importance of improving the attitude of the major society towards the diversity groups by exposing them to the cultural background of the minority groups. The last definition by Professor Covert includes both main aspects of the previously mentioned definitions. The application of the idea of these two aspects will improve the relations between minority and majority groups and lead to mutual understanding and respect.

Evaluation of Writing Example 2

Transformation—Accomplished level:
Form:
1.   Source knowledge was selected and reported concisely.
2.   There is a clear division between what is quoted, paraphrased or interpreted.

3. There is more paraphrasing and interpretation than quotes or straight summaries.

Quality:

4. There is clear evidence of the writer's "voice" (interpretation), primarily in the last paragraph.

5. The writer chose relevant knowledge from the sources that were clearly related to her thesis.

Integration—High-emerging level:

Form:

1. The writing has good transitions between the sources (e.g., "Pusch [1979] provides a different type of definition.")

2. There is a good organizational pattern that unites the sources (e.g., "Some of the definitions emphasize the need to help the minority groups to assimilate in the majority society, while the others underline the importance of…")

3. A sufficient amount of sources is consulted (five sources are integrated in this single section of the report).

Quality:

4. The reader can readily identify the writer's reflection and insightful contribution about the source knowledge (e.g., "The last definition by Professor Covert includes both main aspects of the previously mentioned definitions.")

5. What stops the writing from being accomplished level integration is that the writer focuses on making order of the source knowledge, rather than on her central thesis.

With a minimal amount of revision, the writer could change this section of her report into accomplished-level integration of sources. She could do this by starting out with her main idea and using her sources to support that thesis, rather than focusing on the definitions of the sources. For example:

Teaching for multi-culturalism can improve the relations between minority and majority groups and lead to mutual understanding and respect. The literature presents different aspects of what can be stressed in multi-culture education. For example, sources point out the need for majority groups to become acquainted with the minority culture in their midst as well as for minority groups to improve their academic achievement. (Blanks, 1985; Ekstrand, 1985)

Writing Example 3
Accomplished-level of transformation and integration in this student's literature survey of ESL and games:
Evaluating the Effects of Teaching ESL through Games (p. 3)

" ... Games are one kind of method that can be used in teaching English as a second language. Games in the language classroom help children to see learning

English as enjoyable (Entwistle, 1990; Klein & Freitag, 1991; Schwartzman, 1997) and rewarding. Playing games in the classroom develops the ability to cooperate (Coleman, 1990; Entwistle, 1990; Klein & Freitag, 1991; Palmer & Davis, 1990; Schwartzman, 1997) and to compete without being aggressive (Gaudart, 1999; Klein & Freitag, 1991; Schwartzman, 1997).

Games are suited to all ages (Coleman, 1990; Gaudart, 1999; Meskill, 1990). Adults enjoy games sometimes even more than children do. It is common sense that if an activity is enjoyable, it will be memorable; the language will be internalized, and the children will have a sense of achievement which will develop motivation for future learning. In short, games increase the motivation to learn (Coleman, 1990; Entwistle, 1990; Jones, 1998; Klein & Freitag, 1991; Meskill, 1990; Palmer & Davis, 1990; Rosenorn & Kofoed, 1998; Schwartzman, 1997).

... The main goal of educational gaming is not winning, but developing one's potential. According to Schwartzman (1997), "Gaming allows effort to be rewarded, fouls to be punished, and excellence to be encouraged."

Evaluation of Writing Example 3

Transformation—Accomplished-Level:
Form:
1. The chosen source knowledge is concisely represented.
2. There is a clear division between source knowledge and writer's words.
3. There is more writer interpretation and less direct quotes or summaries of source material.
Quality:
4. Consistently, the writer "transforms" source knowledge (by interpreting, refining, clarifying, expanding, evaluating).
5. Source knowledge is relevant to the writer's thesis.

Integration—Accomplished-Level:
Form:
1. Consistently clear transitions between the sources.
2. Consistently clear patterns of organization that unite the sources.
3. Consistently sufficient and appropriate amounts of sources are used.
Quality:
4. The writer's point of view or interpretations are heard directly.
5. Focus is on the central thesis with the source knowledge used as a support ("embedded" for the writer's purpose).

Acknowledgement

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