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APA, Meet Google: Graduate students' approaches to learning citation style

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Abstract: Inspired by Perkins' Theories of Difficulty concept, this exploratory study examined the learning patterns of graduate students as they grappled with using the style sheet of the American Psychological Association (APA). The researchers employed task performance analysis of three APA formatting tasks, interviews, and observation during a "think aloud" task to gather information on students' misconceptions and successes. The study was able to document in detail how a group of Internet-savvy students approach the use of a style sheet. Learning APA style was found to be a matter both of overcoming conceptual blocks and personal style preferences. Once understanding of genre and conventions that may be inconsistent with prior experience and with each other are attained, motivation, patience, persistence, and attention to detail are also needed to achieve high levels of performance.

Keywords: citation error, skill learning, APA style, graduate students

I. Introduction.

What seemed to be a straightforward task in a doctoral proseminar—formatting references in American Psychological Association (APA) style—turned into a frustrating experience for both instructor and students. Puzzled by the poor performance of talented students on a routine exercise involving correcting bibliographic citations, we undertook a study of the reasons for these challenges.

Given the context, it was easy to avoid assuming that the students were lazy or unmotivated or did not consider the task important, possibilities that normally came to mind when encountering students' citation errors. This group of students was clearly eager to show their proficiency, take their new program seriously, and impress their peers and instructor. They were in the early phase of graduate student adjustment (Weidman, Twale, & Stein, 2001), lacking confidence, but trying very hard to show the institution that it had not made a mistake in accepting them into the program. Within the group, there was a competitive ethos, a seriousness about study and grades that is characteristic of new doctoral students. Thus, inquiring into the difficulties that serious students have with an apparently simple task was at the heart of this study. We framed our main research question as "What factors are associated with errors that new graduate students make in using APA style in citation lists?"

Learning a citation style like APA is important as it helps in academic and research activities such as retrieving documents for verification of data and building credibility as author(s) (Faunce, & Soames, 2001; Spivey, & Wilks, 2004; Sweetland, 1989). Citation styles, such as APA, have evolved through peer-consulted agreements within discipline-oriented

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communities of practice. Such agreed norms and ethics in research and publishing need to be followed by authors (Waytowich, Onwuegbuzie & Jiao, 2006) to ensure the continuation of agreed practice, and therein lies another importance for learning citation styles.

II. Conceptual Framework.

Initially, we were inspired by the work of David Perkins (2008), who advocates abandoning common initial reactions to student mistakes, such as blaming the learner (for laziness, poor study habits, etc.), settling for a formulaic fix (teach harder, use repetition, etc.), and focusing on the topic rather than the symptom and the symptom rather than the cause (how is the difficulty manifesting itself and what is it about the nature of the task and students' actions that are connected to the difficulty?) The approach aims at reaching a deeper understanding of student difficulties that transcends immediate applications to the problem at hand—in our case, students' inability to apply APA style to citation lists. Perkins' ideas are aligned with the scholarship on scientific misconceptions and other approaches that center on cognitive bottlenecks.

When we continued to search for a specific type of conceptual blockage that might be connected with applying APA style, however, we recognized, with the help of a peer, that style sheets are arbitrary in some ways and are patterns to follow, rather than internally consistent logical systems. For this reason, we were grateful for Perkins' advice about seeking deeper causes and wanted to continue to be sensitive to cognitive areas, but turned from the idea of conceptual blockages to a theoretical framework of social cognitive theory, which focuses on skill learning, or the application of rules to particular situations. Svinicki (2004) describes the task of social cognitive learning as students' creation of mental images of the sequences involved in making the desired application of a particular skill. She emphasizes the importance of modeling, practice, and feedback in this kind of learning. In addition, we included in our framework considerations of motivation and transfer, which Svinicki stresses are intertwined in skills learning. In such an exploratory study, we wanted to keep ourselves open to entertaining several theories that might be applicable.

III. Literature Review.

An initial search of the literature failed to reveal a study that focused on the specific topic of learning the APA style sheet. We did discover studies that focused on rates of citation errors in general (Garfield, 1990; Sweetland, 1989) and specifically in Medicine (Asano, Mikawa, Nishina, Maekawa, & Obara, 1995) and in Education (Jiao, Onwuegbuzie, & Waytowich, 2008; Waytowich, Onwuegbuzie, & Jiao, 2006). These studies found that very high rates of errors are common. Across these studies, citation errors ranged from 22%-51% in the samples studied, with most around 30%. Garfield found that many errors occurred when authors copied from other citations rather than the original document. These studies argue that one of the reasons for poor citation style and inattention to accuracy is that these skills are not formally taught. Two of these studies explored the relationship between personal characteristics and performance on APA citation style tasks. Waytowich, Onwuegbuzie, and Jiao found that student perfectionism is associated with high performance on citation style tasks. They documented the disconcerting finding that performance actually deteriorated rather than improved over time as graduate students advanced, suggesting that perhaps complacency or lack of correction by other instructors is to blame. Jiao, Onwuegbuzie, and Waytowich found an association between

library anxiety and APA citation style performance. In this piece, they claim that the Waytowich, Onwuegbuzie, and Jiao study is the first to explore relationships between APA errors and author characteristics, documenting the lack of studies on this topic.

Turning to social cognitive theory, we found Svinicki's summaries (2004, 2010) helpful in applying early work on social learning theory by Bandura (1986) to college teaching. In teaching intellectual skills, Svinicki stresses the roles of "cognitive apprenticeship" (Collins, Brown, & Newman, 1989) and prior knowledge, emphasizing that as learners watch another demonstrate a new skill, they construct a mental model of the process and then with practice and feedback, are able to make applications to other like instances. Awareness of their own processes (metacognition) aids in this activity. Svinicki also discusses the importance of such motivational theories as expectancy/value theory (Eccles, 1983), which alerted us to explore whether the students felt the task worthwhile and felt confident that they could master APA style.

A final strand of literature that seemed of possible relevance was the literature on learning styles. In particular, we looked at the idea of field independence and field dependence (Witkin, Moore, & Goodenough, 1977) as a possible explanation for why some students were more prone to notice details than others. This theory posits that people vary in the extent to which they tend to perceive the overall "big picture" (field independent) or notice the smaller components (field dependent).

The relative lack of prior work on the issue of learning citation style, coupled with a variety of possible explanations to consider, were factors prompting our exploratory approach. In short, we wanted to know whether cognitive confusion, poor mental imaging, motivation, personal style, simple lack of practice, or some combination of these factors were to blame for APA citation style errors.

IV. Methods.

The Proseminar enrolled 12 students, one of whom assisted in designing this study. For that case, we used only the students' assignments, but did not include her as a study participant in subsequent data collection efforts. After obtaining Institutional Research Board approval, we first assigned numbers to the cases of the 12 students and assembled their work products: an initial assignment that involved identifying citation errors in a list of 26 entries, and the reference list they submitted with the literature review assignment for the course. Each assignment was labeled with the student's number. A list of numbers and corresponding participant names was kept in a separate file.

Our initial step was to analyze patterns of error on the first assignment, which involved correction of errors in an instructor-generated reference list. We created spreadsheets for each student and created coding categories, noting when they had failed to detect a citation error or inserted an erroneous correction. All three coders worked independently and then reconciled their coding. The data from these spreadsheets were aggregated and individual and group percentages were calculated.

We next did similar coding of errors with the student-generated reference lists from the literature review assignment, coding errors by category. Again, we coded separately and reconciled differences. Because the lists varied in the number and type of citations used, we calculated percentages based on error rates per citation.

We next held interviews with each student on their basic approach, perceptions of the importance of APA style use, and preferred working style. Notes from each interview were then coded and entered into a database for analysis.

Finally, we observed students as they completed a "think aloud" task involving composing three reference entries in APA style from source items. Students were asked to talk as they worked, telling us their reasoning process. They were encouraged to use any resource they would normally use. Our notes from these sessions and analysis of the resulting citations were coded and entered into the study database. Scores on the citation task were arrived at by agreement of two coders and calculated on the basis of error rate per citation.

V. Findings.

Our explorations yielded important understandings on the thought processes and habits that students used in routine APA tasks, "logical mistakes" they made, their understandings of their own thinking processes (metacognition), and preference for digital rather than print resources. They also supported the efficacy of repeated practice in learning a skill. We will first discuss the results of students' performance; then, describe their strategies and other factors that affected performance.

A. Performance Results.

Student performance on the three APA tasks analyzed for this study had been preceded by a classroom demonstration of APA citation applications using slides archived for later student reference and an in-class exercise requiring students to do APA tasks and receive immediate feedback on their performance.

Error correction task. As previously noted, the first task involved noting APA style errors and substituting the correct format in a reference list of 26 items containing 61 errors. Students were able to do this on their own, using whatever resources they chose, following a class session that provided an overview of common citation tasks using APA style. The performance range on this task was quite disappointing, ranging from 20% to 64% accuracy, with a mean of 40%, showing that only 7 of the 12 students recognized and corrected more than half the errors in the list. Most common mistakes included: failure to recognize the genre of the entry (journal, book chapter, etc.); incorrect punctuation with multiple authors (not using both comma and ampersand); incorrect order of month and year when both needed to be used; inappropriate use of capitalization/lower case and italics/Roman in titles; and incorrectly listing city and state of publisher.

Literature review reference list. Students were asked to do a literature review with a reference list in APA style. On this task, the number and type of citations varied according to the sources students identified, so the error rate was calculated on the basis of errors per entry. The number of entries ranged from 7 to 26 with an average of 14. Scores ranged from an error rate of .6 per entry to 3.5. The mean score was 1.8 errors per citation. Common mistakes for this task involved: upper and lower case errors in titles; punctuation after the date; punctuation with multiple authors; order of year and month, and choice of genre. Four of the 12 students failed to indent their lists. In comparing the list of common errors between this and the first task, it must be remembered that the second list was student-generated while the first list was instructor-generated, so citation tasks on the second assignment depended on the students' choice of

references rather than a standard list. The approach was generative rather than reactive as well, which students cited as preferable, largely because it was easier for them to identify the genre of the source when they had the physical source before them. Nevertheless, there are substantial commonalities across the list of frequent errors, showing that students did not transfer much learning from the first task to the second.

Think Aloud task. Students were given two physical publications and one web URL during the interview visit and asked to write the citations, using whatever resources they chose. Errors per citation ranged from 0 to 3, with a mean of 1.2 per citation. Number of total errors ranged from 0 to 10, with a mean of 3.6. Most common mistakes involved genre identification, retrieval language, and capitalization/italicization of titles.

Patterns across tasks. Given that these tasks were performed over the course of two semesters (from the original assignment to the interview), and assuming that students had other opportunities to use APA style in their coursework, we were curious to know what patterns of improvement occurred. Did students seem to learn from their mistakes? To assess this, we looked at data on initially-high error rate tasks, comparing performance on the first, second, and last tasks per student and then in the aggregate. These citation activities involved the following:

- Identifying genre of source (recognizing correctly that the source is a book, journal, etc.)
- Using APA retrieval language (to cite retrieval of World Wide Web sources)
- Appropriately using Roman/Italics or capitalization/lower case, as called for by the situation
- Using correct punctuation for sources having multiple authors

Table 1 shows the average per item performance for the class on these items. Since the second task involved student-generated lists, a few of which did not use retrieval language or atypical genres, the group average does not reflect the performance of each student as evenly as the other lists. Given this condition, particularly with genre recognition errors, one can see a pattern of improvement across all four citation activities from the first to third task. The two more common activities—italics/capitalization of titles and use of punctuation with multiple authors, improved most dramatically, while the less common citations, involving unusual genres and web sources, were still associated with error rates over .5 per entry.

Table 1. Changes in Error Rate per Citation on Common Problem Citations Across Tasks.

	Use of italics/ Capitalization	**Genre Recognition**	**Retrieval Language**	**Authors (& and ,)**
1st Task	0.7	0.9	0.8	0.5
2nd Task*	0.3	0.5	0.8	0.3
Think Aloud	0.2	0.6	0.5	0.1

**Not as standard as the other two tasks since students chose citations to include, meaning that they had either more or fewer citations of these kinds on which to base the error rate.*

B. Factors Influencing Performance.

Working from our literature base, we looked at several potential factors influencing student performance on the tasks: student characteristics, their strategies for locating APA style information, their work checking behaviors, their perceptions of the value of the task (intrinsic or extrinsic), their prior knowledge, and their metacognition.

Student characteristics. Interview data on students' self-perceptions of their approaches were examined for possible relationships with performance. Students were asked to rate themselves from 1 to 10, with 10 being high, on four constructs: attentiveness to detail, persistence with APA tasks, perfectionism, and tendency to comply with, rather than question, directions. We grouped students by scores into the categories of high, medium, and low performers on the tasks. Then, we compared ratings on personal attributes to level of performance in order to explore the existence of a relationship. We found that the lowest performers rated themselves lowest of all three groups on their tendency to comply with directions and their attentiveness to detail, while the top performers rated themselves highest on perfectionism and attentiveness to detail. Top and middle group students rated themselves high on compliance relative to the low performers. Interestingly, the lower performers rated themselves most highly on persistence, perhaps due to the time their inefficient strategies take. Observations during the Think Aloud task showed that these students were more likely to jump from one strategy to another and to be unfamiliar with the use of some resources, such as the organization of the APA style manual. The results are summarized in Table 2.

Table 2. Relationship between Self-ratings on Performance. Scale from 1 to 10, with 10=High.

Group Averages	Details	Persistent	Perfectionist	Compliant	Averages
Top Performing	8.3	7.5	8.3	8.0	8.0
Mid Performing	7.6	6.5	6.5	8.3	7.2
Low Performing	7.2	7.7	7.3	6.8	7.3
Whole group	7.7	7.2	7.4	7.8	7.5

Strategies in composing citations. Students differed on whether they used a deductive or inductive approach to composing citations. Differences in approach led to different kinds of errors. Those who worked deductively immediately sought a model to accommodate the information on their source. This method led to problems when they misidentified the genre of the source. A frequent problem occurred with publications that are separately titled volumes in a series. Students who saw these publications as a journal ignored the dilemma of three titles (chapter, volume title, series title) and did not see the need to list the place of publication and publisher. Students who worked inductively from the elements of the source information to a model, however, were prone to make mistakes in copying the information or selecting which elements to use. For example, one student chose the earliest of several copyright dates instead of the most recent. Her reasoning was that one should indicate when the piece was first published. Another copied down extraneous information, such as the publisher's website. The choice of key elements of information dictated choice of model, causing mishaps if the wrong elements were chosen. For some, working from the source became a literal exercise—because the title of the book was listed with main words capitalized, it was copied that way.

Clearly, an iterative approach, moving between information from the source and the model entry is required, but many students seemed unable to move back and forth. Once information had been recorded by those using an inductive approach, they were reluctant to abandon some pieces of information as unnecessary; conversely, once a model had been adopted by the deductively-inclined students, they were reluctant to abandon the model because it did not fit the information. An example of a student using the iterative process was found in the student

who said, "I try not to stop at the first thing [model] that fits, because something better may come down the line." Her colleagues were less likely to do so.

The importance of genre recognition became clear from the start of the study. Students' error patterns were often related to their misperception of how the source material should be classified. While students most easily recognized books, book chapters, and journal articles, they had trouble with separately-titled volumes in a series, conference presentations, and electronic sources. Choosing the wrong category of publication meant choosing a model entry that would accommodate only some of the information available. Many students identified this major decision point about the source—What is this?—as the most difficult aspect of using APA citation style. Yet, the ability to make this decision readily is assumed by the Manual, and alas, was assumed by the teacher in the context of this study.

These two problems—failure to work iteratively and misperception of genre—were responsible for many subsequent issues.

Strategies for locating APA information. Only four students expressed a preference for using the APA manual to locate style information and one student outrightly admitted to never using the manual. All of the eight students who relied on other information sources used either the Internet or print model documents (entries in bibliographies or published sources likes books or journals). Much of the Internet use involved using Google or Google Scholar to locate sample citations, but some involved using sites on APA style conventions published by other users, mostly university centers. APA manual use was associated with middle and top performing students more than lower performing students. We did not find any relationship between use of various Internet methods and performance.

The features of online sources, such as hyperlinks and color coding, were viewed as more user friendly and efficient to the students than the print APA manual. As a less preferred resource, students used the APA manual when they continued to have questions about correctness after accessing other methods. For most, the manual is, as one student said, "So dense with information that I find it overwhelming. I don't have the time to spend more than 10 or 15 minutes to look for a citation." The organization of the manual is not clear to students. As they completed their think-aloud tasks, they frequently struggled with the index and flipped through pages randomly. One student complained that there are not enough examples and that those that are in the manual are basic rather than focused on complicated cases. Another student called the manual "stagnant," saying that it provides whole examples rather than building from individual elements. In observing students using the manual, we noted that they referred only to the examples without reading the explanatory text. They sometimes made errors of interpretation when they did read.

Students expressed, to varying degrees, issues of "trust" in consulting sources. For example, several placed trust in people, such as their professors, who would be able to give them advice on a troublesome entry. They joked about "dialing a friend" while they were doing the Think-Aloud exercise. Most students mentioned that using Google or other bibliographies were risky courses of action. Some students expressed the opinion that refereed journals in the field of education can be trusted since these journals all use APA (an incorrect assumption) while others cautioned that one should not rely on collections such as ERIC or EBSCO to provide citations in APA format. Students generally trusted the online APA style digests that other institutions have compiled (again not always a good assumption) but did not trust their peers to be accurate, often saying that peer review of APA work was not helpful because their peers make as many or more mistakes as they do. One student realized that EndNote does not always format citations

accurately in APA style. In the end, however, the APA manual is viewed as the authoritative source and as such is the final recourse of students who are searching to resolve a difficult citation problem. One student said, “APA is like the Bible.”

Students described sometimes using “triangulation” in formatting a difficult entry. They arrayed a variety of examples of a given citation, some from Google Scholar, some from other sources, to judge the “majority opinion,” or the differences between the formats used by more- or less-trusted sources before determining which to follow. Often, they would select the version that most closely matched the APA manual example that they judged applicable.

Work checking behaviors. We did not see strong patterns in the checking and refining patterns of students as observed in the Think-Aloud task. Top students were more likely to check the whole entry than checking only parts on which they were unsure, while mid-performing students were more likely to check only troublesome parts. There was no clear pattern with “giving up” or “settling” behaviors by performance group.

Perceptions of value of task. Although one student saw the APA assignments as “mundane” and said that she did not invest much energy in doing the tasks, all of the others stressed that they were motivated to perform well and gave these assignments their best effort. They stressed their understanding of the importance of using proper citation style, sometimes to a somewhat exaggerated level, such as the student who said, "Mistakes like this [citation format errors] are an 'in' for others to question your credibility.” She added, “It’s really important to avoid ‘public mistakes’--you really have to be careful as a scholar.” A few students stated that they did not think they would be using APA in their work because they were aspiring to administrative careers in which they would not be doing research and publication.

Prior knowledge. Confidence and experience were factors that influenced student performance on APA assignments. A few participants expressed that they were highly familiar with APA through their previous experience as either undergraduates or master’s students in fields using APA style. One was in the middle range on the two tasks that she said she did casually, but did very well in the Think-Aloud task. The other expressed astonishment that her practice had many mistakes, which had never been corrected by professors in past programs. A few participants had been away from formal schooling for several years and cited their lack of practice with formal academic writing as a general challenge.

An issue with prior learning that was experienced by the students in this study, however, was “unlearning” when previous practices had not conformed to APA style. For example, some students had formerly been in disciplines that used other style sheets. Their “memories” told them to put references in numbered lists or to spell out the author’s first name. For many, previous instruction in writing as far back as elementary school confused them when they relied on memory. They had been told to capitalize all major words in a title, for instance. These former practices were deeply rooted and often prevented noticing differences with the new style.

“Logic” of errors. Interview comments often illustrated students’ reasoning in ways that made good sense. For example, they saw contradictions between authorities:

- “The conventions of Microsoft Office are sometimes misleading, since they will do that "little red underline" for spacing or things, when really that's how APA wants it. It causes me to think I’ve made a mistake.”
- “You were taught in grade school to capitalize main words in a title, to use quotation marks around chapter titles. And leaving no space between a volume and issue number just looks weird. Who can you trust?”

Students also yearned for consistency in searching for a way to remember conventions.

- "I would like for conventions on these to be standardized--sometimes you use a comma and sometimes not. What's the rationale for the difference?"
- "Why is it that the main words in the title of a book are lower case, while those in a journal title are upper case?"
- "Why do you have to list the authors' first name initials last at the start of an entry but first when they are the book editors cited in a chapter citation?"
- "Sometimes page numbers are supposed to be listed with 'pp.' and sometimes not. Why the difference?"
- "It says to use "&" in listing authors in citations and "and" when referring to them in text. It would be easier to just use one or the other consistently, wouldn't it?"

Metacognition. While some students were quite aware of their approaches to using APA style, several appeared to be confused about the match between their stated approach and their actions. In eliciting interview comments from students about how they went about formatting entries, we found that students were able to describe their usual approaches, such as first writing down the pieces of information, then looking for a model. But in several cases, the students failed to follow this approach during the subsequent Think-Aloud task. Generally, students whose descriptions of their approach matched our observations of them were in the higher performing groups, leading us to think that metacognition is important in this learning task.

VI. Discussion.

Our overall appraisal of the usefulness of conceptualizing this study in terms of Theories of Difficulty (Perkins, 2008) is positive, in that it encouraged us to look for rational explanations of errors and misleading conceptions. What first seemed to us a routine task that did not require much mental energy emerged as a more complicated one. While our search failed to identify one key type of conceptual difficulty, it did lead us to explore the many factors involved in this type of skill learning. Working from a Theories of Difficulty approach also helped us to see some student errors as rational: they were made on the basis of a tendency to expect consistency in rules with those of previous authorities and with each other. We also learned that we made some incorrect assumptions about prior knowledge, such as students' ability to distinguish between a monograph series and a journal.

We learned, in accord with social cognitive theory (Svinicki, 2004), that practice seemed to improve performance, showing that familiarity and attentiveness to the task were important success factors. A key recognition, however, was that while performance on some APA style citation tasks seems to improve with practice, others require explicit repeated modeling of elements that seem quirky, complicated, or contradictory to prior experience, which take longer to master.

In addition, students' self-ratings of their personal characteristics showed some relationship to performance. This latter finding is consistent with the findings of Waytowich, Onwuegbuzie, and Jiao (2006) with respect to the positive relationship between perfectionism and performance on APA citation style tasks.

VII. Limitations.

The small sample size, location in one program and one doctoral course, and detailed analysis of three tasks allowed us to explore students' APA citation style learning in depth. Coding and

reconciling among coders was slow and labor-intensive, yet it was feasible for the sample size. These advantages also present limitations. The sample was too small to use statistical methods appropriately and is very context-specific. Results, therefore, can only be transferred by individual instructors on the basis of "fit" with their population and context.

A further limitation is the comparability of the tasks used for the study. The first task involved "working backwards"—looking at citations for errors. It used a standard list of 26 items, involving many types of citation tasks. The second involved generating citations for documenting a paper. Here, students chose the sources and the kind of citation tasks varied from one student to another. In the third task, the Think-Aloud task, the citation tasks were standard, but the conditions under which the students worked—being watched and likely feeling some time pressure—differed from those of the first two tasks. Although we have referred to these differences in the analysis, they make interpretation more complex and tentative.

VII. Implications.

Since the use of APA style is valuable in the literature in not only our discipline but in all who use the popular style sheet(*e.g.* Asano, Mikawa, Nishina, Maekawa, & Obara, 1995; Jiao, Onwuegbuzie, & Waytowich, 2008; Waytowich, Onwuegbuzie, & Jiao, 2006), there are several implications stemming from this study for us and our colleagues:

1. Instructors cannot assume that prior experience or self-discovery are adequate methods for students to learn tasks that seem routine.
    a. In the special case of APA citation style use, instructors need to pay explicit attention to genre recognition skills. Teaching with physical specimens is called for. Students need to know the difference between a continuously-paged journal and one that is not, between a separately-titled volume in a series and a multivolume work. By having students identify various types of sources and helping them to know how to check in cases when they are not sure of the identity of the type of source, instructors can assist them in using APA citation style.
    b. Highlighting common conventions of APA style is not enough as an instructional strategy. It is important for instructors to stress systematic search strategies by walking students through them, noting inconsistencies and highlighting conventions. In line with social learning theory, they also need to provide detailed modeling and repeated practice, encouraging students to compose their own learning journals as they encounter conventions that seem unusual or contradictory to their thinking. Such metacognitive activities will address the individual learning challenges in this area.
2. Colleagues in the program need to share the value of APA style use and reinforce learning. In this study, several students who thought they were using APA style correctly discovered that their previous instructors never pointed out APA style mistakes. It is also common to hear that "ideas are more important than mechanics." Instructors therefore need to support each other in helping students by recognizing the importance of reinforcement on style activities.
3. This study demonstrated that the scholarship of teaching and learning is important in unraveling the causes behind student errors and improving instruction. Looking at patterns of error systematically gave us an appreciation for specific types of errors in APA citation style, but more fundamentally changed our approach to learning challenges,

inspiring us to look more carefully at how students approach learning tasks. Instructors who are systematic in their explorations of student difficulties change their teaching in intentional ways as well as help their colleagues to promote better learning.

We believe that the above issues are not limited to the use of APA style, but are issues likely to appear in any use of a style sheet. It thus crosses academic disciplinary boundaries. We conclude then, that mastering APA citation style is influenced by practice, conceptual issues, and personal style preferences. Once understanding of genre and conventions that may be inconsistent with prior experience and with each other are attained, desire, patience, persistence, and attention to detail are also needed to achieve high levels of performance. These are the tasks involved in socialization to the practices of given discipline; our attention to this basic task can help in broader ways than the simple mastery of a style sheet. Gains in metacognition, attention to detail, self-discipline, and pride in one's work are all involved; style sheets can be the medium for helping our students achieve these goals.

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