

# Evaluation of an Instructional Activity to Reduce Plagiarism in the Communication Classroom

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**Abstract** Plagiarism is a prevalent form of academic dishonesty in the undergraduate instructional context. Although students engage in plagiarism with some frequency, instructors often do little to help students understand the significance of plagiarism or to create assignments that reduce its likelihood. This study reports survey, coding, and TurnItIn software results from an evaluation of an instructional activity designed to help students improve their understanding of plagiarism, the consequences of plagiarizing, strategies to help them engage in ethical writing, and key citation elements. Results indicate students had a greater understanding of plagiarism, increased efficacy, and fewer instances of plagiarism as determined by TurnItIn plagiarism software after exposure to an instructional activity on plagiarism. Not surprisingly, when instructors prioritize academic honesty in their classrooms, train students on how to integrate others' works, cite sources appropriately, and use plagiarism detection software, students are less likely to plagiarize. The discussion includes suggestions for instructors to help them create a plagiarism-free environment.

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Academic integrity is a priority in the undergraduate classroom as illustrated by instructors' expectations that students adhere to high standards by submitting original work. Plagiarism, defined as "the act of passing off ideas, text, speech or other creative work of another as one's own" (Usoof et al. 2014, p. 85), is a prevalent form of academic dishonesty in the undergraduate instructional context. Students engage in plagiarism with some frequency (McCabe 2005), yet instructors sometimes struggle to help students understand the significance of plagiarism or to create assignments that reduce its likelihood (Price 2002). Actively addressing students' conceptual and operational definitions of plagiarism, providing students with the appropriate tools for acknowledging others' work, and helping students develop their own critical thinking for assignments may help them approach their written work with increased sensitivity to plagiarism and a greater ability to cite others' work accurately. The current research reports findings from an instructional activity designed to help students improve their understanding of plagiarism, consequences of plagiarizing, strategies to help them engage in ethical writing, and key citation elements.

## Literature Review

### Contextualizing Plagiarism

There are many official definitions of plagiarism, but what is conceptually consistent across them is a statement about using others' work without credit. For example, the White House's Office of Science and Technology Policy defines plagiarism as "the appropriation of another person's ideas, processes, results or words without giving appropriate credit" (Federal Research Misconduct Policy 2000, p. 76260) and the Council of Writing Program Administrators (WPA) (2003) defines plagiarism in instructional settings as occurring when "a writer deliberately uses someone else's language, ideas, or other original (not common-knowledge) material without acknowledging its source" (p. 1). Students receiving any of these definitions would generally understand they cannot and should not claim other people's work as their own, but when it comes to the specific activities of integrating sources, extracting what is important, and citing sources appropriately, students still plagiarize. Hale (1987) found that "supplying students with a definition of what constituted plagiarism did not aid their ability to identify honest and dishonest writing," (p. 70). Moreover, Löfström and Kupila (2013) found that "neither the students' skill levels nor the use of plagiarism detection will automatically reduce plagiarism" (p. 240). Rather, instruction may be necessary. When asked about plagiarism, students admitted that they generally knew what it was, but had difficulty recognizing its nuances, which suggests that students are not sure what is and is not considered acceptable academic writing (Löfström and Kupila 2013). Overall, even when provided with definitions, students may be challenged to truly understand plagiarism and how to avoid it through paraphrasing and citing appropriately, which can lead instructors to regularly question the integrity of student writing.

**Prevalence** There is good reason for instructors to be concerned about plagiarism. More than 43 % of college students reported cheating at least once in the past year (McCabe et al 2006), and plagiarism is strongly represented in reports of academic dishonesty. Data collected from 63,700 undergraduate students in the United States revealed that 36 to 38 % of them admitted to paraphrasing or copying a source inappropriately, 14 % admitted to fabricating a bibliography, and 7 % admitted to copying a source verbatim (McCabe 2005). In another study conducted at an undisclosed institution in the United Kingdom, 54 % of students self-reported paraphrasing others' work without acknowledging the source (Newstead et al. 1996). Moreover, 72 % of college students in Saudi Arabia reported that they know what plagiarism is, yet 11 % of these students admitted turning in assignments that were entirely or mostly copied without using citations, 30 % reported changing a couple of the author's words without using citations, and 40 % reported using an author's direct quotes without using citations (Hosny and Fatima 2014). Based on these numbers, instructors are understandably concerned about the problem even if they have not actively addressd plagiarism in their classrooms.

Instructors in the college setting typically do not strive to serve as "police officers" whose primary aim is to catch students in an act of academic dishonesty (Howard 2002). However, increases in plagiarism detection services, also considered digital archives (Purdy 2009), fuel the sense that instructors are enforcers rather than educators (Davis 2011). College instructors prefer to help students maximize their potential, ideas, and experiences through the required assignments students complete in their coursework. This role negotiation enacted by instructors might partially explain the lack of attention given to plagiarism beyond warnings not to engage in it, because college instructors often do not see their primary role in the classroom as one of enforcement (Howard 2002).

**Turnitin as a Tool** Turnitin, a software program designed to detect the use of others' work, compares student papers with a database of previously submitted student papers, manuscripts, journal articles, and other written text ("Turnitin FAQs" 2015). The system attempts to identify overlapping text, and then provides the user with an indication of whether or not plagiarism has occurred. Although the system is far from foolproof, it does help detect potential problems with student work.

However, it is also important to note that many instructors are concerned about the reliance on plagiarism detection services over other pedagogical approaches to help students with their writing (Purdy 2009). The efficiency associated with using plagiarism detection services should not replace instructional activities to develop student writing, and instructors should use Turnitin "not just to punish, but also to teach" (Purdy 2009, p. 75). Students also agree with this sentiment. In a campus-wide survey about plagiarism detection software, for example, Löfström and Kupila (2013) found that students reported that although the majority of their instructors were not using detection software as a learning tool, it should be used as one. When asked how, the majority of students reported that the software could be used as a tool to help them recognize what constitutes plagiarism and how to prevent it by properly citing sources and paraphrasing core ideas, rather than reproducing them.

## Student Perspectives

Previous research has revealed that students plagiarize for a variety of reasons. For one, some authors hold that plagiarism is a matter of internal motivations and situational factors. For

example, Park's (2003) synthesis of previous literature produced a typology of nine reasons why students plagiarize. The reasons for plagiarism identified in the typology include a genuine lack of understanding, a desire for efficiency in completing an assignment, poor time management skills, personal or moral values that justify the acceptability of plagiarism, to communicate defiance of authority, negative attitudes toward assignments or a class, legitimization of the behavior, ease of engaging or temptation to engage in plagiarism, and lack of deterrence (pp. 479–480 provide the detailed typology). In another study, Löfström and Kupila (2013) used Park's (2003) typology to explore Finnish students' and instructors' perceptions of why students plagiarize. The authors concluded that students' and instructors' answers formed a three-factor solution: students plagiarize for intentional (e.g., the risk of getting caught is lower than the possibility of benefits gained), unintentional (e.g., not knowing the proper way to use and cite sources), and contextual (e.g., students are overloaded with too many writing assignments) reasons. Both students and instructors perceived unintentional plagiarism to be the most common reason for plagiarizing. In other research, Iranian college students reported that students plagiarize because it is easy, because of a lack of training, and because of a lack of time (Rezanejad and Rezaei 2013). Along these same lines, Spanish undergraduates reported that students plagiarize because of poor time management, and because it is easy to do (Comas-Forgas and Sureda-Negre 2010). In all of these cases, plagiarism is thus conceived of as something that may occur because a particular situation permits it (e.g., limited knowledge, or limited oversight) or because the student is actively motivated to plagiarize (e.g., consequences are perceived to be trivial in comparison to the reward).

A second perspective holds that plagiarism is an issue of morality. For example, Newstead et al. (1996) acknowledge that motivation is an important factor that influences plagiarism, but also include morality as a second key factor. Likewise, Park's (2003) typology includes personal or moral values as a reason some students plagiarize. Research has also demonstrated that students' views on plagiarism as a cheating behavior are not as strong as other types of cheating behaviors (e.g., cheating on an exam), and that students have rated not acknowledging sources when paraphrasing or quoting sources to be of only moderate concern (i.e., at the midpoint of the scale in Newstead et al. 1996). In other words, the relatively low moral weight students place on plagiarism may help explain why it is so commonplace.

Finally, a third perspective holds that plagiarism is a result of social learning. Social learning theory (Bandura 1977) suggests that many behaviors are learned by example. Specifically, in a given situation, the behaviors modeled by others, as well as the positive or negative consequences of those behaviors, affect one's own actions. According to social learning theory, therefore, students may plagiarize simply because they see their peers do so and because those peers do not face negative consequences as a result. Indeed, several authors have suggested that although students often know plagiarism is morally wrong, they may decide to plagiarize if they observe other students doing so without detection (Ashworth et al. 1997; Hosny and Fatima 2014; Park 2003).

Overall, it is clear from the research literature that instructors need to understand the influences of student motivations, morality, and peer interactions on plagiarism to address plagiarism in the classroom through appropriate instructional activities. Interventions should strive to address all three influences (student motivations, morality, and peer interactions) to maximize their effectiveness in reducing plagiarism.

To reduce students' motivation to plagiarize, instructors must overcome the fact that many students who plagiarize do not know what constitutes plagiarism, much less how to prevent it by way of paraphrasing, quotations, and using common style guides, such as APA style. By

recognizing that many students plagiarize unintentionally, instructors can take a proactive approach to address plagiarism in the classroom so that students avoid plagiarizing in the first place (Anyanwu 2004; Löffström and Kupila 2013; Marshall and Garry 2006; Valentine 2006). Research has shown that students who are taught to properly paraphrase, quote text, and list references tend to plagiarize much less than students who are not given any instruction on these topics (Owens and White 2013). Moreover, students who are instructed on these same correct writing practices have also reported an increase in confidence using correct citations and referencing, a greater understanding of what constitutes plagiarism, and a greater intention to avoid plagiarizing in the future (Smedley et al. 2014; Volkov et al. 2011). The above evidence suggests that reducing students' motivation to plagiarize through education is an effective tool to reduce plagiarism in the classroom.

In addition to reducing students' motivation to plagiarize, it is important to increase the moral weight of plagiarism. To increase the moral weight of plagiarism, instructors need to make the importance and seriousness of the issue salient. Instructors can increase the moral weight of plagiarism by educating students about their universities' policies on plagiarism, and the penalties for engaging in plagiarism. In doing so, students will understand the gravity of plagiarism and will be less likely to engage in it. Students should also be informed about the negative social repercussions of plagiarizing (Valentine 2006). Namely, if students plagiarize it is likely that their identity will be affected: students may be viewed as dishonest and unskilled writers, whereas if students do not plagiarize and use proper citations and references, then they will most likely be viewed as honest and skilled writers.

Finally, instructors can reduce the likelihood that plagiarism will be modeled from peers by increasing the likelihood of detection and negative consequences for those that do plagiarize. Students may observe their peers being penalized for plagiarizing and decide not to model their behavior. Decreasing the number of potential modelers should further reduce the extent that plagiarism can be learned socially.

Focusing on three approaches (student motivations, morality, and social influences) to address plagiarism is also supported by research that shows there is not a singular solution to reducing plagiarism in the classroom. Rather, to see the best results, reducing instances of plagiarism in the classroom requires both proactive and reactive methods. Reactive approaches, such as the moral and social influence approaches described above, explain what happens to students after they plagiarize; whereas proactive approaches, such as the student motivation approach, attempt to prevent students from plagiarizing in the first place. The effectiveness of a multi-pronged approach is evident in a 5-year longitudinal study that tested the effect of eight plagiarism reduction techniques over the course of 5 years (Owens and White 2013). The results revealed that the greatest decrease in plagiarism, as measured by plagiarism detection software, occurred when reactive and proactive methods were used. Students who were informed that they would submit their assignments online to a plagiarism detection program, and were made aware of their university's policies and penalties for plagiarizing (reactive approach), had significantly less instances of plagiarism than did students who did not receive this information. Additionally, students who were both educated on correct citation, paraphrasing, and referencing (proactive approach), and were informed that they would submit their assignments to a plagiarism detection program, and were made aware of their university's policies and penalties for plagiarizing (reactive approach) demonstrated a decrease in plagiarism cases in comparison to students who did not receive this instruction or information about their universities policies.

Therefore, along with previous research that has reported on specific instructional activities to assist students in understanding plagiarism (Hale 1987; Landau et al. 2002; Owens and White 2013), our research was interested in testing the effectiveness of a plagiarism intervention. As suggested by the overview of student perspectives above, the intervention was designed to address motivational, moral, and social factors of plagiarism. To measure the effectiveness of the intervention, we focused on three key student outcomes: perceptions, knowledge, and behavior. These outcomes were selected because they are important indicators of immediate behavior change, as well as of the likelihood that the intervention would have long-term positive effects. However, we did not have specific preconceived expectations for how effective the intervention would be at addressing these outcomes. Thus, the following research question was posited:

RQ1: What is the effect of an in-class plagiarism intervention on students' perceptual outcomes (efficacy and intention), knowledge gain, and written performance outputs (Turnitin data output)?

## Method

The instructional activity on plagiarism in this study was designed as an intervention in response to the detection of plagiarism in an initial assignment for an introductory organizational communication course. The course took place at a large, public university in the central United States. Students participated in the instructional activity and completed a survey about it. Student assignments were also submitted to Turnitin software and then analyzed by trained coders to measure the effectiveness of the instructional activity.

## Participants

A majority ( $N=194$ ) of the students enrolled in the course participated in the in-class, instructional activity on plagiarism scheduled as a part of normal class exercises for the day. Almost 60 % of the students enrolled in the course were undergraduate communication majors, and the remaining 40 % of students enrolled in the course were from 28 other majors. At the conclusion of the semester, a survey was made available to all enrolled students ( $N=225$ ), 175 of whom ultimately completed the survey (a 77.7 % response rate). The sample was primarily female (61.1 %) and Caucasian (67.9 %). Subjects ranged in age from 18 to 27 years ( $M=20.44$ ,  $SD=1.61$ ) and represented all grade levels (12 % freshmen, 23.4 % sophomores, 35.4 % juniors, 22.3 % seniors, 6.9 % fifth year or other). Participants' credit loads ranged from 8 to 18 credits ( $M=14.21$ ,  $SD=1.64$ ) and their anticipated grades in the class ranged from a 1.5 to a 4.0 ( $M=3.16$ ,  $SD=0.52$ ).

## Procedure

Students completed the first written assignment individually, were exposed to the plagiarism intervention, completed the second written assignment as a group, and then were asked to complete a survey to assess the effectiveness of the intervention.

**Assignment one** At the beginning of the semester, each group of students selected a research topic. The first written assignment on this topic was completed individually. Each student was instructed to identify one empirical research article related to the group topic and identify the purpose of the research, the methodology, and the implications of the study. Students were required to submit their assignments to Turnitin, a cloud-based plagiarism detection service that produces originality reports to promote plagiarism awareness (“Turnitin FAQs” 2015). When the grading process revealed a widespread plagiarism problem with the assignment, three of the authors developed an instructional activity as an intervention to help students address the problem.

**Instructional Activity/Intervention** The plagiarism intervention was implemented with students after they received feedback on the first assignment and before the second assignment was due. Each section of the course was given a comprehensive, interactive lecture on three topics. The intervention was designed to address the motivational, moral, and social aspects of plagiarism. First, instructors discussed the importance of plagiarism and correctly citing sources. Students were informed of how seriously the university takes these issues and of the possible consequences of being caught plagiarizing. By discussing the severity of plagiarism and the punitive repercussions for plagiarizing, the intervention addressed the moral (not viewing plagiarism as wrong) and social aspects (modeling peer behavior) of plagiarism. Second, instructors explained how to avoid plagiarism issues and how to use APA format correctly. For instance, students were given guidance on when they should use in-text citations and how to paraphrase sources to avoid plagiarism. By educating students on proper APA style and paraphrasing techniques, the intervention spoke to the motivational aspect (unintentional plagiarism) in the classroom. Finally, students engaged in an active learning activity comprised of practice exercises to test their understanding of plagiarism and APA style issues. All students also received PowerPoint slides and handouts so they could reference the material as necessary. Students could also access an APA style guide posted on the course website for further reference.

**Assignment two** Following the intervention, a second assignment was completed by groups comprised of 4 to 6 students. Group members combined their revised individual article analyses, supplemented them with additional material, and submitted one comprehensive literature review for their group topic. The overall goals of the literature review were to define the problem related to the group topic and to identify why the problem existed, how the issue had been handled in the past, and why a new approach to the problem was necessary (see [Appendix D](#) for assignment). Students were again required to submit their respective assignments to Turnitin.

## Measurement

At the end of the semester, students completed an anonymous survey measuring several factors related to the effectiveness of the plagiarism intervention. The survey assessed students’ performance self-efficacy regarding plagiarism avoidance, students’ intent to use what they learned in the future, students’ perceived competence in the class, the overall meaningfulness of the course, and general learning indicators. Students also answered general evaluation questions about the plagiarism intervention and knowledge questions about material covered

in the intervention lecture. Other than the knowledge questions, all survey items utilized a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Because the intervention was designed to address the motivational, moral, and social aspects of plagiarism, the measurement assessed these aspects of the intervention. The motivational aspect of plagiarism (unintentional plagiarism) was assessed by knowledge retention questions (true/false and multiple choice) regarding the content of the intervention, written performance outputs, as well as self-efficacy items regarding students' use of APA style in the future. The moral aspect of plagiarism (plagiarism not viewed as wrong) was assessed by measuring students' view of plagiarism as a serious issue, as well as students' behavioral intention to use APA style in the future. Last, the social aspect of plagiarism (modeling plagiarizing behavior) was assessed in the above measures, as addressing the motivational and moral aspects of plagiarism can decrease the number of modelers.

**Validity** To assess measurement validity of the constructs, the efficacy, behavioral intent, meaningfulness, competency, and learning indicators scales were submitted to confirmatory factor analysis (CFA) using IBM® SPSS® and IBM® SPSS® Amos statistical software. Before beginning the analysis, missing data were dealt with using listwise deletion, leaving an  $N$  of 156. Each scale was examined for both internal consistency and parallelism (Hunter and Gerbing 1982).

The initial output indicated poor fit of the model. Specifically, there were unacceptably large residuals in the internal consistency blocks for the efficacy, meaningfulness, competence, and learning indicators factors. To resolve the problem, items were removed until the number of overlarge residuals was at, or lower than that expected to occur by chance with an alpha level of 0.05. Good fit was eventually attained by removing two of the efficacy items, five of the meaningfulness items, three of the competence items, and two of the learning indicator items, CFI=0.94, RMSEA=0.06. The final factor structure, with the factor loading, mean, and standard deviation for each item, is presented in [Appendix A](#).

**Evaluation of Training** Participants evaluated the plagiarism intervention via four items, including "I feel much more knowledgeable about plagiarism due to the class exercise we completed," and "Overall, I now believe plagiarism is an important issue to address in class." Perceived effectiveness was not submitted to tests of validity as it was created as an index of evaluation items (see [Appendix B](#) for items). We also asked students if they had any previous instruction on plagiarism in their college coursework.

**Performance Self-Efficacy** Performance self-efficacy (adapted from Kitching et al. 2011) was measured using four items ( $\alpha=0.72$ ). Sample items are "I am confident using APA format for my papers," "I believe I can avoid plagiarism issues," and "I am able to identify the most common mistakes about APA format." These items spoke to the motivational aspect (unintentional plagiarism) of the plagiarism intervention.

**Behavioral Intention** Intent to implement the material covered in the instructional activity was measured using three items ( $\alpha=0.71$ ). Sample items are "My knowledge about plagiarism issues and APA format will be useful for other classes," and "It is my intention to use correct APA format when I write a paper." These items addressed the moral aspect of the plagiarism intervention.



**Meaningfulness** Meaningfulness of the class was adapted from the learner empowerment scale developed by Frymier et al. (1996). Meaningfulness of the class was measured because previous studies indicate that if students do not value the course or its assignments, they are more likely to plagiarize (Ashworth et al. 1997; Howard 2002; Park 2003). The final scale was comprised of five items ( $\alpha=0.89$ ), including “This class is interesting,” “The tasks required of me in this class are personally meaningful,” and “I look forward to going to this class.”

**Perceived Competence** Perceived competence in the class was also measured with a portion of the learner empowerment scale (Frymier et al. 1996). The final scale was composed of six items ( $\alpha=0.86$ ), including “I possess the necessary skills to perform successfully in this class,” “I feel very competent in this class,” and “I believe that I am capable of achieving my goals in this class.”

**Learning Transfer** Overall learning transfer indicators were measured using the learning indicators scale (Frymier and Houser 1999). The final scale was composed of five items ( $\alpha=0.86$ ), including “I like to talk about what I am doing in this class with friends and family,” and “I compare the information from this class with other things I have learned.”

**Knowledge Retention** Participants also answered six questions that evaluated their retention of the material covered in the plagiarism intervention. The questions included five true/false questions and one multiple-choice question. These questions were compared with the perceived competence measure to see if students’ perceived competence reflected the actual improvement in their understanding of plagiarism issues. Sample questions include “Three types of plagiarism include accidental, blatant, and self-plagiarism. True or false?” “We only need to cite academic articles, not news articles and non-academic sources. True or false?” and “When using a direct quote, you need to include the author’s name and year of publication. True or false?” These items assessed the motivational aspect (unintentional plagiarism) of the plagiarism intervention.

## Content Analysis

To investigate the effectiveness of the plagiarism intervention, students’ assignments were submitted to Turnitin software. Six coders also content analyzed the Turnitin reports for 195 individual article analyses and 42 literature reviews (total  $N=237$ ) for four different types of plagiarism.

**Turnitin** Plagiarism instances in participant submissions were identified using Turnitin’s originality report function. These reports compare the text of a participant’s submission to its “database of 45+ billion pages of digital content (including archived Internet content that is no longer available), over 337 million submissions in the student archive, and 130,000+ professional, academic and commercial journals and publications,” (“Turnitin FAQs” 2015, para. 3). In other words, Turnitin’s originality report computes the degree of similarity between the content of a participant’s submission and its three primary databases: Internet content, past student submissions, and periodicals and books. The originality report includes a similarity index that ranges from 0 to 100 %, and highlights each potential instance of plagiarism on participant submissions. These highlighted instances are color-coded to reflect the severity of

each instance, and provide links to their original source. Not every instance flagged by Turnitin is necessarily an act of plagiarism. False positives can occur if the software is set to include the reference list, quoted materials, and small (e.g., fewer than five) word matches. These false positives can inflate the similarity index and the number of plagiarism instances highlighted, so additional analysis of highlighted text by trained coders provides verification that the instances analyzed represent actual plagiarism.

Before content analyzing each instance, the originality report settings on Turnitin were calibrated across sections to create a consistent measure of plagiarism. The reports were set to include bibliographic materials and quotations, but exclude matches of less than seven words. A word string length of seven was selected based on previous research that showed that defining plagiarism as six matching words results in many false positives, but defining plagiarism as a string of eight matching words results in missed instances of plagiarism (Sorokina et al. 2006).

**Coding of Turnitin output** After the originality reports were calculated, six coders sorted each potential plagiarism instance into one of five categories: (1) over seven highlighted words that matched the source with no in-text citation, (2) over seven highlighted words that matched the source with an in-text citation (but no quotation marks), (3) a quote without an in-text citation, (4) an incorrect in-text citation, or (5) other. The first three categories constituted instances of *severe plagiarism*, the fourth category constituted instances of *APA style mistakes*, and the fifth category constituted *false positives*. Coders were trained using article analyses and literature reviews from previous classes that were not used in the final analysis. Coders practiced classifying instances of plagiarism together and independently until they obtained a minimum *kappa* coefficient of 0.80. After the coders reached this threshold, six coders categorized 12 % of the total corpus (30 article analyses) together to establish inter-coder reliability. The remaining 209 submissions were divided among the six coders and coded independently. Coders classified a total of approximately 65 documents each, including the 12 % overlap to establish inter-coder reliability.

Pairwise inter-coder reliabilities (*kappa*) initially ranged from 0.24 to 0.70. As such, the coder with the lowest inter-coder reliability was replaced with another coder who content analyzed 100 % of the article analyses. After, pairwise inter-coder reliabilities (*kappa*) ranged from 0.52 to 0.70, while pairwise percent agreement was slightly higher, ranging from 61 to 80 %. It is important to note that inter-coder reliabilities were slightly low, but that is primarily due to the fact that some coding categories were used very infrequently, and *kappa* is sensitive to infrequently used categories.

The coders analyzed a total of 2615 instances flagged by Turnitin. Of these instances, 1317 (per paper  $M=7.16$ ,  $SD=4.54$ ) were identified in the 184 individual article analyses submitted for the first assignment and 1298 instances (per paper  $M=30.90$ ,  $SD=9.97$ ) were identified in the 42 group literature reviews submitted for the second assignment. Plagiarism instances ranged from 1 to 21 per paper in the individual article analyses, and from 11 to 58 per paper in the literature reviews. The coders identified 582 instances of using over seven words that matched the source with no in-text citation, 263 instances of using over seven words that matched the source with an in-text citation, 83 instances of using a quote without an in-text citation, 964 instances of using an incorrect APA style citation, and 726 other instances that were not classified in the above categories.

## Results

### Survey

Of the 175 students who completed the survey, 164 (93.7 %) reported attending the class during which the plagiarism intervention took place. Analyses were conducted on this subset of the sample. The majority of participants reported remembering some (30.5 %) or most (53.0 %) of the in-class plagiarism activity. The general evaluation of the intervention was overwhelmingly positive. Means on the evaluation questions ranged from 4.04 to 4.45 and were all significantly above the midpoint of the scale (see [Appendix B](#) for details), indicating that students felt the plagiarism intervention was helpful, improved their knowledge, alerted them to plagiarism issues, and was worth recommending to others. The perceived improvement in knowledge was also reflected in performance on the knowledge questions that were included in the survey.

**Knowledge** For five out of the six questions, more than 93 % of students selected the correct answer, a far higher percentage than would be expected if students were simply guessing. For the remaining question, only 28.7 % of students selected the correct answer, a lower percentage than would be expected if students were simply guessing. This result can be attributed to the difficulty level of the question; students were asked whether or not a citation was correctly formatted, but it was only incorrect due to a capitalization error that was easy to overlook. Details and tests against chance for each of the knowledge questions are presented in [Appendix C](#).

**Scale Analyses** Results indicate students were generally positive about the plagiarism intervention and the class overall. Specifically, participants' *efficacy* regarding APA style use and plagiarism avoidance was high ( $M=3.80$ ,  $SD=0.58$ ), significantly higher than the midpoint of the scale,  $t(155)=17.18$ ,  $p<0.001$ ,  $r=0.80$ . *Intention* to use the information learned during the in-class plagiarism exercise was also high ( $M=4.49$ ,  $SD=0.52$ ), again significantly higher than the midpoint of the scale,  $t(155)=35.70$ ,  $p<0.001$ ,  $r=0.94$ . Consistently above the midpoint, students felt the class was *meaningful* ( $M=3.39$ ,  $SD=0.78$ ),  $t(155)=6.32$ ,  $p<0.001$ ,  $r=0.45$ ; felt *competent* to do well in the class ( $M=4.06$ ,  $SD=0.50$ ),  $t(155)=26.48$ ,  $p<0.001$ ,  $r=0.90$ ; and reported behaviors that demonstrated *learning transfer* ( $M=3.15$ ,  $SD=0.79$ ),  $t(155)=2.28$ ,  $p<0.05$ ,  $r=0.18$ .

### Turnitin and Coding Results

To further assess the effectiveness of the plagiarism intervention, participants' individual article analyses and literature reviews were compared on three different indices of plagiarism: the two outputs provided by Turnitin, and the number of instances of each type of plagiarism identified in the content analysis. Participants' individual article analyses served as the pretest because they were submitted before the plagiarism intervention; group literature reviews served as the posttest. Because the posttest data were collected at the group level, the individual article analyses were aggregated by group to produce comparable pretest data. Group members' pretest scores were integrated to produce a mean similarity index value and counts of the total number of plagiarism incidents of each type. Due to missing data on some

group members, only 19 of the 44 groups were retained for the final analyses. The remaining 25 groups had at least one member who failed to submit an individual article analysis to Turnitin, making accurate aggregation to the group level impossible.

**Turnitin Outputs** Two Turnitin outputs were compared between the pretest and the posttest: the mean similarity index and the average number of plagiarism instances flagged. Among the 19 groups retained for analysis, the mean similarity index increased from the pretest ( $M=20.78$ ,  $SD=5.29$ ) to the posttest ( $M=30.79$ ,  $SD=8.43$ ),  $t(18)=4.17$ ,  $p<0.01$ ,  $r=0.70$ . This increase was not, however, reflected in the total number of instances flagged in the Turnitin originality reports. Although the average number of instances appeared to decrease slightly from the pretest ( $M=35.79$ ,  $SD=9.14$ ) to the posttest ( $M=33.11$ ,  $SD=7.41$ ), this difference was not significant,  $t(19)=-0.93$ ,  $p=0.37$ ,  $r=-0.21$ .

**Coded Plagiarism Instances** To more closely examine the implications of the Turnitin outputs, the remaining analyses focused on the different types of plagiarism identified in the content analysis. To reiterate, three categories encompassed severe plagiarism: (1) over seven highlighted words that matched the source with no in-text citation, (2) over seven highlighted words that matched the source with an in-text citation (but no quotation marks), and (3) a quote without an in-text citation. The two other categories identified (4) incorrect in-text citations and (5) other instances (false positives).

The most severe type of plagiarism—seven or more words with no in-text citation—was alarmingly common before the intervention ( $M=13.32$ ,  $SD=5.89$ ), but declined sharply in use after the intervention ( $M=4.43$ ,  $SD=3.63$ ),  $t(18)=-5.94$ ,  $p<0.001$ ,  $r=-0.81$ . The same pattern was observed for the use of quotes with no in-text citations, declining significantly from the pretest ( $M=1.63$ ,  $SD=1.71$ ) to the posttest ( $M=0.05$ ,  $SD=0.23$ ),  $t(18)=-3.95$ ,  $p<0.01$ ,  $r=-0.68$ . There was no change in the use of seven or more unquoted words with an in-text citation,  $t(18)=0.12$ ,  $p=0.90$ ,  $r=0.03$ ; however, the mean number of occurrences was relatively low both before ( $M=2.47$ ,  $SD=2.07$ ) and after ( $M=2.58$ ,  $SD=2.50$ ) the intervention. To get an idea of the overall impact on plagiarism, these three categories were also summed for each group to create a plagiarism index. The total number of incidents declined greatly between the pretest ( $M=17.42$ ,  $SD=5.98$ ) and the posttest ( $M=7.05$ ,  $SD=5.07$ ),  $t(18)=-6.06$ ,  $p<0.001$ ,  $r=-0.82$ . For the remaining two categories, incorrect citations were common both before ( $M=10.42$ ,  $SD=4.09$ ) and after the intervention ( $M=13.42$ ,  $SD=6.81$ ). Although the average number of incorrect citations appeared to increase following the intervention, the difference was nonsignificant,  $t(18)=1.64$ ,  $p=0.12$ ,  $r=0.36$ . False positives were also relatively frequent both before ( $M=8.32$ ,  $SD=3.33$ ) and after the intervention ( $M=12.63$ ,  $SD=7.39$ ). In this case, the increase from pretest to posttest was significant,  $t(18)=2.36$ ,  $p<0.05$ ,  $r=0.49$ , and this increase likely indicates more accurate use of APA style among students.

## Discussion

The catalyst for this research project was a widespread problem with plagiarism detected by instructors in a large, introductory communication course. The assignment was the first one submitted for the semester, with multiple other written assignments to follow, which created an opportunity for a scholarship of teaching and learning (SOTL) project related to responding to

plagiarism in the classroom. The instructors determined that a systematic approach was necessary to better educate students about plagiarism because they perceived students had low knowledge about plagiarism (Anyanwu 2004; Löfström and Kupila 2013; Marshall and Garry 2006; Park 2003). The instructors created a plan of action to deal with the problem that included three key components. First, the instructors alerted students of the widespread problem, discussed its seriousness, and informed students there would be further action taken to address the problem (which included an opportunity to resubmit the assignment, but with some grade penalty). Second, the instructors developed an in-class, educational activity as an intervention to prevent future plagiarism. The educational activity focused on the serious consequences of plagiarism, correct formatting of APA style citations, and provided practice exercises for students. The final component of the plan of action was to evaluate the effectiveness of the intervention by measuring student responses and coding Turnitin software results to examine potential instances of plagiarism. Not surprisingly, the results revealed that when instructors prioritize academic honesty in their classrooms, train students on how to integrate and cite others' works appropriately, and use plagiarism detection software, students learn from the experience and are less likely to plagiarize on subsequent assignments. Implications of our results may provide insight for instructors to address plagiarism in their classrooms.

### **Student Responses**

Students in the introductory organizational communication class generally rated the class as meaningful, connected the course content with experiences outside of the classroom, and felt competent in their ability to succeed in the class, which provides some evidence that students viewed the course favorably. Slightly over half of the study participants (53 %) reported the plagiarism intervention was the first time they had received formal instruction on plagiarism in their college coursework, supporting the initial impressions of the instructors that knowledge about plagiarism among students was low.

Our results also indicate that students valued the course instruction on plagiarism. Students found the instructional activity and its materials helpful and effective, and also thought they had increased their knowledge about plagiarism and the importance of giving appropriate credit to others' work. Students' perceived increase in knowledge was supported by post-intervention measures of knowledge, on which the vast majority of students correctly answered five out of six questions. Students also reported strong levels of efficacy and intentions to use the information learned from the intervention for other assignments. Building students' confidence in their ability to better cite and integrate others' ideas and having them report that they will continue to use the information indicates some capacity building of student skill sets. There is a clear need for more formalized instruction about plagiarism to help keep academic honesty salient to students and to help them better understand what they need to do to communicate ideas effectively without plagiarizing.

### **Turnitin Outcomes**

Turnitin plagiarism detection software was used in this research to provide an objective measure of potential plagiarism that could be coded further for types of plagiarism; it can also be used as a deterrent and tool for students to reduce plagiarism. The originality report and

coding results revealed that the intervention significantly reduced students' severe plagiarism. Specifically, students' use of over seven words that matched a source without an in-text citation, as well as their use of quotes without in-text citations declined sharply following the intervention. Although students' use of over seven words that matched a source with an in-text citation did not change significantly after the intervention, students did not use this type of plagiarism frequently before the intervention. Overall, the intervention had a positive effect, reducing students' plagiarism behavior.

### **Instructional Implications**

This study highlights the importance of being responsive to students' needs in the classroom. It is important to note that even though our intervention was developed quickly, and in response to the discovery of students' widespread plagiarism, it was effective. Students need more instruction on plagiarism and seem to appreciate it when they receive it. Instructors should consider ways to teach about ethical writing and design writing assignments that not only align with course objectives, but that are meaningful to students to reduce potential plagiarism. Some research indicates that academic honor codes might be helpful, although higher than acceptable rates of plagiarism have been reported among students with honor codes as well (McCabe and Trevino 1993). Our study did not specifically test the use of honor codes, but our efforts to discuss the seriousness of academic dishonesty and its academic consequences did impact students' beliefs about the importance of plagiarism. Other efforts like signed honor codes for conduct would likely support these efforts positively.

Even though plagiarism detection software is helpful to both students and professors, it is not a panacea for plagiarism. Although we shared with students that the instructors may submit student assignments to Turnitin, we did not make it clear that students could also independently submit their work to Turnitin prior to its submission. If we had encouraged students to submit their papers to Turnitin before the assignment was due, then students would have been able to view the originality report for their papers prior to turning in a final draft. In retrospect, we should have done so, and in the future we will do so, because we perceive plagiarism detection software to be a useful tool for students as they strive to integrate multiple sources in an effective and ethical way. If students had submitted their work to Turnitin and had large portions of their text highlighted as potential instances of plagiarism, they would likely have reviewed their assignments again and worked on paraphrasing and citing others' work accurately. Thus, plagiarism detection software can serve as a self-monitoring mechanism rather than as an enforcement strategy for academic honesty.

Our efforts also indicate students have no real understanding of their institution's policies when it comes to academic dishonesty; perhaps more disturbingly, many instructors do not know institutional policies. Efforts by departments, colleges, and academic offices to communicate best practices and actual codes of conduct should be strengthened for both students and instructors.

Finally, although our study provides no direct support for the utility of this intervention for classes offered by departments and colleges outside of communication, it is reasonable to expect the findings to be generalizable to other disciplines. For one, the class in which this intervention was conducted was not limited to

communication majors; students majoring in English, human biology, construction management, supply chain management, finance, kinesiology, and several other areas also took part in the class. The success of the intervention with such a diverse group of students provides preliminary evidence that it would be useful in a diverse number of classes as well. Even if instructors in other disciplines needed to alter the intervention to accommodate a different citation style or a different plagiarism detection service (e.g., see Kaner and Fiedler 2008, regarding the use of Turnitin in the field of software engineering), the same general procedure can still be expected to be effective in reducing plagiarism.

Overall, this research illustrates that maintaining a conversation about plagiarism with students, providing engaging instructional activities, and using plagiarism detection software as a pedagogical tool can create a multi-level approach to handling plagiarism in the classroom.

## Limitations

Perhaps the most significant limitation of this study is the lack of a control group and randomization. Because the participant survey was administered after the intervention and we did not have a control group, we were unable to test for actual change in participants' responses. Instead, we tested the survey response values against the midpoint of the scale, rather than the response values of a control group. However, we were able to analyze data pre- and post-intervention with the Turnitin results and coding, providing an additional measure of effectiveness. Future research may address these issues by designing a similar study using a true experimental design.

Another potential limitation is the difference between the assignments used to measure plagiarism before and after the intervention. Because individuals completed the first assignment (individual article analysis), and groups completed the second assignment (group literature review), it is possible that the decrease in plagiarism instances may have been due to group work rather than the intervention. Research has shown that groups tend to perform better on writing tasks (Dobao 2012), and non-writing tasks (Chou 2011) than do individuals. Reason being, groups are comprised of more people and therefore have more resources, such as knowledge, skills, and abilities, to pool together and accomplish tasks, than do individuals. Future research may address this concern by studying the effect of a plagiarism intervention on individuals or groups (rather than a mix of the two) in comparison to a control group.

This study has two potential confounds. The first involves instructor feedback; students may have revised their literature reviews based on their instructors' comments rather than the intervention. Before the intervention, the course instructors provided students with feedback on their individual article analyses, and we used these analyses as the pretest in this study, which means instructor feedback might account for some of the improvement. Another explanation is that students may have worked harder on the literature review because it was worth more points. The individual article analysis was worth 20 points, but the group literature review was worth 75 points. Accordingly, students could have put much more effort into the group literature review, rather than the individual article analysis. It is important to note, however, that instructor feedback is fundamental to the classroom context and students generally gauge their efforts based on the importance of assignments for their final grade.

## Appendix A

**Table 1** Results of confirmatory factor analysis

	EFF	INT	MNG	CMP	LRN	<i>M</i>	<i>SD</i>
Efficacy ( $\alpha=0.72$ )							
1. I am confident using APA format for my papers.	0.69					3.74	0.85
2. I am able to correctly identify incorrect APA styles in articles that I read.	0.87					3.44	0.90
3. I am able to identify the most common mistakes about APA format.	0.69					3.65	0.78
4. I believe I can avoid plagiarism issues.	0.20					4.37	0.61
Behavioral intent ( $\alpha=0.71$ )							
1. My knowledge about plagiarism and APA will be useful for other classes.		0.76				4.40	0.75
2. I will follow what I learned from class to avoid plagiarism issues.		0.71				4.47	0.63
3. It is my intention to use correct APA style when I write papers.		0.54				4.61	0.59
Meaningfulness ( $\alpha=0.89$ )							
1. The tasks required of me in this class are personally meaningful.			0.66			3.51	0.86
2. I look forward to going to this class.			0.95			3.35	1.00
3. This class is exciting.			0.93			3.19	1.01
4. This class is boring. (R)			0.62			3.28	0.97
5. This class is interesting.			0.74			3.65	0.84
Competence ( $\alpha=0.86$ )							
1. I possess the necessary skills to perform successfully in this class.				0.64		4.10	0.56
2. I feel unable to do the work in this class. (R)				0.40		4.12	0.76
3. I believe that I am capable of achieving my goals in this class.				0.83		4.15	0.57
4. I have faith in my ability to do well in this class.				0.88		4.06	0.67
5. I have the qualifications to succeed in this class.				0.79		4.13	0.60
6. I feel very competent in this class.				0.79		3.82	0.75
Learning transfer indicators ( $\alpha=0.86$ )							
1. I like to talk about what I am doing in this class with friends and family.					0.79	2.87	1.01
2. I explain course content to other students.					0.82	2.83	1.02
3. I think about the course content outside the classroom environment.					0.83	3.09	0.97
4. I see connections between the course content and my career goals.					0.61	3.59	0.99
5. I compare the information from this class with other things I have learned.					0.68	3.35	0.96



## Appendix B

**Table 2** Evaluation of plagiarism intervention

Item	Descriptives	Test against midpoint
The class exercise on plagiarism issues was helpful.	$M=4.04, SD=0.72$	$t(163)=18.52, p<0.001, r=0.83$
I improved my knowledge on plagiarism issues and APA format.	$M=4.08, SD=0.71$	$t(163)=19.49, p<0.001, r=0.84$
The instructional materials used for the class exercise were effective.	$M=3.98, SD=0.79$	$t(163)=15.97, p<0.001, r=0.78$
Overall, I now believe plagiarism is an important issue to address in class.	$M=4.45, SD=0.62$	$t(162)=29.81, p<0.001, r=0.92$
This is the first time any of my college coursework has formally addressed plagiarism in its course content.	$M=3.68, SD=1.30$	$t(163)=6.73, p<0.001, r=0.47$

All items were assessed on five-point scales, so the test value was 3. People who did not attend the instructional activity were excluded from the analysis, bringing the  $N$  to 164

## Appendix C

**Table 3** Knowledge Questions

Item	Scores	Test against chance
(T/F) Three types of plagiarism include accidental, blatant, and self-plagiarism.	93.9 % correct $SD=24.0\%$	$t(163)=23.42, p<0.001, r=0.88$
(MC) Which one of the following is considered plagiarism? [Changing a few words from what the author originally wrote.]	93.9 % correct $SD=24.0\%$	$t(163)=36.76, p<0.001, r=0.95$
(T/F) If a student is caught plagiarizing, s/he may receive a penalty grade.	98.8 % correct $SD=11.0\%$	$t(163)=56.74, p<0.001, r=0.98$
(T/F) When using a direct quote, you need to include the author's name and year of publication.	95.7 % correct $SD=18.9\%$	$t(162)=31.31, p<0.001, r=0.93$
(C/I) Examine the following citation. Is it correct or incorrect?	28.7 % correct $SD=45.4\%$	$t(162)=-5.95, p<0.001, r=-0.42$
(T/F) We only need to cite academic articles, not news articles and non-academics sources.	98.8 % correct $SD=11.0\%$	$t(163)=56.74, p<0.001, r=0.95$

For Q2 the test value was 0.25 because there were four possible answers. For the remaining questions the test value was 0.50. People who did not attend the class were excluded from the analysis, bringing the  $N$  to 164

## Appendix D

### Group Literature Review Assignment (75 points)

As a group, you will write a literature review that brings together all of the literature you have found about your topic. The literature review will orient the reader to the current state of research and other readings associated with your topic. Your research for this literature review will help you to develop ideas for your training program.

The literature review should provide an argument for why this topic is an important one that needs to be addressed. Generally, your literature review might define the problem, offer background related to the problem, include relevant theory and constructs related to the problem, identify why the problem exists, how the issue has been handled in the past, and offer an overall argument that leads up to the need for YOUR training program. Literature reviews are NOT a series of studies in separate paragraphs. As a group, you will have the resources to create a strong literature review about your topic/problem. Students should incorporate information from the individual article analyses and other sources. More specifically:

- Your literature review should cite at least **10 reputable sources**, of which **at least 5 must be empirical sources**. This is a minimum requirement, which is considered “average” work.
- It should be between *6 to 8 pages in content*, including a clear introduction, thesis, transitions, evidence, and a conclusion that indicates that training on the topic/problem is necessary.
- The literature review must adhere to APA style, 6th Edition, and should include a bibliography of all references. An APA style sheet that provides examples will be made available on ANGEL. Also, a helpful primer for APA style can be found at: <http://owl.english.purdue.edu/owl/resource/560/01/>.
- Your introduction should introduce the problem at hand and include a thesis and transition of what will be addressed in your literature review.
- The body of your literature review should include information from research articles, appropriate theories, and other relevant sources. You might use subheadings (see APA manual for correct formatting) throughout your paper to organize it. And you might then: define the problem and explicate it; provide a rationale for the importance of the issue; explain how the issue influences or may potentially influence – positively or negatively – specific parts of an organization (e.g., communication processes, morale, productivity, profitability, etc.); cite appropriate theory that helps us understand the problem and how to address it; and include other information that helps us understand why training might be necessary and/or helpful.
- The body of your literature review should also include a section that discusses potential solutions to your problem/issue that could be implemented in a training program. This section will be particularly important, as it will help inform what you actually do in your training to address the problem/issue.
- Finally, a clear conclusion should be provided that leads us into the need for training on the problem/issue.

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