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Writing Instruction Using an Online Assignment Planner

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Executive Summary

Online writing resources have the potential to improve writing instruction for university students, particularly in large classes where frequent writing assignments are often not possible. The Assignment Planner (AP) is an online resource created by the Writing Centre at Wilfrid Laurier University and is freely available to all students through the Writing Centre website. The AP guides students through the process of researching and writing an academic paper. It projects a timeline for each paper and breaks down the research and writing process into 11 steps. Our research project was designed to examine whether integrating use of the AP into large classes has benefits for students and/or professors.

In this quasi-experimental research project, four large first-year classes and one fourth-year seminar class were studied. The first-year classes were randomly assigned to either a control condition (no classroom integration) or intervention condition (explicit integration of the AP into the classroom). The fourth-year seminar class, in which integration of the AP was already underway, was a post hoc addition to the study. Data collection included frequency counts of students' online access to the AP, student in-class surveys, student writing marks and professor interviews.

The research questions posed were:

1) Do students use the AP to help them write their assignments?
2) Does integration of the AP into classroom practice increase use of the AP by students?
3) Does student use of the AP result in better written assignments?
4) What are students' and professors' reactions to using the AP as a writing resource?

Our findings indicate that students generally failed to use the AP to write their assignments and that integration of the AP into classes had no effect on increasing the frequency of students' AP use. On the other hand, students who did use the AP used it more often when their professors integrated it into their classes than when they did not. Students suggested that they would have been more likely to use the AP if marks had been assigned to its use.

Use of the AP did not show a significant correlation with students' final writing marks, but the response of students who used the AP was often positive, as was that of professors. Many students' perceptions of the AP, however, especially those in fourth year, were that it was meant for struggling students and therefore did not apply to them because they considered their own writing skills to be good. This perception that the AP would not improve their skills was not generally shared by professors. Both faculty and students noted that integration of the AP into classes was problematic. Students felt that they received little guidance or support in its use, while professors demonstrated a variety of writing expectations for students which led to widely different implementation of the AP into classes.

Future research should consider whether assigning marks to AP use affects the frequency with which students use it and whether improving support for professors to integrate the AP into their classes leads to more effective use of the tool. Finally, using more precise methods to identify the text elements that the AP influences would be helpful in evaluating possible changes in the quality of students' writing.

Introduction

Concerns about the quality of students' academic writing have led to research indicating that the amount of writing required of Canadian students varies substantially depending on their program of study and that most assignments students write are fairly short (Graves, Hyland & Samuels, 2010; Strachan, 2008). Added to this evidence is many instructors' observation that as class sizes have grown, opportunities for teaching writing in class have decreased.

In such challenging contexts, two approaches have pedagogical potential for developing students' writing abilities. The first exploits the use of online tools to facilitate writing instruction. Using computer technology to augment classroom instruction has been shown to be effective in increasing learning and is positively endorsed by students (Wilson, Boyd, Chen, & Jamal, 2011). The second approach utilizes "nested" assignments that provide a systematic, low-stakes means of enabling students to develop writing expertise. Nested or scaffolded assignments are short, consecutive tasks that, taken together, constitute a larger, more complex project (Bean, 2011). Offering students writing support that combines these two approaches may be both practical and effective for large class settings. In this project, we evaluated the use of an online writing resource, the Assignment Planner (AP), which breaks writing assignments down into smaller tasks, to determine whether students and professors find it effective for writing instruction in university, particularly in large classes.

The AP was developed by Wilfrid Laurier University's Writing Centre following the model of similar online writing tools that were created to help graduate students plan and write their dissertations. The original model is the University of Minnesota library's Assignment Calculator which was created in 2010.[1] Assignment calculators identify a series of steps in completing a writing task, from identifying the assignment's requirements to submitting the final document. They typically include explanations, strategies, advice, hyperlinks and tips to help students as they undertake these steps. Though we are unaware of any research that has evaluated the efficacy of either the original or other online writing calculators, it is reasonable to expect from their increasing presence on university websites that students find them helpful.

Literature Review

The literature on technological teaching tools in university settings shows that both students and faculty respond favourably to such tools, and studies indicate positive effects from their implementation. For example, research has shown that clicker technology has been used effectively by faculty to improve large-class engagement and learning (Bachman & Bachman, 2011). Several studies have documented that clicker use by students significantly increased student participation (Stowell & Nelson, 2007), increased attendance in large classes by as much as 20% (Ribbens, 2007), and promoted class discussion (Draper & Brown, 2004). In an online English class, the use of online instructional videos was found to be useful by a majority of students learning to conduct database searches (Kadavy & Chuppa-Cornell, 2011). In another study, undergraduate engineering students and faculty overwhelmingly endorsed the use of an online wiki tool to promote collecting and accessing resources for design projects (Clarke & Coyle, 2011).

More specific to our interests, the research literature suggests the effectiveness of online writing resources as pedagogical tools. A study investigating the effectiveness of the plagiarism detection tool Turnitin in graduate students' term papers found that access by students to this resource while they were writing significantly

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[1] See http://blog.lib.umn.edu/jveldof/calculator/

reduced plagiarism in written work (Baker, Thornton, & Adams, 2008). Another project examined the effectiveness of an online learning management system in developing students' critical thinking in assignment writing (Carmichael & Farrell, 2012). These researchers found that use of a "learning module" on Blackboard™ led not only to positive student perceptions of this tool but also to evidence that many students believed it had helped their academic writing. Positive results were also found by researchers investigating the effects of online writing studios. In online writing studios, students develop an understanding of useful feedback in the writing process and form ideas on how to effectively revise their own written assignments based on feedback provided online by others (Kovach, Miley, & Ramos, 2012). Findings indicate that students who participated in online writing studios performed better on final written assignments, which investigators argued was due to enhanced understanding of course content and improved writing skills. Taken together, results of these studies suggest that using technology and online writing resources may result in benefits for students by increasing their knowledge about writing and engagement with content via writing.

Online tools and resources are not without criticism, however. While writing services such as Turnitin are sometimes used in large classes to monitor and teach about plagiarism, they can be critiqued for promoting a mechanical approach to writing with sources. The algorithms used by Turnitin and other such tools detect plagiarism by comparing students' texts to texts stored in the company's databases; identical strings of characters found in both texts are identified as sites of possible plagiarism, but other intents, purposes and forms of copying or source misuse cannot be identified by these tools (Bloch, 2012). These characteristics limit the pedagogical uses of such a tool. In addition, controversy regarding the ethics of using Turnitin, including infringement of students' intellectual property rights, calls the pedagogical value of such tools into question. Other resources such as online modules may enable relatively passive use by students, with students engaged only on a "need to know" basis, often late at night (see Carmichael & Farrell, 2012). One might debate whether such use demonstrates the adaptability of the resource to students' behaviour or an inherent limitation. Finally, tools such as clicker technology, while improving student engagement and class discussion, are limited to use within the classroom, a restriction that prevents students from initiating use of the tool on their own terms.

In contrast, the AP is a tool that was designed to have relevance both inside and outside the classroom and to be used not only by students for learning, but by faculty for teaching. Unlike more mechanically-driven tools such as Turnitin, resources such as the AP are designed to encourage students to understand and critically reflect upon the appropriate use of sources in their writing rather than merely identifying errors. There is also some evidence suggesting that faculty believe offsite access to a tool to be of great importance to students (Clarke & Coyle, 2011), so tools like the AP that can transition from classroom to home use are likely to be most beneficial.

Assignment writing tools such as the AP are hypothesized to be effective in developing students' writing skills because they are designed with cognitive approaches to instruction in mind. Research has demonstrated that cognitive approaches in the classroom can lead to increased student learning and engagement (Deslauriers, Schelew, & Wieman, 2011). One cognitive approach specifically applied to improve student writing is strategy instruction (El-Dinary, Brown & Van Meter, 1995; Graham, 2006). In strategy instruction, a learning task is broken down into components which are explicitly identified, taught and practiced, leading to familiarity and expertise. For example, in using strategy instruction to teach students how to write an explanation, students might: 1) recall previous knowledge about explanations; 2) discuss and recognize parts of a written explanation or the actions necessary to write parts of an explanation; 3) identify these elements in models of explanations; 4) memorize an acronym or mnemonic device to provide a self-prompt for initiating each of these elements of the model; 5) practice using the prompt and completing each element; and 6) independently "perform" the writing of explanations (Boscolo, 2008). In a meta-analysis of studies examining strategy instruction in Grade 2 to 12 students' writing, the results were clear: strategy instruction had a large impact on the quality of student writing, and this effect was evident in both elementary and secondary students (Graham, 2006). The increase in quality of writing was not a result of individual student characteristics, suggesting that the impact of strategy instruction is robust. In university writing, one model

which is commonly used as a prompt in many social science and science research reports is IMRD: Introduction, Methods, Results, Discussion. The incremental, systematic approach taken in strategy instruction is precisely that modeled and promoted by tools such as the AP. The 11 steps of the AP provide direct identification of and instruction in various elements of academic writing (e.g., how to identify sources, take notes, write a thesis statement, structure a paragraph, etc.), and these 11 steps can be considered prompts to carry out the action relevant to that step.

These characteristics suggest that the AP can be used effectively to support writing development, especially in large classes. These classes often provide little writing instruction, and the most frequently promoted writing pedagogies (timely feedback, frequent writing tasks and inquiry-based writing) are difficult to implement in large classes. Indeed, this point has been made by Docherty and colleagues (2010), who argue that a major factor contributing to the poor quality of student writing is the lack of opportunity students have to develop their writing skills. The AP addresses this issue by exposing students to evidence-based writing strategies that can be targeted by instructors willing to incorporate more, but smaller, assignments into their large classes. Many of the AP's steps, for instance, lead to the production of short, discrete texts, such as outlines or a thesis statement, enabling the use of individual steps as nested assignments.

The AP also incorporates instruction from prominent composition resource texts such as Graff and Birkenstein's (2009) *They Say/I Say* to address one element of cognitive strategy instruction, namely the provision of models. Graff and Birkenstein's text seeks to improve student writing by providing explicit examples of collocations and phrases relevant to academic contexts so that students can then apply them in their own texts. Another resource drawn on during the development of the AP was Booth, Colomb and Williams' (2008) *The Craft of Research*. This text makes explicit the processes of researching and developing critical thinking for writing. The AP, then, is a tool that integrates empirically based strategies from cognitive science with linguistic and compositional practices to provide accessible writing support for students.

The Assignment Planner

The AP guides students through the process of researching and writing an academic paper by helping them complete an assignment over a projected timeline, breaking down the process into 11 steps. It suggests the time it should take to accomplish each step, assigning each step a completion date before the due date, and provides email reminders to help students manage their time. Each step includes succinct advice on particular aspects of the research or writing process and introduces students to evidence-based strategies to improve their writing, supported with examples and links to relevant online resources. Thus the AP addresses writing development from both writing process and cognitive strategies approaches, as described above. Moreover, because the AP is an online resource, students can use the AP whenever they need it, as often as they need it and in whatever way they choose to use it. Access to the AP is available using a link on the Laurier Writing Centre webpage, which is freely open to anyone via the internet. A brief summary of the 11 steps is presented in Table 1.

Research Questions

In this study, we investigated the effects of the AP on the teaching and learning of writing in large classes. We analyzed student and faculty use of the AP to determine if it is pedagogically helpful to teachers and whether students benefited from its integration into classroom instruction. Four research questions drove our inquiry:

1) Do students use the AP to help them write their assignments?
2) Does integration of the AP into classroom practice increase use of the AP by students?
3) Does student use of the AP result in better written assignments?
4) What are students' and professors' reactions to using the AP as a writing resource?

Table 1: Summary of Assignment Planner

Step	Brief Description of Step
Step 1: Understand the assignment	• Identify the assignment type • Consider key words in the assignment description • Obtain a firm understanding of the assignment question
Step 2: Select a topic and draft a research question	• Refine and formulate a research topic • Identify the question that your assignment will be addressing
Step 3: Create an outline and design a research strategy	• Design a research strategy to help you collect and evaluate related evidence • Create an outline to provide a road map that can be used in the research and writing process • Make a list about the types of information and sources you will need based on your outline
Step 4: Conduct initial research	• Conduct preliminary library and internet research on your topic • Gather basic information on your topic • Get a sense of how much information has been written on your topic • Create research notes that summarize the research you have examined and its location for future reference
Step 5: Develop a preliminary thesis statement	• Use your research question to develop your thesis • Make your thesis an arguable statement • Be clear about how you will support your thesis
Step 6: Read and document sources	• Engage relevant material in detail critically evaluating your topic along the way • Carefully select the material you will use • Document the sources that you read
Step 7: Write the first draft	• Think about your work as a story that others would be able to naturally follow • Suggestions on how to deal with writing problems
Step 8: Integrate Sources	• Choose the way in which you will use your sources (summary, paraphrase, quotation) • Use text cues to guide your reader • Demonstrate through structure what you have deemed important • Cite sources both in text and in a reference list
Step 9: Revise – rewriting the text for the reader	• Assess and revise the whole paper • Take the reader's perspective • Check and revise your working thesis
Step 10: Proofread	• Use strategies to identify errors and correct them
Step 11: Submit your assignment	• Carefully read the instructions for submission • Tips to consider before submitting

Methods

Participants

University students who participated in this study formed three partially overlapping samples: (1) students from four large first-year courses who consented to have their use of the AP tracked via the internet; (2) students from these same first-year courses who completed an end-of-semester survey; and (3) students from a fourth-year seminar who completed an end-of-semester survey. A summary of the demographic characteristics and participation rates of these samples can be found in Table 2. Participants also included the four professors who taught these courses.

All students were registered and participating in four large (>100 students) first-year courses offered in the winter term; these courses were also open to senior students, so it is possible that some of the participating students were not in their first year of university. We did not collect data on age or year of program. The courses were matched by field within the Faculty of Arts, which is the largest faculty at this university and includes departments of literature, languages, humanities and several social sciences. One of the courses was made up of two sections, while the others were single sections. The four first-year courses were randomly assigned to intervention or control conditions, while the fourth-year seminar operated from the outset as an intervention class.

Table 2: Demographic Characteristics and Participation Rates of Samples

Sample Description	Control/ Intervention	Sample Size	Participation Rate	Gender (% female)
1. Online Tracking Sample				
(a) Women's Studies Course A (n = 132)	Control	n = 75	57%	95%
(b) Women's Studies Course B-1 (n = 115)	Intervention	n = 38	33%	97%
(c) Women's Studies Course B-2 (n = 124)	Intervention	n = 78	63%	81%
(d) Religion Course A (n = 134)	Intervention	n = 47	35%	92%
(e) Religion Course B (n = 143)	Control	n = 77	54%	76%
Total	Intervention Control	n = 163 n = 152 n = 315	48%	83% 93%
2. Student Survey Sample (First Year Courses)				
(a) Women's Studies Course A	Control	n = 68	52%	95%

Sample Description	Control/ Intervention	Sample Size	Participation Rate	Gender (% female)
(b) Women's Studies Course B-1	Intervention	n = 74	64%	89%
(c) Women's Studies Course B-2	Intervention	n = 68	55%	85%
(d) Religion Course A	Intervention	n = 35	26%	65%
(e) Religion Course B	Control	n = 75	52%	86%
Total	Intervention Control	n = 177 n = 143 n = 320	49%	83% 91%
3. Student Survey Sample (Fourth Year Sample)	N/A	n = 18	100%	94%

First-year students (for online tracking)

In total, 315 participants consented to participate out of a possible 648 students (48% participation rate) in the four courses. A total of 38 participants were enrolled in more than one of the four classes, with 19 being enrolled in both a control and an intervention class. Although potentially problematic to have students in conflicting conditions, results revealed that none of the 19 students enrolled in both a control and intervention class actually accessed the AP. If we were to remove these individuals from the analyses, the percentage of students who accessed the AP would be artificially inflated. As such, the results presented for online tracking do not remove these 19 individuals from the sample.

First-year students (end-of-semester survey)

At the end of the term, a survey was administered to the same four large first-year classes. All students had the opportunity to voluntarily fill out this survey which assessed their self-reported use and opinions of the AP. A total of 320 participants completed the survey. There was considerable overlap between first-year participants who consented to online tracking and first-year participants who completed the survey.

Fourth-year students (end-of-semester survey)

An ad hoc decision to include a sample of fourth-year students in the project was made midway through the study. This decision was made because of the slow uptake of the AP by the first-year students (assessed via online tracking), raising the concern that insufficient data would be collected to draw any productive conclusions (see Procedure section for explanation). The fourth-year seminar was similar to the first-year intervention classes in that the professor had integrated the AP into the curriculum and explicitly required AP use in the class syllabus. Because of this explicit integration, we were able to compare frequency and perceptions of the first-year intervention classes to the fourth-year seminar class. The fourth-year seminar class was given the same end-of-semester survey as the first-year classes. All students (n=18) in the fourth year seminar completed the survey (94% female).

Procedure

Ethics approval from Wilfrid Laurier's research ethics board was sought and received for this quasi-experimental research project, after which the four large matched courses were identified based on similar topics and the inclusion of some writing assignments in their syllabi. Informed consent from the professors was acquired and the courses were randomly assigned to either intervention or control conditions. One professor taught an intervention class, one professor taught a control class, and one professor taught both an intervention (in two sections) and a control class of the same course, making five classes in total.

The principal investigators met individually with the professors teaching interventions classes and introduced ways of integrating the AP into their course structure, helping them align use of the AP to the writing goals they had for their students. This collaboration included offering to help professors adapt course writing assignments and deadlines to steps in the AP. It also included providing students with a brief in-class orientation to the AP at the beginning of the term. In keeping with the notion that the AP is a flexible teaching resource, collaborating on classroom integration was driven by the professors' requirements and purposes rather than our own. For the professors who were teaching control classes, there was no direct collaboration or intervention. Students in the control classrooms had access to the AP online (just as all students at the university have access), but these students did not have the AP integrated into their classes.

A trained research assistant went into the classrooms within the first two weeks of the four-month winter term to inform students about the research project (see Appendix A for the recruitment script) and recruit participants. All students were given a letter of information and a consent form (see Appendix B and C) to sign if they wished to participate. Students were informed that as part of their participation, they would be required to self-identify as a research participant when using the AP website. A screenshot of what participants would see if they were accessing the AP can be seen in Figure 1.

When students identified themselves on the website as research participants, online tracking provided frequency data which not only allowed us to assess student use of the AP in general, but also allowed for comparisons of AP use between the control and intervention classrooms. Frequency data were recorded and entered into a data file on a weekly basis.

In collecting and recording the weekly frequency data, it soon became apparent that use of the AP in the first-year classes was minimal. Since one of the goals of this project was to describe students' perceptions of the AP, the lack of students using this resource became a major concern. As a result of this slow uptake, a decision was made to approach a professor teaching a fourth-year seminar to ask if his students would be willing to participate in the research project. This professor was known to the principal investigators as having integrated the AP into his fourth-year seminar curriculum. Due to the late addition of the fourth-year sample to the research project, online tracking of AP use by fourth-year students was not feasible; however, we were able to assess use of the AP by these students via self-reported frequency on the end-of-semester survey.

During the last week of class, the same research assistant went into all classes to collect survey data. This survey included self-reported use of the AP and overall impressions of the AP. Finally, all four professors were individually interviewed after the end of the semester to explore their opinions of the AP.

Figure 1: Screenshot of Student View of AP
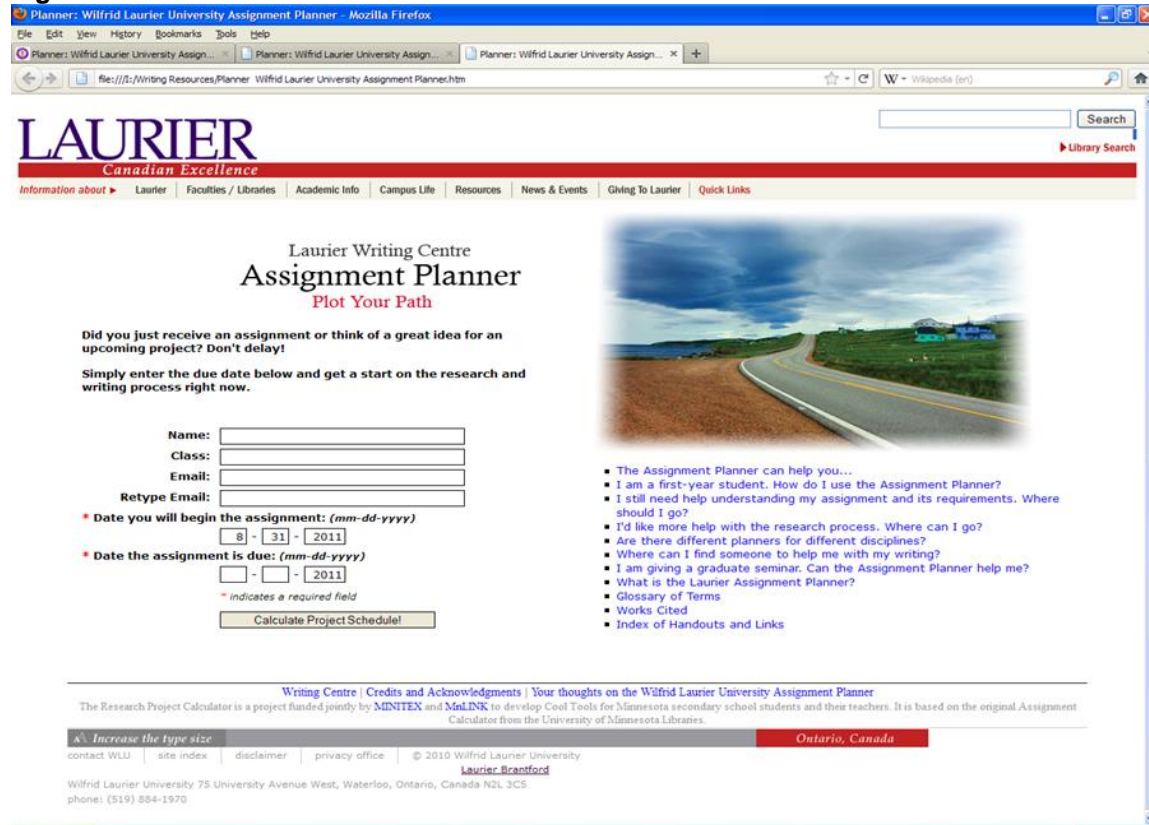
Measures/Materials

Frequency data

Frequency data were collected for first-year students who accessed the AP website and identified themselves as research participants. Using a system similar to Google Analytics, we were able to collect the name of the student participant accessing the AP, the course for which the student was accessing the AP, the date and time the AP was accessed, and the amount of time each student spent on the various steps within the AP.

Student survey

At the end of the research period, all students involved in this project were given the opportunity to fill out a short survey about the AP (see Appendix D). The first question on the survey asked participants to self-report how often they accessed the AP during the research period. Ratings took place on a five-point Likert-type scale ranging from one (*never)* to five (*more than 10 times*). Student response to this initial question determined which section of the survey was to be filled out next.

If students indicated that they had never used the AP (a one on the scale) or had used it once or twice (a two on the scale), they were asked to answer questions regarding their low frequency of use. In total, seven Likert-type scale items and one open-ended question were asked. Ratings of the Likert-type items occurred

on a five-point scale ranging from one (*strongly disagree)* to five (*strongly agree*). An example of one of these items is: "I didn't have enough information about the Assignment Planner to use it." The open-ended question asked students to "Describe why you think you did not use the AP." Answers to this question were coded qualitatively for themes related to the AP as a learning tool.

If students indicated that they had used the AP three to four times (a three on the scale), weekly (a four on the scale) or more than ten times (a five on the scale), they were asked to answer questions regarding their opinions of the AP. A total of seven Likert-type items and two open-ended questions were asked of these participants. Ratings of the Likert-type items took place on a five-point scale ranging from one (*strongly disagree)* to five (*strongly agree).* An example of one of the items is: "I found the time management and settings of dates helpful for writing my assignments." The open-ended questions assessed students' opinions of what was and was not useful about the AP. Answers to these open-ended questions were coded qualitatively for themes related to the AP as a learning tool.

Finally, all students were asked to indicate on a five-point scale ranging from one (*not at all)* to five (*extremely)* how satisfied they were with their marks on the writing assignments in their course.

Faculty interview questions

The professors whose classes were involved in the research project participated in an hour-long semi-structured interview. In total, four interviews were conducted: one with the control condition professor, one with the intervention condition professor, one with the professor who taught both a control and intervention class and one with the fourth-year seminar professor. All interviews were digitally recorded and transcribed.

The questions asked in the interviews varied slightly depending on whether the professor had taught a control or intervention class (see Appendix E). Interviews conducted with professors who taught an intervention class focused on how the AP was integrated into the course, their opinions on the benefits and drawbacks of using the AP as a resource in a large class, and their opinions on the AP as an in-class writing resource in general. Interviews conducted with professors who taught a control class focused on their general opinion and understanding of the AP, their beliefs about weaknesses in students' writing, and plans for integration of the AP into future courses. Answers to these questions were coded qualitatively for themes related to instructional use of the AP.

Writing assignment grades

Instructors for both the intervention and control classes were asked to provide writing assignment marks for all participating students. Analyses were done to determine whether average writing marks for students in the intervention classes were higher than those of the control classes. While not conclusive, this comparison may provide an indication of the potential benefits of the AP in large-class teaching.

Quantitative Results

The results of this research are reported for two separate student samples. The first sample consists of target participants who were students in the large first-year classrooms. The second sample consists of fourth-year seminar students who were added as participants during the research period.

Frequency Data of First-Year Participants

Uptake of the AP in the first-year classes was assessed through two different methods: 1) online tracking of website visits, and 2) self-reported frequency of website visits. As a result of many students wishing to remain anonymous when indicating their self-reported frequency of visits to the AP (i.e., not providing their name on the end-of-semester survey), we are unable to assess the relationship between self-reported frequency and frequency tracked through online visits.

Online tracking of website visits

Online tracking revealed that only 5.1% of participants visited the AP website during the research period. An independent samples t-test was conducted to investigate if students' frequency of use was significantly different between those in the control classroom versus those in the intervention classroom. Results revealed no difference in use between those in the control condition ($M = 0.05$, $SD = 0.27$) and the intervention condition ($M = 0.09$, $SD = .45$), $t(313) = .783$, *ns.* More than three-quarters of those students who did use the AP only used it once. For a breakdown of use within the 5.1% of participants that visited the AP, see Figure 2.

Figure 2: Breakdown of Use for Students who accessed the AP at Least One Time (Assessed via Online Tracking)
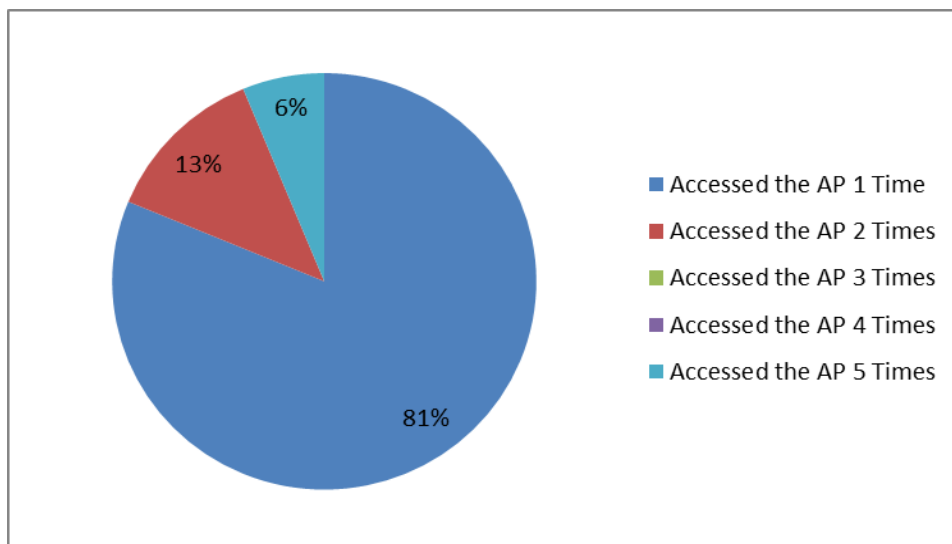
Self-reported frequency of website visits

A breakdown of students' self-reported use is presented in Figure 3A. In total, 15.9% of students indicated that they used the AP (a breakdown of use among the 15.9% of students who used the AP is provided in Figure 3B). An independent samples t-test was conducted to investigate whether students' self-reported use differed between the intervention and control conditions. Results revealed no difference between the two groups, $t(318) = .40$, *ns, d* = 0.04 (see Figure 4A). Taken together, the results of both online tracking and self-reported frequency of AP visits indicate that integration of the AP into classes did not result in greater student use of the AP.

Figure 3A: Breakdown of Self-Reported Frequency Use of All First-Year Participants
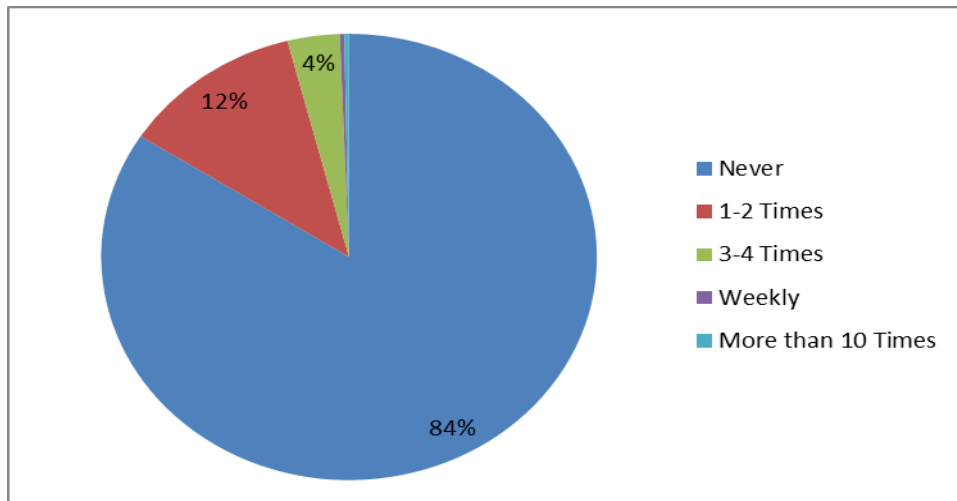
Figure 3B: Breakdown of Self-Reported Frequency use of First-Year Students who used the Assignment Planner
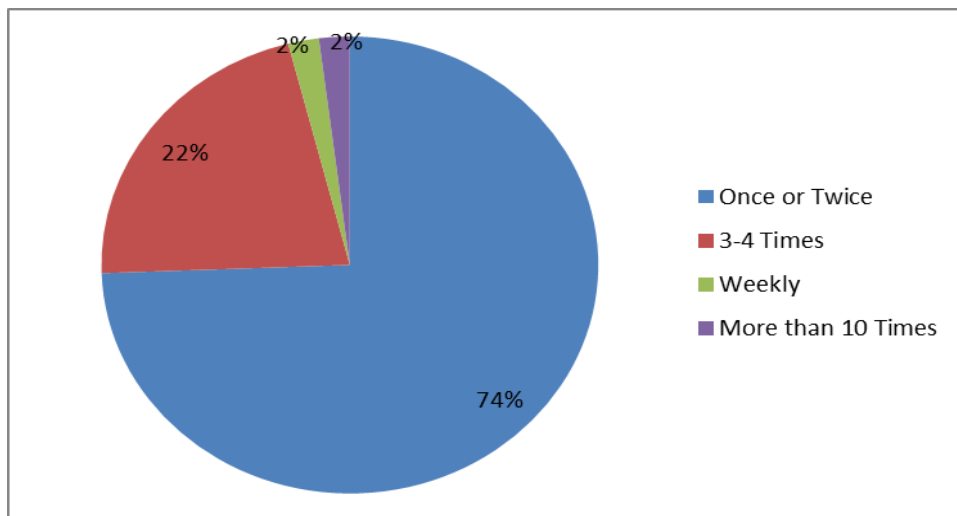
Looking only at students who did use the AP and excluding students who indicated that they never used the AP, a significant difference in frequency of AP use emerges between those in the control condition ($M = 2.12$, $SD = 0.33$) and those in the intervention condition ($M = 2.50$, $SD = 0.77$), $t(49) = 2.29$, $p = .026$, $d = .65$ (see Figure 4B). These results suggest that of students who used the AP, frequency of use was significantly higher in the intervention class than in the control class.

Figure 4A: Self-Reported Use of AP of Whole First-Year Sample (By Condition)
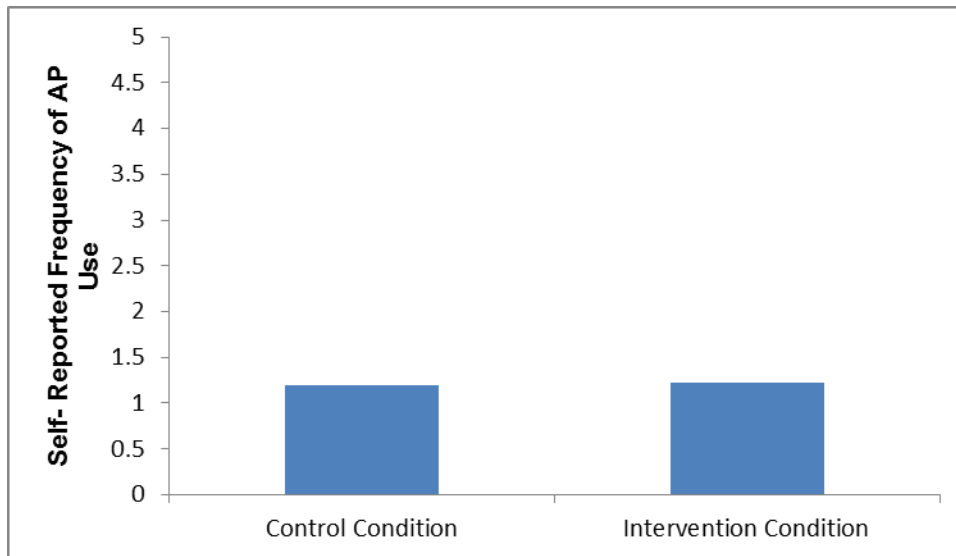
Figure 4B: Self-Reported Use of AP of Selected First-Year Sample (By Condition)
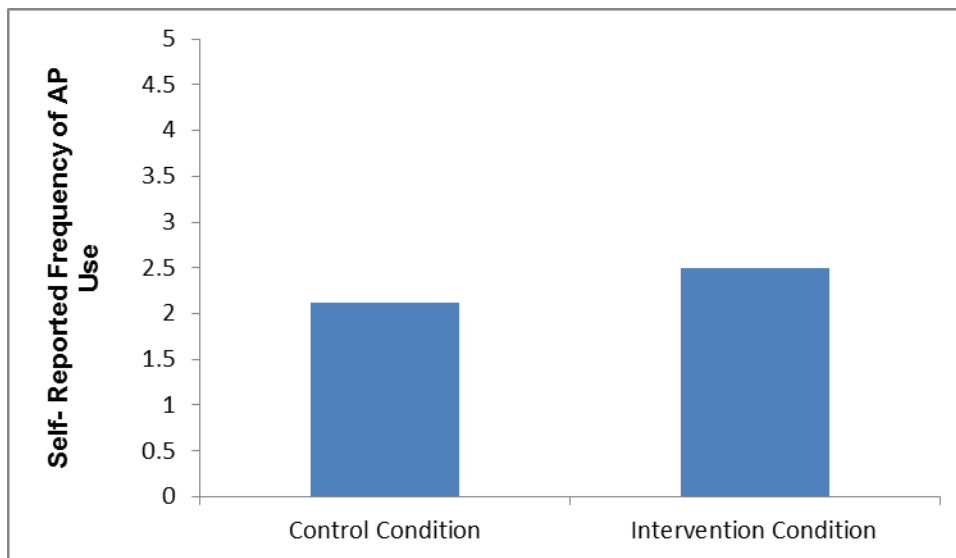
Frequency Data of Fourth-Year Participants

Frequency data of the fourth-year student sample were obtained only through self-report. In total, 100% of the fourth-year sample self-reported that they used the AP. A breakdown of use among the fourth-year students can be seen in Figure 5. An independent samples t-test was conducted to determine if self-reported frequency differed between first-year students in the intervention condition and fourth-year students. Results indicated that there was a significant difference between the two groups, with fourth-year students using the

AP at a higher frequency than the first-year students, $t(193) = 9.04$, $p < .001$, $d = 2.01$. These results suggest that fourth-year students were significantly more likely to use the AP than first-year students.

Figure 5: Breakdown of Self-Reported Frequency Use of All Fourth-Year Students
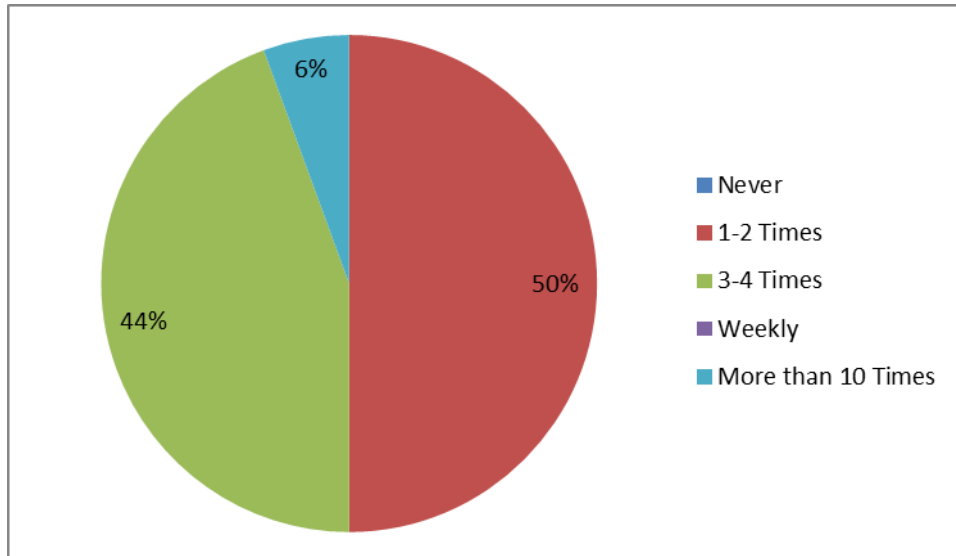
First-Year Student Survey Responses

Survey responses of first-year students who did not use the AP

First-year participants who identified through self-report as never having used, or minimally having used, the AP were asked to respond to a series of Likert-type items. A total of 307 participants fell into this category. The percentage of students indicating agreement (i.e., indicating agree or strongly agree on the Likert scale) or disagreement (i.e., indicating disagree or strongly disagree on the Likert scale) within the control and intervention conditions are reported below in Table 3. Participants who answered items with "neither agree nor disagree" are not included.

1) *Information.* Students agreed with the item "I did not have enough information about the Assignment Planner to use it" most often in the control condition (39.3% of control participants); however, more than one-quarter of control participants disagreed with this statement. In the intervention condition, similar percentages of students disagreed (31.8%) and agreed (31.2%).

2) *Relevance to course.* In response to the item "The Assignment Planner was not relevant to the assignments in this class," about one-fifth of students who did not use the AP in the control condition (20.7%) and intervention condition (22.2%) agreed. However, similar percentages in the control condition (31.4%) and intervention condition (31.1%) disagreed, suggesting that more students found the AP relevant despite their minimal use of it.

3) *Marks.* Students overwhelmingly supported the item "I would have used the Assignment Planner more if I received marks for using it," with 75% in the control condition and 68.2% in the intervention condition agreeing. Only 5.8% in the control condition and 11.4% in the intervention condition disagreed that receiving marks would have led to them using the AP more often.

4) *Writing skills.* Students were asked to respond to the statement "I didn't use the Assignment Planner because I am already a good writer." About one-quarter of students (28.6% in the control condition and 24% in the intervention condition) agreed that they didn't use the AP because they were already good writers. More students in the control condition (33.5%) disagreed with this statement than in the intervention condition (28.2%).

5) *Future use.* Students were asked to respond to two items regarding their anticipated use of the AP. More students in both the control condition (30%) and intervention condition (33%) disagreed that "I will probably use the Assignment Planner in future courses" than agreed (26.4% control condition, 25.2% intervention condition). When asked to look further ahead, however, slightly more students (33.5% in the control condition and 36.5% of students in the intervention condition) agreed that "I will probably use the Assignment Planner as I go into the upper years of my University career." About one-quarter of students in both intervention (24.6%) and control (25%) disagreed they would use the AP in upper years.

Finally, participants were asked to respond to the item "I wish I had used the AP more in this course." Within both conditions, almost half the participants disagreed. Only 16.4% of students in the control condition and 20.4% in the intervention condition agreed.

This pattern of results suggests that students who did not use the AP were unlikely to think they would use it in other courses, nor did they wish to reconsider their decision not to use the AP in their current course. Many of these students, however, indicated that they believed they would use the AP in upper years, suggesting that the AP was seen as more relevant to writing tasks in upper years than it was to their current tasks. These perceptions were largely similar across both intervention and control conditions.

Table 3: Responses of First-Year Students (Minimal Use of AP)

	Control Condition		Intervention Condition	
	Agreement	**Disagreement**	**Agreement**	**Disagreement**
I did not have enough information about the AP to use it.	39.3%	27.2%	31.2%	31.8%
The AP was not relevant to the assignments in the course.	20.7%	31.4%	22.2%	31.1%
I would have used the AP more if I received marks for using it.	75%	5.8%	68.2%	11.4%
I didn't use the AP because I am already a good writer.	28.6%	33.5%	24.0%	28.2%
I will probably use the AP in future courses.	26.4%	30.0%	25.2%	33.0%
I will probably use the AP as I go into the upper years of my University Career.	33.5%	25.0%	35.6%	24.6%
I wish I had used the AP more in this course.	16.4%	45.0%	20.4%	42.5%

First-year students who identified through self-report as having used the AP more than once or twice were also asked a series of Likert-type questions. A total of 13 participants fell into this category. Due to the small number of students in this category, these results should be interpreted with caution. The percentages indicating student agreement (i.e., indicating agree or strongly agree on the Likert scale) or disagreement (i.e., indicating disagree or strongly disagree on the Likert scale) within each condition are reported below. A summary of these results can be found in Table 4. Participants who answered items with "neither agree nor disagree" are not included below.

1) *Writing assignments.* Students were asked to respond to the item "The Assignment Planner helped me to write the assignment(s) in this course." One-third of students in the control condition (33%) and 50% of students in the intervention condition agreed, while only 10% in the intervention group disagreed. In the control condition, 66% of participants disagreed that the AP helped them write in the course. Students were also asked to respond to the item "The Assignment Planner provided information about writing that I did not know." In the control condition, 66% of students disagreed and no students agreed with this statement. In addition, 30% of students in the intervention condition also disagreed with the statement, indicating that many students failed to identify any new information they learned from the AP. In the intervention condition, however, 60% of participants agreed that the AP taught them something about writing that they hadn't known.

2) *Time management.* Students were asked to respond to the item "I found the time management and setting of dates helpful for writing my assignments." In the control condition, 66% of participants disagreed with this statement and no participants agreed. In the intervention condition, 10% of participants disagreed and 20% of participants agreed that the time management elements of the AP were helpful.

3) *Email notifications.* Students were asked to respond to the item "I used the email notification feature to receive prompts for writing my assignments." Only 30% of participants in the intervention condition agreed with this statement, while 60% disagreed. In addition, 66% of participants in the control condition disagreed with this statement and no students in that condition agreed.

Taken together, the responses to the use of the time management and notification features of the AP were ambivalent. Few students indicated that they used these features or felt they were helpful. On the other hand, students in the intervention condition were far more likely to identify these as features they used and valued, suggesting that exposure in the classroom had positive effects on their perceptions of these features.

4) *Use in other courses.* Students were asked to respond to the item "I used the Assignment Planner for assignments in other courses." In the intervention condition, 60% of participants agreed with this statement, almost double the proportion of students in the control condition (33%). Moreover, while 20% of students in the intervention condition disagreed that they used the AP in other courses, in the control condition this rose to 66% of participants. These results suggest that integration of the AP into classes leads many students to generalize use of this tool to other classes.

5) *Implementation.* In response to the item "The professor provided guidance or suggestions on how to use the Assignment Planner," 100% of participants in the control condition disagreed. In the intervention condition, however, 60% of participants also disagreed with this statement and only 10% agreed. Students were also asked to respond to whether "The TA provided guidance on how to use the Assignment Planner." In the control condition, 100% of participants disagreed with this statement. Again, in the intervention condition, 50% of participants disagreed with this statement and no participant agreed.

These results suggest that students feel that the support they received to use the AP was insufficient, a perception that is understandable for students in the control condition, but perhaps unexpected for students in the intervention condition.

Table 4: Responses of First-Year Students (Used the AP)

	Control Condition		Intervention Condition	
	Agreement	**Disagreement**	**Agreement**	**Disagreement**
The AP helped me write the assignment(s) in this course.	33%	66%	50%	10%
The AP provided information about writing that I did not know.	-	66%	60%	30%
I found the time management and setting of dates helpful for writing my assignments.	-	66%	20%	10%
I used the e-mail notification feature to receive prompts for writing my assignments.	-	66%	30%	60%
I used the AP for assignments in other courses.	33%	66%	60%	20%
The professor provided guidance or suggestions on how to use the AP.	-	100%	10%	60%
The TA provided guidance on how to use the AP.	-	100%	-	50%

Fourth-Year Student Responses

Survey responses of fourth-year students who used the AP minimally

Fourth-year students who identified through self-report as having used the Assignment Planner minimally were asked a series of Likert-type questions. A total of nine participants fell into this category, requiring cautious interpretation. The percentages indicating student agreement (i.e., indicating agree or strongly agree on the Likert scale) or disagreement (i.e., indicating disagree or strongly disagree on the Likert scale) are reported below. A summary of these results can be found in Table 5. Participants who answered items with "neither agree nor disagree" are not reported below.

1) *Information.* In response to the item "I didn't have enough information about the Assignment Planner to use it," slightly more students disagreed with this statement than agreed.

2) *Relevance to course.* More than half of the students (55.5%) disagreed that "The Assignment Planner was not relevant to the assignments in the class," and no student agreed with this statement, indicating that students recognized the AP as relevant for their class.

3) *Marks.* In response to whether "I would have used the Assignment Planner if I received marks for using it," no students disagreed with this statement and more than three-quarters of students agreed.

4) *Writing skills.* A majority of students (65.7%) agreed that "I didn't use the Assignment Planner because I am already a good writer," while fewer than one-quarter attributed their lack of use to good writing ability.

5) *Future use.* In anticipating their future use of the AP, most students in this group (66.6%) disagreed that "I will probably use the Assignment Planner in future courses," and no student agreed. Students were also asked to respond to the item, "I will probably use the Assignment Planner as I go into the upper years of my university career." Again, no student agreed with this statement and 55% disagreed. Finally, in response to the item "I wish I had used the AP more in this course," 77.3% of participants disagreed with this statement and 11% of participants agreed.

Table 5: Responses of Fourth-Year Students (Minimal Use of AP)

	Agreement	**Disagreement**
I did not have enough information about the AP to use it.	33%	44.4%
The AP was not relevant to the assignments in the course.	-	55.5%
I would have used the AP more if I received marks for using it.	77.8%	-
I didn't use the AP because I am already a good writer.	65.7%	22.2%
I will probably use the AP in future courses.	-	66.6%
I will probably use the AP as I go into the upper years of my University Career.	-	55.5%
I wish I had used the AP more in this course.	11%	77.3%

Survey responses of fourth-year students who used the AP

Students from the fourth-year sample who identified through self-report as having used the Assignment Planner more than once or twice were also asked a series of Likert-type questions. A total of nine participants fell into this category, so caution in interpreting results is warranted. A summary of these results can be found in Table 6. Participants who answered items with "neither agree nor disagree" are not reported below.

1) *Writing assignments.* Students were asked to respond to the item "The Assignment Planner helped me to write the assignment(s) in this course." About one-third of students (33%) agreed, while only 11% disagreed with this statement. In response to a second item, "The Assignment Planner provided information about writing that I did not know," twice as many students (67%) agreed and disagreed (22%).

2) *Time management.* In response to the statement "I found the time management and setting of dates helpful for my assignment," slightly more students agreed (44%) than disagreed (33%).

3) *Email notifications.* The majority of students (77%) disagreed that "I used the email notification feature to receive prompts for writing my assignments" and no participant agreed.

4) *Use in other courses.* In response to the item, "I used the Assignment Planner for assignments in other courses," almost one-quarter of students claimed they had used the AP in other courses, while the majority (77%) stated that they had not.

5) *Implementation.* Students were asked to respond to the item, "The professor provided guidance or suggestions on how to use the Assignment Planner." In this fourth-year sample, most students agreed that the professor provided guidance while about one-fifth of students disagreed.

Table 6: Responses of Fourth-Year Students (Used the AP)

	__Agreement__	__Disagreement__
The AP helped me write the assignment(s) in this course.	33%	11%
The AP provided information about writing that I did not know.	67%	22%
I found the time management and setting of dates helpful for writing my assignments.	44%	33%
I used the e-mail notification feature to receive prompts for writing my assignments.	-	77%
I used the AP for assignments in other courses.	23%	77%
The professor provided guidance or suggestions on how to use the AP.	77.8%	22%

Relationship between Frequency Use and Grades on Writing Assignments

Correlation analyses were performed between self-reported frequency use of the AP and grades for both the first- and fourth-year students. Participants who did not consent to have their grades used in this study were removed from the analysis.

First-year students

The correlation analysis between first-year students' self-reported use of the AP and grades revealed a non-significant relationship between the two variables, $r(181) = -.04$, $p = .59$. This finding suggests that there is no relationship between students' use of the AP and their grades on written assignments.

Fourth-year students

The correlation analysis between fourth-year students' self-reported use and grades on writing assignments revealed a non-significant relationship between the two variables, $r(14) = .15$, $p = .58$. This finding suggests that, as seen with first-year students, there is no relationship between upper-year students' use of the AP and their grades on written assignments.

Qualitative Findings

Qualitative Analysis of Professor Interviews

After the intervention period was finished, interviews were conducted with the four professors involved in the research project. Transcripts of the four interviews were read through separately by two researchers and coded for recurring themes. Meetings were held to discuss coding and to ensure that interpretations of the codes remained consistent among the two researchers. Reliability between the two coders was high and discrepancies were resolved through discussion and consensus. A total of nine themes emerged from the interviews. Names of all professors have been changed to preserve anonymity.

Key theme 1: Implementation variability

All four professors commented on aspects of implementing the AP during the research period. An important concern was how the AP should be explicitly presented or recommended to students. Comparing remarks of the professors who taught the intervention classes against those who taught the control classes suggests that the level of attention drawn to the AP in class was different across conditions, as would be expected, but this level of attention depended largely upon the commitment of the professor to its use. For example, in response to a question about how often the AP was mentioned in class, Ashley, who taught a control class indicated:

> I didn't do it too frequently, not the fault of the Assignment Planner, but probably because I was just trying to keep up with the number of things I needed to construct in the course for the first time. (Ashley)

In contrast, Michelle, who taught an intervention class, described in detail how the AP was implemented into the course design and claimed that it was mentioned in class quite often. Reuben, however, struggled to integrate the AP and identified not knowing how to do this effectively as a significant barrier for implementation. Perhaps because he taught one control and one intervention class, Reuben had difficulty articulating the differences in implementation between the two classes.

The ways in which professors integrated the AP into specific course assignments also demonstrated differences. Jane prompted use of the AP in her fourth-year seminar by having students record their independent process of working through the AP in a journal, reflecting on how they used the AP. This approach, which required students to be relatively independent and self-motivated, was deliberately avoided by Michelle, who approached the alignment of the AP and assignments in her large first-year class by focusing heavily on the use of individual steps relevant to particular assignments. In response to the question of why she used this approach, she answered:

> Because otherwise it was a bit wide at times [so] I would be teaching the Assignment Planner as opposed to teaching the course material. It is not enough to say that it is there and say choose the parts that are relevant to you, because [the students] don't know what parts are relevant to them. It was "let's choose the part that we need for this particular assignment." (Michelle)

Taken together, these comments from professors suggest that they felt very much like novices trying to integrate the AP – a new resource – into their classes and that encouraging the use of the AP was only one element that needed to be balanced in teaching their classes.

Key theme 2: Weaknesses in students' writing

Concerns about weaknesses in students' writing were a common theme. All four professors demonstrated obvious commitment to the goal of teaching students to write and were passionate about developing students' writing. This commitment, however, did not mean that they felt the task was easily accomplished. In fact, they often seemed dispirited when discussing the difficulties they encountered. They identified citation and referencing as significant issues in student writing, noting that many students struggle with knowing when to cite and appear to see citation as a burden. Jane felt that students did not understand the importance of proper citation and tended to see it as a mechanical process:

> … they saw at the beginning [of the course], the idea of having so many bibliographical entries or work cited entries as an assignment, and [one] that didn't really have anything to do with the essay as long as they had the 10 there. Then they fulfill that criteria and then move on to count the words, you know, that kind of thinking. (Jane)

Related to the problem of citation, other key weaknesses identified in students' writing were paraphrasing, integration of sources and fluency in writing. These issues seemed to be most pronounced when students were writing research essays. As Michelle stated:

> They seem to be well prepared for the reflection essay, I think. But the evidence-based, footnoted research essay where you are arguing a thesis developed by supporting evidence from *other* sources, and then coming to a conclusion that integrates their ideas, requires work. That's a challenge – the integration of readings and arguments of other authors. (Michelle)

In other words, professors seem to feel that students are poorly prepared to write effectively at university and that their strategies for writing, especially with sources, are superficial and mechanical.

Key theme 3: Student characteristics

Professors held conflicting views about the characteristics of undergraduate students. All mentioned some positive characteristics associated with first-year students; for example, students were described as being well-meaning and quick to learn once taught. These positive elements seemed outweighed, however, by perceptions of students' negative characteristics. Ashley, for example, identified lack of motivation or engagement as a significant problem:

> There comes a point where you can give different resources to students and then sometimes you're left a little frustrated because there is a sense, I find that, students still won't look at it…I'm not quite sure why this problem exists but there's sometimes a sense that if it's not compact and it's not done quickly, there isn't really a motivation as much for the work. (Ashley)

The perception that students fail to invest in their school work unless it can be done quickly was a consistent theme in the faculty interviews. Related to this idea of students' lack of motivation were claims from two of the professors that students appeared unwilling to engage in any exercise unless there was a grade allocated for the work.

Key theme 4: Class size

Concerns regarding class size were raised by professors in all interviews, though opinions differed regarding the effective use of the AP in these classes. Ashley, for instance, asserted that the putative benefits of using the AP in large classes came from its electronic access:

> … students who have computers would benefit from access to the online format of the Assignment Planner. If there are more electronic venues for them to see instructions, to help them budget their time, that is good. I think that, yes, the more that the method and theory of writing can be codified somehow, whether that was at some time on the overhead projector, or now on the Assignment Planner, the better. (Ashley)

Although Jane taught the fourth-year seminar and had implemented the AP in a small classroom, she thought that the AP could still readily be used in a large-class format and planned to do so in the future. Although two of the faculty members were optimistic about large-class implementation of the AP, the remaining two faculty members had concerns about the difficulty of large-class implementation. Reuben indicated that he felt overwhelmed in trying to incorporate high-impact learning exercises using the AP into his large class. He thought that it would be easier to do so in a small class setting. The other faculty member who had concerns about implementing the AP in a large class setting also felt that small-class implementation might be a more practical route. Another prominent consideration was that perhaps the AP might be better taught and absorbed by students in large classes if it could be implemented in tutorials that are a component of the large class structure.

Key theme 5: Time management

The use of the AP as a tool for students' time management was of interest to all four professors. As Jane notes, "What the Assignment Planner did was, for most students, remove the last-minute, night-before writing." Related to this point, Michelle commented on how the eleven stages of the AP aided students' planning of assignments. She noted:

> The students who used the Planner did get their stuff in a week ahead of time, and then drafted, so that they could then consolidate and have an organized presentation…the Planner said you have to have it in on time to do three revisions. You [then] get a consistent argument, beginning, middle and an end and very little repetition because they have taken the time to do it. So the Planner works really well for that kind of thing. (Michelle)

Despite this positive perception of the AP as a time management tool, two of the faculty members noted that many students did not seem to use the AP as a time management tool.

Key theme 6: Benefits of the AP in students' writing

As noted above, professors claimed that students' weaknesses in writing were most often seen in citations, paraphrasing, integration of sources and fluency of writing. The benefits of the AP in ameliorating these issues were a prominent theme. For instance, Jane, who had noted the seemingly mechanistic process of citations by students, indicated that this issue was improved after implementing the AP into the class.

> I didn't have any way-off bibliographies again where just in order to have the ten entries they look blindly down the shelf of the library, if they go to the library, or if they do it online, you know whatever they do. So, that I think was very good... the kind of entries I got in the proposal versus what I got at the end, showed a tremendous progress in terms of thinking through the appropriateness of the works cited entries to what they were doing. (Jane)

Similarly, the faculty member who identified integration and fluency of evidence-based essays as an issue in student writing noted that the AP promoted the evidence-based writing that the faculty member wanted. Indeed, this faculty member noted that she saw evidence of the AP material in the evidence-based essay that students completed at the end of the semester. She referred to student improvement manifesting in such a way that "the writers are plugged in" (Michelle). Jane claimed:

> They are moving through the planner, they are trying to do it. They are trying to think through their essays more than they did before. In revision, I think they tended to revise for ideas and that's good. Whereas the finesse of the writing, in other words getting the ideas really effectively articulated, didn't always work for some of them but they probably came closer to it than they would have had they not engaged in the process. (Jane)

Professors also suggested that the AP improved the understanding of concepts relevant to students' writing. Specifically, the AP helped by "getting them to think through more the process of conceptualizing and addressing the research question. So, in other words, conceptually it worked better, which meant that their arguments were more solid." (Jane)

Key theme 7: First-year expectations

The influence of a student's year of study on the implementation of the AP emerged as a site of conflict. Two faculty members demonstrated opposing opinions on how best to integrate writing instruction and the AP in students' first year of study. Jane, who taught the fourth-year seminar, believed that writing instruction and explicit use of the AP needed to be occurring in first year. She stated:

> One of the things I think with first-year students is you just raise the bar immediately. You don't nurture them through the fall term and then tell them they are going to be whacked in the second term. I think they are quite capable of doing that. I'm not talking about bringing them up to a fourth-year level in first year, I am not interested in that, but I would be interested in at least seeing more time in their writing, more thought in their writing, learn about the process of writing a research paper, and by the end of it I hope then they are ready for a good second term. (Jane)

In comparison, Michelle, who taught a first-year intervention class, felt that limited exposure to the tool and greater support in first year is necessary. She stated:

> I think the goal of first year is to prepare them to use it in third or fourth year. That's a reasonable expectation partly because of the complexity of it. By the time they get to third and fourth year and they have used it three or four times they know how to apply it. (Michelle)

The contrast between these two opinions demonstrates fundamentally different expectations that professors have of first-year students. On the one hand is the expectation that first-year students need to learn to use and apply the AP material in their assignments to improve their writing skills, while on the other hand is the expectation that exploration and guidance using the AP should be the goal of first year with independent application of AP material taking place in later years.

Key theme 8: Plans for future implementation

Based on their experiences in the project, professors articulated plans for future implementation of the AP. Michelle outlined specific assignments using the AP that she plans to implement in her first-year classes. For example, she indicated that she is interested in making learning about the AP an actual assignment right at the beginning of the semester and incorporating it into the curriculum of the face-to-face class format and online class format for bonus marks.

Jane also stated that she would be using the AP in her future classes, claiming, "I will probably use it in all my classes next year because I like it." She also identified possible changes that she would make to her teaching of the AP. More specifically, she indicated that in future she would be more apt to spend time walking students through the AP steps.

Key theme 9: Quality perceptions

The final theme that emerged concerns quality perceptions, in particular the overall favourable impressions that professors had of the AP. Throughout the interviews, it was clear that professors think the AP is a good tool that is advantageous to students. Michelle stated that she thought it was a good resource because "it's a teachable tool. It teaches students what they have to do in university and how you have to do it." Professors also were impressed with the content of the AP and its comprehensiveness.

> I really think it's great. I was excited from the first time I saw the prototype and I thought, "Wow this is neat." I think it is a really great tool. How could it be improved? I don't know. It seems to me that all of the elements are there and it works well. (Jane)

Qualitative Analysis of Student Responses

Student participants in this study were asked open-ended questions in a survey administered at the end of the research period (see Appendix D for questions). Their written responses were coded for recurring themes. These results are broken down into sections that correspond with the three open-ended questions that were asked of students: (1) reasons for not using the AP; (2) usefulness of the AP; and (3) changes to the AP.

(1) Reasons for not using the AP

Students who did not use the AP or minimally used it were asked to identify why they thought that they did not use it. The following six themes were drawn from student answers:

Key theme 1: Adequate writing skills

Many students believed that using the AP was not necessary because they felt they already had adequate skills to complete the writing assignments in the course. First-year students replied to the open-ended questions with statements such as "I felt I could handle the assignments for this course by myself", "I don't feel like I need help managing my time or with my writing skills" and "I did not use the Assignment Planner because I am confident in my own writing." Interestingly, although similar statements were made by the fourth-year students, their statements tended to be expanded to include information about why they did not feel the AP was necessary for them. For example, some of the fourth-year students wrote: "I suppose I have established a method and I'm set in my ways. I don't have any problems with [the AP] though and think it's a good idea" and "perhaps this was due to the fact that I'm in fourth-year and have already established writing skills and methods for time management."

Key theme 2: Struggling students

In addition to the notion that they already possess adequate writing skills, some students also indicated that they perceived the AP as a tool for struggling students only. One student wrote, "I felt like it was a tool that should be used optionally for struggling students, not students who already get solid grades." Another student remarked, "I don't think I used the Assignment Planner because I am very good at taking initiative and staying on task for writing assignments. The Assignment Planner would not serve any real benefit to students such as myself who already have strong organization skills on their own."

Key theme 3: Lack of information

Many comments indicated that students did not have enough information about the AP to use it. Some students claimed, "I didn't really know a whole lot about it or how to access it and I know it's supposed to make it so your time is planned out but I feel like I never got the time to check it out and figure out how to use it" and "I did not have enough information about the Assignment Planner in order to have a full understanding of the use of it."

Key theme 4: Lack of time

A lack of time was presented as one barrier to using the AP. This theme became evident in statements such as, "I don't think I used the Assignment Planner, due to my lack of time management skills. I procrastinate and push things off." Another student stated, "I meant to use it, but I got busy with other things and did not get around to it." These comments suggest that students did not perceive use of the AP as an element of the course that they *had* to make time for.

Key theme 5: Plan for future use

A desire to use the AP in the future was suggested in comments such as:

> It sounded like a really good program and I intended on using it – I never got around to setting it up and I thought about it at different times during the semester, but never implemented it. I think now that I've had the stress of last minute papers and procrastination, I think next year I will actually use it to save me stress.

Key theme 6: Issues with the format of the AP

Some fourth-year responses indicated a concern with the format of the AP.

> Personally I feel that it [the AP] is extremely divided [so it is less] productive in the later years. It is unrealistic to believe that you will only sit to write your thesis and that's it, or, write your essay and integrate sources the next time, when you should base your points in research.

On the other hand, another student commented:

> The steps could be more clear-cut. I found some of the steps were too repetitive and then I also found on specific sections there wasn't enough information. Providing more examples for sections would be more useful as well and providing info about getting your paper proofread.

(2) Usefulness of the Assignment Planner and Suggested Changes

Two open-ended questions were asked of students who had used the AP on a frequent basis. The first question asked students to identify what they found to be most useful about the AP.

The most common responses were statements about time management. For example, one student wrote that what was most useful was the "time management aspect and how it sets dates for when you should have certain aspects of the assignment done." In addition to the breakdown of steps by date, many students in first-year classes indicated that e-mail reminders provided by the AP were useful to them. One student explained, "I like that the planner can send you reminder e-mails which is especially useful when you're swamped with work and forget assignments." This opinion, however, was not shared by the fourth-year students. The structure and the content of the AP elicited mostly positive views in comments, for example, "It was structured

well," "It organized a full layout for the paper" and "I liked the dates and links attached that helped make a thesis."

The second question that was asked of participants who had identified as having used the AP on a frequent basis was regarding their thoughts on what should be changed about the AP.

Some students suggested that the AP could be improved by having better advertisement for the tool and that it could have been more heavily promoted on campus. This concern appears to be related to a lack of knowledge about the AP, as demonstrated by suggestions that students had little guidance from professors or teaching assistants on using the AP. In a related theme, students consistently described frustration with the inability to save assignment schedules. Presently, students have to enter the due date of their assignment every time they access the AP to see the breakdown of the 11 steps. Some students noted that this was cumbersome and they wanted to save a version of the schedule created for each specific assignment.

Finally, many first-year students thought that use of the AP could have been improved if marks were allocated for using it. Although this was not a consistent response among students in first-year classes, this desire for the AP to be worth marks seems consistent with the quantitative results presented above.

Fourth-year students often commented on changes to the steps. Many claimed that eleven steps was too many and some of the steps were not in the order they would have liked. For example, one student wrote, "How it is set up is good but the amount of steps is a little bit too long, you might want to combine some steps to make more sense." Also referring to the eleven steps, a student commented, "Ultimately it is not a natural process. It may be helpful for first-year students but by fourth year we have tailored our unique approach to essay writing." With regard to the order of the steps, another student commented. "I did not like the fact that it told you to write your essay and then implement sources a couple days later. When I write my essays, my sources are part of my argument and so I find implementing them later would hinder the fluidity of my writing."

Discussion

In this study we explored students' and professors' uses of an online Assignment Planner to support writing instruction in large university classes. Our first two research questions were: 1) do students use the AP to help them write their assignments? and 2) does integration of the AP into classroom practice increase use of the AP? In response to the first question, we found that few students used the AP. Both online tracking and students' self-reports indicated that the vast majority of students failed to use the AP, and of the small proportion of students (between 5 and 16%) who did use it, most of them only used it once.

Classroom integration did not influence students to use the AP more frequently. We found no difference between students in the intervention and control groups in how often they used the AP, suggesting that whether the AP is introduced in class or not has little bearing on students' uptake of the tool.

Before concluding that the AP appears to have little perceived value, it is important to examine the data of those students who did use it. Of those who did use the AP at least once, more frequent use of the AP was seen by students in the intervention group than the control group. Students who received no classroom integration of the AP used it an average of two times during the term, whereas students whose professors integrated the AP into class used it an average of two and a half times during the same period. This suggests that students who used the AP were more likely to use it more often when it was actively integrated into their classes than when it was not integrated into classes.

Additionally, data from the fourth-year seminar (which prominently integrated the AP as a mandatory component of the course) show that all 18 students in this class did use the AP. These fourth-year students were thus significantly more likely than students in the first-year classes to use the AP when it was integrated into their classes. These findings suggest that although students are generally unwilling to access and use the AP, once they do use it, they are more likely to return to it, especially if this use is reinforced by the professor in class.

Possible explanations for why students did not use the AP were suggested by analyzing their survey responses and professors' interviews. Prominently, students reported that they would have used the AP if they had received marks for using it. This desire for marks to recognize their efforts was perceived by all professors, who noted that students appeared unwilling to engage in activities that did not carry explicit grade allocation. While no negative connotation to this exchange value was noted by students, professors clearly felt that this attitude demonstrated superficial academic engagement.

Another reason for students' failure to use the AP was that the integration of this online resource into classes was insufficient or ineffective. Many students felt that they did not receive enough information about the AP to use it, even though almost one-third of first-year students believed it was relevant to their course work. Even when students did use the AP, the majority disagreed that their professor or TA provided guidance or advice on its use. Professors' responses confirmed that integration of the AP into classes was inconsistent and contentious. Despite suggestions from the research team for strategies on using the AP in large classes, professors largely relied upon their own judgment and experience to adapt their courses to use of the AP, a process that was more successfully navigated by some than others. One relatively new professor, for instance, expressed much frustration at his inability to integrate the AP to the level that he had hoped. Other professors expressed widely differing views about what this integration should entail, with the result that student use of the AP in courses varied from mostly independent use outside of class to mostly supported use within the class. This variability in integration can be traced to professors' conflicting expectations for students, i.e., whether they believe, as one professor noted, that "you just raise the bar immediately" and provide the AP as support for students, or whether the goal is "to prepare [students] to use [the AP] in third or fourth year" by encouraging their use of the tool in first year. While both scenarios imply integration of the AP, the difference is evident in the emphasis given to the AP in supporting content instruction.

Another reason the AP was not used by students relates to the perception that it is a remedial tool, one for struggling students rather than those who are able to write well. Many students, especially those in fourth year, believed that their writing skills were already good so they had no need for the AP. A number of fourth-year students also remarked that the AP did not conform to their individual writing practices so they believed it was not productive for them to use it. These perceptions of their writing abilities were not supported by professors, who expressed many concerns about students' writing weaknesses, especially their ability to use and integrate sources and create coherent arguments. While students believed their writing was appropriate, professors claimed it was often only superficially so.

The ultimate goal of the Assignment Planner, of course, is that students who use the AP frequently will learn to write more effectively and submit better assignments than those who do not use it. We thus examined the relation between students' use of the AP and their writing assignment grades. In response to this third research question, we found that for both first-year and fourth-year students, no relation was seen between AP use and writing grade. This suggests that using the AP has no observable effect on the quality of student writing, a conclusion that is likely related more to the inconsistent integration of the AP than any inherent weakness of the AP. Students who used the AP, for instance, responded positively to its structure and content but were ambivalent about its time management and email reminder functions. More than half of those who used the AP believed that they learned something new about writing, and this effect was strongest in students from the classes that integrated the AP into the course. Additionally, students from the AP-integrated classes reported more generalization of the use of the AP into other classes than did students from classes that did not integrate the AP. This suggests that students need guidance and explicit strategies for the

AP in class so they can use it most effectively and extend its use to other classes' assignments. For their part, professors claimed that students who used the AP made stronger use of sources and revised their work to more effectively articulate their ideas. While it was hoped that use of the AP would lead to higher student writing marks, in the absence of more precise measures of writing improvement, it was not possible to determine if there were smaller effects on students' written texts.

Conclusion and Next Steps

Online pedagogical tools such as the Assignment Planner carry an expectation that students and professors will find them readily accessible and helpful, but our findings demonstrate that their use depends upon thoughtful integration of the tool rather than simply exposure to it. In fact, in the absence of committed integration into a course and explicit instruction in its use, the AP was used by few students. Nevertheless, the positive responses of students who did use the AP suggest that such integration and instruction may lead students to learn about writing, so it is an approach worth pursuing.

In response to the clear statements from students that assigning marks to use of the AP would encourage them to use it, and the remarks of professors regarding their difficulties in carrying out appropriate integration of the AP, future studies should extend this work by examining whether these changes alter the results we found. As well, the use of a more precise writing assessment should be considered to see if it is able to demonstrate any changes in the quality of student writing.

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