

**Basic Writers and the Challenges of Writing from Sources:  
Experimental Study of a Strategy Instruction Approach**

Charles A. MacArthur, University of Delaware

Zoi A. Traga Philippakos, University of Tennessee

Henry May, University of Delaware

Jill Compello, University of Delaware

Paper accepted for presentation at the annual meeting of the  
Society for Research on Educational Effectiveness

**Background:** In the USA, nearly half of beginning college students attend 2-year colleges (NCES, 2019), and many are required to take basic, or developmental, writing courses for underprepared students (Bailey, Jeong, & Cho, 2010). Since 2010, our research group has been developing and evaluating instructional approaches for developmental writing based on self-regulated strategy instruction (Harris & Graham, 2009; MacArthur, 2011). Students learn systematic strategies for planning and revising based on genre elements. In addition, they learn metacognitive, self-regulation strategies for goal setting, task management, progress monitoring, and reflection. Following two years of design research (MacArthur & Philippakos, 2013), we conducted a full-semester quasi-experimental study (MacArthur, Philippakos, & Ianneta, 2015) with 13 instructors and 276 students at two colleges; the study found strong positive effects on quality of argumentative writing ( $ES = 1.22$ ) as well as positive effects on self-efficacy and mastery motivation. A subsequent randomized control trial (MacArthur, Traga Philippakos, May, & Compello, 2019) with 19 instructors and 207 students at two community colleges found similar positive effects on writing quality ( $ES = 1.75$ ) and positive effects on self-efficacy, affect, and beliefs about writing.

One limitation of these studies is that instruction focused on writing essays without sources. For success in college, students need to read source materials critically and synthesize information across sources to write their own critical essays.

**Purpose:** The purpose of the current study was to evaluate the efficacy of an expanded curriculum that included strategies for critical reading and note-taking, writing of summary-response papers, and integration of source information in argumentative essays.

**Setting and Participants:** The study was conducted in two community colleges in a state in the eastern United States with one college each in fall and spring semesters. Participants included 23 instructors (14 women & 9 men; 21 white, 1 African-American, 1 other; 2-20 years experience teaching college writing) and 187 students with complete data (57% female, 46% white, 27% African-American, 13% Hispanic, 6% Asian, 6% other; 23% were non-native speakers of English; mean age 24.4 years).

**Intervention:** In the curriculum used in the study, *Supporting Strategic Writers: Introduction to Writing with Sources*, students first learned systematic strategies for planning and revising argumentative essays based on genre elements but without using sources. Then they learned strategies for critical reading and note-taking, writing of summary-response papers, evaluation of the credibility of internet sources, and integration of source information in

argumentative essays. Instruction followed a sequence including introduction to the genre and task, evaluation of good and weak essays, think-aloud modeling, collaborative writing, individual writing, peer review with preparation, and editing. In addition, students learned metacognitive, self-regulation strategies for goal setting, task management, monitoring of progress, and reflection (Harris & Graham, 2009). Instruction was provided for a full semester 3-credit course. Treatment instructors received two days of professional development and coaching. Control instructors implemented business-as-usual instruction.

**Research Design:** A multi-site randomized trial was conducted in which instructors within each college were randomly assigned to treatment or a business-as-usual control condition.

**Data Collection and Analysis:** At pretest, students wrote argumentative essays without sources. These baseline essays were scored using a 7-point quality scale for essays without sources. All essays were scored independently by two raters unfamiliar with the study; interrater agreement was 58% exact and 98% within one point.

The primary posttest measure was a final examination in which students read two newspaper Op Ed articles presenting different opinions on an issue and wrote an argumentative essay on the topic; the articles were 700-800 words each and written at a first-year college level. Essays were scored using a 7-point quality scale with a rubric that included use of sources (inclusion of both sources, accuracy, synthesis, and citation) as well as content, organization, language, and conventions. Interrater reliability among three raters was good (range  $r = .80 - .90$ ).

In addition, at posttest, students wrote a timed argumentative essay using a retired 12th-grade prompt from the National Assessment of Educational Progress (NAEP). Two raters unfamiliar with the study were trained by an independent consultant with experience training raters for NAEP and using the NAEP rubric. Interrater agreement was 57.7% exact and 97.8% within one point.

Finally, at posttest, students wrote an in-class summary of a newspaper editorial, which was about 600 words at an 11<sup>th</sup>-grade level. Scoring has not been completed for this measure.

Also at pretest and posttest, students completed a motivation questionnaire tapping goal orientation, beliefs, self-efficacy, and affect (MacArthur, Philippakos, & Graham, 2015). Internal consistency of all subscales were good, Cronbach alphas ranged from .73 to .97.

Scores on placement tests (Accuplacer reading and writing) were collected at pretest, and students took the Accuplacer reading at posttest.

In addition to student measures, all instructors were interviewed at pretest to gather information on experience and teaching practices. Treatment instructors were interviewed after the semester about their perspectives on the curriculum. Treatment and control instructors were observed for a minimum of three classes. Treatment instructors were observed to evaluate treatment fidelity using a scale that included a checklist of instructional components and quality ratings. Observations were conducted by the primary researchers and a research assistant with experience teaching using the SSW curriculum because the observations served the dual purpose of rating fidelity and providing coaching. In the first college, most observations were done in person; at the second due to distance, most were done online live but with a video recording. A second rater independently scored fidelity for 70% of the observations, either from a video

recording or from detailed field notes. Agreement between pairs of raters ranged from 82-86% for checklist items and 73-90% for quality ratings. Control instructors were observed to describe their instruction.

Estimates of treatment impact under the randomized trial were produced via hierarchical linear modeling (HLM). Our primary statistical model nested students within instructors, with fixed effects differentiating the two sites. An interaction term between treatment assignment status and site was included to test for differentiation in impacts across sites. The mathematical form of the model equation is:

$$Posttest_{ij} = \beta_0 + \beta_1(Pretest_{ij}) + \beta_2(Treatment_j) + \beta_3(College_j) + \beta_4(Treatment_j \times College_j) + \alpha_j + \varepsilon_{ij}$$

where:  $Posttest_{ij}$  is the outcome for student  $i$  under instructor  $j$

$\beta_0$  is the model intercept

$\beta_1$  is coefficient for the *Pretest* covariate

$\beta_2$  is the treatment effect for College 1

$\beta_3$  is the fixed effect differentiating Colleges 1 & 2

$\beta_4$  is coefficient for the treatment by site interaction term (i.e., testing for differential treatment effects between colleges)

$\alpha_j$  is a random effect for instructors

$\varepsilon_{ij}$  is the student-level residual term

**Results:** Regarding fidelity of treatment, on the checklist of lesson components, instructors averaged 1.44 (SD=0.35) on a 2-point scale. On quality of key components, instructors averaged 2.41 (SD=0.52) on a 3-point scale. The mean scores were slightly higher at the first college. In general, checklist scores greater than 1.5 on a 2-point scale and quality scores greater than 2.5 on a 3-point scale were considered acceptable. By these criteria, at the first college, 4 of 5 instructors had acceptable fidelity on both scores, and one did not have acceptable fidelity on either score. At the second college in contrast, only 3 of 6 faculty had acceptable fidelity on both scores and 3 did not reach acceptable fidelity on either score.

Data on the baseline, final, and NAEP essays are in Table 1. Preliminary analysis found no significant difference in quality of baseline essays by condition or college ( $p > .5$ ). For the primary outcome measure, the argumentative essay with sources, HLM analysis with the baseline essay as a covariate found a statistically significant difference by condition favoring the treatment group ( $p < .01$ ; ES (Glass's  $\Delta$ ) = .56). A significant interaction between condition and college was also found. Follow-up analyses of the individual colleges found a significant effect of treatment for college 1 ( $p < .01$ ; ES (Glass's  $\Delta$ ) = .71), but not for college 2 ( $p > .05$ ; ES (Glass's  $\Delta$ ) = .40). No significant effect of treatment was found for the NAEP essays ( $p > .05$ ).

Data on motivation are in Table 2. Preliminary analysis found no significant difference in any of the motivation scales by condition or college ( $p > .5$ ). No significant effects of treatment were found ( $p > .05$ ).

**Significance:** The study is significant as the first randomized control trial with college basic writers of the effects of instruction in integrated strategies for reading and writing leading to the important outcome of writing with sources. From a practical perspective, the study addresses the needs of a large population of students required to take developmental writing courses (NCES, 2013). Analysis found a moderate effect on the quality of student writing with sources. Effects varied between the two colleges, with larger effects at the site with higher fidelity of implementation. Though the effects are statistically significant and educationally meaningful, the effects on the primary writing outcome were smaller than prior studies with a curriculum that focused on writing without sources in multiple genres. In addition, no effects were found on the standard NAEP writing assessment or on motivation. Analysis of summary writing is not yet complete. In addition, further analysis of the qualitative data will seek greater understanding of the results.

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Table 1. Quality of Baseline and Final Essays by Condition and College

	College 1		College 2		Total	
	Control	Treatment	Control	Treatment	Control	Treatment
Baseline	2.19	2.21	2.29	2.22	2.23	2.22
M (SD)	(.76)	(.71)	(.60)	(.75)	(.69)	(.72)
Final	2.72	3.56**	2.63	3.02	2.68	3.35**
M (SD)	(1.11)	(1.36)	(1.24)	(1.08)	(1.16)	(1.28)
NAEP	3.04	3.20	2.93	3.03	2.99	3.13
M (SD)	(1.21)	(1.20)	(1.39)	(1.09)	(1.28)	(1.15)

\*\*  $p < .01$ , treatment effect, ES (Glass's  $\Delta$ ) = .56

Table 2

*Motivation Outcomes: Self-Efficacy, Beliefs about Writing, and Affect*

	Treatment		Control	
	Pre	Post	Pre	Post
<b>Self-efficacy (SE)</b>				
SE Task/process	63.0 (17.2)	74.0 (16.7)	67.9 (18.7)	76.5 (16.9)
SE grammar	52.4 (21.4)	64.0 (20.4)	59.7 (21.1)	68.7 (18.9)
SE self-regulation	66.1 (16.2)	72.6 (16.1)	68.7 (16.9)	75.0 (17.6)
<b>Beliefs</b>				
Substance	4.1 (0.6)	4.2* (1.0)	4.10 (0.64)	4.2 (0.6)
Mechanics	2.7 (0.9)	2.6 (0.9)	2.73 (0.78)	2.8 (0.8)
<b>Goals</b>				
Mastery	4.38 (0.66)	4.36 (0.61)	4.33 (0.67)	4.30 (0.70)
Performance	2.81 (1.15)	2.87 (1.10)	2.91 (1.01)	2.98 (1.06)
Avoidance	2.71 (1.14)	2.64 (1.09)	2.78 (1.03)	2.68 (0.98)
Affect	3.1 (0.9)	3.3** (0.8)	3.3 (0.8)	3.2 (0.9)