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Cognitive Complexity through Collaboration in Argumentative Student Blogs

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Abstract

In order to investigate instructional planning strategies that impact student improvement in argumentative writing, the teacher-as-researcher implemented an Integrated Writing intervention (MacArthur, Graham, & Schwartz, 1993) in a seventh grade urban school classroom. Utilizing a mixed methods action research study, the teacher-researcher collected both qualitative and quantitative data during two four-week instructional units that involved status checking, mini-lessons, student writing, peer and teacher conferences, and group sharing of published student writing. Two iterations of data were analyzed for the inclusion of argumentative elements in the students' writing, and data samples were coded for cognitive complexity through analysis of their levels of depth of knowledge (Webb, 2005). This study showed the effectiveness of using the Integrated Writing intervention in promoting students' ability to write effective cognitively complex arguments.

Cognitive Complexity through Collaboration in Argumentative Student Blogs

While the importance of teaching argumentative writing is not new and has its roots in models that espouse clear thinking through the articulation of well-formed claims, evidence, warrants, and rebuttals (Toulmin,1958; Hillocks, 2011), recent data about student performance shows the need for students to improve in their argumentative writing. For example, the results of the 2011 writing assessment for eighth and twelfth graders on the National Assessment of Educational Progress (NAEP) show that a mere 24% of the nation's eighth and twelfth graders performed at the proficient level in writing on this national assessment (NCES, 2011). Local data where this study was conducted likewise indicated the need for district-wide instructional interventions for argumentative writing (Puffer, 2015). Recent local and national curricular efforts to prepare students for college and careers have also indicated the importance of teaching argumentative writing, particularly through the implementation of the Common Core State Standards (2010). The Common Core State Standards (2010) have provided the recommended literacy standards for grades K-12, emphasizing the skills needed to make students ready for post-secondary education or the work force. Four skills identified as vital to the success of students for careers and college were critical thinking, communication, collaboration, and creativity (Partnership for 21st Century Skills, 2007). Argumentative writing was an important shift in the Common Core State Standards (2010) with an emphasis placed on giving students essential 21st century opportunities for learning.

Background

The urban district where the study took place had adopted many new initiatives to address the shifts in the Common Core State Standards (2010); however, a significant decline in

writing scores had been recorded in the district. Results noted on the school's strategic school profile demonstrated improvements in reading; however, writing scores continued to decline, signaling the district to look for initiatives to improve student writing. For instance, beginning with the performance of seventh-graders, 60.4% of students scored proficient in reading, while a mere 39.9% of students in the district scored proficient in writing (CT Online Reports, 2012). Puffer's (2015) reports about the Smarter Balanced Assessment scores noted that "26% percent of city students reached targets in the 'English/Language Arts' portion of the test taken last school year" (p. B1). Local data reflected that the urban district for the site of this study was significantly behind the state average. These scores signaled the importance of a change in instructional practices for teaching argumentative writing.

Purpose

The teacher-as-researcher in this action research study implemented a new technology-based curriculum with instructional strategies that were designed to improve students' argumentative writing. Thus, the purpose of this action research study was to investigate those instructional skills and strategies using the Integrated Writing intervention (MacArthur, Graham, & Schwartz, 1993) in a seventh grade urban school classroom. A second purpose of this action research study was for the teacher-researcher to improve her own teaching and research praxis.

Research Question

The primary question in this study was, "Does an Integrated Writing intervention positively impact student argumentative writing?"

Theoretical Framework

This study was based on theories about argumentative writing and teacher self-efficacy that emphasized teacher planning and reflection to refine instruction. Utilizing sociocultural learning theory (Vygotsky, 1978) and social cognitive theory (Bandura, 1977, 2001), the teacher-as-researcher formulated the research question and the study design. Bandura's (1986, 1993) focus on self-efficacy showed that self-reflection is the capstone to improving self-efficacy (Bandura, 1986). According to Bandura (1986), people with a strong sense of self-efficacy see tasks they cannot do as challenges, not threats, with four factors influencing efficacy: mastery experience, vicarious experience, verbal persuasion, and somatic and emotional states.

The Integrated Writing intervention model (MacArthur, Graham & Schwartz, 1993) was chosen for this study because it incorporated collaboration, writing, and reflection. The process of the integrated writing implementation follows a daily structure of classroom lessons for students with and without disabilities in writing. Wright (2006) describes the intervention as the following:

> Student writing is regularly shared with classmates and the instructor, with these audiences creating a sustaining social context to motivate and support the writer. Students receive instruction and feedback in an interactive manner, presented both in lecture format and through writing conferences with classmates. Technology (particularly computer word processing) is harnessed to help the writing disabled student to be more productive and to make use of software writing tools to extend his or her own capabilities in written expression. (p. 2)

To guide teacher-student conferences, the teacher-researcher created an Argumentative Checklist based on three epistemologies in argumentative writing instruction, involving structural, ideational, and social practice epistemologies (Newell, Van Der Heide, & Olsen, 2014) and the standards from the Common Core State Standards (2010). The instructional focus for each of these involved developing a coherent essay structure as an argument (structural), developing original ideas that are explored and justified through argument (ideational), and developing a projected or imagined social context with a "real" audience that anticipates an argument (social practice).

Research Method

Participants

The participants were from a seventh-grade middle school classroom and chosen out of a convenience sample; the researcher was the teacher in the classroom. There were eighteen student participants selected for the study. The students were grouped heterogeneously, none identified as eligible for special education services. The site for this study was a general education urban middle school located in the Northeast with a total enrollment of 1206 students; 85.4% students were eligible for free and reduced lunch. The middle school was divided into three houses; each house had sixth to eighth grade students. Each teaching team had a social studies, science and math teacher, and two reading and language arts teachers instructing the students in a ninety-minute block.

Procedure

The teacher-researcher instructed students during two, four-week argumentative units with the Integrated Writing intervention. The Integrated Writing intervention (MacArthur,

Graham & Schwartz, 1993) involved five steps to instructing writing: (a) status-checking, (b)

mini-lessons, (c) student writing, (d) peer and teacher conferences, and (e) group sharing of

publishing. Integrated writing follows a specific, daily structure of classroom lessons for

students with and without disabilities in writing.

Figure 1

Intervention Revision
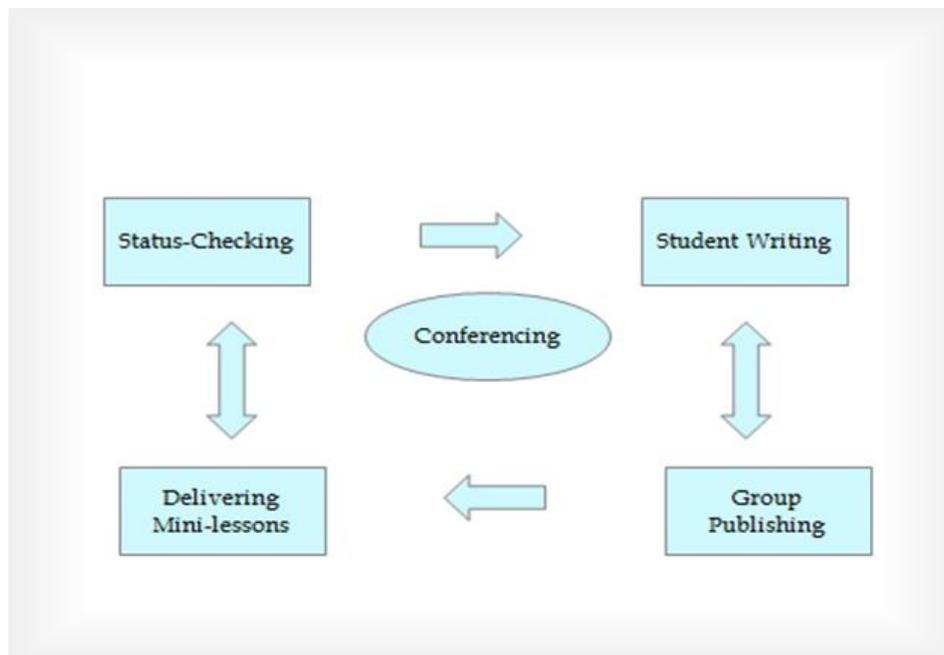
Laptops in the classroom were secured through grant funding. Therefore, students were

able to utilize KidBlog as a way to connect to each other in an online environment. The students

in the sample responded weekly to their peers' blogs by leaving a blog comment on their peer's

blog. The teacher-researcher recorded student inclusion of argumentative elements in weekly

student blogs during two iterations of research. Students read authentic texts in the classroom and responded to the week's essential question.

Quantitative data was tracked on a researcher-created checklist with the categories from the Common Core State Standards (2010) to measure student inclusion of argumentative elements in the students' argumentative blogs. The theoretical themes (Glaser, 1978) that the teacher-researcher used for coding the blogs and blog comments were derived from the language of the Common Core State Standards (2010). The checklist reflected the Depth of Knowledge (Webb, 2006) level 4 continuum, which included designing-creating, connecting, synthesizing, applying concepts, critiquing, analyzing, and proving. All of these are essential in writing cognitively complex arguments. Descriptive statistics (Hendricks, 2013) were also employed.

This was a mixed methods action research study involving two four-week iterations. The components of the intervention package were revised after the teacher's deep reflection to Iteration 1. During Iteration 2, conferences became the center of the intervention and tied the status-checks, mini-lessons, student writing and group sharing together. The teacher embedded the components of the intervention package in order to seamlessly connect them; the teacher placed importance on the student drafting and revision process.

Results

Iteration 1

As noted in Table 1, student writing showed the highest frequencies for claims and for warrants based in evidence with frequencies ranging from 83% to 100%. The lowest frequencies after four weeks of instruction were in the ideational category (17%).

Table 1

Argumentative Element Frequencies, Iteration 1

	Week 1	Week 2	Week 3	Week 4
Structural				
Introduction to the topic	67%	39%	94%	83%
Claim	100%	95%	100%	94%
Warrant based in evidence	94%	83%	100%	83%
Analysis of evidence	72%	61%	94%	72%
Rebuttal	44%	61%	100%	78%
Cite appropriately	28%	17%	50%	78%
Transition words	44%	44%	94%	72%
Use of argumentative vocabulary	33%	50%	94%	72%
Use of multiple sources	44%	83%	94%	72%
Conclusion	44%	83%	94%	72%
Ideational				
Explore your own idea	28%	.06%	33%	17%
Use evidence to back up your idea	17%	0%	28%	17%
More than one source	44%	0%	28%	17%
Tie your idea to the authors	11%	0%	28%	17%
Social Practice				
Recognize your audience	61%	100%	78%	83%
Comment on peers' blogs	100%	100%	78%	83%
Use evidence to support counter arguments	61%	61%	78%	72%

Iteration 2

As noted in Table 2, after an additional four weeks of the intervention, based on the

revision, the categories noted above improved. The category of "claims" had frequencies of

100%, "warrants" rose to 100%, and all of the ideational categories rose, with "explore your own

idea" having a fourth week frequency of 100%, "use evidence to back up your idea" having a

fourth frequency of 89%, "more than once source" having a fourth week frequency of 89%, and

"tie your idea to the author's" having a fourth week frequency of 89%. The social practice

categories also rose to 100% for "recognize your audience" and "comment on peer's blogs;"

"use evidence to support counter arguments" also rose to 75%.

Table 2

Argumentative Element Frequencies, Iteration 2

	Week 1	Week 2	Week 3	Week 4
Structural				
Introduction to the topic	94%	100%	100%	100%
Claim	100%	100%	100%	100%
Warrant based in evidence	100%	100%	100%	100%
Analysis of evidence	89%	94%	100%	100%
Rebuttal	100%	100%	100%	100%
Cite appropriately	83%	94%	94%	100%
Transition words	100%	100%	100%	100%
Use of argumentative vocabulary	100%	100%	100%	100%
Use of multiple sources	100%	100%	100%	100%
Conclusion	67%	61%	83%	89%
Ideational				
Explore your own idea	94%	78%	100%	100%
Use evidence to back up your idea	72%	56%	89%	89%
More than one source	44%	56%	83%	89%
Tie your idea to the author's	67%	56%	83%	89%
Social Practice				
Recognize your audience	100%	100%	100%	100%
Comment on peers' blogs	100%	100%	100%	100%
Use evidence to support counter arguments	72%	72%	50%	75%

Iteration 1

As noted in Table 3, week 4 results showed that students had most difficulty with the

ideational categories since the frequencies for "connect" and "synthesize" were 17%. Students

exhibited difficulty in these two categories for all four weeks of Iteration 1. Students did not

show much improvement over four weeks in the structural category; for instance, for "design-

create" the frequencies remaining the same at 67% for week one and week four; the frequencies

for "analyze" remained the same at 72% for week one and week four. There was moderate

improvement from week one (83%) to week four (90%) for "apply concepts." The most growth

was shown in the category of "prove," changing from 44% for week one to 72% for week four.

Table 3

Frequencies for Cognitive Complexity, Iteration 1

	Week 1	Week 2	Week 3	Week 4
Structural				
Design/Create	67%	70%	67%	67%
Apply Concepts	83%	85%	90%	90%
Analyze	72%	61%	94%	72%
Prove	44%	83%	94%	72%
Ideational				
Connect	11%	0%	28%	17%
Synthesize	17%	0%	28%	17%
Social Practice				
Critique	61%	61%	78%	72%

Iteration 2

As noted in Table 4, by the end of the fourth week of instruction, students' writing in the ideational categories showed improvement with frequencies rising to 89%. All categories showed frequencies by the fourth week rising above 75%, with those in the structural categories rising to 100% for design/create, apply concepts, and analyze. In the category of social practice frequencies rose from week one (72%) for "critique" to 75% for week four. In contrast to Iteration 1 there was much improvement in the Iteration 2 categories for cognitive complexity.

Table 4

Frequencies for Cognitive Complexity, Iteration 2

	Week 1	Week 2	Week 3	Week 4
Structural				
Design/Create	94%	100%	100%	100%
Apply Concepts	85%	90%	90%	100%
Analyze	89%	94%	100%	100%
Prove	67%	61%	83%	89%
Ideational				
Connect	67%	56%	83%	89%
Synthesize	72%	56%	89%	89%
Social Practice				
Critique	72%	72%	50%	75%

Discussion

The results indicated improvement in student inclusion of argumentative elements after a revision to the intervention instruction after Iteration 1, particularly for the ideational categories. The results indicate that the Integrated Writing intervention was effective in improving students' argumentative writing. A key difference, however, between Iteration 1 and Interation 2 was the emphasis of collaboration and conferencing to support students' writing. The feedback that the students gained from the teacher and from their peers helped the students in writing more effective argumentative essays. In addition, the cognitive complexity of the students' writing

increased, as evidenced by data from week 4 of Iteration 2. However, it should be noted that a limitation in interpreting the results of this study is the small convenience sample; it is difficult to generalize the findings based on the population of the students at the research site, and additional studies would need to be conducted with larger populations in other demographic sites to see if similar conclusions can be drawn. However, for this population students expressed that collaboration was essential to their learning processes.

In conclusion, the intended impact of this study was the improvement in instruction of argumentative writing and the growth of demonstrated student inclusion of argumentative elements, as evident in measures on the argumentative checklist; this was clearly demonstrated through the Integrated Writing intervention and the use of online technologies for teaching writing in middle grade classrooms.

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