Exploring the Correlation Between Ideation Confidence and Motivation and Its Effect on Writing Proficiency

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Abstract

This quasi-experimental research investigated the impact of collaborative writing activities on improving writing performance among college-bound twelfth grade students. The study's key finding demonstrated a statistically significant improvement in participant writing proficiency from pre-treatment to post-treatment assessments among students who self-reported motivation for writing as moderate or high. Collaborative writing activities focused on honing student motivation and building ideation confidence appears to be a beneficial pedagogical tool that enhances overall writing proficiency. Closing the achievement gap has been an emphasis in secondary educational research since 2001 as writing has become more prominent in the language arts curriculum. However, more needs to be done regarding research and policy to address the identified lack of preparedness of college-bound seniors in college and career-ready writing. This research shows that collaborative writing pedagogy can increase student motivation while bolstering the confidence in ideation necessary to be successful at the post-secondary level.

Keywords: writing, self-efficacy, ideation, process writing, motivation, active systems theory, pedagogy

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Introduction

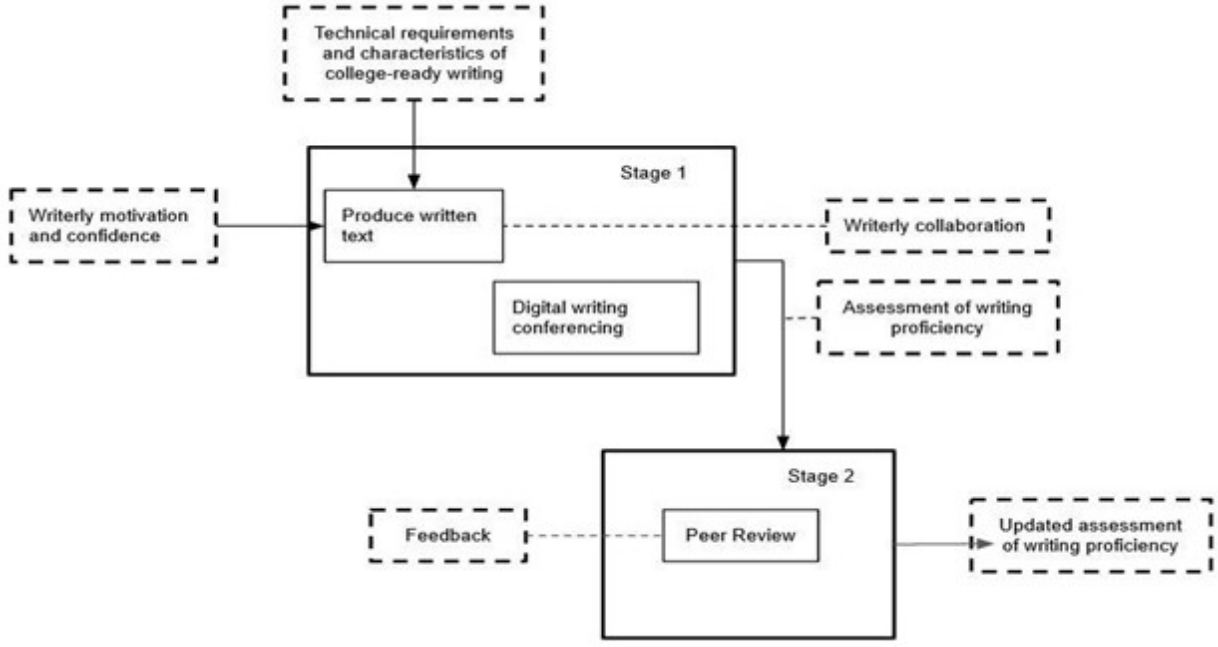
Research has emphasized that students come to class with various experiences and perspectives to shape writing outcomes (Zimmerman & Schunk, 2011). Confidence in writing ideation is a writer's belief about their abilities to generate ideas. The generation of ideas is a foundational part of the writing process (Langacker, 2008) and involves the ability to develop the content and ordering of thoughts necessary to communicate proficiently. More recent literature has focused on the importance of student motivation in prompting and nurturing more self-regulated learning in educational settings (Frankel et al., 2018). Students gain motivation and understanding of expectations and desired outcomes when actively involved in learning (McConlogue, 2020). Progressing from acclimation to competence in the domain of writing occurs from changes in students' motivation for writing (Graham et al., 2017), with writing development advancing as students become more motivated to write.

Methodology

Systems theory evaluates the interrelatedness of things—the process of resources, behaviors, or functions transforming to a product, service, or other measurable outcome—as a relationship established among a subject, object, and tool(s). Active systems theory (Engeström, 1999) emphasizes that how something is learned is part of what is learned and has a measurable effect on learning outcomes. It is most effective for students in a truly collaborative writing community to take on multiple roles: author or coauthor, observer or reader, and reviewer. The V.A. Trapeznikov Institute of Control Sciences developed an active systems approach for evaluating an object based on pairing and comparing a set of determined parameters (Zheglova & Titarenko, 2020); Figure 1 shows their algorithm adapted for this research.

Figure 1

Assessment Algorithm Based on Active Systems Theory



Systems theory has been refined and reinvented since its formal introduction in 1954. Several theorists of the 1920s viewed the whole as the sum of its parts, an open system regulating its internal environment to maintain its stability (Bohr, 1928; Cannon, 1929; Smuts, 1926). Communication and feedback among the parts of a system were further refined in the 1930s and 1940s to assist with application and recall (Ashby, 1947; Rosenblueth et al., 1943; Shannon, 1948). Simon (1955, 1956) and Nagel (1961) defined *systems theory* as a set of rules for modeling, or a logical skeleton to supply structure. Giere (1988) used systems theory to link the real world through hypotheses.

Interaction design is the intentional design of spaces for human communication and interaction (Bales, 2001). It is especially relevant in the context of technology-supported collaborative learning in the writing curriculum. Systems theory aligns with the general premise of interaction design in that it focuses on human activity with technology rather than focusing on the computer (Kaptelinin & Nardi, 2007). Applying systems theory in concrete educational research typically requires intermediate concepts, such as activity, to be applied as a lens to analyze the learner and the learning tool (Gedera & Williams, 2016).

Previous writing-based research has appropriately incorporated systems theory for pre- and post-test methodology in digital writing pedagogy to explore whether schema-oriented teaching improves students' writing proficiency (Engeström, 1999; McAvinia, 2016; Ritzer & Stepnisky, 2018; Sun, 2014). Cho and Ma (2020) similarly examined the effects of schema activation and strategy instruction on student comprehension, strategy use, motivation, and learner beliefs in a technology-rich learning environment. Their results showed that schema building and strategy implementation yielded positive results.

In Week 1 (i.e., pretreatment) of this 6-week study, participants completed a survey of motivation and confidence for ideation (see Table 1) before composing a pretreatment assessment of writing. I used released standardized prompts from a state assessment of writing to assess writing proficiency, and a pair of outside graders employed a peer-reviewed rubric to ensure validity and reliability.

Table 1

Self-Efficacy for Writing Scale

Confidence for Ideation	**Pre-Test**	**Post-Test**
I can think of many ideas for my writing	67	68
I can put my ideas into writing	69	70
I can think of many words to describe my ideas	63	68
I can think of a lot of original ideas	64	67
I know exactly where to place my ideas in my writing	49	60
Motivation for Writing	**Pre-Test**	**Post-Test**
I enjoy writing	3.3	3.3
I think it is very useful for me to write	3.8	3.9
It's fun to write	3.1	3.1
I think writing is meaningful	4.3	4.3
I think writing is interesting	3.5	3.5
It is important to me to write	3.2	3.5
I think writing is fascinating	2.8	3.0

Note. Adapted from "*Self-Efficacy for Writing Scale,*" by M. Dempsey, D. Kauffman, C. McKim, S. Zumbrunn, & R. Bruning, 2010, *Journal of Educational Psychology*, *105*(1), p. 25 https://doi.org/10.1037/a0029692

During Weeks 2–5 (i.e., tasks/treatment) of this 6-week study, participants actively engaged in four collaborative process writing pedagogy iterations. These cycles included direct instruction, collaborating, drafting, revising and editing, corroboration, and publishing.

The survey of motivation and confidence for ideation was administered again in Week 6 (i.e., posttreatment) of this 6-week study, followed by a posttreatment writing assessment. A pair of outside graders assessed writing proficiency using the same peer-reviewed rubric to ensure validity and reliability.

Results

This study of 53 upper level (juniors and seniors) honors English students sought to determine what relationship, if any, existed among student motivation, confidence for ideation in writing, and writing proficiency. The focus of this research was raising writing scores from non-proficient (specifically, "approaches expectations," scoring 6–10) to proficient ("meets expectations," scoring 11–15; or "exceeds expectations," scoring 16–20). All students who went from approaching expectations to either meeting or exceeding expectations ($n = 11$) saw a mean increase in ideation for writing (3.5) with no change in motivation (3.2); see Table 2.

Table 2
Motivation and Ideation Variables for Improved Writing Performance

Student	Pre-Writing	Motivation	Motivation Δ	Ideation Δ	Writing Δ
1307	8	4			+4
1308	10	3			+1
1309	6	3		+8	+4
1313	10	4	+1	+4	+1
1316	6	3		+14	+8
1402	8	2		+4	+4
1404	9	3	−1	−10	+3
1406	6	3		+14	+7
1418	10	3		+8	+8
1420	6	3		−2	+5
2108	9	4		−2	+3

All proficient students who saw no score change between pre- and post-writing ($n = 9$) saw a mean increase in ideation (3.3) with no significant change in motivation (.4). Similarly, all proficient writers who saw a score decrease pre- to post-writing ($n = 7$) saw a mean increase in ideation (4.2) with no significant change in motivation (.3). Of those students with negative change, 3 students scored "exceeds expectations" (19 or 20) on both pre- and post-writing assignment. Regression to the mean - the statistical fact that an individual who scores extremely well on one occasion will tend to score less extremely on the next occasion - could account for this score decline more than a legitimate change in student proficiency pre- to post-write.

In the sample, the average post-treatment self-efficacy score, $se = 70.95$, was higher than the pre-treatment self-efficacy score, $se = 68.66$. Furthermore, the difference between the two averages, $-2.287, 95\%\ CI\ [-4.728, .1538]$, was statistically significant, $(49) = -1.883$, $p = .033$. Similarly, the average post-treatment motivation score, $m = 3.17$, was higher than the pre-treatment motivation score, $m = 3.03$, and the difference between the two

averages, $-.139, 95\%\ CI\ [-.2639, -.0152]$, was also statistically significant, $(52) = -2.253, p = .014$; see Table 3.

Table 3
Mean Differences in Academic Self-Efficacy and Motivation Following Treatment

Pair	Mean	Std. Dev.	St. Err.	95% CI	t	df	One-Sided p
PreSE - PostSE	−2.2875	8.59028	1.21485	(−4.728) .1538)	−1.883	49	.033
PreM - PostM	−.13962	.45121	.06198	(−.263, −.015)	−2.253	52	.014

Note. PreSE stands for pre-treatment Self-Efficacy, PostSE stands for post-treatment Self-Efficacy. PreM stands for pre-treatment Motivation, PostM stands for post-treatment Motivation. Std. Dev. stands for the standard deviation, Std. Err. is the standard error mean, CI is the confidence interval, t represents the t-value, and df represents the degree of freedom.

Discussion

Myriad studies have evaluated the effects of pedagogy, curriculum, and classroom modality on writing quality (Aminloo, 2013; Biria & Jafari, 2013; Shehadeh, 2011; Storch, 2005; Sutherland & Topping, 1999) and writing fluency (Kim, 2019; Pham et al., 2019; Storch, 2011; Zabihi et al., 2013) and research on writing performance, writing self-regulation, and writing self-efficacy has been primarily limited to language learners (Zheng et al., 2021). Collaborative writing activities help students identify and address gaps in their writing performance (Rahimi & Fathi, 2022), and the findings of this research showed a statistically significant ($p < .05$) increase in participant writing proficiency pre- to post-treatment.

The only subgroup to score below the 1.5 average increase in writing proficiency was those students who finished with a motivation score of 2 or lower (out of 5); this group saw an increase in proficiency of only 1.2 despite an incredibly high change in ideation (14.4). Similarly, of the seven students who started the study with a motivation score of 4 or higher (out of 5), all but 2 saw in increase in post-writing proficiency; furthermore, four of those five students saw an increase of at least 3 points. These students also saw gains in ideation (5.4).

A Pearson's r value of 0.505 indicates a positive linear correlation between increased ideation and increased writing proficiency among participants reporting at least average (3) motivation. There was also a moderate, positive linear relationship ($r = 0.481$) between student motivation and confidence for ideation in writing, suggesting that as one variable increases, the other tends to increase. Further analysis revealed that initial motivation for writing affects both writing proficiency and self-efficacy for ideation, while changes in motivation had no correlation to changes in ideation or writing proficiency.

In a similar study providing evidence-based support for the importance of promoting students' self-efficacy, Zheng (2021) examined these variables or their interrelationships as predictors of undergraduate medical students' learning outcomes in the context of flipped learning. On average, students scored highest on self-efficacy (mean = 5 out of a possible 7), followed by intrinsic motivation (mean = 4.59). Their results suggest that, while there was a direct effect of self-efficacy on learning outcomes, academic motivation did not mediate it. By unpacking the structural relationships among self-efficacy, academic motivation, and learning outcomes,

($n = 146$) their findings seem to echo that student motivation at the onset of a learning task is necessary to increase both confidence and proficiency.

Conclusion

This research seems to drive the conversation from the sphere of pedagogy to policy. If initial motivation for writing is indeed indicative of the prospect of increasing student self-efficacy for ideation and eventually writing proficiency, then more must be done in the formative years of literacy instruction to build student motivation in writing. According to Mary Wennersten (2019), third grade is the single most important year of a student's academic success because that "is the year that students move from learning to read—decoding words using their knowledge of the alphabet—to reading to learn." How impactful would the results be is this approach honed in on all elements of literacy – including writing – to help students foster ability in critical thinking and ideation, reading and writing to learn, and an overall motivation for both the input and output sides of literacy.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that no AI or AI-assisted technologies have been used to generate, refine, or correct the content in the manuscript. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

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