

The Effects of Student Reflection on Academic Performance and Motivation

SAGE Open
July-September 2017; 1–13
© The Author(s) 2017
DOI: 10.1177/2158244017733790
journals.sagepub.com/home/sgo


Derek Cavilla^{1,2}

Abstract

Building upon reflection as a tool for enhanced metacognition, the researcher postulated that a positive correlation would exist between application of a reflection instrument and students' level of academic performance and motivation in an urban high school English class. A statistically insignificant correlation was found between either construct; however, qualitative analysis provides implications for teachers on the power of student reflection. Foremost, reflective activities do not appear to detract from academic performance nor have a negative correlation with student motivation. Furthermore, reflective activities in the short term appear to affect students on an affective level rather than a cognitive level.

Keywords

reflection, motivation, metacognition, underserved students, affective development

Diamonds are my business. However, my mine is long abandoned and well worn. Long gone are the fancy machines, sparkling tools, and multitude of workers who once labored to discover the sparkling gems that lie beneath. Now, all that is left are myself and the hard to find diamonds—the ones that take excruciating effort to locate, yet are still highly valuable once they are finally discovered and polished. My tools are limited. Fancy equipment and influx of supplies are a distant memory; therefore, I rely on ingenuity and, perhaps most importantly, my mind to reveal the treasures that were left behind in the rapidity and oversight of my predecessors. Of course, the diamonds I am referring to are carbon based, but they are not the gems that adorn the fingers and necks of other people—they are people; students to be exact. However, these students, much like the remnants left behind in an abandoned mine, struggle to be recognized for both their beauty and potential for success. As their teacher, I often feel like the lone miner who has unlimited access to their abandoned prize, and although it can be a difficult challenge to uncover and polish the gems that are locked deep within the earth, the feeling of zeal and passion when one is discovered is second to none.

In a world of equitable education for all, it is surprising that these students have been relegated to near abandonment. While their dominant culture or high aptitude peers have been transitioned into college bound tracks and advanced courses, these students have simply slipped into despair due to a quagmire of issues: learning disabilities, low-socioeconomic status, broken homes, behavioral struggles, constant moving between schools, and interactions with teachers who are either unprepared to meet their individual needs or frustrated with their constant need for remediation, both academically

and affectively. Consequently, our system's most struggling students are often passed along without the requisite skills needed to succeed in life or are simply cast off just like the diamonds in the mine whose cost to extract outweighs their perceived value in the open market. However, the fact that their inherent value has not been initially recognized is not always cause for alarm because there are prospectors among us who are always on the hunt to discover the jewel that still lies within each and every one of these students: the potential to become empowered members of society through access and support within our educational system.

As a teacher within fragile populations, I have noticed that many of my students lack the motivation to complete assignments or display a lack of confidence in their academic abilities. However, what is most interesting to me is that my students are far more capable than they perceive themselves to be. When probed about the disconnect between their potential and their actual performance, many of my students explain that they have been told in the past that they are sub-par or have been made to feel like failures due to constant comparison with other students. Consequently, their motivation to complete work wanes because they feel inadequate and their perspective on their abilities is skewed due to a lack of feedback or positive attention. This, combined with the general apathy and lack of motivation often seen among high

¹Public Charter School, Orlando, FL, USA

²University of Central Florida, Orlando, USA

Corresponding Author:

Derek Cavilla, Adjunct Instructor, University of Central Florida, Orlando, FL, USA.

Email: cavilla101@mac.com



school students who are near graduation, is highly problematic for both the student and the teacher because precious learning time and opportunities are being lost at a critical stage in life—a time when youth are making the transition to adulthood and must be prepared to enter either an institution of higher learning, the military, or the workforce.

This conundrum is the basis for my study. In wondering how I could improve overall student motivation and self-concept, I honed in on the idea of reflection as a tool not only to enhance students' affective psyche, but their academic performance as well. As a passionate and caring teacher, I take extra time to provide my students with feedback on all their assignments and am sure to point out the positive aspects of their work and efforts in my class. This is an anomaly for many of my students and, at first, they are often unsure if the grades and feedback they are receiving are honest and accurate. Over time, they begin to realize that they have significant talent and skills; however, until this realization is internalized and reinforced on an intrapersonal level, there is a possibility for relapse and regression. Therefore, it is my hope that the introduction of a mandatory, structured reflection as part of assignments in my class will yield positive results in the form of less missing assignments and improved performance on academic tasks. Asking students to examine their own efforts on assignments as well as requiring them to formally state their rationale for completing or choosing not to complete activities through reflection will provide them with the personal insight and intrapersonal cognition that is required for success not only in the educational arena, but in professional and higher education settings as well.

A significant amount of research and resources regarding reflection are focused on *teachers*, not students, and have more prevalence either in contexts outside of education, such as in Mountford and Rogers's (1996) study on the use of reflection in nursing, or in institutions of higher education, such as Yost, Sentner, and Forlenza-Bailey's (2000) notion of reflection as the primary component of an effective teacher, rather than in primary or secondary school settings. In addition, while reflection could be seen as a type of self-evaluation, my action research is not focused on students' actual ability to evaluate their own work. Rather, students are asked to reflect on their perceived effort and to gauge their overall performance of the task at hand, a concept discussed and clarified by Kritt (1993) as metacognition or thinking about one's own thinking. While metacognition is a construct too large to review in the context of this study, research indicates that students with higher metacognitive ability are often more successful than those who lack this skill (Sperling, Richmond, Ramsay, & Klapp, 2012). Therefore, the purpose of this study is not to focus on the benefit of teacher reflection or the use of reflection as self-evaluation, but rather on *reflection as a tool* for improved student metacognitive practices and academic performance as previously investigated with success by Ash, Clayton, and Atkinson (2005); Lew and

Schmidt (2011); and—as specifically examined for underserved high school populations such as the context for this study—Cleary, Platten, and Nelson (2008). This focus culminates in the research question for this study:

Research Question 1: To what extent does student reflection correlate with academic achievement and motivation to complete assignments for underserved students in 11th- and 12th-grade English?

Review of Literature

The goal of this study is to determine if a correlation exists between student self-reflection and academic performance and motivation. This review of literature will serve to inform the following aspects of my research: how reflection is defined, how reflection has evolved over time, what previous research has discovered regarding any potential connections between student self-reflection and academic performance and motivation, as well as the implications for teachers who may or may not currently be utilizing reflective exercises in their own classrooms. As discussed by Yancey (1998), “[i]f we don’t ask our students to [reflect on] their own work—a process based on internal factors and criteria—they are likely to [remain] dependent on external rewards, now knowing where to begin to consider their own performance” (p. 14). Moreover, students who are explicitly taught metacognitive activities, such as written self-reflection, tend to be more highly engaged in their school work as well as maintain higher levels of academic proficiency (McCormick, Dimmitt, & Sullivan, 2013).

While reflection could be seen as a type of self-evaluation, my research was not focused on students' actual ability to evaluate their own work. Rather, they were asked to reflect on their perceived effort and to gauge their overall performance of the task at hand. Therefore, the articles presented below do not involve the concept of reflection as self-evaluation, but rather reflection as a tool for improved metacognitive practices to effectively enhance overall academic motivation and performance. The following review of literature will guide the reader through (a) the history and rationale for integration of reflective thinking, (b) definitions and concepts of student self-reflection as they relate to education, (c) the potential benefits of integrating reflective activities into the classroom, (d) specific studies that support these benefits, and (e) the implications for teachers to create action to make reflection a part of their day-to-day classroom routines. Therefore, to provide a holistic rationale and review, literature has been included from the educational, professional, and international arenas. For purposes of this study, as well as the context for this review of literature, the definition of reflection provided by Webb and Scoular (2011) will be utilized:

Reflective learners

1. [I]dentify . . . opportunities and achievements
2. [S]et goals with steps to achieve them
3. Review progress, act . . . on outcomes[,] [and] . . . check how things are going and take action
4. Ask for feedback and advice; respond positively to feedback and advice
5. Evaluate experiences and learning to inform future progress
6. Communicate about their learning

The History and Rationale for Integration of Reflective Thinking

The foundations of reflection as a tool for learning began not within the walls of a primary or secondary classroom, but outside of the realm of education altogether. For example, Mountford and Rogers (1996) conducted research on the use of individual and group reflection as a tool for effective learning for nurses and claim,

formal reflection was seen as a learning strategy to influence positively students' educational outcomes and professional practice via six key factors[:] . . . academic self concept, . . . task awareness . . . views of knowledge, . . . the influence of knowledge on behavior, . . . writing as a learning activity, and . . . generating knowledge by reflecting in and on assessment with discussion. (p. 1127)

While this study focused on a field outside of education, the idea of academic self-concept and task awareness are of particular interest to education. The study relays that "when someone's self-concept matches what they really think, feel and do, they are able to realize their full potential" (Rogers in Mountford and Rogers, 1996, p. 1128). Regarding the idea of task analysis, the researchers point to Dewey (1933) who asserted,

being responsible and taking control of one's own education and practice as essential attributes for success. Task awareness is just as much a part of education as it is a part of practice. Students who are active in constructing meaning from their educational tasks . . . are more successful, especially in the long term. (Mountford & Rogers, 1996, p. 1129)

Given this close connection to the idea of reflection in education, it is no surprise that later research focused on the idea of teacher preparation programs working to develop more reflective educators.

The Journal of Teacher Education (Yost et al., 2000) refers back to Dewey, who felt the most important quality of a teacher was critical reflection. The authors relay that

a reflective/analytic teacher is one who makes teaching decisions on the basis of conscious awareness and careful consideration of the assumptions on which the decision are based[.]. . . The end result of critical reflection for the individual is cognitive change. (Yost et al., 2000, p. 41)

This focus on the importance of reflection for the educator is what spurred so many colleges of education, perhaps including our own, to infuse high levels of reflective thinking and practice within the pedagogy of the teachers that they are training. Yost et al. (2000) wrote, "we believe that teacher education programs must designate critical reflection as a primary mission and interweave reflection throughout the teacher education curriculum" (p. 41). Consequently, it is logical to assert that the more reflective the teacher, the more teachers will imbue reflective thinking within the curriculum for their students, which is a primary focus of my own study. Despite the focus on developing a reflective teacher and the lack of research on student-centered reflection, one area of focus that prior research felt would benefit from infusion of reflection was the area of service learning.

Ogden and Claus (1997) discussed the "burgeoning service learning movement" of the 1990s and relay the importance of reflection among student participants to avert relegating service learning projects to a mere "superficial addition" to the school curriculum (p. 72). The authors relay,

the experiential education and service learning literature makes clear that reflection is the central way in which we process experience into learning. Reflection contributes to understanding and generalization, and it becomes the cornerstone to developing a more thoughtful and intentional pursuit of future action. (Ogden & Claus, 1997, p. 72)

This concept of processing experience into meaningful learning and understanding is not isolated to service learning; in fact, it is the basic tenet for why reflection ultimately developed into a core principle for preservice teachers as well as deemed beneficial for students across all subjects of the curriculum. Therefore, before we are able to examine the prospective benefits of the induction of reflective thinking into the curriculum, or delve into actual studies surrounding this topic, it is essential to canvass the rationale for its development and integration in the first place.

Definitions and Concepts of Student Self-Reflection as They Relate to Education

Yancey (1998) relayed that many teachers see reflection activities as student self-evaluation and that many students are reticent to participate in self-assessment because they "see that kind of judgment as belonging to the teacher" (p. 13). However, the same study is clear to assert that to transition students from external to intrinsic motivation to succeed, reflection must be integrated and embraced within the classroom. Therefore, while reflection does not need to take the place of a teacher's assessment, it can be infused as part of an activity to enhance student performance because, if students are "makers of meaning," their own thoughts and interpretation of their work and its overall impact "have to be part of the mix" (Yancey, 1998, p. 17). All in all, the most compelling issue related to prior research in the use of reflective

thinking is its inherent power to enhance outcomes—particularly in combination or support of metacognition and/or critical thinking (Ford & Yore, 2012). From professional fields outside of education, to teachers, to students, the power of reflection is evident; however, its integration into the curriculum must be intentional and well planned to have maximum effect.

This mirrors the position taken by Kritt (1993) who relayed, “by about fifth grade children begin to have metacognitive ability sufficient to realize when they are not understanding something. . . . [T]hey could use this knowledge to monitor their own behavior” (p. 44). This connection to learning theory and affective development is crucial and implies that reflection could be an appropriate self-monitoring tool in both primary and secondary grades. This infusion of self-discipline and ability to think about the approach used to complete an academic task is critical to achievement and motivation; Kritt (1993) concluded that

developing a concept of oneself as a thinking person requires opportunities to engage the range of one’s abilities and guidance in recognizing one’s strengths and weaknesses, as well as assistance in figuring out how to play to one’s strengths and minimize weaknesses. (p. 45)

However, the rationale for development and direct instruction of reflective practices is not limited in scope to just the United States.

Russian educational theorists have developed a method for direct instruction of reflection, dubbed Learning Activity, for elementary school students. As discussed by Zuckerman (2004), “when the elementary school curriculum does not foster reflective development, other habits of intellectual work will be cultivated that later limit students motivation for and access to self-learning” (p. 10). Given this tenet, the author presents the Russian viewpoint of reflection, which mirrors what many professional educators may already be doing in their classroom, albeit implicitly. Zuckerman (2004) relayed that concepts such as considering the goals and means of one’s own actions and thoughts as well as the willingness and consideration to take on the views of others are critical to effective educational growth and learning, going as far as to say that direct instruction of reflective thinking can stretch students’ zone of proximal development as postulated by Vygotsky. This is a pivotal idea considering that, the wider a student’s zone of proximal development, the greater the amount of learning that can take place independently once it has been properly scaffolded by the teacher.

A similar consensus was determined by English and Swedish researchers who concluded that student reflection served to enhance “learning as understanding ‘reality’” and ultimately resulting in students’ abilities to “see learning as personally meaningful . . . [and] describe . . . transformation[s] in perceptions of the world before and after learning” (Bednar & Eglin, 2007, p. 46). This analysis builds upon the aforementioned

Russian study and discusses the concept of secondary and post-secondary students using reflection to develop double-loop learning. In this framework, students who have mastered reflective thinking practices move from “‘passing the unit,’ to create a more productive learning spiral in which they gain transferable learning skills” (Bednar & Eglin, 2007, p. 53). These international comparisons serve to illustrate the cross-cultural and humanitarian basis for the benefits of reflection activities in both primary and secondary settings.

The Potential Benefits of Integrating Reflective Activities Into the Classroom

Rusche and Jason (2011) asserted,

critical self-reflection not only improves students’ critical thinking skills but also helps students develop self-knowledge. . . . [It] compels students to interrogate their beliefs and perspectives on reality by acknowledging how they influence, and are influenced by, their social realities. (pp. 339-340)

This sheds light not only on the power of reflection as an academic learning tool, but on the transformative power of its ability to fundamentally change the way students think and perceive their effort, motivation, and ability to complete novel and familiar tasks. In addition to supporting students’ abilities to think about their thinking, the basic principle of metacognition, reflection also allows students affective outlets that can reduce stress and frustration toward the curriculum. As discussed by Rusche and Jason (2011), “giving students an opportunity to ‘write it out’ not only can alleviate some frustration but can significantly deepen their grasp on the material, even when they do not like it or agree with it” (p. 346). Colley, Bilics, and Lerch (2012) took a similarly positive outlook with regard to the power and importance of metacognitive thinking as developed by reflection; they relay, “lifelong learning takes place through reflection. That is, learning begins with metacognition, knowing one’s own thoughts and reflection, which allows the individual to identify factors that influence one’s own thinking” (p. 1). As teachers, we are often tasked with designing or delivering a mere section of the overall curriculum—a grade in primary school or simply a year of a single subject in secondary school. However, the underlying hope is that our impact spans well beyond the 180 days that students spend in our charge. Rather, if students are truly supported through effective instruction as well as empowered for the development of enhanced affective and metacognitive growth, the effect is much longer lasting—perhaps for a student’s entire lifetime (McCormick et al., 2013). As evidenced in the literature, there is a clear rationale for the integration of reflection in the classroom, with Colley et al. (2012) calling it a “key pedagogical strategy . . . [that] develop[s] a realistic sense of efficacy and motivation” (pp. 12-13); however, it is also integral to examine the specific benefits of its implementation.

Student reflection was identified as one of the top six activities to promote student achievement in Maurice Elias's (2010) article titled, "School Climate That Promotes Student Voice." In his article, the author attests that "students should have chances to set some of their own goals, monitor their own progress, have choices in how they show evidence of what they've learned, and share their learning with others" (Elias, 2010, p. 24). This approach seems effective because it helps to create a culture of intrinsic motivation to succeed as well as promotes students' approaches to completing assignments for the sake of growth and learning rather than simply to receive a grade. By encouraging students to express their thoughts and ideas about their performance on academic tasks, we are not only allowing them to analyze their own learning, but are teaching them a skill that reaches far beyond the classroom and into the rest of their adult lives in both professional and social interactions. As summarized by the author of this study, "lasting learning is the results of acts of co-creation in caring contexts, and that is what the pedagogy of student voice provides" (Elias, 2010, p. 22).

A comparable framework was examined by Harford (2008) who passionately relayed, "routine reflection exercises can result in the most exciting and rewarding moments in the classroom . . . [because] reflection reinforces the students' sense of competence and accomplishment while simultaneously helping them recognize their areas of weakness" (pp. 61-62). Again, this sentiment is imperative when discussing the potential impact of reflection as a tool to support student growth because learning is more than memorizing content or moving through the curriculum—It is about helping students to develop the confidence to attempt concepts that may be foreign to them, to persevere in the face of adversity, and to use failure or impasse to deepen the desire to find new approaches to solving problems. When these components are infused with the content of the curriculum, we are no longer moving through learning, we are experiencing intellectual and emotional evolution. In her closing, Harford attests, "engaging in an authentic process of reflection . . . is one of the best ways to ensure buy-in from students across the academic spectrum" (p. 65). This concept of buy-in is critical, especially in today's assessment-driven culture where students may feel the effects of an unintentionally fractured curriculum or propensity to learn simply for the sake of passing state-mandated tests. Consequently, once the culture of reflection is successfully integrated into the classroom or school setting, its effects have shown to be potent—even in an assessment-driven educational culture.

Prior Studies That Support the Benefits of Reflection

Ash et al. (2005) discussed how reflective activities must be intentionally linked to assessment, which is the approach used in my study. To receive a summative evaluation of their

work, my students will have completed and attached a reflection activity to their assignment. Ash et al. (2005) relayed that reflection activities have the potential to improve students' overall academic performance as well as allow teachers to "evaluate the quality of thinking" demonstrated by individual students by "gaining access to their internal thought processes about the activities" (p. 49). This is an important component to consider because it implies the possibility for teachers to unravel the disparity between students' perceived and actual ability levels through execution of reflective interventions. Phan (2008) shared a similar outlook on the value of reflection, but notes that very few studies have looked at its actual impact in the classroom setting; her research tested a structural model that included looking at the classroom environment, achievement goals, and reflective thinking practices. In this study, it was determined that the overall ability of reflective thinking in relation to student achievement relies heavily on the actual classroom environment that it is being implemented in (Phan, 2008, p. 571). Although the overall number of studies that analyze and report findings on the connection between reflection and academic achievement or motivation are limited, there are a few that are noteworthy.

A review from the *Journal of Advanced Academics* supports the specific rationale for my study and focuses on the performance of secondary students in an urban setting, which aligns very well with the situation presented in my research. The authors state,

[i]mpacting the academic performance of high school students . . . is important because of the high-stakes nature . . . relative to their vocational and post-secondary pursuits. . . . Getting students to become more active, strategic participants in their learning . . . is an important pathway to academic success. (Cleary et al., 2008, p. 71)

The authors relay that there is no single intervention that can rectify the poor academic performance seen among today's urban, high school students; however, students in their study did show marked improvement on academic tasks after exposure to a well-structured intervention program involving student reflection. This is promising and posits that future research studies, such as the one presented herein, will allow for greater generalization of findings for urban or high school students in general. Lew and Schmidt (2011) concluded that student reflection through the use of journals resulted in students examining both the process and content of their learning and showed a weak to moderate correlation with improved academic performance. Their findings suggest that students' ability to accurately reflect on their work improves over time, but does not significantly affect their overall performance on work in the classroom (Lew & Schmidt, 2011, p. 540). In addition, the authors relay that, in their experience, self-reflection skills are not easily taught and that the question of whether or not effective student reflection affects

overall performance either positively or negatively is still up for debate. However, rather than abandon the concept of reflection as a tool for enhanced student performance, the authors of this study suggest that further research is needed as well as point out that student reflection may improve student learning in ways that are not measureable by academic achievement (Lew & Schmidt, 2011, p. 540). However, while these studies clearly indicate the power of reflection as a tool for enhanced academic performance, further studies show the relevance for improved metacognition and enhanced motivation to succeed academically by allowing students to recognize and ponder areas of excellence as well as needed improvement (McCormick et al., 2013; Sperling et al., 2012).

Desautel (2009) conducted a study on the effects of reflection in an urban elementary school, very similar to the ethnography of my study, and concluded, “self-reflection serves the goal of constructing metacognitive knowledge by making formerly unconscious, intangible, or reflexive processes or events explicit” (p. 2001). This concept is integral and points out not only the power of reflection but also the need for its meaningful integration into the curriculum. In the current age of assessment-driven culture, many students are forced full of facts, strategies, and procedures, but are often not allowed time for this content to percolate or culminate into synthesis of how to transfer it into other arenas. Therefore, while requiring specific planning and execution time, reflection can help students transfer knowledge and understanding from the subconscious to the conscious part of their psyches. This approach is also supported by Webb and Scouler (2011) whose study revealed, “reflection time helpful for recapping . . . lesson[s] and reinforcing learning. It helped [students] realize what they were doing wrong and what they needed to improve” (p. 479). These studies convey the power of student self-reflection as a learning activity in relation to improved academic performance, motivation, and metacognitive thinking, which mirrors the rationale for this study.

Implications for Teachers

In her article “Practicing the Virtue of Reflection in an Unfamiliar Context,” Birmingham (2003) discussed the model of reflection known as *phronesis*. In this theory, first described by Aristotle in his work *Nicomachean Ethics*,

reflection is not something a teacher does, not a form of knowledge or a thought process, not a rule or a principle, but a moral way of being. The first implication of this model is that reflection is more than relevant to moral issues; reflection is *essentially* moral. (Birmingham, 2003, p. 189)

The study continues to describe the definition of *phronesis* as “practical wisdom” and “the virtue of thought that permits correct reasoning in decisions that involve virtues of

character” (Birmingham, 2003, p. 190). Connecting Aristotle’s concept of *phronesis* back to Dewey, Birmingham (2003) relayed the three virtues of character, or attitudes that he considered essential for reflection: wholeheartedness, open-mindedness, and responsibility (p. 192). The idea of reflection as a tool for morality and ethics supports a study conducted by Sunstein (1998) who implemented reflection as a way to prelude students’ propensity for plagiarism in her classroom. After asking students to reflect on their actions and intentions for assignments, the value and importance of reflection as a tool in the classroom became clear; however, the author points out that use of reflection must be intentional and meaningful. She writes,

[v]apid reflection seems, at best, an exercise in self-indulgence[.]. . . Careful, detailed reflection upon one’s own learning, however, is not among the “basic skills” taught in schools[.]. . . [b]ut it is [how] . . . students take stock of learning represented in a given collection of work at a given moment in time. (Sunstein, 1998, p. 40)

This call for meaningful reflection is important and relays that reflective activities must be infused within the curriculum rather than seen as a mandatory add-on or mundane requirement.

While this may take extra planning to incorporate into the curriculum, the benefits are paramount because when students and teachers analyze outcomes and assessments with rigorous questions that demand reflection and reflexivity, everyone involved has the potential to see the true meaning of the assignment at hand (Sunstein, 1998). However, while reflective thinking has become an integral part of both the teacher and his or her student, it is important to delineate the concept of reflection as support for performance and motivation versus being used as an actual self-assessment. Duijnhouwer, Prins, and Stokking (2012) provided a concise definition of reflection as it relates to this study: “a process that starts with the identification of a problem and the decision to seek a solution” (p. 172). Ge and Land in Duijnhouwer et al. (2012) relayed that “instruction that provides students with questions to ask themselves during problem-solving has been shown to enhance performance” (p. 173).

Although existing research on this topic is limited, there does appear to be a positive correlation with student self-reflection and academic performance and motivation. For example, Duijnhouwer et al. (2012) mirrored the anticipated outcome of this study. By asking students to reflect on their assignments to personally explore their true intentions and insight toward their perceived efforts and cognitive growth, rather than as a manner of simply providing a quantitative grade or summative evaluation on their own work, it is my intention to enhance their performance not only academically but affectively as well—thus translating into a correlation not only between reflection and performance but also between reflection and mere motivation to attempt completion of

assignments. Nascent research also asserts that the lines between critical thinking, metacognition, and reflection should be blurred in an effort to promote cohesion and interdependence among these core, yet historically separated constructs, in the classroom (Ford & Yore, 2012).

Method

Site and Participants

The setting for this study is a small high school that was established 9 years ago and operates in the heart of downtown Orlando as a public, Orange County charter school. The school serves only students in the 11th and 12th grades and provides teaching in all core content areas as well as in physical education and business. Of the 242 students who attend the school, 54% are African American, 26% are Hispanic, 18% are Caucasian, and 2% are Asian. The gender balance is fairly equal, with 51% of the student body being female and 49% male; the institution is a Title One school and nearly all the student population comes from working poverty families or underserved communities. The overall school demographics also represent the demographics of the participants of this study due to the fact that, as the sole English teacher at the school, I serve and support more than 95% of the student body in either English III or English IV; the only students who are not in one of my 10 class periods are those who have already completed their English class credits at a previous school. Consequently, this research will reach nearly the entire student body and will provide insight based on the broad range of students served at this institution of learning. Although not an alternative school, the student body presents various challenges that must be overcome by the staff to assist students with graduation, foremost among them academic achievement; the average grade point average (GPA) of students at this school is 1.30. This results in teachers providing a significant focus on the remediation of core skills in reading and math as well as constant socioemotional support to help students gain greater levels of motivation and commitment to their learning and growth. It is the commitment to this goal that served as the impetus for this action research project, although the context of the site and its participants present the following limitations: (a) a relatively small sample size, (b) research and focus in a single subject across only two grade levels, and (c) the integration of a single, self-created student reflection instrument as a tool for the intervention.

Materials and Conceptual Framework

This study began on January 22, 2013, with the introduction of the reflection instrument that was used as an intervention tool (see the appendix) and concluded about 8 weeks later on March 22, 2013, when the final data were collected for analysis. The disconnection between the students' actual and

perceived abilities, as well as the disparity between their motivation to complete assignments or exert their maximum effort on academic tasks, prompted the development of this research instrument because, to answer the research question, it had to be ensured not only that the researcher would be able to effectively integrate a structured, reflective activity into the classroom routine but also to establish if there was a correlation between its implementation and students' academic performance and motivation to complete their assignments in class. The reflection instrument developed was the only material outside of regular classroom curriculum—such as books and project supplies—that was utilized for intervention with the study participants.

The main issues that needed to be addressed in this study were how to enhance the students' overall level of personal empowerment in their abilities as well as to facilitate their ability to think about their efforts from both an academic and affective standpoint. This issue aligned well with the concept of self-reflection; however, as discussed in the review of literature, this notion is multifaceted. Therefore, to define the conceptual framework for this action research project, it was decided to hone in on the practice of reflection as a method for improved cognition to support students' overall academic growth and intrinsic motivation to complete their tasks. Desautel (2009) relayed that reflection had a strong connection with metacognition, which is a person's ability to think about his or her own thinking. This enhanced level of self-understanding and direction indicated the potential power to lead toward improved intrinsic motivation, not only to complete assignments and tasks but to also execute them to one's fullest potential—thus resulting in improved academic performance, as detailed by Ash et al. (2005), Lew and Schmidt (2011), Sperling et al. (2012), McCormick et al. (2013), and—as specifically examined for underserved high school populations such as the context for this study—Cleary et al. (2008).

Consequently, the reflection tool that was created was specifically aimed at supporting the conceptual framework of this study by stimulating students' metacognition through structured and meaningful reflective prompts about their work, thus resulting in the potential for improved academic performance on future assignments as well as increased motivation to complete their tasks effectively. These aspects of academic performance and motivation, the dependent variables, are the components of the research question that will be measured and analyzed qualitatively and quantitatively both before and after the introduction of the independent variable, the reflection instrument.

Procedure

Prior to the introduction of the intervention instrument, students had not reflected on their work in any formal capacity; therefore, introduction of this task was novel for the participants of the study. As a result, the researcher opted for a

written reflection, as opposed to a verbal reflection, to allow students sufficient time to process their thoughts and provide meaningful insight into the various prompts given within the reflective activity. Most assignments given in the classroom context are completed in the actual classroom; therefore, the completion of the reflection assignment took place in class for the vast majority of the students. The intervention used in this study was focused on each of the students in 10 class period sections, five of which were English III and five of which were English IV; students received the instrument within the context of their 75-min class as part of their assignment requirements. The intervention mechanism was a structured reflection assignment that students were required to complete and attach to each of their written English assignments and was introduced and explained prior to its mandatory integration over the course of 12 possible assignments during the treatment period. After assignments were collected for grading, the reflection instruments were personally removed and stored for qualitative analysis and evaluation after the close of the data collection period.

To strengthen and add potential credence to the qualitative data collected from the students' reflection instruments, data were also collected from a quantitative standpoint to assist with determining if a correlation existed between student self-reflection and academic performance, student motivation to complete assignments, or both. For baseline data comparison, student data were collected from the second marking period of the academic school year, which ran from October 29, 2012, through January 17, 2013, and included no discussion or implementation of structured reflective activities in class. The specific data collected for the purpose of future comparison were the total number of missing assignments per student for the academic marking period as well as each of his or her summative report card grades, which represented the total average of all combined assignments on an interval scale ranging from a possible 0% to 100%.

This same exact procedure was conducted at the conclusion of the data collection period so that each student's overall number of missing assignments as well as his or her overall academic performance could be compared with how it was prior to the introduction of the reflection instrument. Once the quantitative data were retrieved from the school's approved grade-keeping software program, ProgressBook, it was entered into Microsoft Excel for data analysis. Each student who was enrolled in any class sections for both the second and third marking period of the 2012-2013 academic school year comprised one row of data that consisted of his or her name, his or her total number of missing assignments for the second marking period, his or her grade for the second marking period, his or her total number of missing assignments for the third marking period, and his or her final grade for the third marking period; students who were withdrawn during the data collection period or who were not enrolled for either the full period of the baseline or intervention periods were removed from the data collection.

Although I was present to guide students in how to complete their reflections if needed, it was entirely up to them to determine how to best answer the questions and prompts that were presented to them on the intervention tool. Students were asked to complete their reflections individually and were told that their responses would not affect their assessments in any way, thus promoting honesty and transparency in the activity—anonymous submissions were also accepted for students who were concerned that their reflections were too personal or abrasive in nature. The supposition is that student academic performance on assignments will increase and that the overall number of missing assignments from students will decrease while the treatment is in place. In addition, it is also the conviction that the possible correlation between the independent and dependent variables could shed light onto the potential power of reflection in the classroom and could serve as the basis of its integration for teachers of other subject areas at this school as well as for schools in other underserved communities.

Data Analysis

The results of the quantitative research indicated that there was a statistically insignificant correlation between student self-reflection and academic performance and motivation to complete assignments for underserved students in 11th- and 12th-grade English; however, analysis of the qualitative data indicated that students' levels of metacognition and reaction to the intervention were largely positive. Therefore, while the hypothesis to the research question was not proved through the quantitative data, the qualitative analysis provided a multitude of facts and considerations as presented below.

Quantitative Analysis

The summative academic marking period grades for all participants ($n = 146$) calculated to $M = 73.68$ prior to the reflective activity intervention and $M = 73.47$ after its implementation. In addition to determining means, Pearson correlations were run between the two sets of report card grades as well as the number of missing assignments for the second and third marking periods. A paired-sample t test was also used to determine a possible statistical difference in student grades after the treatment. There was a moderate to strong correlation between the two sets of student grades, $r = .638$, $n = 146$; the paired-sample t test indicated that the statistical difference between the two sets of summative grades was not significant, $t = 0.153$, $n = 146$, $df = 145$, $p = .879$. With regard to the total number of missing assignments for the marking periods, the overall number missing from the baseline period was 300 ($M = 2.05$, $n = 146$) versus 331 ($M = 2.27$, $n = 146$) for the intervention period, which brought the overall percentage of missing assignments to 18.67% for the collection period prior to the reflective activity and 18.89%

Table 1. Quantitative Results of Changes in Student Grades and Missing Assignments After Implementation of Self Reflection Instrument.

Section	Baseline grade (M)	Post grade (M)	Baseline missing (M)	Post missing (M)
One (n = 15)	75.20	69.57	2.93	3.27
Two (n = 15)	74.16	74.02	1.93	2.40
Three (n = 12)	78.70	81.40	0.83	1.17
Four (n = 7)	74.87	71.59	2.29	3.14
Five (n = 12)	76.64	76.58	1.17	1.50
Six (n = 13)	69.69	70.86	3.23	2.85
Seven (n = 17)	76.39	71.71	1.29	2.59
Eight (n = 18)	77.33	82.80	1.33	1.06
Nine (n = 17)	65.35	60.44	3.29	3.59
Ten (n = 20)	71.03	75.90	2.15	1.55

after its integration. There was a moderate to strong correlation between the number of missing assignments from before and after the treatment, $r = .647$, $n = 146$. The mean results for both academic performance and overall number of missing assignments for each individual class section are summarized in Table 1:

Qualitative Analysis

From the reflection instrument, student response data were grouped based on (a) academic performance indicators, (b) academic motivation indicators, and (c) affective motivation indicators. The strongest indicator was for affective motivation, including reflection resulting in metacognition, with 84.3% of participants responding either favorably or showing an indication of improved affective motivation or self-efficacy for future motivation. This was followed by 74.8% of students responding favorably to a commitment to future academic motivation and 67.3% of students providing feedback and insight that related favorably to improved academic performance. A summary and analysis of specific detail for each of the indicators are presented below.

1. **Academic Performance:** For this indicator, Questions 1 and 3 from the reflection instrument were used to determine a positive or negative influence on students' academic performance based on their responses to the question prompts. Overall, 67.3% of respondents indicated a positive change in academic performance and relayed comments such as the following:

I hate writing, but this activity made me realize that brainstorming to describe a topic makes the task easier for me.

At first I thought this assignment was boring, but now I can relate to it and find this concept more interesting.

The end result of my assignment doesn't live up to my personal expectations, so I will have to work harder on the next one.

I didn't like poetry before, but after reading the poems in class and finding that they aren't hard to understand, I like them better.

I discovered that poetry is like a puzzle with universal themes that can be easily mistaken.

This assignment has made me work harder to try and succeed and get a better grade.

This activity changed the way I comprehend. Now, I don't just read the story and tell what it means, I also tell about its other elements and structures and infer more.

In the future, I will elaborate more and use support from the text in my responses to get a better grade.

I have learned that success requires me to look beyond what is presented.

The remaining 32.7% of responses were either left blank or indicated a negative change or attitude toward academic performance, including comments such as the following:

This activity did not change my thinking at all.

I hated poetry before this assignment and still hate it.

My way of thinking about this topic has not changed.

I only completed this assignment for a grade.

2. **Academic Motivation:** For this indicator, Questions 2 and 5 from the reflection instrument were used to determine a positive or negative influence on students' academic motivation to complete assignments based on their responses to the question prompts. In total, 74.8% of respondents indicated a positive change in current or future academic motivation and relayed comments such as the following:

I did truly do everything I could to succeed, but I need to work on my time management.

On future assignments, I will try harder and turn it in on time.

If I were to revisit this assignment, I would do more research and look up better vocabulary words.

I need to organize my time better to make sure I succeed.

I would try harder and ask for more help instead of attempting to understand it on my own.

I would change my work ethic completely and try much harder.

I would not miss the class that was given to go over this assignment so I would not be rushing through this to get the rest of my work done.

I would turn it in on time and not procrastinate as much.

I took advantage of all the time given to me and I worked proficiently and tried my best.

The remaining 25.2% of responses were either left blank or indicated a negative change or attitude toward academic motivation and self-efficacy to complete assignments, including feedback such as the following:

I would do nothing differently.

I never try my best on assignments in class.

It's okay. I could have done better, but choose not to.

No, I did not.

I rushed just to get the job done.

I procrastinated and didn't even finish.

3. Affective Motivation: For this indicator, Questions 4 and 6 from the reflection instrument were used to determine a positive or negative influence on students' affective motivation and self-efficacy based on their responses to the question prompts. All in all, 84.3% of respondents indicated a positive change in either affective motivation or improved self-efficacy and shared comments including the following:

I now know that this work is not as hard as it seems, so next time I won't overthink it and will just do it more calmly.

This task made me think about what else I need to learn in school and life.

I am excited to learn more; I never knew how creative I could be!

I feel more motivated and confident in my abilities to work on this topic in the future.

Poetry has boosted my emotions and made me think outside of the box.

I feel I have the potential to influence my classmates because they looked to me for help on this assignment; I now enjoy helping other people more.

I have learned that there is more than my own perspective in the meaning of things.

The passion I put into my responses would influence others because it's organic and I feel that my realness is that others expect and enjoy from me.

I now look at the work and the information in it much differently to learn how it affects me and my life.

I am actually excited to read and learn new words now.

Poems and I are now on friendly terms. Not the best, but not the worst like before.

I hope to inspire others to try their best and turn their work in on time, like me.

The remaining 15.7% of responses were either left blank or indicated a negative change or attitude toward affective growth, intrinsic motivation, or self-efficacy, including responses such as the following:

I don't have the ability to influence others.

I don't want to learn more about anything.

Nobody would listen to me or believe me anyway.

Nothing has changed and I still feel the same way.

No because I still have too much to learn to be able to influence other people.

No because other people would have done better on this assignment anyway.

Discussion

From a quantitative standpoint, the results showed that reflection as a tool for enhanced metacognition, thus translating to improved academic performance or motivation to complete assignments, had minimal to no overall effect. Although the correlation between the sets of grades and missing assignments was moderate to strong, the null hypothesis for this study was that there would be no correlation between baseline and postintervention results because a

significant growth in academic performance or a tremendous change in the overall number of student missing assignments would result in a weak to negligible correlation. Therefore, the strength of the correlation for the overall groups of participants supported the results of the statistical means of the participants in both areas, both of which actually declined very slightly from the baseline to the postintervention period. Despite this overall scope of a lack of quantitative impact, there were four sections that showed improved performance. Sections 6, 8, and 10 all showed improvement in both academic performance as well as decline in the mean number of missing assignments while Group 3 showed improved academic performance despite an actual increase in the overall percentage of missing assignments. As a result of the interpretation of the quantitative data, the hypothesis was not proved: There was little to no correlation between student reflection and improved academic performance and motivation to complete assignments for underserved students in 11th- and 12th-grade English. However, despite this lack of quantitative proof, the qualitative proof yielded more positive results.

With regard to academic performance, more than two thirds of participants conveyed partial to significant insight toward enhanced academic performance. A majority of students relayed exerting extra effort to achieve the maximum grade possible as well as conveyed changing the way they thought about the concepts taught after completion of lessons. While this growth may not have been evident in the overall means of student grades, it was quite clear in their responses on the reflection instrument. In addition, when paring the data down to the individual student level, there were some striking instances of growth, with a small portion of students improving more than 40% from their performance in the baseline period to the length of time that included the reflective activity. Moreover, nearly three fourths of students detailed specific examples and connections to improved academic motivation. Comments, as shown in the aforementioned qualitative analysis, regarding the tendency to procrastinate, to rush through work, to give minimal effort, as well as insights that shed light on a portion of students who were clearly empowered and gave their maximum effort to complete assignments efficiently and on time were significant.

This level and depth of thought, as well as the level of transparency and willingness to voice the truth of the situation with regard to motivation and effort, clearly relayed that the reflective activity caused students to think about their approach, motivation, and efforts with regard to completion of their tasks. Again, while this trend did not specifically translate to the overall mean or percentage of missing assignments decreasing for the entire group of participants, it clearly indicated the potential for improvement and explained why several students grew from missing nearly all assignments for the second marking period to missing only one or no assignments for the third marking period. Finally, the vast

majority of participants, more than 84%, presented indicators for positive affective growth with regard to motivation and/or self-efficacy on the reflection instrument, which is a significant level of positive evidence for improved metacognition as it relates to the potential for improved performance and motivation in the future. Again, while this remarkable level of positive indication did not translate into quantitative improvement, it does show that the reflection instrument either assisted with students' growth in the area of improved metacognition or at least provided them with an outlet for metacognitive thought that would not have necessarily been available to them without the reflection instrument. While these qualitative measures do not inherently prove the hypothesis for this study, they do allow for educational stakeholders to reflect on their possible implications as well as the discrepancy between the expectations and outcomes of this action research project.

Implications

Based on the observations of students made by the instructor during this study, a paramount implication is that the power of student self-reflection, as well as the seemingly positive feedback that may come with it, does not inherently translate into quantitative academic success or improvement for all students or the participant group as a whole. This tenet is supported not only by the personal observations made during this study but also by the qualitative results of the reflective instrument. Clearly, enhanced metacognition took place on both an intellectual and affective level, as shown by the majority of participants who responded positively to the aforementioned indicators; however, these results did not translate into improved academic performance or motivation on a larger or more significant scale as hypothesized in the research question. Therefore, while this action research has skimmed the surface for the power of reflection in the classroom, as well as provided a sound and firm foundation of prior research and conceptual framework, there appears to be additional elements required, such as additional time for infusion of the intervention or improved instruction and implementation of the reflective activity itself, to unleash the full potential power of reflection as a tool for enhanced metacognition.

Furthermore, it is evident that the overall number of students' missing assignments directly link to their academic performance—a fact that any seasoned teacher can easily infer. As shown in the quantitative analysis, three of the four sections that showed mild improvement in academic performance all indicated an overall reduction in the amount of missing work. Therefore, the power of reflection as a tool for enhanced metacognition in the short term may be best utilized initially simply to motivate underperforming students to complete their tasks to avert bringing down their summative grades merely from a refusal to complete and turn in assignments. Using this step as an initial approach, teachers

could then continue to build upon the power of enhanced metacognition by implementing activities and interventions that allow students to examine their cognitive and intellectual approaches toward their work, thus propelling them toward substantial and long-lasting academic improvement. The idea of this multistep approach toward reflection evokes an interesting concept: Take an initial affective approach with reflection to motivate students to embrace the responsibility and willingness to attempt completion of required tasks and then subsequently build on their newfound motivation to further enhance improved academic performance through reflective activities aimed at analyzing and evaluating the approaches used in completion of those tasks. Using this framework, the formula for effective integration of reflection as a tool for durable and significant academic improvement and motivation may require initial separation of affective and cognitive processes followed by a reconnection of the two modalities once initial progress has been established.

Given this potential ramification, it is important to note that improved academic performance and motivation is not entirely based in the cognitive arena; therefore, reflection should not be relegated to this portion of the student psyche either. In today's highly diversified classroom, students arrive with a plethora of needs, some of which are intellectual, some of which are social-emotional, and all of which must be determined for each individual student and the context that he or she is arriving from. The possibilities are endless: an underachieving gifted student from a low-socio-economic urban area, a student with a cognitive or emotional disability from an affluent area, a higher performing student who is frustrated with curriculum due to a language barrier, a brilliant yet introverted student who is at risk due to bullying, or simply an average, dominant culture student who appears apathetic toward the curriculum due to prior negative experiences or sudden life changes that result in a refocus of priorities merely to survive. Given this exponential list of possibilities and combinations, it is feasible to surmise that without some level of affective intervention to remediate possible affective duress students will struggle academically or suffer from a decline in intrinsic motivation or self-efficacy. Therefore, a tool that can be used in a highly individualized and nonthreatening manner is reflection with a focus on affective and social-emotional growth, which is a tactic that deserves merit not only for serving the whole student but also for its potential to enhance students' lives well beyond the 180 days of the school year by providing an opportunity for time to think about one's thinking and the implications of how the daily interaction with life's quandaries can ultimately lead to empowerment and success across the intellectual, social, intrapersonal, and professional spectrums.

All in all, the most exigent implication of this study is the revelation that, although student self-reflection as an intervention for improved academic performance and motivation may not yield the most staggering quantitative results in an abbreviated time period, the approach of using reflection as

a tool to enhance and refine students' ability to develop metacognition does not appear to be detrimental in any aspect whatsoever. All results of this study indicate that reflection as a tool for enhanced metacognition in either the affective or cognitive framework only served to maintain students' current academic performance and/or motivation or improve it—sometimes significantly for students who truly embraced the potential of its full impact. Therefore, this action research suggests that despite the convoluted nature of today's curriculum- and assessment-driven educational culture, reflection should not be rejected as a potential detractor for academic performance or a meaningless part of the hidden curriculum that merely serves to help students feel better about themselves. Rather, it should be implemented in a well-structured, intentional manner with purposeful fidelity throughout the course of a student's academic career so that it becomes ingrained within the very way that he or she approaches the complex issues of intellectual and social-emotional growth throughout his or her life experience. If this task is accomplished, we have fulfilled our mission as educators because our students deserve more than a curriculum and instruction that teaches them concepts and facts; they are entitled to the exposure of skills and tactics that will allow them to develop into their full and utmost potential as an individual, which is a sojourn that can be traversed successfully through the power of self-reflection.

Appendix

Below is a condensed version of the researcher created reflection instrument used for this study, which served as the independent variable. As indicated in the results, the questions below were grouped into the following indicators for qualitative data analysis: (a) Academic Performance, Questions 1 and 3; (b) Academic Motivation, Questions 2 and 5; and (c) Affective Motivation, Questions 4 and 6.

CLASSWORK/PROJECT REFLECTION

How has this activity changed the way I think about this concept?

_____.

Did I truly do everything I could to succeed in this task?

_____.

Does the end result of this assignment live up to my personal expectations?

_____.

Do I feel that my work on this assignment has the potential to influence others?

_____.

If I were to revisit this assignment in the future, what would I do differently?

How has this assignment fueled my thirst to learn more about this topic?

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

- Ash, S., Clayton, P., & Atkinson, M. (2005). Integrating reflection and assessment to capture and improve student learning. *Michigan Journal of Community Service Learning, 11*, 49-60.
- Bednar, P., & Eglin, R. (2007). Contextual inquiry: A systematic support for student engagement through reflection. *Interdisciplinary Journal of Knowledge & Learning Objects, 3*, 45-54.
- Birmingham, C. (2003). Practicing the virtue of reflection in an unfamiliar cultural context. *Theory Into Practice, 42*, 188-194.
- Cleary, T., Platten, P., & Nelson, A. (2008). Effectiveness of the self-regulation empowerment program with urban high school students. *Journal of Advanced Academics, 20*, 70-107.
- Colley, B., Bilics, A., & Lerch, C. (2012). Reflection: A key component to thinking critically. *The Canadian Journal for the Scholarship of Teaching and Learning, 3*, 1-19.
- Desautel, D. (2009). Becoming a thinking thinker: Metacognition, self-reflection, and classroom practice. *Teachers College Record, 111*, 1997-2020.
- Dewey, J. (1933). *How we think: A restatement of the reflective thinking to the educative process*. Heath.
- Duijnhouwer, H., Prins, F., & Stokking, K. (2012). Feedback providing improvement strategies and reflection on feedback use: Effects on students' writing motivation, process, and performance. *Learning & Instruction, 22*, 171-184.
- Elias, M. (2010). School climate that promotes student voice. *Principal Leadership, 11*, 22-27.
- Ford, C. L., & Yore, L. D. (2012). Toward convergence of critical thinking, metacognition, and reflection: Illustrations from natural and social sciences, teacher education, and classroom practice. In *Metacognition in science education* (pp. 251-271). The Netherlands: Springer.
- Harford, M. (2008). Beginning with the students: Ownership through reflection and goal-setting. *The English Journal, 98*, 61-65.
- Kritt, D. (1993). Authenticity, reflection, and self-evaluation in alternative assessment. *Middle School Journal, 25*, 43-45.
- Lew, M., & Schmidt, H. (2011). Self-reflection and academic performance: Is there a relationship? *Advances in Health Sciences Education, 16*, 529-545.
- McCormick, C. B., Dimmitt, C. A., & Sullivan, F. R. (2013). Metacognition, learning, and instruction. In *Handbook of psychology* (pp. 69-97).
- Mountford, B., & Rogers, L. (1996). Using individual and group reflection in and on assessment as a tool for effective learning. *Journal of Advanced Nursing, 24*, 1127-1134.
- Ogden, C., & Claus, J. (1997). Reflection as a natural element of service: Service learning for youth empowerment. *Equity & Excellence in Education, 30*, 72-80.
- Phan, H. (2008). Achievement goals, the classroom environment, and reflective thinking: A conceptual framework. *Electronic Journal of Research in Educational Psychology, 6*, 571-602.
- Rusche, S., & Jason, K. (2011). You have to absorb yourself in it: Using inquiry and reflection to promote student learning and self-knowledge. *Teaching Sociology, 39*, 338-353.
- Sperling, R. A., Richmond, A. S., Ramsay, C. M., & Klapp, M. (2012). The measurement and predictive ability of metacognition in middle school learners. *The Journal of Educational Research, 105*(1), 1-7.
- Sunstein, B. (1998). Searching under surfaces: Reflection as an antidote for forgery. *Clearing House, 72*, 39-43.
- Webb, L., & Scoular, T. (2011). Reflection on reflection on reflection: Collaboration in action research. *Educational Action Research, 19*, 469-487.
- Yancey, K. (1998). Getting beyond exhaustion: Reflection, self-assessment, and learning. *Clearing House, 72*, 13-17.
- Yost, D., Sentner, S., & Forlenza-Bailey, A. (2000). An examination of the construct of critical reflection: Implications for teacher education programming in the 21st century. *Journal of Teacher Education, 51*, 39-49.
- Zuckerman, G. (2004). Development of reflection through learning activity. *European Journal of Psychology of Education, 19*, 9-18.

Author Biography

Derek Cavilla, EdD is an adjunct instructor of gifted education at the University of Central Florida with a specialization in the affective development of gifted learners; he also serves as a school-based administrator in the Bay Area of California. Derek's research continues to focus on the social-emotional development of gifted learners as well as how to better identify and support gifted underachievers and twice-exceptional students.