

Examining the Unexamined Education: Reviving Philosophy in Secondary Schools

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Introduction

In Plato's *Apology*, one of the world's great philosophers, Socrates, was charged with impiety and corrupting the youth of Athens. Upon reading that text, one has to stop to ask, in what depraved wickedness was the founder of modern western philosophy engaged? Socrates was not involved in the misappropriation of funds from the Athens public school system, nor was he indicted for fraudulently manipulating Greece's standardized test scores. Plato tells his readers Socrates implored all the people of Athens that the unexamined life was not worth living (Worley, 2018). Socrates merely wanted all citizens of Athens to question their beliefs, better to understand themselves, and to become more conscientious citizens of Athens.

Indeed, such faith in self-reflection is part of the bedrock of the U.S. public education system. During his term, former President Obama urged a national campaign to promote problem-solving, critical thinking, and creativity in U.S. schools. Across the political spectrum, educational policymakers have made a part of their platforms improving schools and focusing curricula on problem-solving. Why then, in so many states and nationally, has an attack been waged upon the very courses best suited to teaching the foundations of critical thinking and problem-solving? Teachers of philosophy are no longer sentenced to death through poisoning, but are now being forced to accept the other option Socrates refused: exile.

Presentation of the Problem

The technology that moves U.S. schools into the twenty-first century has led to a curricular turning away from basic lessons of self-reflection learned more than twenty-four hundred years ago (Cam, 2018). The dwindling influence of philosophy in the U.S. curriculum is a common problem throughout school systems in the U.S., in particular in large urban school districts (LUSD) (Burgh, 2018). Educational leaders vehemently detail their aspirations for promoting critical thinking and problem-solving while simultaneously making far less likely such growth by pulling funding from subjects considered otiose in the 21st century (Hand, 2018). Science, technology, engineering, and mathematics (STEM) educational programs are promoted and funded at the expense of philosophical study.

Various states and LUSDs implement STEM projects ostensibly in order to prepare students for the information age. An unintended consequence of this privileging is heavy reliance upon standardized testing, best utilized to measure students' recall of facts and formulas presented in math and science courses. Even in courses called the humanities, such as English Language Arts and U.S. government, student outcomes are measured in ways that fail to measure or evaluate critical thinking skills and interpretation. Therefore, if critical thinking and problem-solving skills are to be a primary focus in U.S. schools, districts will need to bring the basic skills required for such higher level thinking back into the classroom.

After having worked within an LUSD for numerous years, I chose to focus my research on the underutilization of philosophy within high school curricula. Numerous organizations and educational entities provide philosophical scholarship and training for K–12 students, such as the Center for Philosophy for Children at the University of Washington and the Institute for the Advancement of Philosophy for Children at Montclair State University, along with international organizations, such as the UK's Society for the Advancement of Philosophical Enquiry and Reflection in Education which all correspond to the P4C movement started in the 1970s. However, since students within my own district primarily are educated to score well on the Missouri Assessment Program (MAP) examination, philosophy curricula is not stressed. My research is not meant to mount accusation against my district's administration, rather I critique the ongoing consequences of the Bush administration's No Child Left Behind Act (NCLB) and the resulting singular focus on STEM curricula (Chetty & Suissa, 2017). As the era of high-stakes accountability drones on, educational institutions and educators are justifiably driven by fears of funding loss, and therefore turn their focus to promote "practical" skills that purportedly translate into jobs in an ever more globalized world economy while neglecting skills that can help make those same students responsible, thoughtful world citizens.

Impact of Philosophical Studies

Research on philosophy curricula for public schooling has primarily focused on the needs, weaknesses, and results of implementation. Voices across this contentious issue range from those of professional philosophers, educational researchers, politicians, school administrators, and classroom teachers. Even philosophy instruction's detractors are not opposed to the study of philosophy, but rather what they frame as its incorrect usage (Fitzsimons, 2014; Thompson & Lašic, 2014). Consensus has been building over the past 90 years about what benefits philosophical studies contributes towards students' development of critical-thinking skills, and now the debate surrounding philosophy in secondary schools has evolved into a struggle to find the correct pedagogical model.

The majority of scholarly work on philosophy curricula in secondary schools focuses on the necessity and benefits of implementation (Cam, 2014, 1998; Burke, 2013; DeCesare, 2012; Dewey, 1997; Keddie, 2011; Lane, 2012; Lippmann, 1988, 1980; Nussbaum, 2010; Ralston, 2008). This cadre of researchers, philosophers, and teachers point to positive, lasting effects philosophical study has on students' lives, particularly the skill of learning to think about problems through a philosophical lens and how that skill increases a student's ability to problem-solve, think critically, and develop or deepen empathy.

Among the consequences of re-introducing philosophy into public school curricula (Arcilla, 2002; Pelletier, 2008), the three most-often-cited issues are: a lack of time, "improper" teaching methods, and accountability. Within the current educational environment, it is difficult for educational administrators to find room in secondary curricula to include a philosophy course. Second, opponents of teaching philosophy to school-aged children argue teachers are not trained well enough to facilitate such courses successfully. Lastly, critics point out flaws in outcomes measures, calling for a standardized way to measure student outcomes before adding courses to the curriculum.

I argue the ongoing shrinking of the world through globalization only increases and makes imperative the need for instruction in philosophical perspectives. Dakmara Georgescu (2008) calls the impact philosophy has on broadening students' views as the ability to reject "absolutes and the quest for certainty in epistemology" which he sees as "a dominant position in current thought" (p. 50). The U.S. is behind the times, for the positive impact of philosophy in education has been accepted by the United Nations and the Dutch, Australians, and New Zealanders.

The litany of critiques fails to recognize how the teaching of philosophy not only affects student outcomes, but also provides beneficial outcomes for instructors. Rosie Scholl (2014) measures the impact of learning philosophy on teachers' pedagogy, documenting how,

...teachers spoke of changes in terms of their pedagogy, moving from a "banking" model of teaching and learning to a more collaborative, democratic and interactive, inter-responsive, inquiry-based approach that found its impetus in student questions; in student (not teacher) voice. (p. 93)

Teachers became more open to new, more interactive, and participatory ways of teaching. Millet and Tapper (2011) document that "teachers doubled their use of open-ended questions over a 6-month period" (p. 9). Significantly, educators who learn philosophy of education become more willing to allow students to think for themselves and develop answers and follow-up questions instead of merely checking for memorization skills (Proedfriedt, 1984; Weber & Wolf, 2017).

A fear administrators face when deciding upon whether to allow philosophy to be taught within their packed schedules is whether students will be able to show measurable growth. Anecdotal evidence is pertinent for parent/teacher conferences, but proves not as concrete or persuasive at district compliance meetings. But, Kienstra, Imants, Karskens, and van der Heijden (2015) measure the significance of teacher-led philosophy lessons on student achievement, finding students “produce a higher level of doing philosophy with teachers who chose to organize a philosophical discussion with shared guidance by the teacher together with the students” (p. 1).

Effects on students introduced to philosophical ideas and dialogue become more prominent as the student matriculates through their schooling. Topping and Trickey (2007) find “philosophical enquiry involving interactive dialogue led not only to significant gains in measured verbal cognitive ability but also generalization to nonverbal and quantitative reasoning ability” (p. 271). Aside from the problem of governmental high-stakes accountability, the research on the benefits of integration of philosophy within schools seems overwhelming positive.

Kienstra et al. (2015) also offer specific, measurable areas for research, collecting student data on reflection, sentence building, searching for counterexamples/exploring boundaries, producing criticism, deductive reasoning, and defining concepts. Such skills are applicable across school curricula from English and language arts to science, mathematics, and the social sciences. Sharpening skills vital to other fields of study—fields seen as “more prestigious”—is one way to counter the negative attitudes towards including philosophy in an academic program.

Millett and Tapper (2011) report “A whole population of children gained on average 6 standard points on a measure of cognitive abilities after 16 months of weekly enquiry (1 hour per week)” (p. 9). I set out to conduct research the results of which might guide school administrators into appreciating the benefits of philosophical inquiry. Since platitudes are boundless in support of increasing problem-solving and critical thinking, I set out to bring sceptics the data.

Design of the Study

In this study I test my hypothesis that participation in a philosophy-infused classroom improves the critical thinking skills of LUSD students on logical reasoning, and to determine whether ability examinations measuring problem-solving were valid. The definition and concept of teaching philosophy within the secondary classrooms I chose revolves around the idea of introducing students to the world of philosophy, largely for the first time. The primary text used was Patton and Cannon’s (2015) *The Cartoon Introduction to Philosophy*, and copies were procured through a student-led Donors Choose campaign combined with The Center for Learning’s *Philosophy Books 1 & 2* (Kasmarek, 2002, 2004). Texts were chosen to give

students an initial taste of philosophy in an identifiable manner mixed with examples from popular culture to provide student-friendly context. For example, rather than solely discussing the “Allegory of the Cave,” students combined their reading of Socrates with the film *The Matrix* (Wachowski & Wachowski, 1999).

I set out to measure whether the re-introduction of a formal logic curriculum would increase the analytical problem-solving skills of students at The Academy. To accomplish this goal, quasi- project began with a simple question: What effect does the engagement with and study of formalized logic have on LUSD students’ ability to answer questions rationally? Throughout the courses and research, the primary objective was to provide experience with formal logic and problem-solving. Kasmarek’s (2004) second volume served as the basis of instruction on logic, with additions from the work of Patton and Cannon (2015). Students worked through sections on formal logic, symbolic logic, and mathematical logic with the inclusion of deductive and inductive logic over a span of seventeen weeks. Due to most students’ limited preexisting knowledge and the random effects of otherwise-accumulated knowledge, the individual specificity of weeks per topic naturally varied across cohorts consistent with delivery of any topic in a school setting.

My goal was to measure the improvement of students’ reasoning and logic skills after exposure to a beginning philosophy class in which students were taught formalized logic. In addition to the pre- and post-tests, students were simultaneously assessed on verbal reasoning pre- and post-tests. The department of education describes the verbal reasoning test as “a multiple-choice test that measures the ability to think and reason using words and language. Items in the test tap into vocabulary, word relationships, classification and deduction” (2016). The numerical reasoning test was “a multiple-choice test that measures the ability to think and reason using numbers. Items in the test tap into series, matrices, arithmetical reasoning and deduction” (State, 2016).

A key facet of my study is inclusion of a control group, the members of which were actively enrolled in a corresponding social studies seminar course and learning without a structured program dedicated to problem-solving and critical thinking. Data accumulated at the terms’ end was not only reviewed for changes within individual subjects, but also assessed across the two seminar courses. Whereas the social studies seminar class infused with philosophical topics and reasoning and logic curriculum primarily promoted critical thinking, the other seminar classes only included problem-solving as a side-effect of the district’s typical curriculum. I found statistical significance and benefits among a structured course promoting essential skills needed for critical thinking, which corresponds to Rondhuis and van der Leeuw’s (2000) call for more stringent assessments in children’s philosophy instruction.

One limitation in my results is that the control group was taught by a different teacher than the experimental group. However, to mitigate this limitation, effort was made to provide both groups with educators of relatively similar qualifications and backgrounds. Instructors of the control group and experimental group were of the same gender and race, both were highly qualified social studies teachers with content-area master's degrees, and both received dual-credit certification through a local university. The main difference between educators was the control group teacher had more years of classroom experience.

The district predominantly serves an African-American (81.8%) community with a small white (11.5%) minority and even smaller populations of Latino, Native American, and Asian students and families. Data comes from the scores of pre- and post-tests given to experimental and control groups. The independent variable is the philosophy and logic curriculum implemented in the experimental group. The assessment tools themselves were developed by the Australian state of Victoria's Department of Education and Training as an entrance exam for secondary students. The decision to select an Australian instrument was twofold; first, one of the course's aims was to present new ideas and new ways of understanding to students and introducing an international assessment helped to broaden their ideas of educational assessments. Secondly, the assessments correlated well together with qualitative and numerical sections designed to provide consistency in the question design. Finally, the instrument could be delivered within a single class period rather than requiring additional time as do many, more lengthy examinations.

The assessment selected to measure the increase in students' cognitive abilities was a commercially produced test rigorously piloted and tested by the education department in the state Victoria in Australia. The assessment was implemented as a non-parametric test since the structure of the overall study was quasi-experimental. Lastly, the assessment was also a criterion-referenced test. The data collected from the students was originally disaggregated and then re-combined to look at individual increases as well as group achievement.

The target sample was composed of two separate groups of twelfth-grade students at The Academy drawn using the same principles as Hannam and Echeverria (2009). The full population of the study ended up being 80 students with 40 experimental group students analyzed for improvement after the incorporation of the independent variable.

Data was analyzed utilizing a quasi-experimental quantitative methodology. To create a more formalized, standardized method of assessment, I implemented a pre-test-post-test non-equivalent group design. Therefore, students were given a pre-test at the beginning of the school term for the school years 2016–2017 and 2017–2018. The post-test

portion of the study occurred during May 2017 and 2018. Both pre-tests and post-tests were composed of two reasoning tests.

Results

As mentioned in my presentation of the problem section, numerous previous research studies report beneficial effects of studying logic in the classroom (Cam, 2014; Daniel & Auriac, 2011; Georgescu, 2008; Kienstra, Imants, Karskens, & van der Heijden, 2015; Millet & Tapper, 2011; Rondhuis & van der Leeuw, 2000; Stewart, 2014; Topping & Trickey, 2007). However, my study is the first of its kind to be conducted in a U.S. urban school district. Analysis demonstrates a modest to moderate benefit to students who participated in the introduction to philosophy course when compared to those not enrolled. Over the course an academic year, students' numerical reasoning in the experimental group grew by 5% from 27% to 32% while those in the control group increased by a single percentage point (Figure 1). Additionally, the experimental group also outperformed the control group on the verbal reasoning assessment by improving by 3%, from 33% to 36%, while the control group failed to improve, remaining at 33% (Figure 2).

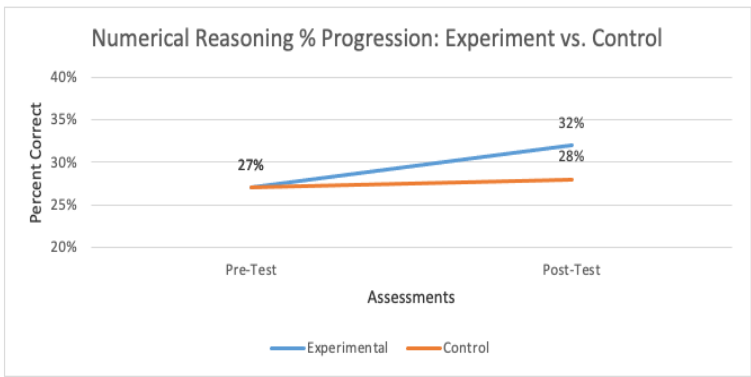


Figure 1: Comparison of numerical reasoning progression.

Analysis of the data reveals further differentiation between the experimental groups and control groups. For instance, the 2016–2017 experimental group improved their verbal reasoning scores by 10%, while the same year's control group remained the same at 28% (Figure 4). A 10% divergence in student performance illustrates the benefits that come from a formalized critical-thinking-based curriculum. I found that students were able to improve their logical problem-solving skills by formally participating in a philosophy course. However, as is always the case with statistics, the story of acquiring rational and logical decision-making capabilities is more complicated.

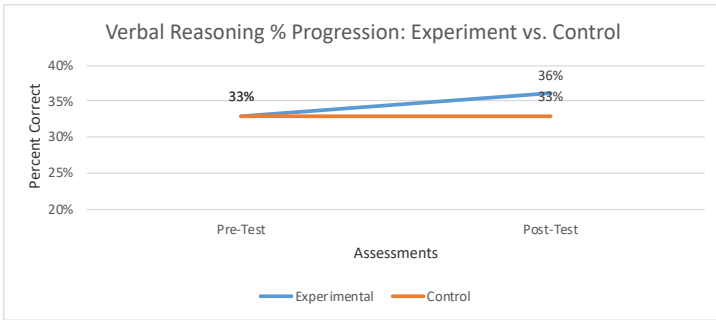


Figure 2: Comparison of verbal reasoning progression.

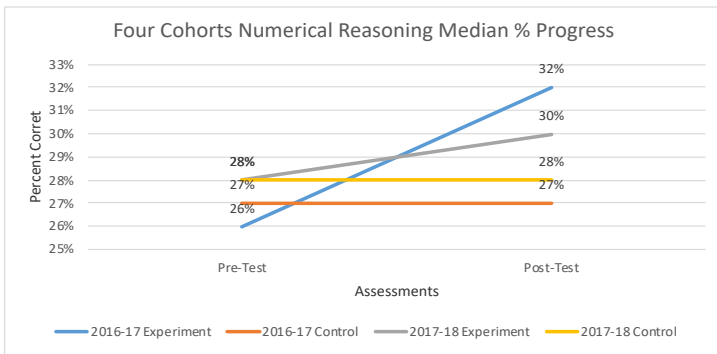


Figure 3: Disaggregated numerical reasoning comparison.

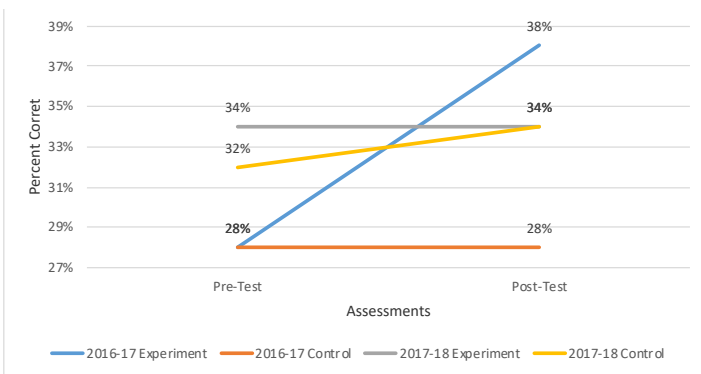


Figure 4: Disaggregated verbal reasoning comparison.

One of the more fascinating results from the study is revealed by comparison of the standard deviations between the control cohort and the experimental cohort. In both cases, the control group had a lower standard deviation than the experimental group (Figures 5 & 6). These smaller numbers, 8.79 on the verbal and 7.03 on the numerical, compared with 11.32 and 7.97, demonstrate the philosophy curriculum's influence on student learning. Students from the control group remained at a basic level of understanding of logic and rational problem-solving, while those engaged in the philosophy class were able to extend their learning and advance their levels of capability, dispersing further away from the mean and each other.

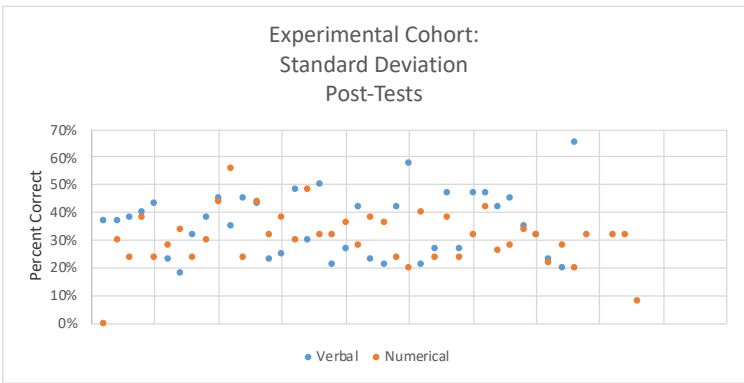


Figure 5: Experimental cohort's standard deviation for post-tests.

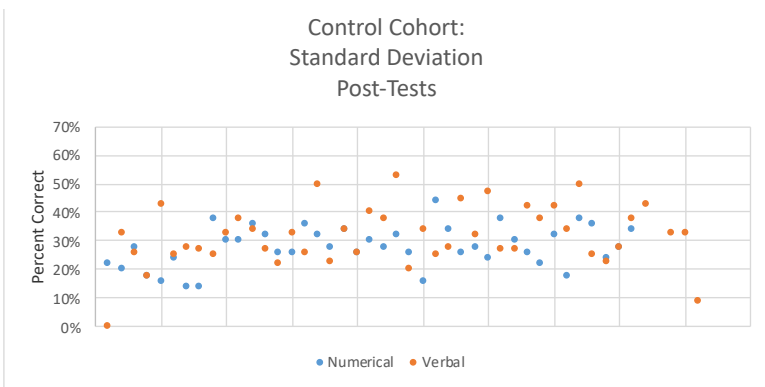


Figure 6: Control cohort's standard deviation for post-tests.

Utilization of a pre-test-post-test non-equivalent group designed quasi-experimental method enabled me to compare the aggregated experimental cohort with the aggregated control group. This combination of methodologies created the effect sizes based on Cohen's d :

Type of Logic	Effect Size	Strength
Verbal	0.30	Modest Effect
Numerical	0.53	Moderate Effect

Table 1: Experimental vs. Control Design.

Type of Logic	Effect Size	Strength
Verbal	0.22	Modest Effect
Numerical	0.70	Moderate Effect

Table 2: Pre-Test vs. Post-Test Design.

I see the effect size as key to answering my initial research question on the effects of a formalized logic curriculum. The data demonstrates a 0.53 and 0.30 effect size (Table 1) for those enrolled in the introduction to philosophy course as opposed to the control group and a 0.22 and 0.7 effect size (Table 2) for those students solely enrolled in the introduction to philosophy course. This secondary measure helps to minimize the role of difference across students' cognitive abilities within the small sample size and differences in teaching abilities within the experimental and control classrooms. Therefore, overall, students in the philosophy class demonstrate that curriculum had a modest to moderate effect on their ability logically and rationally to problem-solve.

Figure 7 reports the experimental group's growth at the conclusion of the course, comparing female students to male students. On the numerical reasoning test growth rates between the two gender groups were very similar after curricular engagement; the males' scores increased overall by 4% and the average female's score improved by 5%. The verbal scores offered more diverse results, as males improved by 5%, while females decreased by 1%, although females still outscored their male counterparts. The female verbal score averages on pre- and post-tests highlight a question on the pitfalls of relying solely on high-stakes accountability measures: Did women's understanding of logical reasoning decrease over the semester or did the pre-test lend itself to being overly vulnerable to guessing?

A second demographic disaggregation is offered in Figure 8 which reports the result of looking at differences that occurred between Black students and white students within the experimental cohort. Black students outperformed their white classmates on the verbal assessment, scoring an average of 37% on the post-test while the average white student scored 2% lower. However, on the numerical reasoning test, white students improved by 10% while Black students increased their performance by 4%.

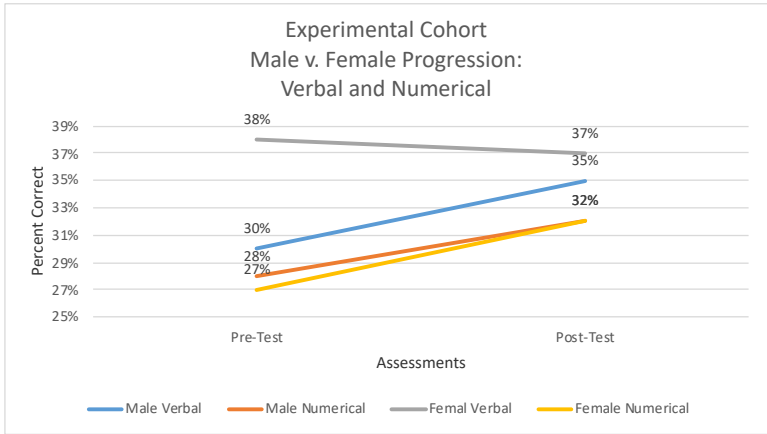


Figure 7: Female and male progression for verbal and numerical.

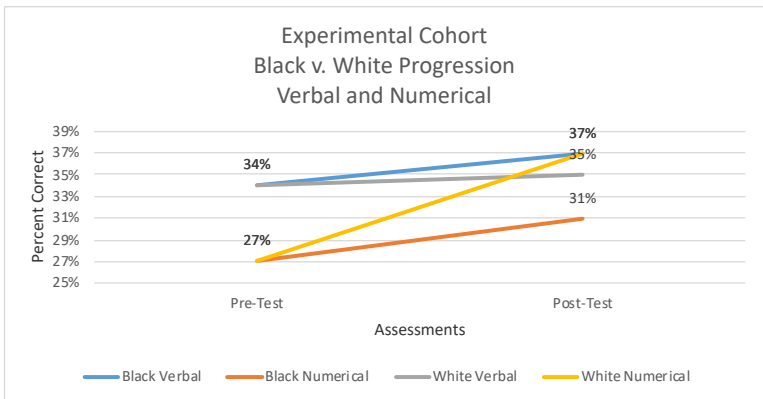


Figure 8: Black and white progression for verbal and numerical.

Recommendations

Students engaged in the study of philosophy at The Academy were able to improve their logical reasoning skills as measured through examinations assessing problem solving, which coincides with Daniel and Auriac's (2011) findings. The modest and moderate effect sizes are evidence of the class' success, but these are only the first step in re-introducing the study of philosophy into secondary schools.

The ability to reason and problem-solve from various vantage points will only be enhanced by providing these necessary philosophy skills earlier in a student's academic career. Perhaps the formalized study of logic might wait until students reach secondary school due to its complicated and somewhat illogical style of thinking, although Montclair State's philosophy of education program focuses specifically on teaching philosophy to children. Therefore, if the basic principles of logic can be taught and used by students throughout elementary and middle school, then a student's ability to comprehend and contribute to philosophical arguments cannot help but be significantly enhanced.

As with all educational topics, the curriculum for introducing students to philosophy and rational decision-making process could become more standardized and universal (Poulton, 2014). There is no high-stakes accountability instrument that measures the effects of teaching such a course at the secondary level, and often philosophy is an elective. To gain the full benefit of increasing student performance in problem solving, educators will need to design courses and pedagogical strategies to enhance the skills of teachers and facilitators (Knight & Collins, 2014).

Unsurprisingly, most research examining the teaching of philosophy in schools comes from countries outside the U.S. and other countries in North America. If the U.S. begins implementing problem-solving instruction in educational settings, such universal implementation stands to create an entire generation of students who will be better prepared for a more complex and ever-changing world.

One last caveat about my findings and recommendations. Adequately to measure the impact of formalized study of logical reasoning requires longitudinal study. The thorough analysis of changes in individual gains over the course of a student's academic career, when compared with students not enrolled in a philosophy course, can provide essential data and evidence in support of re-introducing philosophy in secondary schools.

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