

5-2017

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## Recommended Citation

Robbins, A. (2017). *Authentic intellectual work and student achievement* (Master's thesis, Northwestern College, Orange City, IA). Retrieved from [http://nwcommons.nwciowa.edu/education\\_masters/33/](http://nwcommons.nwciowa.edu/education_masters/33/)

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Authentic Intellectual Work and Student Achievement

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### Abstract

Finding an instructional practice that works for most students in a classroom can be difficult. With so many different styles of learners, outside influences, and students coming in with different background knowledge, it can be hard to know where to start with some units. The purpose of this research was to use the framework of Authentic Intellectual Work (AIW) to test if this would improve student performance. Two kindergarten classrooms were used—a traditional classroom, and a classroom that implemented Authentic Intellectual Work. Both classrooms consisted of 21 students. The students were assessed using state certified screeners in January and again in April to measure any gains or set-backs in their performance. The screeners used were Boulder Valley, a math screener, and the Formative Reading Assessment System for Teachers (FAST), which is a literacy screener. What was found was that literacy performance remained consistent for both classrooms. Math performance lowered in the traditional classroom by 5%, while the AIW classroom saw a 14% gain in performance. These findings may suggest that where students have freedom to construct their own knowledge and thinking (such as choosing a strategy to complete a math problem), they will be more successful if they have been taught in a way that follows the AIW framework. While subjects such as reading are more “structured” with less student choice, may not have as much impact from the framework of AIW.

### Authentic Intellectual Work and Student Achievement

Most educators want to provide classroom instruction for students that will provide the best education possible. It is also know that there is a need to provide students in the classroom multiple teaching styles, as not all students learn the same way. By providing students with authentic instruction, teachers can meet the needs of more students, while still providing the rigorous curriculum needed.

Providing an authentic and intellectual curriculum means that students will be provided real world, hands-on experiences (authentic) that are rigorous and challenging (intellectual). Students will be engaged because the activities they are doing relate to their real world (Newmann, 2000). When students are engaged and actively involved in learning, they are more willing to take risks and possibly fail, knowing they can continue to try again because of the safe learning environment.

Authentic intellectual work follows three main, broad criteria as identified by Newmann (2000). The three criteria are Construction of Knowledge, Disciplined Inquiry, and Value Beyond School. Construction of knowledge is known as using or manipulating knowledge as in analysis, interpretation, synthesis, and evaluation, rather than only reproducing knowledge in previously stated forms. Disciplined inquiry is defined as gaining in-depth understanding of limited topics, rather than superficial acquaintance with many, and using elaborated forms of communication to learn and to express one's conclusions. Value Beyond School is the production of discourse, products, and performances that have personal, aesthetic, or social significance beyond demonstration of success to a teacher (Newmann, 2000). The purpose of this research project is to determine the impact of Authentic Intellectual work on an early elementary classroom.

### **Literature Review**

As grade level, expectations continue to rise, and state test scores seem to be the indicator of well-rounded education, educators search for a consistent way to provide an educational environment that challenges their students, while helping them to master what they are learning. Authentic Intellectual Work (AIW) provides a curriculum focused on “construction of knowledge through disciplined inquiry to produce discourse, products, and performance that have value beyond school.” (Iowa Department of Education, 2012, p.2). When a curriculum follows the AIW framework, there is increased expectation of intellectual challenge and rigor, students are interested in their academic work and goals, and topics are taught for in-depth understanding not just surface level introduction. Teachers and staff will also notice that a professional learning community is created when the environment is vulnerable able to be vulnerable with each other, providing each other the support needed across grade levels and subject areas to help create well rounded students that are willing to engage in meaningful, intellectually stimulating tasks that will prepare them for their future (Iowa Department of Education, 2012).

When first trying to determine if authentic intellectual work made an impact on student test scores, researchers collected assignments from teachers in different schools (12-18 schools, depending on the year), grades 3, 6 and 8. A range of typical weekly assignments and challenging assignments were submitted from two teachers of each of the three grade levels, in each school participating in the study. During the summer, when all assignments had been collected, teachers (outside of the ones involved in this study) would collaborate to score the assignments based on the AIW framework of construction of knowledge, disciplined inquiry, and value beyond school.

The results, after assignments had been scored based upon the AIW framework, was that classrooms with assignments that were scoring higher authentically and intellectually, were classrooms in which students had higher state standardized test scores. The teachers involved in this study, those providing assignments to be scored, had never been trained in AIW. These teachers were simply providing work that they have done with their students. The only ones with the AIW training were those that scored assignments during the summer.

Upon finishing the study, the researcher is able to conclude, that if students are provided a classroom environment where they are given real world, rigorous opportunities that challenge and engage their thinking then they will be better able to take that knowledge and apply it to new problems and situations. This transfer of knowledge means that they can take something they learn in one subject area and apply it to others, as well as other areas of their life. Students will be better prepared for the real world, and able to be a more productive citizen in society.

## **Methodology**

### **Participants**

This research was done in two kindergarten classrooms. The two classrooms will be referred to as Classroom A and Classroom B. Classroom A received the implementation of the AIW framework, while classroom B (control group) did not. Classroom A has 22 students, 12 boys and 10 girls. None of the children in this classroom are on Individualized Education Plans (IEP's). Though there are no IEPs, two students receive ESL support, and four students receive Title I support. There are six students in Classroom A that are identified a low Socio-Economic Status (SES).

Classroom B has 21 students, 11 boys and 9 girls. None of the children in this classroom are on IEPs. There is one student in this class that receives ESL support, and three students who receive Title I support. There are eight students in this classroom that are identified as low SES.

### **Data Collection**

The data collected was done through the literacy and math screeners used district wide. Both of these screeners are done with students one-on-one with their classroom teacher. The literacy screener that is used is the Formative Reading Assessment System for Teachers (FAST). It is given through the Iowa TIER website, and in the winter focuses on letter sounds, word segmenting, onset sounds, and nonsense words. In the spring, the focus will change to letter sounds, word segmenting, nonsense words, and sight words.

The math screener students were given is called the Boulder Valley Math Screener. This screener is given through Forefront Math, and the focus in the winter is on counting, cardinality, operations and algebraic thinking. In the spring, the focus will be on counting and cardinality, operations and algebraic thinking, and numbers and operations in base ten. This screener will rate students as proficient, basic, and at risk. Their final score is out of how many points were possible. In the spring, the total amount of points are lower than the winter, so a student may appear lower even if they received all of the points possible.

In the spring, at the end of the research period, these screeners were both given again to all students. Both of these screeners adjust to the time of year students are taking it, therefore the benchmark goal is higher and the tasks the students are asked to do become more difficult. What was compared at the end is not the score the student received, but whether or not the student remained at the same level of proficiency that they had in the winter.

All data collected was done through state screeners, to only measure student performance. The data received will compare an AIW classroom (classroom A) to a traditional classroom (classroom B). Data was collected using the Boulder Valley math screener and the FAST literacy screener, both state approved screeners in which we provide interventions based upon student performance.

## **Results**

This research was done during the spring semester of the school year. Students were assessed in early January and again in late April. During this time, students worked mainly on segmenting and blending sounds, sight word recognition, decoding nonsense words, beginning – middle – and ending sounds in words, and reading books at their level (ranging from Guided Reading Levels A-I).

As shown on Table 1 below, classroom A had 76% of student's proficient in math in the winter, and 71% of student's proficient in literacy. By the spring screener, 90% of the students in this classroom were proficient in math, and 71% were proficient in literacy.

Individually, many students saw progress in their reading ability throughout this time. While many of the students that were not proficient in the winter were still the students not proficient in the spring, they did see growth. This could be attributed to the interventions they received. One student made very little progress and is still drastically below benchmark, but also missed two months of school to visit family in Cuba, missing vital instruction time. He also comes to school about an hour late each day, missing core reading time. However, another student that scored very low in the winter, has since been diagnosed with ADHD and placed on medication, is now meeting benchmark.



When looking at individual scores from the Boulder Valley math screener, five students were not proficient in the winter. Through interventions and continued practice with different number choices, three of these five students are now meeting benchmark goals.

Table 1: Classroom A Results

Classroom A – AIW Implementation			
Winter % Proficient		Spring % Proficient	
Boulder Valley	76%	Boulder Valley	90%
FAST	71%	FAST	71%

Table 2 shows the results from the traditional classroom, classroom B. In the winter, 100% of students in this classroom were proficient in math, and 81% of students were proficient in literacy. By the spring, 95% of students were proficient in math, and 81% of students continued to be proficient in literacy.

While it does not look like much growth happened in reading, there were two individual students who stuck out as having much progress. One student raised their score from a 51 to 66, and another from 52 to 63. These are students who were recommended to do a year of transitional kindergarten, so the progress they are making is phenomenal.

In math, all students remained consistent, except for one student dropped from an 89% proficiency rate to a 58% proficiency. This can be attributed to many things, mainly this student (also a student that was recommended to do a year of transitional kindergarten) just isn't ready to be working with the larger numbers that kindergarten is working with. With maturity, this

student should gain some confidence and understanding, but right now is struggling with getting to where other peers in the classroom are.

Table 2: Classroom B Results

Classroom B – Traditional Classroom			
Winter % Proficient		Spring % Proficient	
Boulder Valley	100%	Boulder Valley	95%
FAST	81%	FAST	81%

The data collected shows that both classrooms remained constant in the number of students proficient in literacy. Math, however, showed growth for classroom A, and a decrease in proficiency for classroom B. Although the percentage of proficient students in both classrooms remained the same for literacy, the individual students did not. Some students that were not proficient gained proficiency. While other students that were proficient in the winter, dropped below proficiency in the spring.

## Discussion

### Challenges with the Data

Overall, the findings of this study did not show drastic gains in either math or literacy for the kindergarten students. While many students stayed consistent, made progress or had great gains, other students did not—but this was seen in both classrooms, with both types of instruction.

Using only screeners that are state certified proved to have pros and cons. While these are great tools to use, they did not show student performance in the classroom. Some students are not

good test takers (especially timed tests), and that showed. Boulder Valley is not timed, and the results of that showed very similar results to classroom performance, with no unexpected students showing up as outliers. However, the FAST screener did not seem to have an accurate representation of classroom performance.

When ranking students based on performance according to FAST scores, the comparison to classroom observations of the student abilities is not the same. In future studies, the data could be improved by providing more findings from classroom performance. Since it is hard to test in kindergarten, the following could be used: Guided Reading level, standards based report card scores, and/or an interest inventory for reading and math. This would provide more information about classroom performance, and how a student is really doing than the timed screener.

### **Conclusion**

While the data did not show that using Authentic Intellectual Work as a framework for writing classroom curriculum was imperative to student success, this is still a great framework to follow. Since Authentic Intellectual Work was written for high school learners, adapting it to the kindergarten level has its challenges. What it does provide are teachers that are conscientious to all learner styles, and are willing to be flexible to suit the needs of every child in the classroom. This is a quality that all teachers should have or be willing to strive for, so whether or not the results are life-altering for students, it is a good framework to follow that can have a positive impact on most student-learners in each classroom.

### Resources

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