



THE EFFECT OF INTEGRATED, CROSS-CURRICULAR CO-TEACHING ON STUDENT ACHIEVEMENT, ENGAGEMENT, AND HIGH SCHOOL COMPLETION AT AN ALTERNATIVE HIGH SCHOOL

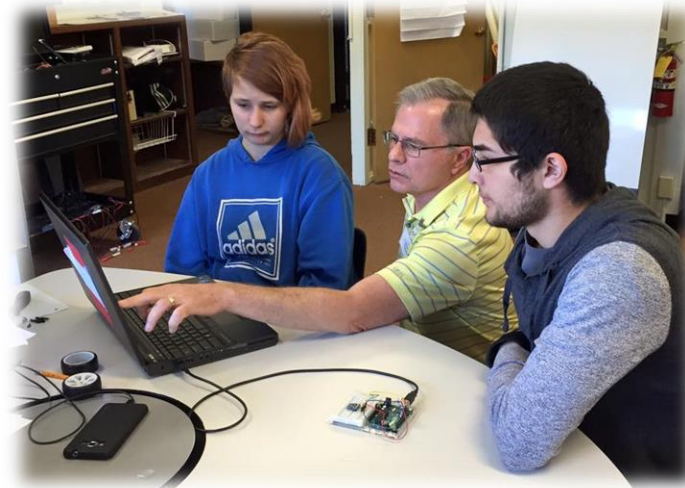
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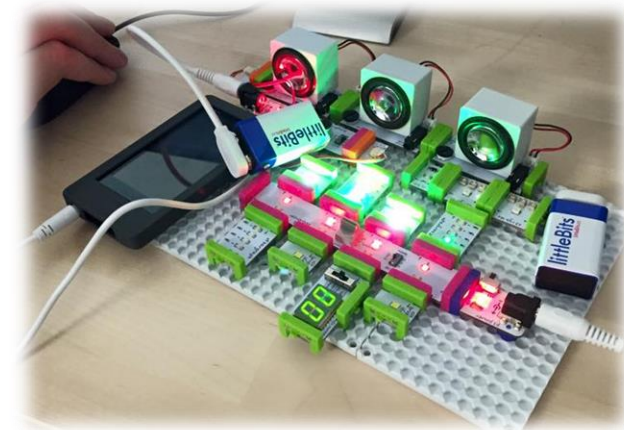
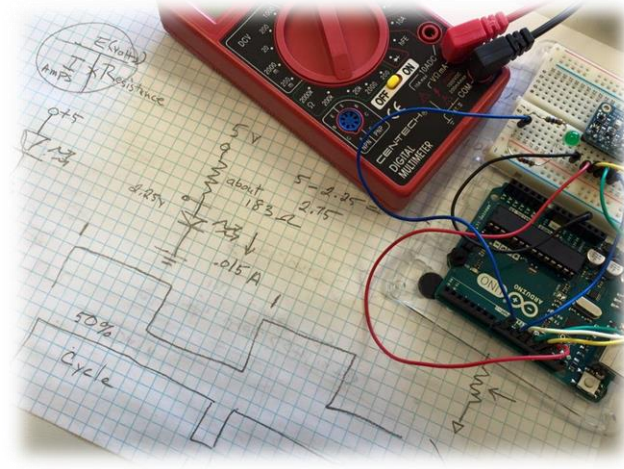
METRO HIGH SCHOOL

METRO is the alternative high school for the Cedar Rapids Community School District (CRCSD). METRO serves a population of roughly 300 at-risk students. METRO's philosophy focuses on the students. Compared to the traditional high schools in the district, we provide smaller classroom size, co-teaching, an advisory system, and a focus on building relationships and getting students out into their community. This approach helps support students individualized needs and bring relevance to our student's educational experience.

The students at our alternative high school have been identified as being at-risk of not completing high school. We focus on engaging students and bringing relevance into their education while helping them progress through high school graduation and prepare them for their next steps. In an alternative setting this often involves credit recovery, innovative and engaging programs, strong social and emotional support, and individualized learning strategies.



BACKGROUND



The approach studied incorporates curriculum integration and individualized, competency-based courses. This style combines the teachers and curriculum of two separate content areas and merges two courses together. Curriculum integration involves aligning standards and benchmarks, connecting content, and generating projects that engage students in integrated learning.

Rational for integrated, cross-curricular co-teaching:

- Students have been found to increase their engagement, problem solving, critical thinking skills, motivation and achievement when engaged in integrated or cross-curricular teaching and learning (Costley, 2015).
- Along with a strong teacher relationship, there is a link to success in alternative schools when implementing a personalized learning approach (Farrelly & Daniels, 2014).
- There is evidence that when done with fidelity, competency-based assessment can help those students who have been historically marginalized and who are most at-risk of not completing high school (Patrick & Sturgis, 2013).
- When combined with a blended learning approach, personalized learning and competency-based assessment become highly effective, efficient, and scalable, leading to increased benefits for marginalized and at-risk students (Hyslop and Mead, 2015).

RESEARCH QUESTIONS

What effect would a cross-curricular, team-taught course have on student achievement, engagement, and high school completion at an Alternative High School?

- What is the effect on a student's attitude towards school?
- What is the effect on student attendance?
- What is the effect on student course completion?

METHODOLOGY

The action research was conducted over a nine-week period during the 3rd quarter of the 2018-2019 academic school year. Two courses were selected for the study, physical science and earth science. Each course will have a control section taught by a science teacher with a typical approach in our alternative school setting. The treatment section of the course will be taught with a co-teaching approach integrating content and standards from science as well as another academic content area.

Treatment

The section of integrated physical science was co-taught with our Career and Technical Education (CTE) teacher. The section of integrated earth science was co-taught with a social studies teacher. Both groups had the opportunity to earn credit in both courses during the quarter. Both sections have been designed, aligned, and planned to use a co-teaching method that included integrating standards, concepts, projects, and themes.

Data Collection Instruments

A variety of data collection instruments were used to better understand the impact the treatment had related to the studies research questions. The triangulation matrix below outlines these data collection instruments and how they aligned with the research questions.

Research Questions	Data Sources		
	1	2	3
What effect would a cross-curricular, team-taught course at an Alternative High School have on...			
Engagement	Instructional Practices	Student Attitude Survey	Student Interviews
	Inventory (IPI)	(Likert Style)	
	Engagement Data		
Student Attendance	Student Attendance Data	Credit Earning Data	Student Attitude Survey (Likert Style)
Student's attitude toward school	Student Attitude Survey (Likert Style)	Instructional Practices	Student Interviews
		Inventory (IPI)	
		Engagement Data	
Student achievement & high school completion	Credit Earning Data	Student Attendance Data	Student Attitude Survey (Likert Style) & Student Interviews

REFERENCES

Costley, K. (2015, February). Research supporting integrated curriculum: Evidence for using this method of instruction in public school classrooms. Retrieved from <https://eric.ed.gov/?q=integrated+curriculum&ft=on&id=ED552916>

Farrelly, S. & Daniels, E. (2014). Understanding alternative education: A mixed methods examination of student experiences. Education leadership review of doctoral research, 1(1).

Patrick, S. & Sturgis, C. (2013). Necessary for success: Building mastery of world-class skills. A CompetencyWorks Issue Brief, international association for k-12 online learning. Retrieved from <https://files.eric.ed.gov/fulltext/ED561282.pdf>

Hyslop, A. & Mead, S. (2015). A path to the future: Creating accountability for personalized learning. Bellwether education partners. Retrieved from <https://files.eric.ed.gov/fulltext/ED557085.pdf>

DATA & ANALYSIS

Engagement

Figure 1 Engagement: Control vs. Treatment, (N=46 samples).

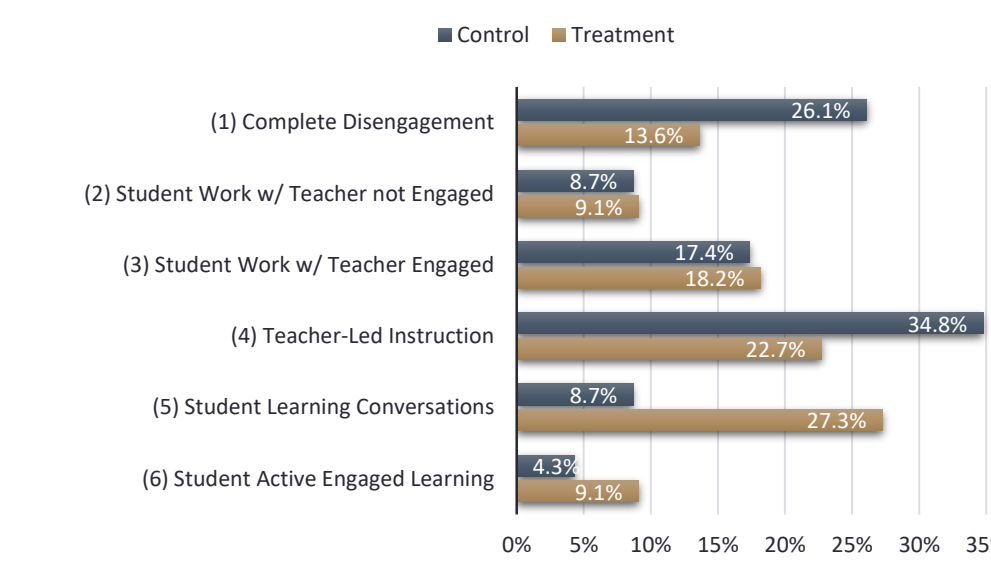
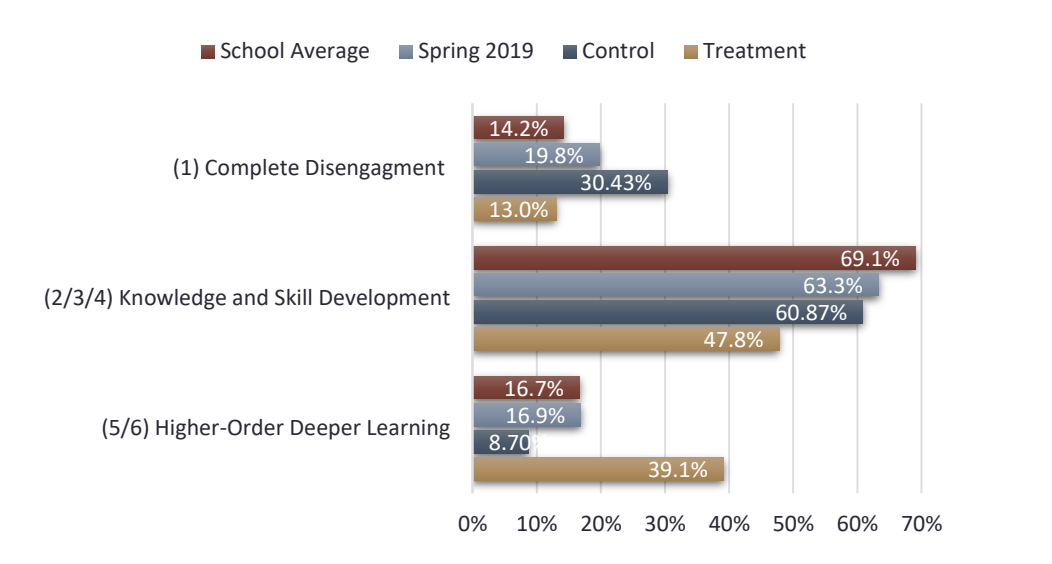


Figure 2 Engagement: Cognitive Engagement Levels, (N=46 samples).



When comparing engagement between the control group and the treatment group the engagement was significantly increased in the treatment group (Wilcoxon rank sum test, $w = 172.5$, $p\text{-value} = 0.03981$). A measured difference of 22.4% above the school-wide norm (Figure 2) indicates a significant increase in the engagement of student in higher-order cognitive learning when provided the treatment. The treatment did not completely prevent disengagement.

Attendance & Credit Earned

Table 1 Attendance: Average Attendance

Course Identifier	Group	Average Attendance
Control-Earth Science	Control	65%
Control-Physical Science	Control	37%
Treatment-Earth Science	Treatment	55%
Treatment-Physical Science	Treatment	78%
	Control	49%
	Treatment	64%

Table 2 Credit: Average Credit Earned

Course Identifier	Group	Average Credit Earned
Control-Earth Science	Control	0.45
Control-Physical Science	Control	0.31
Treatment-Earth Science	Treatment	0.40
Treatment-Physical Science	Treatment	0.56
	Control	0.38
	Treatment	0.48

Attendance vs. Credit Earned

Figure 3 Treatment: Attendance vs. Credit Earned, (N=45).

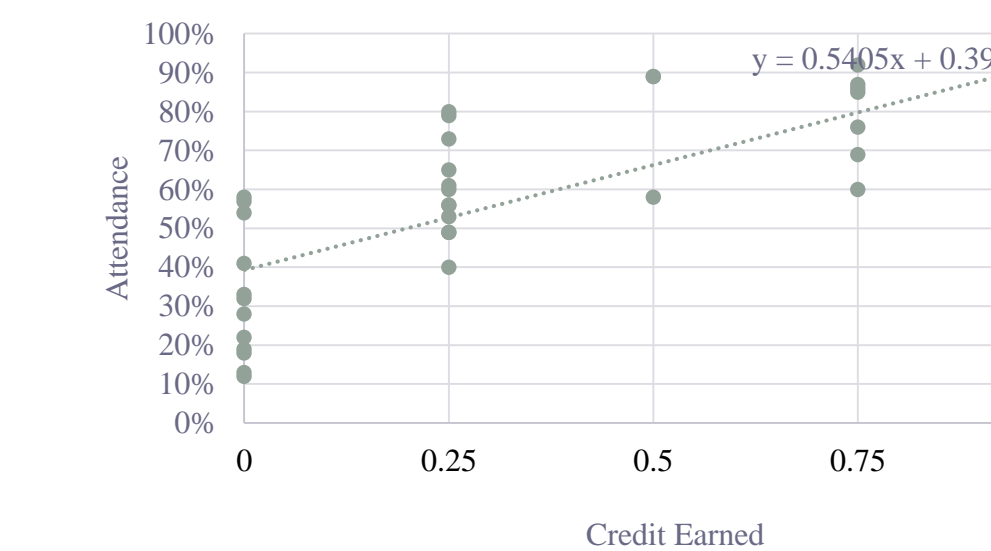
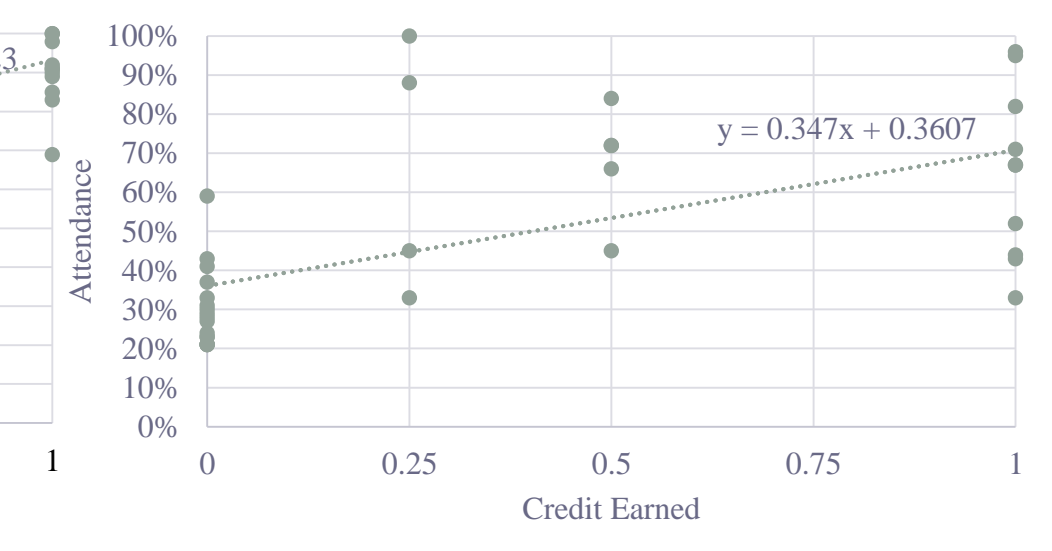


Figure 4 Control: Attendance vs. Credit Earned, (N=36).



CONCLUSIONS

When looking at data from all the collection methods (outlined in table 1), there is strong support for an integrated, team-based approach in an alternative education setting. Students were found to be more engaged and engaging in more cognitively complex tasks. Students in the treatment reported liking their school experience more than in the control group and students in the treatment group attended school at a higher rate during the data collection period. These factors contributed to better outcomes for course completion, as measured by credit earning, and high school completion. Although credit earning in science didn't significantly increase students earned credit in both courses they were enrolled in during the class period. This significantly increased the amount of credit students earned during their class period and contributed to improved course completion rates and high school completion. This approach has significant implications in the alternative school setting where students are often at a deficit in credit earning in relationship to their age. In this scenario, opportunities for credit recovery and accelerated learning increase the likelihood of students completing high school.