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An External Evaluation Report on the CITRS/CC! Initiative's Outcomes:

Schools implementing the CITRS/CC! Initiative experience statistically significant improvements in reading proficiency

School systems nationwide are seeking new interventions which have evidence supporting that implementation of the intervention can help with improving reading proficiency. During the first two years of the CITRS/CC! Initiative's initial pilot study in a large metropolitan Northeast school district's elementary schools, such a statistically significant finding was documented.

The results to follow document how during a two year span the CITRS/CC! Initiative was implemented, the experimental schools participating in the CITRS/CC! Initiative experienced a major reduction in the percentage of students performing in the lowest ELA (English Language Arts) performance category (i.e. Level 1), while the control schools in the same district using the same curriculum experienced a major increase in students moving down to Level 1. Additionally, experimental schools experienced higher gains than control schools in the best proficiency category (Level 4) ELA scores during the two years of implementation.

One of the major state tests taken annually nationwide is focused on measuring proficiency levels regarding the subject of ELA (English Language Arts). This subject tests students' abilities in reading, writing, listening and speaking. Improved ELA proficiency (i.e. which some consider being an indicator or gauge of reading comprehension) is a major predictor of other academic outcomes and the secret to improving test scores across the board. In other words, if a student can improve the level they read and comprehend, it makes common sense they would also be able to perform better on lengthy worded math, science and history questions. As a result, finding interventions which can complement curriculum efforts is something that many schools are actively pursuing. Finding initiatives which can improve academics by focusing on student's character, motivation to learn and learning climates is essential to maximizing the limited minutes of instruction which exist during the day.

As Table 1 below illustrates, while the experimental schools implementing CC! experienced declines in the percentage of students performing in the bottom three performing categories (e.g., Level 1 (the lowest performing) to Level 3, the control schools basically experienced

having a large percentage of kids performing at Level 2 fall further down to Level 1. Additionally, although not statistically significant (most likely due to sample size limitations), experimental schools experienced a 9.4% increase in Level 4 ELA students compared to control schools seeing a 5.9% increase. With more schools in future samples for analysis or being able to study the impact of the program at the classroom level (versus the schools level), such trending data suggests it is possible that future evidence might support how the CITRS/CC! Initiative is capable of empowering teachers to achieving statistically significant increases in the number of students moving up to Level 4 performance.

According to baseline academic year 15/16 state test scores (baseline), 56.7% of the 3rd grade experimental CC! Cohort students fell into the lowest of four performance categories assessing ELA proficiency. After two years of the intervention, the percentage of Level 1 performers for this same experimental cohort of students (now in 6th grade) was reduced to 52.5% according to 18/19 state ELA test scores (posttest). The control group students during this same period of time, however, experienced a significant increase in the number of students falling down into the worse ELA performance category. The control group went from 54.7% in the lowest performing Level 1 category on the 3rd grade 15/16 state ELA test scores (Baseline) to 63.1% while in 6th grade based on 18/19 state ELA test scores (posttest).

Table 1: Changes in ELA Proficiency

ELA State Tests	Experimental	Control
Level 1 15/16	56.7%	54.7%
Level 1 18/19	52.5%	63.1%
Level 1 Change	-4.2%	+8.4%
Level 2 15/16	24.9%	29.6%
Level 2 18/19	24%	17%
Level 2 Change	-.9%	-12.6%
Level 3 15/16	15.9%	13.4%
Level 3 18/19	11.3%	11.6%
Level 3 Change	-4.6%	-1.8%
Level 4 15/16	2.7%	2.3%
Level 4 18/19	12.1%	8.2%
Level 4 Change	+9.4%	+5.9%
Level 2-4 15/16	43.4%	45.3%
Level 2-4 18/19	47.5%	36.9%
Level 2-4 Change	+4.1%	-8.4%
Level 3-4 15/16	18.6%	15.8%
Level 3-4 18/19	23.2%	20%
Level 3-4 Change	+4.6%	+4.2%

According to an independent-samples t-test conducted to compare pretest proficiency levels related to 15/16 ELA state test scores, at baseline (pretest) there was no statistical difference between the experimental (M = 56.7%, SD = 17.12%) and control groups (M = 54.7%, SD = 12.98%) ELA Level 1 performance category; t (26) = .34, p = .74. In fact, at pretest there were no statistically significant differences between the experimental and control cohorts on any of the four levels of ELA performance.

According to an independent-samples t-test conducted to compare posttest proficiency levels related to 18/19 ELA state test scores, however, at posttest there was a statistical difference between the experimental (M = 52.5%, SD = 13.16%) and control groups (M = 63.14%, SD =

10.74%) in the ELA Level 1 performance category; t (24) = -2.27, p = .03, two-tailed. The magnitude of the differences in the means (mean difference = 10.64%, 95% CI: -20.31% to -0.97%) equates to a rather large effect size (eta squared = .18).

Furthermore, according to an independent-samples t-test conducted to compare posttest proficiency levels related to 18/19 ELA state test scores, at posttest there also was a statistical difference between the experimental (*M* = 24%, *SD* = 7.82%) and control groups (*M* = 17%, *SD* = 5.74%) in the ELA Level 2 performance category; t (24) = 2.63, p = .015, two-tailed. The magnitude of the differences in the means (mean difference = 7%, 95% CI: 1.50% to 12.4%) equates to a rather large effect size (eta squared = .22). As the table above suggests, the experimental cohort experienced further reduction in the percentage of students in this Level 2 lower performance category, while the control schools experienced an even higher reduction in Level 2 performing students. The trending data in Table 1 suggests that many of the control school students in Level 2 moved down to Level 1.

Additionally, this movement resulted in another significant finding related to the measurement of the percentage of student in the Level 2 to 4 category. According to an independent-samples t-test conducted to compare posttest proficiency levels related to 18/19 ELA state test scores, at posttest there was a statistical difference between the experimental (*M* = 47.5%, *SD* = 13.16%) and control groups (*M* = 36.86%, *SD* = 10.74%) in the ELA Levels 2 to 4 combined performance category group; t (24) = 2.27, p = .032, two-tailed. The magnitude of the differences in the means (mean difference = 7%, 95% CI: .97% to 20.31%) equates to a rather large effect size (eta squared = .18).

To further test these findings, and in order to run an Analysis of Variance (ANOVA) for confirmatory efforts, the external evaluator composed change scores for each level of ELA proficiency. For example, to compose a change score for Level 1 changes in proficiency percentages, we subtracted the 15/16 ELA percentage from 18/19 ELA percentage (e.g., 52.5% - 56.7% = -4.2%). Such an approach allows one to determine if there was reduction or gain during the two pear span. This one way between-groups analysis of variance was conducted to explore the CITRS/CC! Initiative's level of impact on the students' ELA scores. Participants were divided into two groups, experimental and control. Statistically significant differences, with large effect sizes, were identified matching the same significant differences documented above:

Level 1: $F(1,24) = 8.15$, $p = .009$, Eta squared = .25
Level 2: $F(1,24) = 9.28$, $p = .006$, Eta squared = .28
Level 2 to 4: $F(1,24) = 8.15$, $p = .009$, Eta squared = .25

Inferential Analysis Summary

Can CITRS claim it was their initiative which was solely responsible for this significant finding? No. As with studying any intervention in schools which typically are required to implement numerous initiatives simultaneously, there are other factors at play. But with the experimental design of this project (or more specifically this analysis) utilizing control and experimental schools, results suggest the initiative played a pivotal role. Beyond the experimental group implementing a character education initiative and the control group not taking part in such an initiative, the control and experimental schools as two distinct categories of participants are rather similar demographically. Furthermore, we are assuming they use the same curriculum assigned by the district. So as a means to better distinguish how or why the CITRS/CC! initiative contributed to such statistically significant outcomes, future efforts need to better assess school climate, character and other factors (utilizing reliable and validated scales) so that the analysis and evidence can more precisely show that changes in academic performance are related to how the CITRS/CC! Initiative is changing the climate and learning perceptions. But as is, with the addition of a literature review and method section, this analysis and its outcomes could be submitted as a manuscript and submitted to a journal for publication.

About Multi-Dimensional Education Inc.

Multi-Dimensional Education Inc. (MDed- an Ohio-based S-Corp), the developers of the Multi-Dimensional Youth Assessment (MDYA) and the VitalChild solution, was started in 2008 by the internationally respected researchers and evaluators Drs. Michael W. Corrigan and Doug Grove, as well as their since retired partner Dr. Phil Vincent. The partners and staff at MDed are experts in child development, clinical and developmental psychology, organizational change and statistical analysis. From its origins, the vision and primary goal of MDed has been to help improve the lives of children by helping youth-focused organizations, schools and agencies collect, analyze and utilize more sound evidence-driven approaches to continuous improvement.

With more than a decade of experience pursuing this vision and goal, from coast to coast MDed has assisted more than 150 school systems, state agencies and national organizations in their work with children and families. Holding to the highest ethical practices and standards, they have directed the research for more than $19.5 million in federal studies funded by the National Science Foundation (NSF), U.S. Department of Education and Department of Justice Juvenile Division, and as a result are heavily experienced in training others to design and use data-driven outcomes to ensure sustainable successful change processes. They also are well known for their ability to strengthen and create assessments (i.e. measurement validation and psychometric expertise), strategically configure such evidence via applied sound operational and predictive analytics, and turn accountability information into applicable actionable data.

Their core leadership team consists of professors who for decades have sought to make a difference far beyond the confines of academia. They have taught research methods, statistical analysis, organizational communication and leadership, developmental psychology (child development), clinical psychology and clinical diagnosis, as well as delivered hundreds of keynotes, workshops and training seminars. But they have also worked in the field and continue to develop solutions and approaches to help the public sector find greater success.