Editor's Note

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Welcome to the spring issue of *The Charter Schools Resource Journal*. It is an honor and a pleasure for me to present to our readers two articles on charter schools.

In the first article titled *Reciprocal Teaching Plus Behavioral Support: How a Small Urban Charter School Raised Literacy Scores by 28%*, Dr. Carter took us through an extraordinary journey of how the Dreamland Academy merged from the brink of the bankruptcy to increase school literacy scores by 28%. The evolving story of Dreamland students' emergence as better readers offers a message for educators interested in helping poor readers read better.

In the second article titled *A Comparison of Student Achievement in Technology Charter High Schools and Technology Traditional High Schools in a Texas Region*, Dr. Hinojosa, Dr. Jay, and Ms. Suwannakit from Texas A&M University-Commerce, TX examined exit-level math and science standardized scores and expenditures per pupil in technology charter high schools and technology traditional high schools in Texas. They found that the charter technology high schools were not performing as well as the regular technology high schools in terms of math and science TAKS exit-level tests, even when the differences in expenditure per pupil were taken into account. It again proves that charter schools are not a homogeneous group, and they vary across many important dimensions, regarding student achievement.

In short, both articles are well researched, timely, and tackle an important issue in education -- the quality of charter schools. I would like to thank all the authors and editorial board members for their hard work. As always, your comments related to the journal will be greatly appreciated.

Happy Reading!

Reciprocal Teaching Plus Behavioral Support: How a Small Urban Charter School Raised Literacy Scores by 28%

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Dreamland Academy of Performing and Communication Arts is a small urban elementary charter school in Little Rock, Arkansas. In three years, Dreamland overcame start-up woes to increase school literacy scores by 28%. The evolving story of Dreamland students' emergence as better readers offers a message for educators interested in helping poor readers read better.

New Charter School for At-Risk Students Opens Its Doors in Little Rock

In the fall of 2007, amidst the celebration of the 50th anniversary of the desegregation of Central High School in Little Rock, Arkansas, the Dreamland Academy of Performing & Communication Arts, an open enrollment charter school for elementary students, opened its doors to a population comprised of 292 at-risk students. With its opening, Dreamland became Little Rock's first open enrollment elementary charter school designed to provide needed support and high quality academics to at-risk urban students. A stone's throw away from Central High School, Dreamland Academy is located in southwest Little Rock in close proximity to the "iron rectangle," a section of Little Rock known for its high percentage of criminal behavior ranging from murder, rape, burglaries, and assaults, to illegal drug trade. This "iron rectangle" is within walking distance of Dreamland Academy and many of Dreamland's 292 students resided within its boundaries. As a result, their exposure to crime was daily and many of them had been victims of robberies, burglaries, and assaults. They lived with violence and brought with them violent behaviors that were front and center. Their first year assessment results indicated the high needs the students had for academic interventions.

During its maiden year, in 2007-08, Dreamland students in grades 3-5 were administered the Arkansas state assessment (ACT-TAAP). On Mathematics Assessment in the 3rd grade: 28% scored at the Proficient or Advanced; 72% scored basic or below basic. In literacy, 26% of grade 3 students scored at the Proficient or Advanced levels, while 74% scored basic or below basic. In the 4th grade, 20% scored at the Proficient or Advanced levels in mathematics, while 80% of students in grade four scored basic or below basic. In literacy, 20% of students scored at the Proficient or Advanced levels, while 80% scored at the Basic or Below Basic level. In the 5th Grade: 5% of students scored at the Proficient or Advanced levels, while 95% scored basic or below basic. By anyone's imagination, these scores indicated the extreme academic needs the students brought with them to Dreamland Academy.

Three years later, in 2009-10, Dreamland students showed learning promise, but in a No Child Left Behind world, the progress made by Dreamland students was ignored. Yet had someone looked closer, he or she would have discovered that something astonishing had happened at Dreamland that resulted in its 4th grade students demonstrating more growth in reading than any other group of students statewide. In its third year of operation, the tide

turned and Dreamland students outdistanced all students in Arkansas in growth in proficient literacy scores and demonstrated a whopping 28% increase in 4th grade reading. Additionally, Dreamland students demonstrated progress of the most important kind: the distance from where a student started in terms of reading competence and the distance he or she traveled in one academic year; moreover, they demonstrated that the intervention we employed accomplished the following: (1) it helped poorer readers achieve more reading growth and (2) it resulted in a majority of the students improving—not just the stronger readers exclusively, but the majority of the students--made progress.

What happened to stimulate this growth in reading? What kind of intervention did we implement? The purpose of this article is to answer the above two questions by introducing the students and teachers of Little Rock's first elementary charter school, Dreamland Academy; describing the journey Dreamland teachers and administrators travelled to establish a coherent school framework needed to gain control of unruly students with high needs; clarifying its efforts to implement Reciprocal Teaching, a short-term reading improvement intervention for fourth and fifth grade students; and reflecting on the lessons learned that inform future interventions designed to help students read better.

2007-08 Dreamland Students: Demographics

In many ways, Dreamland 2007-08 demographics mirrored those common to other urban elementary schools as they included African American students (90%), Latino American students (5%) and European American students (5%). Dreamland Academy's average daily attendance for 2007-08 was 95.3%. A significant number of Dreamland students lived in single parent homes, many students had incarcerated parents; others lived with grandparents or resided in group homes or foster homes. Some were homeless and living in shelters or doubled up with family or friends. Most of them (92%) received free or reduced lunch; most needed assistance with reading and literacy development, and even some of the first graders-brought with them to Dreamland histories of suspension, out of control behavior, and a need for multiple therapies (occupational, speech, behavioral management, and physical).

First year assessment results indicated that the overwhelming majority of the students needed assistance with reading and mathematics. Among the initial student population were students who might be described as having extreme behavioral problems and high needs. Such students represented an enormous challenge as their behaviors constantly disrupted classroom activities and required considerable management by staff, teachers, and school administrators.

Their out of control outbursts included loud screaming, oppositional defiant behavior, physical assaults such as kicking, biting, or hitting staff who tried to prevent them from injuring another student. They engaged in physical assaults on fellow students (kicking students in the head, biting them, slapping them, punching them in the nose, etc.), and they engaged in dangerous behaviors such as throwing chairs or books and knocking over objects in their environment. Five to ten first and second grade students would not remain in their classrooms at all. We would escort them to their classrooms, but they would remain a few minutes and walk right out. The more extreme students kicked the walls and furniture, screeched and wailed for extended periods of time in ways that represent behaviors more commonly found in day treatment facilities. Six students were remanded to behavioral

hospitals and two remained hospitalized for over 4 months. In short, the school was filled with students who had failed to thrive in traditional school settings; these included high incidence special needs students (learning disabled, emotionally impaired, speech and language, autism, and physical disorders), students with discipline backgrounds, records of suspension from school, high absenteeism, and low performance on local and state assessments.

Such students, while welcomed at Dreamland given its mission to help at-risk students thrive in school, threatened the school environment and its developing academic culture and were the single most contributing factor to Dreamland losing more than 70 students in its first two months of existence. The smallest thing could set them off: cutting the line, someone else answering a question they thought was directed to them, touching their backpacks, picking up an item that belonged to someone else, for example. During the first three months (August-November) the hallways were filled with screaming children and administrators trying to calm them down. During this early period, parents interested in Dreamland would come to visit the school and we would experience a real juggling act as we tried to keep the screaming students away from the prospective new students and their parents.

Students Behavior Indicated Need for Behavioral & Clinical Support

We recognized early on the futility of pursuing learning interventions when so much off task behavior was apparent; therefore, we made a conscious decision to address the out of control behavioral problems and unmet therapy needs as the first order of business. We partnered with three therapeutic agencies to provide therapy to needed students that ran the gamut: occupational, speech, and physical. Counselors were sought to help families and their children, and we used any community resource available to us to help our students. One firm moved 12 staff into the school and provided us with case managers, therapists, and child care workers. The administrators created a program that would use counseling, time out, and other non-punitive methods for handling student discipline. If a student used a bad word, we would note it, talk to the student and after some time, return the student to class. Teachers objected to this even though we stressed the importance of students remaining in class and learning.

Accordingly, if students broke a minor code of conduct standard, we did not suspend them but instead sent them to the Reflection Room. Students would be counseled here, if the response required parental notification, parents would be called, but the goal was to calm the student down and return him or her to learning. If students violated a major code of conduct offense resulting in their hurting another student or staff, they were suspended; however, if parents requested, we placed them in an in-school suspension program to ensure required childcare. Because we were a school of choice, we did not balk at offering parents options that allowed for child supervision and that did not interrupt their work schedules. Teachers objected to this as well. Because we were aware of their novice status, we continued to try persuasion, staff development, and staff meetings to review the charter application with teachers and show them that our charter called for kind responses to students. Still, they clamored for zero tolerance-something we categorically rejected as administrators.

Dreamland Teachers: Culturally Inexperienced With Limited Teaching Tools

In 2007-08, 10 of 13 Dreamland teachers were first year teachers and 10 of the 13 were European American while 3 were African American. None had experience with the specific population except one. They were unprepared for the students when they arrived due to lack of experience with the population, and our initial placement in inadequate facilities, so the school resembled a madhouse for at least the first 3 months following its opening. Teachers had few tools to work with such challenging students and reverted to the very things that exacerbated the students even higher. For example, they screamed at students and tried to elevate their voices over the students' voices. Of course, the students just got louder, so we endured teacher and student screams throughout the day during the early weeks of the school's opening. Sometimes they grabbed students in an attempt to manage them physically; this resulted in the students falling down to the floor and screaming loudly. Teachers, assuming that administration was weak, demanded that administration suspend students—even though we had been open for business only one week.

Some teachers used threats to students backed up with their cell phones to call parents repeatedly if students would not behave as expected. Of course, given the chaos, they experienced difficulty controlling class and managing classroom, so all administrators spent the whole day during the first year in the hallways, managing students, and trying to provide support to the classroom teachers. Office time was impossible, so was lunch time, or meeting time. The first year, we devoted our energies to survival. The more experienced teachers sought and found solutions to managing their classrooms. One taught students to sing their lessons. In her class, they sang everything from the way to complete an envelope, to the states of the union and their capitals, to the countries of the world, to American history lessons, and math processes.

In another class, the teacher relied on chorals to gain control of the class and teach them required content. Accordingly, in this class, they chanted in unison the Preamble to the Constitution, their summaries of their history lessons, and science or math solutions. Another one structured her classroom tightly and moved students through the tight structure until they understood and knew how to follow her procedures and move from center to center. The others screamed at the students, loud teacher voices reverberated throughout the school halls until our programming, and response to students began to generate results.

Teachers' Lesson Plans Indicated Need for Diverse, Engaging School Curriculum

We opened school for the second year in August 2008 aware of the importance of creating interventions that would re-direct the students from failure and poor achievement to competence in reading and mathematics. Unfortunately, we tried to install a reading intervention, but failed as the teachers struggled with student behavioral issues that impeded their ability to focus on reading research. By this time, students were remaining in their classrooms, though, and as a result, the hallways were quiet, but the explosions in the classrooms continued. In one class, we placed 4 adults, the teacher and 3 community aides, and held our breath before opening the classroom door, especially if a visitor was with us. Having experienced expert teaching among the Jackson Public Schools teaching staff who excelled at innovative teaching, we were wide open for teacher experimentation and invention, but the teachers focused on the students' behaviors, and try as we might, we could

not get them to recognize the role they played in off task student behavior as most assignments were lecture, demonstration, and completion of worksheets or workbooks.

Because we had electronic learning aids, teachers sometimes added these to their lessons. But by and large, the lesson plans were sterile and bland and the student activities were predictable and non-exciting. The exceptions noted included two third grade teachers reliving the first Thanksgiving with their students and dressing as Indians and Pilgrims. Or the teacher who taught students to sing everything; history? The states, capitols, locations on the map; science? Raps about life science, and the metamorphism of the butterfly; math? Raps and beats that provided students with processes and rules they could remember easily; English? Plays, charades, role-playing that represented some area of grammar or composition they were learning.

We had learned by this time that the students loved to perform, so we placed them on teams and sought out places where they could demonstrate or perform for an audience. We added martial arts, urban step dancing, ballroom and ethnic dances, and we added music to the school curriculum. Slowly, we began to witness students regulating and managing better their own self-discipline. We offered a 21st Century Community Learning Center after school program and enrolled 253 students; we fielded two sets of cheerleaders, a team of twirlers, and two basketball teams who competed in a city league for elementary students. We offered a martial arts program that performed in various venues within the city. We created a step team, an urbanized drill team of sorts. We noticed that with the expansion of the school program, the student behaviors became better.

We beefed up our in-school suspension program that was rooted in intensive care principles where the over-riding goal is redirecting student behaviors, as opposed to punishing them for minor infractions or non-physical violations of the Code of Conduct for students. We rented a house adjacent to the school and used it as a time out place dubbed "The House," by the students. If students were sent to the House, they remained in the house and completed their assigned work under the guidance of the school social worker, counselor, and a highly qualified teaching assistant. Students were not allowed to attend daily specials, nor were they allowed to eat lunch in the cafeteria or attend recess with their classmates. Assignment to the House was reserved for severe violations of the Code of Conduct such as fighting, hurting another student, attacking an adult, etc. Having relied on student support services, therapeutic responses, and engaging school curricula to calm down students, and having addressed the behavioral problems the students experienced through intensive care, counseling, or therapy, we set out to create a learning intervention to demonstrate for teachers how much students can improve when they learn to self-direct their learning. Enter the Reciprocal Teaching intervention, a reading improvement strategy hailing from learning science that works and offers considerable promise for helping urban students improve their reading competence.

Learning Intervention Applied At Dreamland: Reciprocal Teaching

What is Reciprocal Teaching? A highly venerated reading development strategy wherein students mimic the behaviors of expert readers in an effort to construct meaning from text when faced with daunting circumstances that required student achievement in reading (Palinscar & Brown,1986). By description, Reciprocal Teaching is a reading improvement

strategy that mimics the processes that expert readers employ when they are engaged in reading or learning. As such, Reciprocal Teaching is a holistic reading improvement strategy that is ideal for strengthening meta-cognitive skills and helping students learn how to read better. Reciprocal Teaching is characterized as a dialogue taking place between the teacher and students (or student leader and members of the group) that results in students learning how to construct meaning when they are placed in must read situations (tests or assignments). The approach derives from the theory that reading for meaning and retention—what is referred to as study reading—requires effort, a full repertoire of comprehension strategies (namely, summarizing, generating questions, clarifying, and predicting), and the flexibility to use these strategies as the situation requires. Using prior experience as a channel, readers learn new information, main ideas, make connections, and generally make sense from the text as intended by the author (Brown, Palinscar, & Armbruster, 1984; Bruer, 1993; Palincsar, Ransom, & Derber, 1989).

Readers construct meaning by relying on prior experience to parallel, contrast or affirm what the author suggests. Because Reciprocal Teaching engages students in constructing meaning, it thus parallels the new definition of reading that describes the process as a dynamic interaction between the reader and the text in the reader's attempt to construct meaning from the text. Strategic readers consistently employ two ongoing mental activities as they read: they read and understand the content while at the same time remaining alert for instances when they are not achieving full comprehension, and taking appropriate steps to remedy the situation. Generating questions, summarizing, clarifying, and predicting were selected to comprise the Reciprocal Teaching technique because they meet both needs of the strategic reader, the ability to read for meaning and the need to simultaneously monitor learning for comprehension. Each of the strategies helps students to construct meaning from text and helps students monitor their reading to ensure that they (in fact) understand what they read. These strategies inform them when they have wandered off, missed the point, are confused, cannot predict what is coming up, or are not following the gist of that to be learned (Bruer, 1993). In combination, these strategies work to strengthen students' meaning construction skills in specific ways represented on Table 1.

Table 1: Description of Reciprocal Teaching Strategies & Their Sub-Skills

Reciprocal Teaching Strategies & How They Promote Understanding	Sub-Skills of Reciprocal Teaching
Summarizing. Summarizing text provides the opportunity for readers to identify, paraphrase and integrate important information in the text. It requires the reader to recall and state the gist he (or she) has constructed. Therefore, a reader who can summarize has activated background knowledge to integrate information appearing in the text, allocated attention to the main points, and evaluated the gist for consistency. The inability of the reader to summarize text indicates that comprehension is incomplete.	**HOW TO SUMMARIZE:** If Topic Sentence is present, identify topic first then identify the topic sentence. If no topic sentence is present, identify the topic; then identify the important facts in the text; use these to create a summary. If steps or lists are present, identify the topic, assign a name or title to the list or the steps, create a summary from this information.

Questioning. When readers generate questions, they first identify the kind of information that is significant enough that it could provide the substance for a question. Then they pose this information in a question form and self-test to ascertain that they can answer their own question. Generating questions about text, likewise, depends on the gist and the function needed for summarizing, but with one additional demand: that the reader monitor the gist to pick out the important points. To generate questions, the reader is required to re-process the information read into question format. The inability to formulate appropriate questions about text is another indicator that comprehension has not occurred.	**HOW TO QUESTION IN A RECIPROCAL TEACHING DIALOGUE:** Use question words to start the process and to figure out the main idea. Ask about an important fact that is directly stated in the paragraph. Ask about an unimportant fact that is directly stated in the text. Ask about things not stated in paragraph but that can be inferred by combining important facts across sentences.
Clarifying. When readers clarify the text, their attention is called to the many reasons why text is difficult to understand: new vocabulary, unclear references and unfamiliar or difficult concepts. When a reader clarifies a point, he/she must allocate attention to the difficult points and engage in critical evaluation of the gist. In short, clarifying directs the reader to look for parts of the passage that are confusing and unclear. The reader must ask the question: 'Is there anything in this segment that I don't understand?' If there are unclear segments which block understanding, the reader is signaled to re-read, read ahead or ask for help.	**HOW TO CLARIFY:** When author uses a pronoun, clarify it by identifying the word (noun) the pronoun refers to; or encounters a difficult vocabulary word, try one or more of these strategies: (a) Read ahead to see if author defines or describes word further; (b) Use context clues to help figure out what the word means; (c) Ask questions and try to locate answers as a self-check; (d) Identify the parts that are confusing and place these into a question form. (This sets up reader to ask someone or use other methods to get information that helps); (e) Ask someone for assistance; (f) Look for little words in big words; (g) Look for word parts such as roots, prefixes, & suffixes; (h) Look for commas that follow unfamiliar words; (i) Look for commas that help define information in text.
Predicting. Predicting requires the reader to hypothesize about what the author might discuss next in the text. This provides a purpose for reading: to confirm or disprove the hypothesis. Additionally, with predicting an opportunity has been created for the readers to link the new knowledge they will encounter in the text to the knowledge they already possess. It also facilitates the	**HOW TO PREDICT**: Use the title as a clue to the subject. Use the headings as a clue to predict contents therein. Look for questions; if author asks a question, he or she will usually answer the question.

use of text structure as students learn that headings, sub-headings and questions embedded in the text are useful means of anticipating what might occur next. To predict, the reader must read with anticipation and expectancy, watching for text clues indicating where the author is going next. The inability to predict may also be an indicator that comprehension is inadequate.	

Palinscar established five requirements to guide her development of a prototype (of an instructional model) that could be used to teach the four strategies to students; then she designed Reciprocal Teaching to satisfy all five of the requirements. The requirements, in brief, are (1) that for strategy instruction to be successful, teachers have to make the strategies overt, explicit and concrete by modeling them for the students; (2) to avoid inert strategies, teachers should teach strategies as a functioning group (as opposed to in isolation) and should link them to the context in which they are to be used. (This suggests that reading strategy instruction should take place during reading-comprehension tasks, where the goal is to construct meaning); (3) instruction must be informed—the student should be aware of why the strategies work and when and where they should use particular strategies; (4) students should be aware that the strategies work regardless of their level of performance and they should receive feedback from their teachers about their success based on their abilities; and, finally, (5) to ensure that students are spontaneous strategy users, the responsibility for comprehension must be transferred from the teacher to the student, gradually, but as soon as possible (Bransford, Brown, & Cocking, 1999; Brown, & Palinscar, 1986; Bruer, 1993; Rosenshine & Meister, 1994).

How Dreamland Teachers Were Introduced To Reciprocal Teaching

Reciprocal Teaching was introduced to Dreamland teachers in a professional staff development setting that began with an overview of text features and text structures, followed by an explication of the 4 strategies common to Reciprocal Teaching and why these work to help students construct meaning from text. Following the overview of Reciprocal Teaching, each teacher was provided with a copy of a teacher training module developed by Palinscar (co-creator of Reciprocal Teaching) that provided scripted lessons in the form of 4 modules, one representing a strategy common to Reciprocal Teaching. The lesson plan within each module literally "walks" students through the four strategies of Reciprocal Teaching which are summarizing, clarifying, questioning, and predicting and includes an explication of the sub-sets of Reciprocal Teaching strategies for the teacher as well as a script to follow while teaching students the strategies. In completing the module, teachers learn what to look for as clues for summarizing from text, how to clarify unknown elements in text, how to raise questions about elements stated or unstated in the text, and how to generate predictions from the text using clues such as titles, sub-headings, etc. Teachers were encouraged to practice the strategies by role playing as students and teachers and then exchanging roles. For example, Dreamland teachers were provided the four instructional modules and directed to pair off. One teacher served as the learning facilitator, the other listened and responded on cue to the learning facilitator's prompts and questions as a student might. Teachers reversed the roles twice, so each acted as the learning facilitator and the student. Additional support provided teachers included reinforcement of Reciprocal Teaching strategies and question and answer

sessions to help teachers close their gaps related to the same. They followed a script that helped them understand the benefits of using Reciprocal Teaching.

The Dreamland Reading Improvement Intervention

Accordingly, in the Dreamland intervention, the aim was to develop students' meta-cognition skills and to help them learn to approach reading using the specified strategies as a habit of mind. Therefore, we designed the Reciprocal Teaching intervention to achieve the following purposes: (1) to develop a research-based framework for improving reading performance among elementary urban students with histories of poor performance in reading, (2) to field-test Reciprocal Teaching strategies as aids to meaning construction within 4th and 5th grade English classes to determine their impact on student performance on the Arkansas State Benchmark Literacy Assessment, and (3) to learn from the classroom intervention the needed steps and considerations the Academy would have to take to implement a school wide reading intervention based on Reciprocal Teaching-if students' reading (literacy) scored improved in any significant way as expected.

Students engaged in Reciprocal Teaching dialogue sessions of about 30 minutes where they (1) raised questions about the text (and sought to answer these as self-checks on comprehension), (2) clarified ambiguous vocabulary and elements of the text that were confusing to the students (using strategies taught to them explicitly), (3) summarized main points as these emerged in the text (and thereby checked for their emerging understanding), and (4) predicted what should logically come next in the text (or imagined based on the constructed meaning). These strategies combined to inform students when they had wandered off, missed the point, were confused, could not make a prediction of what is coming up, or could not follow the gist of what was to be learned. The Intervention began in mid-January (2010) and concluded in early April (2010), nine weeks later.

Although all teachers were encouraged to use Reciprocal Teaching, the intervention to increase students' performance on state standards was limited to one teacher who taught English to students in grades 4 and 5 for 1 hour per day. We embedded the Reciprocal Teaching strategy into his English class and directed the teacher to group the students in a specific way (groups of 5 comprised of two good readers, one poor reader, and two moderate readers). Also, the teacher was directed to cover the same materials he would were we not trying an intervention, but to allow students to construct meaning from the same in small groups using the Reciprocal Teaching strategies of summarizing, clarifying, predicting, and questioning. To ensure student fidelity to the intervention, we added classroom journals and required students to capture their thinking in writing as it evolved in the Reciprocal Teaching dialogues. How? They simply created a four square template and placed one of the strategies at the head of each square. Within these, the students were to capture their thinking or the conclusions they reached while constructing meaning. See Table 2.

Table 2: Reciprocal Teaching Comment Sheets Used By Dreamland Students

Summarizing This story (article, chapter) is about	Predicting I predict that
Questioning My questions	Clarifying Words I do not know

Reading Scores Up 28%: A Conclusion

Dreamland students completed the Arkansas Benchmark Assessment and reported results which stunned everyone statewide and prompted a local television station to liken other districts with Dreamland as it reported the unprecedented growth in reading realized by Dreamland students, the very students thought to be unable to reach state standards in representative numbers. *Less than two years ago, the Dreamland Academy in Little Rock was on the verge of closing its doors; waist-deep in debt. "It was in excess of $200,000," said Dreamland interim Superintendent Carolyn Carter. Now they have made enough progress both financially and academically to become one of the state's well-performing schools, at least according to the 2010 Arkansas benchmark exams. "We were ecstatic to realize when we got our scores back that our fourth graders had spiked 28 percentage points from last year," Carter says, "It wasn't by happenstance. We would like to believe we put together an intervention based on cognitive science and we're happy to find out that the kids were actually able to do it."* (C. Carter, personal communication, June 30, 2011)

What happened to stimulate this growth in reading? What kind of intervention did we implement? The evolving story of Dreamland students' emergence as better readers offers a message for educators interested in helping poor readers read better: consider an intervention involving Reciprocal Teaching in addition to behavioral management and support; the result is astonishing, and the strategy works!

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A Comparison of Student Achievement in Technology Charter High Schools and Technology Traditional High Schools in a Texas Region

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This study examined exit-level math and science standardized scores and expenditures per pupil in technology charter high schools and technology traditional high schools in Texas. The sample included 30 technology charter high schools and 30 technology traditional high schools in Region 20.

Introduction

Charter schools are publicly funded schools of choice. Supporters hope that charter schools will give new options to families and prove educationally effective by virtue of greater accountability to parents (Finn, Manno, & Vanourek, 2000; Finn, Ryan, & Lafferty, 2010). Opponents argue that greater choice may exacerbate current racial segregation and create fiscal strains for states and school districts (Lacireno-Paquet, Holyoke, & Moser, 2002). Despite this debate, charter schools have grown rapidly since the first charter school opened its doors in Minnesota in 1992. Currently, over 5,400 charter schools operate in 40 states plus the District of Columbia (Center for Education Reform, 2011).

To answer the question about how charter schools are doing academically, RAND Education Group (2003) conducted a comprehensive study of California's charter schools. RAND found that charter schools are not a homogeneous group, and they vary across many important dimensions. Regarding student achievement, results are mixed. Students in charter schools generally have comparable or slightly lower test scores than students in regular public schools, but there is variation among the types of charter schools.

Student achievement, particularly in the era of the No Child Left Behind (NCLB) legislation, should assume a new focus (Hess & Finn, 2007). Charter schools now have to demonstrate that the academic performance of their students meets the standards as set in the NCLB legislation—or go out of business. The No Child Left Behind Act (U.S. Department of Education, 2001) leaves schools, charter or regular, with no excuse but to use all educational means to help every child be successful in school.

This study examined exit-level math and science standardized scores and expenditures per pupil in technology charter high schools and technology traditional high schools in Texas in hopes of shedding important light on the future policy of charter schools.

Technology Charter High Schools

Texas Education Agency (TEA, 2008a) defines technology charter high schools as legally independent and innovative public schools. TEA also defines charter high schools as open-enrollment charter schools that receive state funds based on the average daily attendance (ADA) of students. Unlike independent school districts, however, charter schools do not receive funds from local tax revenue and do not have access to state facilities allotments or technology. These schools receive waivers from state laws and regulations that conflict with innovations such as mandating the amount of time a class must spend on a particular subject or how it is taught (Weil, 2000).

Technology charter high schools are held to fewer state laws than technology traditional public schools, with the idea of ensuring financial and academic accountability without undue regulation of instructional methods or pedagogical innovation (Fuller, 2000). The charter movement continues to grow and with this growth comes accountability for student achievement. States have frequently used technology charter high schools as a catalyst for educational reform (Brady, Umpstead, & Eckes, 2010; Shober, Manna, & Witte, 2006; Solomon, 2006) or educational innovation. In this latter role, technology charter high schools may actually improve nearby traditional public schools by serving as models of innovation and fostering competition for students (Stewart, 2002).

In this study, we will particularly look at technology charter high schools and technology traditional high schools that incorporate technological tools such as digital video cameras, portable LCD projectors, WebQuest, wikis, blogs, etc. We contacted all 60 schools examined to confirm usage of at least 50% or half time of technological use. These 60 schools included 30 technology charter high schools and 30 traditional technology schools as identified by the Texas Education Agency (2008a). Education Service Center, Region 20, was chosen for this study because it contains the second highest number of approved charters in the state of Texas (TEA, 2009a). Region 20 assists school districts in improving student performance and increasing the efficiency and effectiveness of school operations. Region 20 includes 15 counties, and over 340,000 students enrolled in grades K-12. The ethnic distribution consists of 255,468 Hispanic students, 86,509 white students, 28,320 African American students, 1,086 Native American students, and 6,672 Asian/Pacific Islander students. Over 60% of Region 20 students are of low socioeconomic background while 50% of Region 20 students are “at risk."

Research Questions

The following research questions provided focus for this study.

1. How does the level of student achievement on the Texas Assessment of Knowledge and Skills (TAKS) exit-level math and science tests in technology charter high schools in Region 20 compare to the achievement of students in technology traditional high schools from Region 20?
2. How does the level of student achievement on the TAKS exit-level math and science tests in technology charter high schools in Region 20 compare to the achievement of students

in technology traditional high schools from Region 20, when the differences in expenditures per pupil are taken into account?

Research Design

A causal-comparative method was used in this study. Causal-comparative research involves comparing two or more groups in order to explain existing differences between them on some variable(s). In causal-comparative research, the groups that are being compared, the independent variable, have already been formed and factored (Johnson & Christensen, 2000). To test the first and second hypotheses, a between-groups design was utilized. A one-way analysis of variance (ANOVA) was conducted, with a two-level factor. The factor was divided into the different school types, technology charter high schools and technology traditional high schools. There was one dependent variable; student achievement in mathematics and science. Quantitative measurements for the dependent variable were based on the mean of student test scores.

To test the second hypothesis further, an analysis of covariance (ANCOVA) was conducted. The factor was divided into the different school types, technology charter high schools and technology traditional high schools. The covariate was expenditures per pupil and the dependent variable was student achievement in math and science.

Population and Sample

The population of interest for the study included all technology charter high schools and technology traditional high schools that implement the use of technology on their campuses in Region 20. According to a recent publication by TEA (2009b), entitled Pocket Edition 2008-2009 Texas Public School Statistics, the population of interest totaled 1,229 technology charter campuses and technology traditional campuses. According to the same document, Texas had 29 approved charter districts with 52 open-enrollment technology charter school sites. The total number of technology charter high schools was 36 and the total number of technology traditional high schools was 87. After eliminating six of the open-enrollment technology charter high schools due to a "non-rating" given by TEA, a sample of 30 open-enrollment technology charter high schools in Region 20 and 30 technology traditional high schools from the same region were randomly selected using the Statistical Package for the Social Sciences (SPSS). The findings from the selected sample of technology traditional high schools and technology charter high schools in Region 20 were used to support the inferences applied to all technology traditional high schools and technology charter high schools in Texas.

Instrumentation

This study was based on the following pre-existing data sets: TEA 2008 Snapshot; Texas Education Agency report entitled Texas Open-Enrollment Charter High Schools Evaluation, February 2008 (TEA, 2008b); and the Academic Excellence Indicator System Data Files for 2007-2008 (TEA, 2008c). TEA Snapshot is a Texas Education Agency product that provides

an overview of state public education for a particular school year. In addition to state-level information, this website contains a profile of the characteristics of each public school district. The Snapshot does not provide any campus-level information.

The Texas Open-Enrollment Charter High Schools Evaluation is an annual evaluation conducted by the Texas Center for Educational Research (TCER, 2000) to assess charter school progress. In addition to being an annual assessment of every type of charter school, this evaluation examines:

- Student scores on assessment instruments;
- Student attendance, grades, and discipline;
- Socioeconomic data on students' families;
- Parents' satisfaction with their children's schools;
- Students' satisfaction with their schools; and
- Costs incurred by technology charter high schools for instruction, administration, and transportation.

The Academic Excellence Indicator System (AEIS) pulls together annually a wide range of information on the performance of students in each school and district in Texas. This information appears in AEIS reports, which are available each year in the fall. The information includes:

- State-administered assessment performance by grade, subject, and total grades tested;
- State-Developed Alternative Assessment performance;
- Student Success Initiative;
- Attendance rates for the full year;
- Dropout rates (by year);
- Completion and dropout rates (4-year longitudinal);
- Percentage of high school students completing an advanced course;
- Percentage of graduates completing the Recommended High School Program;
- Advanced Placement (AP) and International Baccalaureate (IB) examination results;
- Texas Assessment of Academic Skills (TAAS)/Texas Academic Skills Program (TASP) equivalency rates; and
- SAT and ACT examination -- participation and results.

Performance on each of these indicators is shown disaggregated by ethnicity, sex, special education, low-income status, and, beginning in 2002-03, limited English proficient status. The reports also provide extensive information on school and district staff, finances, programs, and demographics.

Analyses of common characteristics of technology charter high schools in Region 20 and technology traditional high schools in the same region were guided by TEA Snapshot; Texas Education Agency report entitled Texas Open-Enrollment Charter High Schools Evaluation, 2006-2007 (TEA, 2008b); and the Academic Excellence Indicator System Data Files for 2007-2008 (TEA, 2008c).

Procedures

Initially, the total number of technology charter high schools in Texas and a list of the Region 20 technology charter high schools were determined. In addition, the total number of technology traditional high schools in Region 20 was found. Math and science exit-level TAKS scores were examined for technology charter high schools in Region 20, when compared to technology traditional high schools in Region 20. In addition, expenditures per pupil information was extracted from the Academic Excellence Indicator System (AEIS) reports.

Data Analysis and Results

Data Analysis and Results of Research Question One

Research Question One: How does the level of student achievement on the TAKS exit-level math and science tests in technology charter high schools in Region 20 compare to the achievement of students in technology traditional high schools from Region 20?

Null Hypothesis One: There is no statistically significant difference in TAKS achievement between students in technology charter high schools compared to students in technology traditional high schools.

For the 2007-2008 academic year, the descriptive statistics for exit-level mathematics results for technology charter high schools and technology traditional high schools are shown in Table 1. Exit-level mathematics results for technology charter high schools were (M = 53.60, SD = 23.032), indicating that technology charter high schools have an average of 53% to 54% exit-level mathematics rate. Exit-level mathematics results for technology traditional high schools were (M = 77.13, SD = 12.275), indicating that technology traditional high schools have an average of a 77% exit-level mathematics rate. Based on the descriptive statistics for exit-level mathematics, the technology traditional high schools had a higher math exit-level TAKS rate than technology charter high schools.

Table 1

Descriptive Statistics for Math TAKS Results for Technology Charter High Schools and Technology Traditional High Schools

Variable	*M*	*SD*
Technology charter high schools	53.60	23.032
Technology traditional high schools	77.13	12.275

A one-way analysis of variance (ANOVA) was conducted to evaluate the relationship between school type (technology charter high schools vs. technology traditional high schools) and percentage of student exit-level TAKS rate in mathematics is presented in Table 2. The ANOVA was significant, F (1, 58) = 24.393, p = .000. The strength of relationship between the school type and the percentage of student exit-level TAKS rate in mathematics, as assessed by η^2,

was strong, with school type accounting for 30% of the variance of the dependent variable. Because the *p* value was less than .05, we rejected the null hypothesis that there is no statistically significant difference in TAKS achievement between students in technology charter high schools compared to students in technology traditional high schools.

Table 2
One-Way Analysis of Variance Summary for Representation of Exit-Level TAKS Rate in Math

Source	*df*	*SS*	*MS*	*F*	*p*	η^2
Between-group	1	8307.267	8307.267	24.393	.000	.296
Within-Group	58	19752.667	340.563			
Total	59	284428.000				

For the 2007-2008 academic year, the descriptive statistics for exit-level science results for technology charter high schools and technology traditional high schools are shown in Table 3. Exit-level science results for technology charter high schools were (*M* = 55.53, *SD* = 20.082), indicating that technology charter high schools have an average of 55% to 56% exit-level science rate. Exit-level science results for technology traditional high schools were (*M* = 79.93, *SD* = 12.157), indicating that technology traditional high schools have an average of a 79%-80% exit-level science rate. Based on the descriptive statistics for exit-level science, the technology traditional high schools had a higher science exit-level TAKS rate than technology charter high schools.

Table 3
Descriptive Statistics for Science TAKS Results for Technology Charter High Schools and Technology Traditional High Schools

Variable	*M*	*SD*
Technology charter high schools	55.53	20.082
Technology traditional high schools	79.93	12.157

A one-way ANOVA was conducted to evaluate the relationship between school type (technology charter high schools vs. technology traditional high schools) and percentage of student exit-level TAKS rate in science is reported in Table 4. The ANOVA was significant, F (1, 58) = 32.411, p = .000. The strength of relationship between the school type and the percentage of student exit-level TAKS scores in mathematics, as assessed by η^2, was strong, with the school type accounting for 36% of the variance of the dependent variable. Because the *p* value was less than .05, we rejected the null hypothesis that there is no statistically significant difference in TAKS achievement between students in technology charter high schools compared to students in technology traditional high schools.

Table 4

One-Way Analysis of Variance Summary for Representation of Exit-Level TAKS rate in Science

Source	*df*	*SS*	*MS*	*F*	*p*	η^2
Between-group	1	8930.400	8930.400	32.411	.000	.358
Within-group	58	15981.333	275.540			
Total	59	300180.000				

Data Analysis and Results of Research Question Two

Research Question Two: How does the level of student achievement on the TAKS exit-level math and science tests in technology charter high schools in Region 20 compare to the achievement of students in technology traditional high schools from Region 20, when the differences in expenditures per pupil were taken into account?

Null Hypothesis Two: There is no statistically significant difference on the level of student achievement on the TAKS exit-level math and science tests in technology charter high schools in Region 20 when compared to the achievement of students in technology traditional high schools from Region 20, when the differences in expenditures per pupil were taken into account.

For the 2007-2008 academic years, the descriptive statistics for expenditures per pupil rates for technology charter and technology traditional schools are shown in Table 5. Expenditures per pupil for charter schools were (*M* = $5,838.90, *SD* = 2957.77). Expenditures per pupil for technology traditional schools were (*M* = $7,816.37, *SD* = 4080.12). Based on the descriptive statistics for expenditures per pupil, the technology traditional schools had more expenditures per student than technology charter schools.

Table 5

Descriptive Statistics for Expenditures Per Pupil Results for Technology Charter Schools and Technology Traditional Schools

Variable	*M*	*SD*
Charter Schools	$5,838.90	2957.77
Traditional Schools	$7,816.37	4080.12

In Table 6, a one-way analysis of covariance (ANCOVA) was conducted to evaluate the relationship between school type, expenditures per pupil, and student math achievement. The independent variable included two types: technology charter vs. technology traditional. The covariate was the expenditures per pupil and the dependent variable was student math achievement.

The ANCOVA was significant, F (1, 57) = 31.309, p = .000. The strength of relationship between the school type, percentage of student exit-level TAKS rate in mathematics, and expenditures per pupil, as assessed by η^2, was strong, with school type accounting for 36% of the variance of the dependent variable. Because the p value was less than .05, we rejected the null hypothesis that there is no statistically significant difference on the level of student achievement on the TAKS exit-level math test in technology charter high schools in Region 20 when compared to the achievement of students in technology traditional high schools from Region 20, when the differences in expenditures per pupil were taken into account.

Table 6

Analysis of Covariance for Math Achievement by School Type Using Expenditures per Pupil as the Covariate

Source	*df*	*SS*	*MS*	*F*	*p*	η^2
Expenditures Per Pupil	1	5.559	5.559	.020	.888	.355
School Type	1	8758.356	8758.356	31.309	.000	.000
Error	57	15945.007	279.737			
Total	59	248833.000				

In Table 7, a one-way analysis of covariance (ANCOVA) was conducted to evaluate the relationship between school type, expenditures per pupil, and student science achievement. The independent variable included two types: technology charter vs. technology traditional. The covariate was the expenditures per pupil and the dependent variable was student science achievement.

The ANCOVA was significant, F (1, 57) = 70.871, p = .000. The strength of relationship between the school type, percentage of student exit-level TAKS scores in mathematics, and expenditures per pupil, as assessed by η^2, was very strong, with school type accounting for 55% of the variance of the dependent variable. Because the p value was less than .05, we rejected the null hypothesis that there is no statistically significant difference on the level of student achievement on the TAKS exit-level science test in technology charter high schools in Region 20 when compared to the achievement of students in technology traditional high schools from Region 20, when the differences in expenditures per pupil were taken into account.

Table 7

Analysis of Covariance for Science Achievement by School Type Using Expenditures per Pupil as the Covariate

Source	*df*	*SS*	*MS*	*F*	*p*	η^2
Expenditures Per Pupil	1	9.784	9.784	.050	.823	.554
School Type	1	13791.497	13791.497	70.871	.000	.000
Error	57	11092.250	194.601			
Total	59	260049.000				

Data Analysis Summary

This study examined whether there is a statistically significant difference between technology charter high schools and technology traditional high schools in Region 20 when considering variables such as student achievement and expenditures per pupil. Our data suggest that there is a statistically significant difference between the levels of student achievement on TAKS testing in open-enrollment technology charter high schools in Region 20 compared to students in technology traditional high schools from Region 20.

In addition, our data analysis indicates that there is a statistically significant difference between the level of student achievement on the TAKS exit-level math and science tests in technology charter high schools in Region 20 compared to the achievement of students in technology traditional high schools from Region 20, when the differences in expenditures per pupil were taken into account. The data were analyzed employing the one-way ANOVA and a one-way ANCOVA. Data were analyzed between groups established by the TEA listings, which included technology charter high schools and technology traditional high schools. The between-groups analysis compared student achievement in technology charter high schools with technology traditional high schools. In addition, evaluation whether population means on the dependent variable were the same across levels was conducted by adjusting for differences on the covariate (expenditures per pupil).

Discussions and Recommendations

There is a significant difference between the level of student achievement on the TAKS exit-level math and science tests in technology charter high schools in Region 20 compared to the achievement of students in technology traditional high schools from Region 20, even when the differences in expenditures per pupil were taken into account. In other words, the charter technology high schools are not performing as well as the regular technology high schools in terms of math and science TAKS exit-level tests.

Findings presented in the study provide insight into technology charter school accountability when expenditures per pupil are taken into account. These findings and forthcoming recommendations should be of interest to school districts, the Texas Education Agency, the Texas state legislature, federal legislatures, and those responsible for developing and creating charter school programs. Based on the analysis of the study, we recommend the following:

1. The TEA should develop qualitative and quantitative methods for collecting student achievement and expenditures per pupil data from technology charter high schools that are reliable and valid. The improved method will include ratings for all schools, even those that have been open for just 1 year (non-rated campuses). This improved method would support the study, analysis, and assessment in preparing more accurate Academic Excellence Indicator System (AEIS) reports for researchers.

2. TEA should categorize the amount of technology used on each campus by providing descriptive information on the amount of technology used on each campus. This categorization will help researchers determine which technology charter schools are implementing technology, and exactly how much technology used in instruction can be assessed.

3. Technology charter high school expansion should consider improved student performance as measured by Texas Education Agency accountability standards. TAKS remedial assistance in 11th grade mathematics and science should be provided while implementing technology-driven strategies.

4. Additional instructional support and professional development in technology must be provided to teachers of technology charter high schools.

5. Technology charter high schools should consider improving their technology resources. Although expenditures per pupil are often less for technology charter high schools, these institutions must improve their technology if they wish to continue to compete with traditional public schools. If the learning environment is not conducive to technology and innovation, the charter school program will not ensure student success.

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