A Typology of Colorado Charter Schools

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Executive Summary

Since researchers have begun studying public charter schools, they have focused primarily on how charter schools, as a group, compare to district-run schools. The trouble with this approach is that it treats charter schools as if they were all the same, when in fact charter schools differ significantly from one another in terms of student population, pedagogical approach, curricula, and academic achievement. While previous research can shed some light on whether chartering, as a mechanism for opening autonomous schools, produces better results than the conventional method, it cannot answer the question,

"What types of schools best serve students or groups of students?"

To answer that question, Dick Carpenter and Krista Kafer created a typology that compares achievement levels of Colorado charter schools based on their educational approach. Based on the methods and types created by Carpenter in his 2006 study for the Thomas B. Fordham Institute, the Colorado study sorts the state's charter schools into five pedagogical categories (traditional, progressive, general, vocational, and alternative delivery) and into two student population types (targeted enrollment and open enrollment).

Schools with a college prep or back-to-basics philosophy were placed in the "traditional" category. Schools that subscribed to educational philosophies such as Montessori, Waldorf, and/or practices aligned with "progressivism," such as project-based learning, were characterized as "progressive." Vocational schools were those that sought to impart career-related skills along with academics. Schools indistinguishable from neighborhood public schools were labeled "general." Online or virtual schools were classified as "alternative delivery." Schools in these five pedagogical approaches were also classified as "open enrollment," that is, schools that do not serve specific student populations, or as "targeted student population" schools that serve students with specific needs or characteristics.

A sample of the findings includes:

- *Prevalence:* A slight majority (65 percent) of Colorado's charter schools are of the traditional type. Progressive schools comprise another 27 percent. The remaining 8 percent are almost equally distributed among the vocational, general, and alternative delivery categories. Most schools, 88 percent, do not serve a specific population of students. Targeted schools are most likely to be of the progressive design, followed by traditional and vocational.

- *Student demographics:* Of the open enrollment schools, alternative delivery schools serve the greatest proportion of students of color, English language learners, and students with disabilities. In the targeted population category, progressive schools enroll the greatest percentage of students learning English. Vocational schools enroll the greatest percentage of low-income students and the second greatest percentage of minority students.

- *Teacher statistics:* The teacher to pupil ratio is greatest for alternative delivery schools with both open and targeted populations. Targeted vocational schools report the lowest ratio, followed by traditional schools. Teacher experience is generally greater in targeted student population schools.

- *Safety:* Vocational and alternative delivery schools report the fewest safety and discipline infractions. Progressive schools, especially those with targeted enrollment, report the greatest number of safety and discipline incidents.

- *Achievement:* In determining school performance, reading and math data were analyzed separately and together, and the analysis controlled for variables research has indicated influence school achievement. Traditional schools tend to report the greatest achievement results topping the ranks in both math and the mean of math and reading. Traditional schools also report the second greatest achievement scores in reading. Alternative delivery schools realize the smallest scores in math and the mean of reading and math but report the greatest scores in reading.
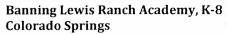
For educational consumers (i.e., parents), the results reported here point to the need to devote greater attention to a school's type prior to enrolling. For those seeking to open a school, this report provides a concise picture of the charter landscape in Colorado and could significantly reduce the information costs associated with starting a school. The results have particular application to authorizers as they create Requests for Proposals or consider charter applications. Districts and the Colorado Charter School Institute can use these data to target the kinds of schools that are more likely to be successful in meeting identified student needs.

Introduction

What is Known about Charter School Achievement?

Since the first public charter school law passed in 1991, more than 4,600 charter schools have opened. Today they educate approximately 1.3 million students.[1] Charter schools differ from other public schools in that they are governed by their own board of directors and are largely independent of the school district in which they reside. Depending on state law, charter schools determine their own curricula, pedagogy, staff contracts, hour/day length, and budgets. Like other public schools, they are funded by taxes and are subject to state testing and accountability measures, Special Education and nondiscrimination laws, and building and safety regulations. Charter schools are held accountable to their authorizer, usually a school district or state agency, by the academic and financial terms of their charter. Because all charter schools are schools of choice, they are also accountable to parents. To stay open, they must attract and retain students.

These characteristics comprise the common ground shared by charter schools. The similarities, however, end there. Charter schools come in many shapes and sizes. They are located in the city, the suburbs, and the countryside. Their philosophies and pedagogies cover the spectrum from back-to-basics to hands-on experiential and everything in between. Some target particular populations of students, such as high school drop-outs, intellectually gifted students, or new immigrants. Others serve a broader population of students. In a sense, the term "charter school" is much like the classification "restaurant." All restaurants serve food and must adhere to all federal, state, and local laws and regulations appropriate to that enterprise. They, like charter schools, must provide a good service or customers will abandon them. Nevertheless, one restaurant is quite different from another.

**Banning Lewis Ranch Academy, K-8
Colorado Springs**

Because of the heterogeneity of charter schools, academic comparisons between traditional public schools and public charter schools are of limited value. The comparisons can shed some light on whether chartering, as a mechanism for opening autonomous schools, produces better schools, on a whole, than the conventional method. But such comparisons

cannot answer the question, "What types of schools best serve students or groups of students?"

The answer to the first question is somewhat mixed. In 2007, the National Alliance for Public Charter Schools (NAPCS) published a literature review of 70 charter school studies.[2] Of the 40 studies that tracked student or school performance over time, 21 studies showed larger overall gains for charter schools. Another 10 found larger gains for charter schools in certain categories, such as schools serving at-risk students or those serving specific grade levels. Five studies found charter and traditional public schools reported similar student academic growth rates. Only four showed charter schools lagging traditional public schools in terms of growth. The NAPCS study also examined 30 studies that compared traditional public schools and charter schools at single points in time. Of these, 18 showed positive, comparable, or mixed results for charter schools.[3]

In 2004, Harvard Professor Caroline Hoxby published a study using data from 99 percent of the nation's charter elementary schools. She compared the reading and math achievement of students at charter schools with the nearest traditional public school the students would most likely have attended.

Hoxby found that students in charter schools were 3.2 percent more likely to be proficient in math and 5.2 percent more likely to be proficient in reading.

Older charter schools achieved better results. Students who attended charter schools that had been in operation for 9 to 11 years were 10.1 percent more likely to be reading at the proficient level.[4] Similar results were found by Manhattan Institute researchers who compared test scores of students at charter schools with students at traditional public schools enrolling similar populations. The research examined 11 states over a one year period. General student populations at charter schools achieved higher test scores in math and reading.[5]

While the results of these studies should give lawmakers, the public, and educators cause to be optimistic about the value of chartering and the contribution of charter schools, they do not provide information about what types of charter schools excel at educating students. In other words, the research shows that chartering works, but not which charter schools work best.

Typologies - Finding What Works

Over the past few years, researchers have examined the differences between types of charter schools in terms of their student demographics, organizational structure, non-profit/for-profit company sponsorship, and other characteristics.[6] For example, in 2003, Brookings Institution researcher Tom Loveless published a study that compared charter schools run by Education Management Organizations (EMOs) with non-EMO charter schools in 10 states.[7] The study examined test score data for a three year period for 90 EMO charter schools. These schools served a higher proportion of low-income and African-American students than other charter and district-run schools. Nevertheless, when

compared to non-EMO charter schools with similar demographics, EMO charter schools had higher gain scores. While this study provides information to authorizers and parents on the relative efficacy of EMO charter schools, it does not show what works best in terms of pedagogical methods or philosophic school framework.

This gap in the research prompted the Thomas B. Fordham Institute, a Washington D.C.-based education think tank, to pioneer new research that compared types of charter schools in terms of their success in educating students.[8] The following year, the Texas-based Charter School Policy Institute produced a different typology.

Carpenter Typology

In the 2006 Fordham study, "Playing to Type? Mapping the Charter School Landscape," Dick Carpenter was the first to comprehensively and systematically sort and compare charter schools by educational approach. He collected descriptive data from 1,182 charter schools (about 87 percent of the total number of schools) in the five states with the greatest number of charters in operation (Arizona, California, Florida, Michigan, and Texas). Drawing from a variety of sources, including school websites, school accountability reports, state education department websites, state charter school associations, and direct correspondence, Carpenter amassed detailed information about each school's enrollment, student diversity (percentage of minority students and those eligible for the federal free/reduced lunch program), age of the school, and its pedagogical and curricular approach. The initial analysis indicated 55 different curricular/pedagogical approaches, such Core Knowledge, Montessori, project-based, school-to-work, online, etc. Schools indentified as being no different than district schools in terms of curricula or program design were placed in the "general" category.

These 55 subcategories were grouped into 5 categories: traditional, progressive, vocational, general, and alterative delivery.

Schools that stressed high academic standards, prized rigorous coursework, or had a college prep or back-to-basics philosophy were placed in the "traditional" category. Schools that subscribed to educational philosophies such as Montessori, Waldorf, and/or practices aligned with "progressivism," such as project-based learning, were characterized as "progressive." Vocational schools were those that sought to impart practical, career-related skills along with academics. Schools indistinguishable from neighborhood public schools, and those that converted from a traditional public school to a charter with no discernible pedagogical change, were labeled "general." Online or virtual schools made up the fifth category of "alternative delivery."

Carpenter also categorized schools as "open enrollment," that is, schools that do not recruit specific student populations for admission, or as "targeted student population" schools that serve students with specific needs or characteristics. Altogether the study used 10 categories in a two-dimensional model, as shown in Figure 1. Of 1,182 schools, 1,163 were

assigned a type. Most of the schools that Carpenter was unable to assign a type closed before or during the project period.

Figure 1: The Carpenter/Fordham Typology

	Open Enrollment	Targeted Student Population	Totals
Traditional	260 (22.4%)	8 (.7%)	268 (23.1%)
Progressive	329 (28.3%)	8 (.7%)	337 (29%)
Vocational	50 (4.3%)	93 (8%)	143 (12.3%)
General	153 (13.2%)	189 (16.3%)	342 (29.4%)
Alternative Delivery	69 (5.9%)	4 (.3%)	73 (6.2%)
Totals	861 (74.1%)	302 (26%)	1,163

Of the 1,163 charter schools, 23 percent were classified as traditional, 29 percent as progressive, 12 percent as vocational, 29 percent as general, and 6 percent as alternative delivery. Seventy four percent of the schools were open enrollment schools compared to 26 percent with a targeted population.

To gauge achievement differences between the categories, Carpenter collected assessment data for each school from the 2003-04 and 2004-05 school years. The Michigan schools had to be removed from this portion of the study because the state did not collect sufficient student academic data. Using achievement data from 722 schools, Carpenter calculated differences between school groups in terms of absolute performance and in terms of gain scores.

In determining absolute performance, Carpenter analyzed reading and math data separately and together. He also controlled for the following variables research has indicated influence school achievement: percent minority students, percent free/reduced lunch eligibility, school size, and years in operation. Adjusting for these demographics, the study revealed the following results:

Figure 2: Highest and Lowest Performance Results

Highest Performance	Lowest Performance
Traditional	Vocational
General/Open Enrollment	General/Targeted Student Population
Progressive	Alternative Delivery

Carpenter also calculated differences in gain scores. Gain scores reflect the rate of growth in student achievement from 2003-04 to 2004-05. In this analysis, some of the school types with low absolute performance due to students starting so far behind, showed high gain scores. Indeed, gain score analysis reveals an inverted pattern of the absolute performance analysis. Vocational schools made the greatest progress overall, and alternative delivery

schools made the greatest gains in math. Other statistically significant differences were found between vocational and traditional schools with vocational schools making significantly greater progress in both reading and math. Vocational made significantly greater progress in reading, and reading and math combined, than general/open enrollment schools. Progressive schools made greater progress in math, and reading and math combined, than traditional schools.

Ernst and Blankenship Typology

In May 2007, Jody L. Ernst and Virginia H. Blankenship published a different typology titled "Building a Typology of Charter Schools in Texas."[9] The authors surveyed 241 Texas charter schools with a 75 percent response rate. Together with information they received from the Texas Education Agency, the researchers compiled data on total enrollment, student-teacher ratio, state test scores, student demographics, school mission and curricula, and target population. They also collected demographic data on traditional public schools.

Ernst and Blankenship categorized charter schools into three groups: Highly academic/college preparatory schools; risk/recovery schools "organized to serve students who have dropped out, are at risk of dropping out;" and non-traditional/alternative schools "that provide an alternative for families who are dissatisfied with traditional public schools and offer such things as seemingly safer environments, alternate instructional styles, small classes, or increased personal attention."[10]

Parker Core Knowledge Charter School, K-8 Parker

The analysis compared charter school groups with each other and with non-charter public schools. The results show that highly academic charters achieve greater results than other charter groups and perform similarly to non-charter public schools. Risk/recovery charter schools serve predominantly minority and low-income students. They report achievement levels similar to non-charter schools with the same demographics. In math, risk/recovery elementary schools outperform non-charter public schools with the same student population. Non-traditional charter schools realize similar achievement levels as non-charter public schools in reading but lower performance in math.

Because of differences in school categories, findings from the Ernst and Blankenship study cannot be compared directly with those of Carpenter's. Although schools from Carpenter's

traditional category would likely appear in the highly academic/college preparatory group, the similarities between the typology categories end there. For example, a Montessori school in Carpenter's progressive category would fit into Ernst and Blankenship's non-traditional group. Nevertheless, there are some parallels. Traditional and highly academic charter schools achieve the greatest academic performance followed by non-traditional schools, which would appear to capture most of Carpenter's alternative delivery, progressive, and vocational schools. In the Texas study, the surprising finding is how well risk schools compare to non-charter public schools with similar demographics. In the Carpenter study, the unexpected finding is high gain scores for vocational schools.

This information on the relative effectiveness of types of charter schools is of particular value to authorizers, charter school founders, and parents seeking options. Clearly traditional/high academic charter schools enjoy an edge in terms of absolute performance. Carpenter's findings for vocational schools' higher gain scores and Ernst and Blankenship's findings for risk/recovery schools suggest these schools can positively affect students who struggle in traditional educational environments, whether in district-run schools or charter schools. Since neither of these studies used schools from Colorado, they cannot specifically answer the question, "What about Colorado charter schools?"

Colorado Public Charter Schools

Colorado's first public charter school opened its doors in fall of 1993, a few months after Governor Roy Romer signed the Colorado Charter Schools Act.[11] Today, 141 charter schools operate, comprising roughly 7 percent of the state's total number of public schools. Growing in popularity, charter schools enroll 56,458 students or roughly 7 percent of all public school students. Another 40,000 children are wait-listed.[12]

Location
Most of Colorado's charter schools exist along Front Range cities and suburbs. Denver has 26 charter schools and Colorado Spring 22 charter schools.[13] Colorado has the highest percentage of suburban charter schools (47 percent) according to a 2002 Fordham study.[14] In his 2005 paper for the Progressive Policy Institute, Todd Ziebarth attributed the high percentage of suburban charter schools to the popularity of Core Knowledge schools among suburban parents and the use of chartering to meet the needs of high population growth areas such as Douglas County.[15] The state also has a surprising number of rural charter schools in such places as Avon, Carbondale, Windsor, Gypsum, Lamar, Marble, Georgetown, Cortez, Montrose, Granby, and Paradox.

Grades Served
According the 2006 triennial State of Charter Schools report, the most common grade span served by charter schools is kindergarten (or prekindergarten) through 8th.[16] Forty percent of charter schools are of that configuration. Fourteen percent serve only elementary school students, 5 percent middle school students, 8 percent middle and high school students, and 16 percent high school only. Eleven percent served all three groups, and the rest have configurations that do not fit into these categories. As schools have built

out their programs to include more grades, it is likely that these percentages will differ in the 2009 report.

Student Enrollment
Over time, charter schools have come to serve an increasingly diverse group of students. While the percentage of minority and low-income students was lower than the public school average a decade ago, today it is much closer. Statewide public school student enrollment is 37.5 percent minority and 33.1 percent low-income.[17]

Figure 3: Percentage of Minority and Low-Income Students at Colorado Charter Schools

	1997-1998	2001-2002	2004-2005	2007-2008
Percent Minority	19	27	32	38
Percent Low-Income	12	18	22	26

Model and Achievement
Beyond location and grade span, Colorado charter schools differ considerably in their pedagogical methods and curricula. A glance at the Colorado Department of Education's list of charter schools reveals considerable diversity. For example, Georgetown Community School, located in a quaint mountain town, serves 130 students, from toddlers to 6th graders. KIPP Sunshine Peak Academy is a Denver middle school affiliated with the national KIPP organization. Ninety-one percent of its students are eligible for the federal free/reduced lunch program. The Life Skills Center of Colorado Springs, created by a for-profit company, serves 300 at-risk high school students including former drop-outs with an on-site, online curriculum. Colorado Springs is also home to The Classical Academy, a Core Knowledge K-12 school with 2,800 students. It is the largest brick and mortar charter school in Colorado. Colorado is also home to charter schools for incarcerated youth, homeless students, pregnant and parenting teens, new immigrants, deaf students, and gifted children.

According to the most recent State of Charter Schools report, 77.5 percent of Colorado's charter schools used a comprehensive national reform model as the foundation of their educational program.[18]

The remainder had a curriculum or school design developed by the school's founders. Of all the charter schools operating in 2004-2005, 41 percent used Core Knowledge curriculum, 4 percent Montessori, and 8.4 percent Expeditionary Learning/Outward Bound to highlight a few models identified in the report.

Survey data collected for this study also revealed many well known national models. It should be noted that the level of adherence to the model varies by school.

Figure 4: 2008 Schools Using a National Model

National Model	Number of Colorado Charter Schools
Core Knowledge	57
Expeditionary Learning	6
Knowledge is Power Program (KIPP)	1
Montessori	7
Paideia	3
Success for All	1

Only 12 schools, about 9 percent of the total, were operated by national nonprofit or for-profit EMOs. By comparison, a quarter of charter schools nationwide are managed by EMOs.[19] In Michigan, nearly three out of four charter schools are so managed.[20]

Figure 5: 2008 Schools Operated by an Education Management Organizations

Education Management Organization	Number of Colorado Charter Schools
Edison	4
Greater Educational Opportunities Foundation	1
Mosaica	4
National Heritage Academies	1
White Hat/Life Skills	2

In addition to embracing national models, Colorado has developed some of its own charter school franchises including the Hope Online Learning Academy Co-Op, Cesar Chavez School Network, and New America Schools. In these cases, founders have replicated their school model in other Colorado districts.

There is enormous diversity among Colorado charter schools in terms of achievement. In the 2007-2008 school year, of the top achieving middle and high public schools—both charters and district-run schools— eight out of ten middle schools and four out of five high schools were charter schools. Summit Middle Charter School and Cheyenne Mountain Charter Academy placed second and third among middle schools. The Vanguard School and Ridgeview Classical Charter took first and third among high schools.

Vanguard Classical School, K-8 Denver

Ridgeview Classical in Fort Collins has also received national recognition. In the 2008 *U.S. News and World Report* America's Best High Schools, this Fort Collins charter school ranked 15th among the 21,069 analyzed by the magazine. Most of the schools ahead of Ridgeview have selective enrollment, meaning they pick and choose students. When selective schools are omitted from the *US News* rankings, Ridgeview takes 4th place. Also worthy of mention, Peak to Peak Charter School in Lafayette took 69th place. The only other Colorado public school in the top 100 public high schools in the country was D'Evelyn Junior/Senior High School in Jefferson County.

On the other side of the achievement spectrum, charter schools also figure prominently. A charter school holds the distinction of the lowest performing elementary school, the second lowest middle school, and the lowest achieving high school.

When compared to traditional public schools, Colorado's charter schools, as a whole, fare well. In the 2006-2007 school year, 74 percent of Colorado charter schools made Adequate Yearly Progress (AYP), meaning that a sufficient number of their students were deemed proficient on state tests of core academic subjects.[21] Fifty-nine percent of traditional public school students achieved AYP.

The Colorado Department of Education rated 48 percent of charter schools as "excellent" or "high" compared to 42 percent of traditional public schools.[22]

While this information speaks well of charter schools in general, it does not provide insight into what kinds of charter schools are most effective. Similarly, although individual School Accountability Report (SAR) data can provide valuable information to parents and school authorizers about the quality of schools, it cannot predict how similar schools might function in the future.

In 2006 Andrew Brodsky, Alex Medler, and Van Schoales published research that provided a partial answer to that question. Their article in *Prism*, a publication of the Colorado Association of School Boards (CASB), compared the achievement of types of charter schools with that of districts.[23] While not a full blown typology, the results are valuable.

To do the analysis, the authors asked the Colorado League of Charter Schools to classify charter schools by school model. They excluded from the study the 19 charter schools and 60 district schools that focused on at-risk students. Using combined reading, math, and writing scores from Colorado School Assessment Program (CSAP) data, Brodsky, Medler, and Schoales analyzed performance levels and percentage of black and Hispanic students in charter and district schools. The researchers chose ethnicity as their key demographic variable instead of participation in the federal free/reduced lunch program, a more common variable, because many charter schools do not use the school lunch program.

The results showed that "charters tend to vary more from each other than they do from district schools making it more difficult to make broad comparisons between charter and district schools."[24] Nevertheless, they found some differences. Charter schools achieved equal or better results than district schools with similar ethic demographics, though most of the results for grade level-ethnicity comparisons were not statistically significant. Among those schools with higher percentages of black and Hispanic students, elementary charter schools typically perform higher than district schools and about the same in middle and high schools.

The most useful findings from the analysis focus on specific charter school models. The researchers found that Core Knowledge charter schools "perform significantly better than other charter and district schools even after controlling for the percent of black and Hispanic students."[25] Montessori and Expeditionary Learning/Outward Bound also had strong performance data after controlling for ethnicity.

After analyzing the data, the authors made several recommendations including one to evaluate high performing charters schools. They state, "We should seek to understand what makes these schools successful. We should ask if there are more students in our communities that could benefit from similar offerings. And if so, how could we create more schools using these models?"[26]

The Value of a Colorado Typology

The questions raised by Brodsky, Medler, and Schoales are those that researchers, authorizers, policy makers, charter school founders, and parents should be asking. Authorizers in particular should ask themselves, "Which school models are the most successful, and how can we increase their presence in our district?" Conversely, they should ask why some schools are not successful.
Rather than being reactive, school boards and the Colorado Charter School Institute, the statewide authorizer, could be proactive in authorizing charter schools that meet the needs for the district.

Richard Wenning of the Colorado League of Charter Schools and Margaret Lin of the National Association of Charter School Authorizers addressed the need for the strategic creation and management of charter schools in the 2006 edition of *Prism*.[27] Boards, they say, should adopt the role of portfolio manager in terms of their charter schools. Wenning and Lin explain:

> Just as financial investment managers must constantly seek and maintain high performance in their portfolios, educational portfolio managers are responsible for selecting and overseeing a community's public schooling investments and for ensuring the strength and quality of that portfolio... Strategic school authorizing enables school boards to stimulate a supply of new schools that meet community needs.[28]

In addition to conducting a needs assessment to determine gaps in academic achievement, specialized services needs, parent demand, and other factors, a district charter school portfolio manager would also need to know something about the types of charter schools. This is where a full typology would be useful.

Jefferson Academy Elementary School, K-6, Broomfield

Among the authorizing community, there is a recognized need for this kind of analysis. Ken Delay, former executive director of CASB, in the 2006 *Prism* edition wrote, "Almost never discussed is how charter schools might become a powerful tool for local school boards to innovate, drive change, learn and more effectively respond to community needs. This discussion will occur only if the State Board leads it."[29] The following typology signifies the beginning of that vital conversation.

Developing a Colorado Typology

The process of developing a typology required several steps. Working from a list of charter schools provided by CDE, the researchers sorted each school into 1 of 10 categories using the groups developed by Carpenter in his Fordham study. The authors compiled information about each school's curriculum, pedagogy, philosophy, and target population

from school websites, the Colorado League of Charter Schools, and/or direct correspondence with schools. Often the school's name, mission statement, or promotional materials explicitly stated its philosophy, pedagogy, and/or curriculum, such as adherence to the Core Knowledge sequence, project-based learning methods, Montessori philosophy, or vocational emphasis. Websites also made it clear if the school was a virtual or brick and mortar school. In instances where information was not easily discernable, direct contact was required. Kafer called the schools and asked, "What distinguishes your school from the other public schools in your area?" a question developed by Carpenter in his original research. Schools were then grouped into the following categories developed for the Fordham study.

Traditional: Traditional schools stress high academic standards, challenging coursework, nightly homework, and other components often associated with a back-to-basics or college preparatory approach. Traditionalist philosophy places a high value on the acquisition of essential knowledge and skills and tends to view the teacher's role as the expert provider of that information. Core Knowledge schools and college-prep schools figure prominently in this group.

Progressive: Schools based on the philosophy of progressivism tend to prioritize individual student discovery and construction of knowledge. Classroom activities are often student-centered, project-based, hands-on, and done in cooperative student groups. The teacher assumes the role of facilitator or resource person, a "guide on the side," not a "sage on the stage," to use a common description. Montessori, Paideia, and Expeditionary/Outward Bound schools are examples of this type of school.

Vocational: More commonly high schools, these schools work to equip students with career-related skills to help them transition to the world of work after graduation. Students often have the opportunity to participate in apprenticeships and on-the-job training programs designed to give them job-specific skills, experience, and marketable credentials.

General: These charter schools are essentially indistinguishable from conventional neighborhood public schools. General schools may have school uniforms or other minor distinctions but they have not adopted curricula, thematic designs, or distinctive instructional strategies to distinguish them from the district's schools.

Alternative delivery: These "virtual" schools provide the majority of instruction online. Teachers guide and monitor progress and are available by phone, email, and even interactive computer video simulcast. Students study at home with the support of a parent or in the case of Hope Online, at a center with Hope mentors.

Targeted student population: These schools recruit and serve students with specific characteristics or needs, such as high school drop-outs, gifted students, deaf students, or new immigrants. Typically these schools' missions emphasize serving a particular type of student rather than with employing a particular curriculum or pedagogy.

Open enrollment: These schools do not target or recruit a specific student population for admission.

After categorizing each school, the researchers filled in the remaining information through a CDE data request. CDE provided 2007-2008 data for each school's enrollment, percentage of minority students, percentage of federal free/reduced lunch program participation, percentage of English Language Learners (ELL), percentage of students in Special Education, years in operation, teacher to pupil ratio, average years of teacher experience, safety and discipline rates, and average scale scores in reading and math on CSAP tests.

In computing analysis of charter school types in terms of math and reading achievement, the researchers used Hierarchical Linear Modeling. Ideally, they would have examined differences between types using the full typology. However, statistical testing requires prescribed group sizes for reliable results. Because some of the types in Colorado had too few schools, they had to combine some of the types; specifically all of the targeted student population types were combined into one type.

The first stage in the analysis was to determine an index of significant covariates for each test type to help control for the effects of other variables that might muddy the determination of the effect of school type on performance. Specifically, the goal of research of this type is to isolate the relationship between school type and performance. However, without controlling for the effects of other variables on performance, one cannot know with certainty whether differences between schools result from type or some other phenomenon.

Therefore, the study examines the relationship between math, reading, and the mean of reading and math and the following variables:

Student level variables

- Whether the student was new to the school in 07/08 (yes/no)
- English language learner status (yes/no)
- Free/reduced lunch status (yes/no)
- Special Education status (yes/no)
- Gender (male/female)
- Race/ethnicity (Black/Hispanic/Other/White)
- Prior performance (prior year's CSAP score)

School level variables

- Urbanicity (urban/suburban/rural)
- Years in operation
- Total enrollment
- Percent minority
- Percent free/reduced lunch

- Percent English language learner
- Percent Special Education
- Student to teacher ratio
- Average years of teacher experience
- Percentage of safety and incidents

For math, the preceding variables that proved significant included prior math score, student Special Education status, school Special Education percentage, and student race/ethnicity. For reading, significant variables included student gender, prior reading score, student free/reduced lunch status, student race/ethnicity, school free/reduced lunch percentage, pupil to teacher ratio, urbanicity, and years of teacher experience. For the mean of reading and math, significant variables included prior test score, student free/reduced lunch status, student race/ethnicity, school free/reduced lunch percentage, school Special Education percentage, pupil to teacher ratio, school enrollment, and school percent minority. Therefore, these were included as covariates in the respective analyses, meaning that the results reported below represent performance scores *after* controlling for the effect of the variables listed in these paragraphs.

Limitations

Although steps were taken to create the most robust study design possible, there remain some limitations. First, and most obvious, is the combination of the targeted student population types, which prohibits the examination of finer distinctions. Second, group sizes for some types are still small, which means results could be different with larger group sizes. Third, the differences between charter schools are not fully explained by school type. In research of this kind, this is determined by the explanatory power of the variables measured in the research. Each of the variables, and the combination of variables, explains a certain percentage of the differences between schools.

For example, if the researchers knew the average CSAP score for each of two schools and that average years of teacher experience and school enrollment both significantly affected that difference, then they could determine how much teacher experience and school size explained the difference in performance. It may be that teacher experience explains 80% of the difference between schools, while school size explains 20%. This would mean changing a school's size to affect performance would likely produce only marginal differences compared to hiring more experienced teachers.

Specific to this study, school type explains some of the differences between schools, but results indicate a significant portion of those differences is not fully explained by school type. This means charter school designers should give serious consideration to school type but should not expect it ameliorate other variables important to student achievement.

Typology Results

The results below begin with some basic descriptive statistics about how Colorado's charter schools, their teachers, and their students look based on the typology.

Distribution of Colorado Charter Schools

Figure 6: Distribution of Colorado Charter Schools by Type

	Open enrollment	Targeted Student Population	Totals
Traditional	88 (63.30%)	3 (2.15%)	91 (65.46%)
Progressive	29 (20.86%)	8 (5.75%)	37 (26.61%)
Vocational	-	3 (2.15%)	3 (2.15%)
General	3 (2.15%)	1 (.7%)	4 (2.87%)
Alternative Delivery	3 (2.15%)	1 (.7%)	4 (2.87%)
Totals	123 (88.48%)	16 (11.51%)	139

As Figure 6 shows, 65 percent of Colorado's charter schools are of the traditional type. Progressive schools comprise another 27 percent. The remaining 8 percent are almost equally distributed among the vocational, general, and alternative delivery categories. Most schools, 88 percent, do not recruit a specific population of students. Targeted schools are most likely to be of the progressive design, followed by traditional and vocational. There are no open enrollment vocational schools.

The majority of traditional schools are Core Knowledge schools. College preparatory schools rank a distant second. It should be noted that Core Knowledge is a preschool to 8th grade curriculum. K-12 schools that adopt a Core Knowledge curriculum to serve students in K-8 will often develop their own college preparatory or classical learning focus for high school. The traditional category is also home to schools that use Success for All, a curriculum developed by Robert Slavin of Johns Hopkins University, and Direct Instruction, another research-based curriculum.

Colorado has a greater proportion of traditional charter schools and a smaller percentage of progressive and general schools than percentages recorded in Carpenter's five state typology. In the Fordham study, traditional schools accounted for 23 percent of the total, progressive schools 29 percent, and general schools 29 percent.

The comparatively smaller percentage of "general" schools in Colorado suggests that charter school founders and authorizers in this state are interested in opening schools distinctive from district schools. The 1993 Charter Schools Act states in three separate places the value of innovation as a purpose for authorizing charter schools.

> The general assembly hereby finds and declares that...
>
> Different pupils learn differently and public school programs should be designed to fit the needs of individual pupils and that there are educators, citizens, and parents in Colorado who are willing and able to offer innovative programs, educational techniques, and environments but who lack a channel through which they can direct their innovative efforts...
>
> To encourage diverse approaches to learning and education and the use of different, proven, or innovative teaching methods...
>
> In authorizing charter schools, it is the intent of the general assembly to create a legitimate avenue for parents, teachers, and community members to take responsible risks and create new, innovative, and more flexible ways of educating all children within the public school system. The general assembly seeks to create an atmosphere in Colorado's public school system where research and development in developing different learning opportunities is actively pursued.

The large percentage (97 percent) of public charter schools that offer a distinctive curricular framework, philosophy, or methods distinctive from nearby district schools suggests that the vision of the charter school law's authors is being achieved with respect to innovation and diversity. This also illustrates how the concept of choice creates specialization. In broader economic theory, market systems create dynamics in which businesses specialize to serve customers seeking a specific product or service.[30] In education, charter schools serve the same function by specializing in a particular approach and perhaps targeting a specific student population in order to serve the needs and desires of educational consumers. This specialization is clearly evident when comparing charters to traditional public schools and also within the charter school population in Colorado with schools distributed through the typology.

Figure 7: Mean Years in Operation by School Type

	Open Enrollment	Targeted Student Population
Traditional	6	5.8
Progressive	6.42	8.65
Vocational	-	7
General	8.23	7
Alternative Delivery	3.47	3

Figure 7 shows that charter schools in the general and progressive categories report the greatest average number of years in operation. Alternative schools are the newest addition to the charter landscape. This latter fact is, in part, a function of the development of technology. Colorado's Charter Schools Act predated widespread availability of the Internet, and even then it took some years for technology to advance to the stage where a robust educational offering via the Internet proved viable.

Student Enrollment and School Size at Charter Schools

Figure 8: Total State Charter School Enrollment by School Type

	Open enrollment	Targeted Student Population	Totals
Traditional	24,416 (77.07%)	142 (.45%)	24,558 (77.52%)
Progressive	3,980 (12.56%)	925 (2.92%)	4,905 (15.48%)
Vocational	-	291 (.92%)	291 (.92%)
General	80 (.25%)	148 (.47%)	228 (.72%)
Alternative Delivery	279 (.88%)	1419 (4.48%)	1,698 (5.36%)
Totals	28,755 (90.77%)	2,925 (9.23%)	31,680 (5.36%)[31]

As Figure 8 indicates, 77 percent of charter students attend schools of the traditional type. Fifteen percent attend progressive schools. Since progressive schools comprise 27 percent of the total but enroll 15 percent of students, it would seem that progressive schools are typically smaller institutions. The same would hold true for vocational and general schools. Alternative delivery schools appear to be comparatively larger.

Figure 9: Average School Enrollment by Type

	Open enrollment	Targeted Student Population
Traditional	277	47
Progressive	137	116
Vocational	-	97
General	27	148
Alternative Delivery	93	1,419

Information on the average school enrollment by type in Figure 9 confirms this trend. Alternative delivery schools with a targeted population report the greatest enrollment, followed by traditional schools with open enrollment, general targeted schools, and progressive open enrollment schools. Prairie Creeks Charter in Strasburg enrolls the fewest number of students (six total), while the Colorado Virtual Academy serves the greatest number at 3,341. The Classical Academy in Colorado Springs boasts the largest enrollment of brick and mortar schools with 1,860 students.

Demographics of Charter School Students

Figure 10: Percent Minority and Percent Free/Reduced Lunch by School Type

	Open enrollment		Targeted Student Population	
	Percent Minority	Percent Free/Reduced Lunch	Percent Minority	Percent Free/Reduced Lunch
Traditional	33	21	49	42
Progressive	37	22	64	43
Vocational	-	-	66	98
General	21	48	68	91
Alternative Delivery	63	36	59	42

As Figure 10 indicates, of the open enrollment schools, alternative delivery serves the greatest proportion of minority students and the second greatest percentage of low-income students. Traditional and progressive schools with open enrollment serve the smallest percentage of low-income students. Of the targeted enrollment schools, vocational schools enroll the greatest percentage of low-income students and the second greatest percentage of minority students. The average percentage of low-income students in this sample was 25.8 percent and for minority students 37.6 percent. By comparison, statewide public school student enrollment is 37.5 percent minority and 33.1 percent low-income.[32]

Figure 11: Percent English Language Learners and Percent Students in Special Education by School Type

	Open enrollment		Targeted Student Population	
	Percent ELL	Percent SPED	Percent ELL	Percent SPED
Traditional	8	6	8	14
Progressive	5	9	31	7
Vocational	-	-	10	32
General	5	11	3	11
Alternative Delivery	13	11	0	4

Figure 11 illustrates that of the open enrollment charter schools, alternative delivery followed by traditional schools serve the greatest percentage of ELL students. Alternative delivery and general have the highest percentage of children with disabilities. In the targeted population category, progressive schools enroll the greatest percentage of students learning English. Vocational schools enroll the greatest percentage of Special Education students. In most cases, charter schools that target particular student populations serve a greater percentage of ELL and Special Education students than the state average. Statewide public school enrollment is 13 percent ELL students and 10 percent students with disabilities.[33]

Charter School Teachers

Figure 12: Teacher to Pupil Ratio and Average Years of Teacher Experience by School Type

	Open enrollment		Targeted Student Population	
	Ratio	Experience	Ratio	Experience
Traditional	19.4	6.3	14.6	8.6
Progressive	17.2	7.9	20.8	4.9
Vocational	-	-	11.3	3.8
General	13.2	11.4	24.6	14.6
Alternative Delivery	28.5	6.9	142.1	13.2

As Figure 12 indicates, the teacher to pupil ratio is greatest for alternative delivery schools with both open and targeted populations. Targeted vocational schools report the lowest ratio, followed by traditional schools. Progressive, general, and alternative delivery schools with targeted student populations have greater student-teachers ratios than their open enrollment counterparts. As a point of comparison, the state average pupil-teacher ratio is 17.[34] Teacher experience is generally greater at targeted student population schools with the exception of progressive targeted schools. Teachers at general and alternative delivery

targeted schools boast the most years in the profession. Vocational instructors report the fewest years in job.

Safety and Discipline Rates

Figure 13: Mean Safety and Discipline Rate by School Type

	Open enrollment	Targeted student population
Traditional	8%	0%
Progressive	11%	18%
Vocational	-	1%
General	8%	4%
Alternative Delivery	2%	2%

Figure 13 reveals that vocational and alternative delivery schools report the fewest safety and discipline infractions. This is not surprising in the case of alternative delivery schools since most learning in these schools occurs on an individual basis aided by parents or center mentors (at Hope Online Centers). Progressive schools, especially those with targeted enrollment, report the greatest number of safety and discipline incidents.

Student Achievement at Charter Schools Adjusted for School and Student Variables

As Figure 14 indicates, traditional schools tend to report the greatest achievement results topping the ranks in both math and the mean of math and reading. Traditional schools also report the second greatest achievement scores in reading. Alternative delivery schools realize the smallest scores in math and the mean of reading and math but report the greatest scores in reading. In some ways, the latter finding makes technical sense. Unlike students in traditional classrooms, those in alternative delivery programs likely receive instruction disproportionately through written text, albeit online. Therefore, proficient reading skills are a premium, which is likely captured in testing.

Figure 14 Rank Order of Achievement Scores

Mean Math/Reading
Traditional
Progressive
Targeted Student Population
General
Alternative Delivery

Math
Traditional
Progressive
General
Targeted Student Population
Alternative Delivery

Reading
Alternative Delivery
Traditional
Targeted Student Population
Progressive
General

Figure 15 provides the specific scale scores by charter school type. Although there are obvious differences in scale scores for reading across school types, these differences did

not prove statistically significant, meaning one cannot be certain such differences were not the result of chance. For math, however, the traditional type is significantly greater than targeted student population ($p=.000$) and alternative delivery ($p=.004$). Moreover, progressive is significantly greater than targeted student population ($p=.000$) and alterative delivery ($p=.021$).

For the mean of math and reading, traditional is significantly greater than progressive ($p=.047$) and almost significantly greater than alternative delivery ($p=.054$).

Figure 15: School Scale Scores by Type

	Math	Reading	Mean Math/Reading
Traditional	568.15	665.71	622.52
Progressive	542.37	651.53	607.53
General	528.39	634.70	595.11
Alternative Delivery	440.25	679.80	579.54
Targeted Student Population	458.38	661.17	606.50

Key Findings

- Differences among the school types in achievement adjusted for demographics and other variables are only statistically significant for math and math and reading combined. In math, traditional and progressive schools achieve higher scores than targeted population and alternative delivery. In the combined score analysis, traditional schools score higher than progressive and alternative delivery.

- In terms of student safety, vocational and alternative delivery schools report the fewest safety and discipline infractions. Progressive schools, especially those with targeted enrollment, have the most safety and discipline incidents.

- Traditional and progressive open enrollment schools serve proportionally fewer low-income and minority students, students with disabilities, and English language learners.

- There are comparatively few vocational schools in Colorado.

How Stakeholders Can Use this Report

The content of this report provides some valuable information for four audiences in Colorado. For policymakers, it confirms that the law is producing diverse and innovative educational options for Colorado families. As the state continues to realize population growth and greater diversity within that population, this report shows how charter schools offer more educational options to families with different needs and desires.

This report also provides a framework by which policymakers could consider different and stronger accountability options. Specifically, Colorado's charter school enabling legislation requires that charter school performance be compared to that of traditional public schools. Although important, this simple comparison treats all charter schools monolithically, thereby masking important differences within the charter sector and limiting the utility of accountability systems. Whether it be the typology reported here or some other similar structure, using a system to measure and report differences among types of charter schools would facilitate a finer analysis of educational practice in the pursuit of determining what works.

University Schools, K-6, Broomfield

For educational consumers (i.e., parents), the results reported here point to the need to devote greater attention to a school's type prior to enrolling. Apart from the apparent performance differences between types, this report illustrates the not yet widely recognized fact that not all charter schools are created equal. Simply put, just because a school has "charter" in its name does not mean it is a good fit for every family. Most schools include on websites or in written material descriptions of their curricular approaches, missions, goals, and purposes. The Colorado League of Charter Schools and the Colorado Department of Education also make such information available. And if such sources prove fruitless, discerning a school's type is as easy as calling the school and asking, "How is your school different from the other public schools in your area?"

For those seeking to start a charter school, this report illustrates what models are currently in use and what results can be associated with them. Often, charter founders begin with a basic idea for a school but quickly become overwhelmed with the time and resource costs associated with gathering the information necessary to turn that original idea into a fully formed school. This report provides a concise picture of the charter landscape in Colorado and could significantly reduce the information costs common to those seeking to start a school. It can also provide a framework by which charter founders can ask themselves some fundamental questions in creating their school, such as, "What do we believe about education?" "What do we believe is the best way to educate children?" "What is our target constituency?" "Do we want to serve the needs of a particular student population or cast a broader net?" "What models are currently being used in Colorado's charter schools and what results have they realized?"

Finally, for authorizers seeking to be proactive educational portfolio managers these data are useful. While the results do not and cannot provide a definitive single answer "open this

type of school and all will be well," the data do provide some insights and raise probing questions. First, as districts create Requests for Proposals or when they consider charter applications, they can use these data to target the kinds of schools that are more likely to be successful in meeting identified needs. For example, a question that districts might consider is, "Do low-income and minority students have access to high achieving schools?" Although traditional schools yield the highest combined scores, there are comparatively fewer minority and low-income students enrolled at these schools. It is possible that fewer such schools operate in areas where these students live. (Brodsky, Medler, and Schoales would seem to suggest this as well.) Districts seeking to increase charter schools options in low-income areas might consider issuing an RFP for traditional schools.

Second, authorizers considering the approval of certain types of schools should give proactive attention to the potential struggles associated with certain types. For example, how will alternative delivery schools sufficiently address math? How can proposals for progressive charter schools address the issue of discipline? How can vocational schools address the needs of at-risk students? Vocational schools comprised too small of a number for the researchers of this study to include in the comparative analysis. Such schools in the earlier Carpenter study, however, made the greatest progress in math and reading combined. Given that there are few vocational charter schools in Colorado, opening vocational schools to serve at-risk high school students could be a viable option for districts.[35]

Conclusion

As with any research, this typology study does not represent the final authoritative word on defining characteristics of a successful charter school. As stated in the limitations above, there remains much to be explained in charter performance. Rather, the researchers hope subsequent typologies will attempt to quantify other school features in a combined effort to define what works in the charter landscape. Indeed, educational consultant Mark Van Ryzin has begun an effort to build a taxonomy of schools that would capture multiple dimensions of school characteristics, including Learning Model, Administration, and Facilities and Resources.[36] Within each of those broad dimensions, Van Ryzin includes the following sub-dimensions:

Learning Model	Administration	Facilities and Resources
Curriculum	School management	School building
Assessment of learning	Teacher development	School status
Place and time	Student involvement	Use of technology
Teacher to student	Parental involvement	Support services
programs	Measuring success	Other facility related
Student to student programs	Other administration related	variables
Other learning related	variables	
variables		

Within each sub-dimension multiple indicators will be measured at the school level. When constructed, these indicators, sub-dimensions, and dimensions can be mixed and matched to describe a school and also how the various combinations interact to predict student performance.

Such taxonomies or typologies can also be combined with the routine school data currently collected, and some that are not, to create a robust examination of what works. For example, many of the data included in this study, such as student/teacher ratio, percent free/reduced lunch, and so forth represent important variables in measuring school performance, but other important data remain unmeasured at the school level. One of the more significant is school funding. To date, Colorado reports school finance at the district level only, making any analysis of the relationship between performance and funding quite limited in its utility. This is a particularly important issue with charter schools for at least two reasons.

First, charter schools in most states, Colorado included, operate with less (sometimes significantly so) funding than traditional public schools.[37] Although charter supporters frequently decry the funding gap, little is actually known about the effects of such inequities given the lack of data to support such analyses. Second, charters enjoy flexibility in their operations, including the use of funds. Knowing how charter schools, particularly successful charter schools use their funds and still realize strong student achievement despite funding inequities could prove quite revealing.[38] If both of these were combined with various taxonomies or typologies addressed above and operational and demographic

characteristics of schools, the results could quite powerful for research generally and for authorizers specifically as they review charter proposals and oversee charter contracts.

Endnotes

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[12] See Colorado League of Charter Schools at www.coloradoleague.org/colorado-charter-schools/charter-schools-fact-sheet.php.

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[14] Pushpam, J. (2002). *The approval barrier to suburban charter schools.* Washington, DC: Thomas B. Fordham Foundation.

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[17] SchoolDataDirect is a service of the Council of Chief State School Officers. Go to www.schooldatadirect.org/app/location/q/stid=6/llid=111/stllid=219/locid=6/stype=/catid=-1/secid=-1/compid=-1/site=pes.

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[31] This figure represents the total number of students tested in this study, not the total number of charter school students in Colorado. Due to missing data, some students were omitted.

[32] SchoolDataDirect is a service of the Council of Chief State School Officers. Go to www.schooldatadirect.org/app/location/q/stid=6/llid=111/stllid=219/locid=6/stype=/catid=-1/secid=-1/compid=-1/site=pes.

[33] *Ibid.*

[34] *Ibid.*

[35] A highly successful example of such a charter school is the ISUS school in Dayton, Ohio (http://isusinc.com/default2.asp).

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[38] Some work has already begun along these lines. In Palardy, J., & Nesbit, T. (2007). Traditional public schools versus charter schools: A comparison of technical efficiency. *Economics Bulletin, 9*(9), 1-10, the authors compared Arizona charters to public school districts to determine what kind of schools proved more efficient in its use of resources. Although helpful, the charter school to school district comparison comes with serious limitations, as the authors acknowledged in their article. Similar research is currently underway using data from Ohio and Minnesota, two states that report finance data down to the school level.

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