

Evidence of Educational Need

Evidence 1—The Learning Gap between Shanghai and North Carolina

North Carolina Students' Performance

Making all the students perform on the grade level has always been a top priority for the NC DPI but it seems there is still a long way to go. In the 2016-17 academic year, only 55.4% of North Carolina students were proficient (Level 3 or above) in Math state tests and only 57.5% were proficient in Reading (NC DPI, 2017).

How Far are America and North Carolina from the Top?

How is North Carolina's education ranked in the world? Three states (i.e., CT, FL, MA) participated in the 2012 PISA study. The 2012 PISA data shows that Shanghai's 8th graders were three years ahead of the world average in math. The gap between Shanghai students and North Carolina students in math is stunning 3.5 years (613 vs 471)! Shanghai's students in the lowest socioeconomic status quarter are over one year ahead of North Carolina students in the top SES quarter (562 vs 516)! So North Carolina students' basic skills are in a deplorable state both in absolute terms (Nearly half are below grade level) and relative terms (3.5 years below Shanghai students in math).

Table 1: A Comparison of PISA Scores

	Math			Reading Average	Science Average
	Average	Highest SES Quarter	Lowest SES Quarter		
Shanghai, China	613	660	562	570	580
Singapore	573	627	523	542	551
Finland	519	555	488	524	545
Massachusetts	514	576	459	527	527
Connecticut	506	570	450	521	521
UK	494	545	458	499	514
US	481	532	442	498	497
Florida	467	521	430	492	485
NC (2015)	471	516	437	500	502

Learning from China

The two countries that American educators talk about the most are Singapore and Finland. Finland is not very remarkable if compared with Massachusetts. Students in these two places had similar performances in Math (519 vs 514) and Reading (524 vs 527) but Finland students did better in Science (545 vs 527). Singapore math has been adopted by many American

schools but Singapore students are one year behind Shanghai students in math (573 vs 613)! The 2009 and 2012 PISA studies created a new superstar—Shanghai, but why American educators still talk about Singapore and Finland? Why do we learn from the second best when there is a clear best? Americans take no action but the British have made some serious moves. Their Minister of Education visited Shanghai. They invited some Chinese teachers to teach in British schools, and the BBC even made a documentary about five of them. Just after one month, the students taught by the five Chinese teachers outperformed the students in the comparison group by more than 10% (The Telegraph, 2015). About 8,000 British primary schools will adopt Shanghai way of teaching math (Harding, 2016).

American educators often use students' socioeconomic status as an excuse for students' poor performance. The Chinese know how to make low SES students perform at high levels. Shanghai's students in the lowest socioeconomic status quarter performed far better than American students in the top SES quarter (562 vs 532). If street vendors' kids in Shanghai outperformed attorneys' kids in the US, should we start to learn from the Chinese?

References

Harding, E (2016). *Half of primary schools set to teach maths Chinese-style: Children will be*

required to practise sums and exercises until they can prove they have mastered them Retrieved on 9/18/16 at <http://www.dailymail.co.uk/news/article-3685552/Half-primary-schools-set-teach-maths-Chinese-style-Children-required-practise-sums-exercises-prove-mastered-them.html>

National Center for Education Statistics. (2013). *Program for International Student Assessment (PISA)*. Retrieved on 9/18/16

http://nces.ed.gov/surveys/pisa/pisa2012/pisa2012highlights_3a.asp

NC DPI.(2017). 2016–17 Performance and Growth of North Carolina Public Schools Executive

Summary. Retrieved on 9/30/18 <http://www.ncpublicschools.org/docs/accountability/reporting/2017/documentation/exsumm17.pdf>

The Telegraph. (2015). *Pupils taught by Chinese outpace their peers in experiment*. Retrieved on 9/18/16 at <http://www.telegraph.co.uk/education/expateducation/11811235/Take-note-Chinese-teachers-a-little-classroom-chaos-can-be-a-good-thing.html>

Evidence 2--Survey Data Analysis

We put a survey online and also distributed hard copies to gauge parents' interests in Carolina Experimental School. We got 173 completed surveys.

About 53% of parents were willing to send their children to Cary's three existing charter schools (i.e., Cardinal Charter Academy, Sterling Montessori Academy, Triangle Math and Science Academy) but 34% of parents were not and 13% said "maybe."

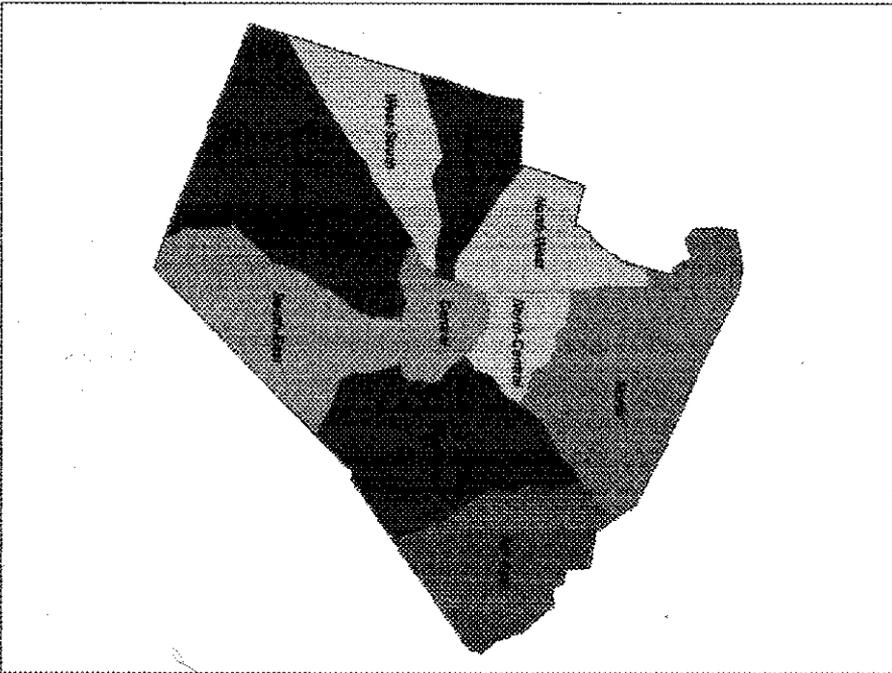
About 65% of parents did not know about Shanghai's stunning performances on the 2009 and 2012 PISA studies. Even more parents (74%) did not know there was a three-year gap between Shanghai's 15-year-olds and their American peers in math. About 94% of parents believed that a charter school adopting Shanghai's teaching practices would outperform their local schools. About 92% of parents made academic excellence a top priority in choosing a school. Other factors that are important for parents include the fit between the school and the child, school size, the school's programs, school size, and distance.

About 89% of parents considered sending their children to a school as good as Raleigh Charter High School if it is a K-12 school within ten miles from their homes. There is a demand for such a charter school in other parts of the Triangle area: "I hope the school will open for families outside Cary." "This is very exciting. Thank you so much to establish CES. My child and myself cannot wait to join. Please consider adding a CES in north Raleigh also."

Evidence 3 - WCPSS's Student Growth Projection

It's All About Growth...

Net Gain: 2012-13 to 2015-16



Planning Region	Net Gain: 2012-13 to 2015-16	Forecasted Gain: * 2015-16 to 2020-21
West-North	2,619	1,142
South-West	2,120	4,878
Near East	1,349	4,807
North	547	1,032
North-Central	350	- 502
North-West	329	- 234
West-South	296	2,057
Central	250	- 472
South-East	249	2,588
Far East	23	433

* Negative growth in some areas is a result of lower system-wide K-12 forecast and significantly increased growth potential in other areas.

Data Sources:
WCPSS student geocode; SPDM forecast; OREDITRE, April 2016

Appendix B Sample Curriculum Outline

Social Studies

In addition to basic knowledge and skills, students at Carolina Experimental School will develop their talents and read great books, which means they have much more to know. Students need to know psychology and education to improve their learning efficiency so CES students read classics in these subjects. Great books are for summer reading. Students will write book reports or essays. Teachers will discuss or allude to these books in class.

	Standards/Units	Great Books
K	<ol style="list-style-type: none"> 1. Change over time (e.g., self, others, season) and how life events bring about change. 2. Maps of school, classroom, and home 3. Identify physical features 4. Identify locations using positional words 5. Explain ways people use environmental resources to meet basic needs and wants (shelter, food, clothing, etc.). 6. Explain why citizens obey rules in the classroom, school, home and neighborhood. 7. Exemplify positive relationships through fair play and friendship. 8. Explain how jobs help people meet their needs and wants. 9. Explain the elements of culture (how people speak, how people dress, foods they eat, etc.). 10. Explain similarities in self and others. 	Read them all! — Caldecott Award winning and honor books
1 st Gr	<ol style="list-style-type: none"> 1. Explain how and why neighborhoods and communities change over time. 2. Explain the importance of folklore and celebrations and their impact on local communities. 3. Explain why national holidays are celebrated (Constitution Day, Independence Day, Martin Luther King, Jr., Memorial Day, Presidents' Day, etc.). 4. Use geographic tools to identify characteristics of various landforms and bodies of water. 5. Give examples showing the location of places (home, classroom, school and community). 6. Understand the basic elements of geographic representations using maps (cardinal directions and map symbols). 7. Explain ways people change the environment (planting trees, recycling, cutting down trees, building homes, building streets, etc.). 8. Explain how people use natural resources in the community. 9. Explain how the environment impacts where people live (urban, rural, weather, transportation, etc.). 	Read them all! — Caldecott Award winning and honor books

	<ol style="list-style-type: none"> 10. Summarize the various ways in which people earn and use money for goods and services. 11. Identify examples of goods and services in the home, school and community. 12. Explain how supply and demand affects the choices families and communities make. 13. Explain why rules are needed in the home, school and community. 14. Classify the roles of authority figures in the home, school and community (teacher, principal, parents, mayor, park rangers, game wardens, etc). 15. Summarize various ways in which conflicts could be resolved in homes, schools, classrooms and communities. 16. Compare the languages, traditions, and holidays of various cultures. 1.C.1.2 Use literature to help people understand diverse cultures 	
2 nd Gr	<ol style="list-style-type: none"> 1. Use timelines to show sequencing of events. 2. Identify contributions of historical figures (community, state, nation and world) through various genres. 3. Compare various interpretations of the same time period using evidence such as photographs and interviews. 4. Interpret maps of the school and community that contain symbols, legends and cardinal directions. 5. Interpret the meaning of symbols and the location of physical and human features on a map (cities, railroads, highways, countries, continents, oceans, etc.). 6. Understand the effects of humans interacting with their environment. 7. Give examples of ways in which people depend on the physical environment and natural resources to meet basic needs. 8. Explain how people positively and negatively affect the environment. 9. Give examples of ways in which businesses in the community meet the needs and wants of consumers. 10. Explain the roles and impact producers and consumers have on the economy. 11. Summarize the concept of supply and demand. 12. Explain why people and countries around the world trade for goods and services. 13. Explain how money is used for saving, spending, borrowing and giving. 14. Summarize the role of financial institutions relative to savings. 15. Explain government services and their value to the community (libraries, schools, parks, etc.). 	Read them all! — Caldecott Award winning and honor books

	<ol style="list-style-type: none"> 16. Explain how governments establish order, provide security and create laws to manage conflict. 17. Understand the roles and responsibilities of citizens. 18. Exemplify characteristics of good citizenship through historical figures and everyday citizens. 19. Explain why it is important for citizens to participate in their community 20. Explain how artistic expressions of diverse cultures contribute to the community (stories, art, music, food, etc.). 21. Recognize the key historical figures and events that are associated with various cultural traditions. 22. Exemplify respect and appropriate social skills needed for working with diverse groups. 	
3 rd Gr	<ol style="list-style-type: none"> 1. Explain key historical events that occurred in the local community and regions over time. 2. Analyze the impact of contributions made by diverse historical figures in local communities and regions over time. 3. Exemplify the ideas that were significant in the development of local communities and regions. 4. Use historical thinking skills to understand the context of events, people and places. 5. Explain change over time through historical narratives. (events, people and places) 6. Explain how multiple perspectives are portrayed through historical narratives. 7. Find absolute and relative locations of places within the local community and region. 8. Compare the human and physical characteristics of places. 9. Exemplify how people adapt to, change and protect the environment to meet their needs. 10. Explain how the movement of goods, people and ideas impact the community. 11. Summarize the elements (cultural, demographic, economic and geographic) that define regions (community, state, nation and world). 12. Compare various regions according to their characteristics. 13. Explain how location impacts supply and demand. 14. Explain how locations of regions and natural resources influence economic development (industries developed around natural resources, rivers and coastal towns). 15. Understand entrepreneurship in a market economy. 16. Explain why people become entrepreneurs. 17. Give examples of entrepreneurship in various regions of our state. 18. Summarize the historical development of local 	Read them all! — Newbery Award winning and honor books

	<p>governments.</p> <ol style="list-style-type: none"> 19. Describe the structure of local government and how it functions to serve citizens. 20. Understand the three branches of government, with an emphasis on local government. 21. Understand how citizens participate in their communities. 22. Exemplify how citizens contribute politically, socially and economically to their community. 23. Exemplify how citizens contribute to the well-being of the community's natural environment. 24. Apply skills in civic engagement and public discourse (school, community) 25. Compare languages, foods and traditions of various groups living in local and regional communities. 26. Exemplify how various groups show artistic expression within the local and regional communities. 27. Use non-fiction texts to explore how cultures borrow and share from each other (foods, languages, rules, traditions and behaviors). 	
4 th Gr	<ol style="list-style-type: none"> 1. Summarize the change in cultures, everyday life and status of indigenous American Indian groups in North Carolina before and after European exploration. 2. Explain how and why North Carolina was established. 3. Explain how people, events and developments brought about changes to communities in various regions of North Carolina. 4. Analyze North Carolina's role in major conflicts and wars from the Pre-Colonial period through Reconstruction. 5. Understand how notable structures, symbols and place names are significant to North Carolina. 6. Explain why important buildings, statues, monuments and place names are associated with the state's history 7. Explain the historical significance of North Carolina's state symbols. 8. Summarize changes that have occurred in North Carolina since statehood (population growth, transportation, communication and land use). 9. Explain the impact that human activity has on the availability of natural resources in North Carolina. 10. Exemplify the interactions of various peoples, places and cultures in terms of adaptation and modification of the environment. 11. Explain the impact of technology (communication, transportation and inventions) on North Carolina's citizens, past and present. 12. Understand the basic concepts of a market economy: price, 	<ul style="list-style-type: none"> - Nominate 10 greatest North Carolinians and explain why - Read them all! — Newbery Award winning and honor books

	<p>supply, demand, scarcity, productivity and entrepreneurship.</p> <ol style="list-style-type: none"> 13. Understand how scarcity and choice in a market economy impact business decisions. 14. Analyze the historical and contemporary role that major North Carolina industries have played in the state, nation and world. 15. Explain the impact of entrepreneurship on the economy of North Carolina. 16. Understand the economic factors when making personal choices. 17. Explain how personal financial decisions such as spending, saving and paying taxes can positively and/or negatively affect everyday life. 18. Explain how scarcity of personal financial resources affects the choices people make based on their wants and needs. 19. Summarize the key principles and revisions of the North Carolina Constitution. 20. Compare the roles and responsibilities of state elected leaders. 21. Explain the influence of the colonial history of North Carolina on the governing documents of our state. 22. Compare North Carolina's government with local governments. 23. Analyze the North Carolina Constitution. 24. Analyze the preamble and articles of the North Carolina Constitution in terms of rights and responsibilities. 25. Give examples of rights and responsibilities of citizens according to the North Carolina Constitution. 26. Differentiate between rights and responsibilities reflected in the North Carolina Constitution. 27. Explain how the settlement of people from various cultures affected the development of regions in North Carolina (languages, foods and traditions). 28. Explain how the artistic expression of various groups represents the cultural heritage of North Carolina. 	
5 th Gr	<ol style="list-style-type: none"> 1. Evaluate the relationships between European explorers (French, Spanish and English) and American Indian groups, based on accuracy of historical information (beliefs, fears and leadership). 2. Summarize the political, economic and social aspects of colonial life in the thirteen colonies. 3. Analyze the impact of major conflicts, battles and wars on the development of our nation through Reconstruction. 4. Understand the role of prominent figures in shaping the United States. 	<ol style="list-style-type: none"> 1. Read <i>The Autobiography of Benjamin Franklin</i> 2. Read <i>The Story of My Life</i> by Hellen Keller 3.

	<ol style="list-style-type: none"> 5. Summarize the contributions of the “Founding Fathers” to the development of our country. 6. Explain how key historical figures have exemplified values and principles of American democracy. 7. Compare the changing roles of women and minorities on American society from the Pre-Colonial era through Reconstruction. 8. Explain the impact of the physical environment on early settlements in the New World. 9. Explain the positive and negative effects of human activity on the physical environment of the United States, past and present. 10. Exemplify how technological advances (communication, transportation and agriculture) have allowed people to overcome geographic limitations. 11. Exemplify migration within or immigration to the United States in order to identify push and pull factors (why people left/why people came). 12. Summarize the role of international trade between the United States and other countries through Reconstruction. 13. Explain the impact of production, specialization, technology and division of labor on the economic growth of the United States. 14. Understand that personal choices result in benefits or consequences. 15. Explain the importance of developing a basic budget for spending and saving. 16. Evaluate the costs and benefits of spending, borrowing and saving. 17. Explain how ideas of various governments influenced the development of the United States government (Roman, Greek, Iroquois, European and British). 18. Summarize the organizational structures and powers of the United States government (legislative, judicial and executive branches of government). 19. Analyze historical documents that shaped the foundation of the United States government. 20. Analyze life in a democratic republic through the rights and responsibilities of citizens. 21. Understand the values and principles of a democratic republic. 22. Analyze the rights and responsibilities of United States citizens in relation to the concept of the "common good" according to the United States Constitution (Bill of Rights). 23. Exemplify ways in which the rights, responsibilities and privileges of citizens are protected under the United States 	
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	<p>Constitution.</p> <p>24. Explain why civic participation is important in the United States.</p> <p>25. Analyze the change in leadership, cultures and everyday life of American Indian groups before and after European exploration.</p> <p>26. Exemplify how the interactions of various groups have resulted in the borrowing and sharing of traditions and technology.</p> <p>27. Explain how the movement of goods, ideas and various cultural groups influenced the development of regions in the United States.</p> <p>28. Understand how cultural narratives (legends, songs, ballads, games, folk tales and art forms) reflect the lifestyles, beliefs and struggles of diverse ethnic groups.</p>	
6 th Gr	<ul style="list-style-type: none"> - Human Geography - Early Humans - Middle East & Ancient Egypt - Greece - Rome - Islam - Africa - Americas - India - China - Japan - Medieval Europe - 	<ul style="list-style-type: none"> - Greek and Roman mythology - <i>The 100: A Ranking of the Most Influential Persons in History</i> by M. H. Hart
7 th Gr	<ul style="list-style-type: none"> - Renaissance - Reformation - Age of Exploration - Enlightenment - French Revolution & American Revolution - Industrial Revolution - Imperialism - World War I - World War II - Cold War - New World Order 	<ul style="list-style-type: none"> - <i>The Diary of a Young Girl</i> by Anne Frank - the biography of Leonardo da Vinci - histories of Industrial Revolution - histories of Scientific Revolution - <i>Outliers: The Story of Success</i> by Malcolm Gladwell
8 th Gr	<ul style="list-style-type: none"> - Colonization & Settlement - American Revolution - Expansion & Reform 	<ul style="list-style-type: none"> - biographies of politicians such as George Washington,

	<ul style="list-style-type: none"> - Civil War & Reconstruction - Industrialization & Impacts - WWI & Great Depression - WWII - Post-War US - Contemporary US 	<p>Thomas Jefferson, Andrew Jackson, Abraham Lincoln, Theodore Roosevelt, FDR, JFK, Linden Johnson, and Ronald Reagan</p> <ul style="list-style-type: none"> - <i>Growth Mindset</i> by Carol Dweck - <i>Experience and Education</i> by John Dewey
9 th Gr	<ul style="list-style-type: none"> - Nomadic and Agricultural Societies - The Cradle of Civilization - Egypt - Greeks and Romans - Judaism, Christianity, & Islam - African - Ancient Asia - The Americas - Medieval Europe and Byzantium - Renaissance and Reformation - Colonization and Imperialism - Industrial Revolution - World War I - Global and Regional Conflict - Independence - Globalization 	<ul style="list-style-type: none"> - <i>The Origin and Goal of History</i> by Karl Jaspers - <i>Guns, Germs, and Steel: The Fates of Human Societies</i> by Jared Diamond - <i>Gandhi: An Autobiography</i> - <i>Autobiography</i> by John Stuart Mill - <i>The Child and the Curriculum</i> by John Dewey
10 th Gr	<ul style="list-style-type: none"> - Ancient America and Africa - Europeans and Africans Reach the Americas - Colonizing a Continent in the Seventeenth Century - The Maturing of Colonial Society - The Strains of Empire - American Revolution - Consolidating the Revolution - Economic Transformations in the Northeast and the Old Northwest. - Slavery and the Old South - Moving West - The Union in Peril 	<ul style="list-style-type: none"> - <i>Democracy in America</i> by Tocqueville - <i>1491</i> by Charles Mann - <i>The Words: The Autobiography of Jean-Paul Sartre</i> - <i>The Schools We Need: And Why We Don't Have Them</i> by E. D. Hirsch

11 th Gr	<ul style="list-style-type: none"> - The Civil War - Reconstruction - The West and the New South - Industrial Revolution in America - Becoming a World Power - The Progressives Confront Industrial Capitalism - WWI - Boom and Bust - WWII - Cold War - Reform and Rebellion in the Turbulent Sixties - The Revival of Conservatism - Post Cold War 	<ul style="list-style-type: none"> - biographies of entrepreneurs such as Thomas Edison, Henry Ford, John Rockefeller - <i>Battle Hymn of the Tiger Mother</i> by Amy Chua
12 th Gr	<ul style="list-style-type: none"> - Citizenship - Voting, Elections, and Political Parties - Foundation of American Democracy - The US Constitution - The Amendments - The Legislative, Executive and Judicial Branch - The American Legal System - The State Government - The Local Government - World Affairs and Comparative Government 	<ul style="list-style-type: none"> - <i>The Spirit of Laws</i> by Charles Baron De Montesquieu - <i>On Liberty</i> by John S. Mill

Competitions

- Geography Bee
- National Flag Day writing contest: What Our Flag Means to Me?
- Model UN
- Speech contest
- C-Span's Student Cam
- National History Day
- National History Bee
- Debate
- Academic WorldQuest
- Mock Trial
- University Interscholastic Council Social Studies Contest
- EconChallenge
- National Peace Essay Contests

Carolina Experimental School

Year 1 Course Offerings (9th Grade)

English	English I (Standard & Honors)
Math	Math I (Standard & Honors), Math II (Standard & Honors)
Science	Biology (Standard & Honors), Earth Science (Standard & Honors)
Social Studies	World History (Standard & Honors)
World Languages	Spanish I & II, Chinese I & II
Technology	Introduction to Computer Science, Programming
PE	PE & Health
Art	Visual Arts I Theatre 1
Music	Chorus, Band

Year 2 Course Offerings (9th & 10th Grade)

English	English I (Standard & Honors), English II (Standard & Honors), Creative Writing
Math	Math I (Standard & Honors), Math II (Standard & Honors), Math III (Standard & Honors), PreCalculus
Science	Biology (Standard & Honors), Earth Science (Standard & Honors), Physical Science (Standard & Honors)
Social Studies	World History (Standard & Honors), Civics & Economics (Standard & Honors), American History I (Standard & Honors)
World Languages	Spanish I, II, & III, Chinese I, II, & III
Technology	Introduction to Computer Science, Programming
PE	PE & Health
Art	Visual Arts I, Visual Arts II Theatre 1, Theatre 2
Music	Chorus, Mixed Ensemble, Band 1, Band 2

Years 3 Course Offerings (9th, 10th, & 11th grade)

English	English I (Standard & Honors), English II (Standard & Honors), English III (Standard & Honors), English IV (Standard & Honors), Creative Writing
Math	Math I (Standard & Honors), Math II (Standard & Honors), Math III (Standard & Honors), Advanced Functions & Modeling, PreCalculus, AP Calculus AB
Science	Biology (Standard & Honors), Earth Science (Standard & Honors), Physical Science (Standard & Honors), Chemistry (Standard & Honors), AP Physics, AP Environmental Science

Social Studies	World History (Standard & Honors), Civics & Economics (Standard & Honors), American History I (Standard & Honors), American History II (Standard & Honors), AP US History, AP European History, AP Psychology
World Languages	Spanish I, II, III, & IV Chinese I, II, III, & IV French 1, German 1
Technology	Introduction to Computer Science, Programming
PE	PE & Health
Art	Visual Arts I, Visual Arts II, Visual Arts III Theatre 1, Theatre 2, Theatre 3
Music	Chorus, Mixed Ensemble, Band 1, Band 2, Strings 1

Years 4 & Year 5 Course Offerings (9th, 10th, 11th & 12th grade)

English	English I (Standard & Honors), English II (Standard & Honors), English III (Standard & Honors), English IV (Standard & Honors), AP Language, AP Literature, Creative Writing
Math	Math I (Standard & Honors), Math II (Standard & Honors), Math III (Standard & Honors), Advanced Functions & Modeling, PreCalculus, AP Calculus AB, AP Statistics
Science	Biology (Standard & Honors), Earth Science (Standard & Honors), Physical Science (Standard & Honors), Chemistry (Standard & Honors), AP Physics, AP Biology, AP Chemistry, AP Environmental Science
Social Studies	World History (Standard & Honors), Civics & Economics (Standard & Honors), American History I (Standard & Honors), American History II (Standard & Honors), AP Human Geography, AP US History, AP European History, AP World History, AP Psychology, AP Government and Politics – US, AP Macroeconomics
World Languages	Spanish I, II, III, & IV, AP Spanish Literature Chinese I, II, III, & IV, AP Chinese Language and Culture French 1, French 2, French 3 German 1, German 2, German 3
Technology	Introduction to Computer Science, Programming
PE	PE & Health
Art	Visual Arts I, Visual Arts II, Visual Arts III, AP Art History, AP Studio Art Drawing Theatre 1, Theatre 2, Theatre 3
Music	Chorus, Mixed Ensemble, Band 1, Band 2, Strings 1, Strings 2

Carolina Experimental School 2020-2021 Instructional Calendar

2020

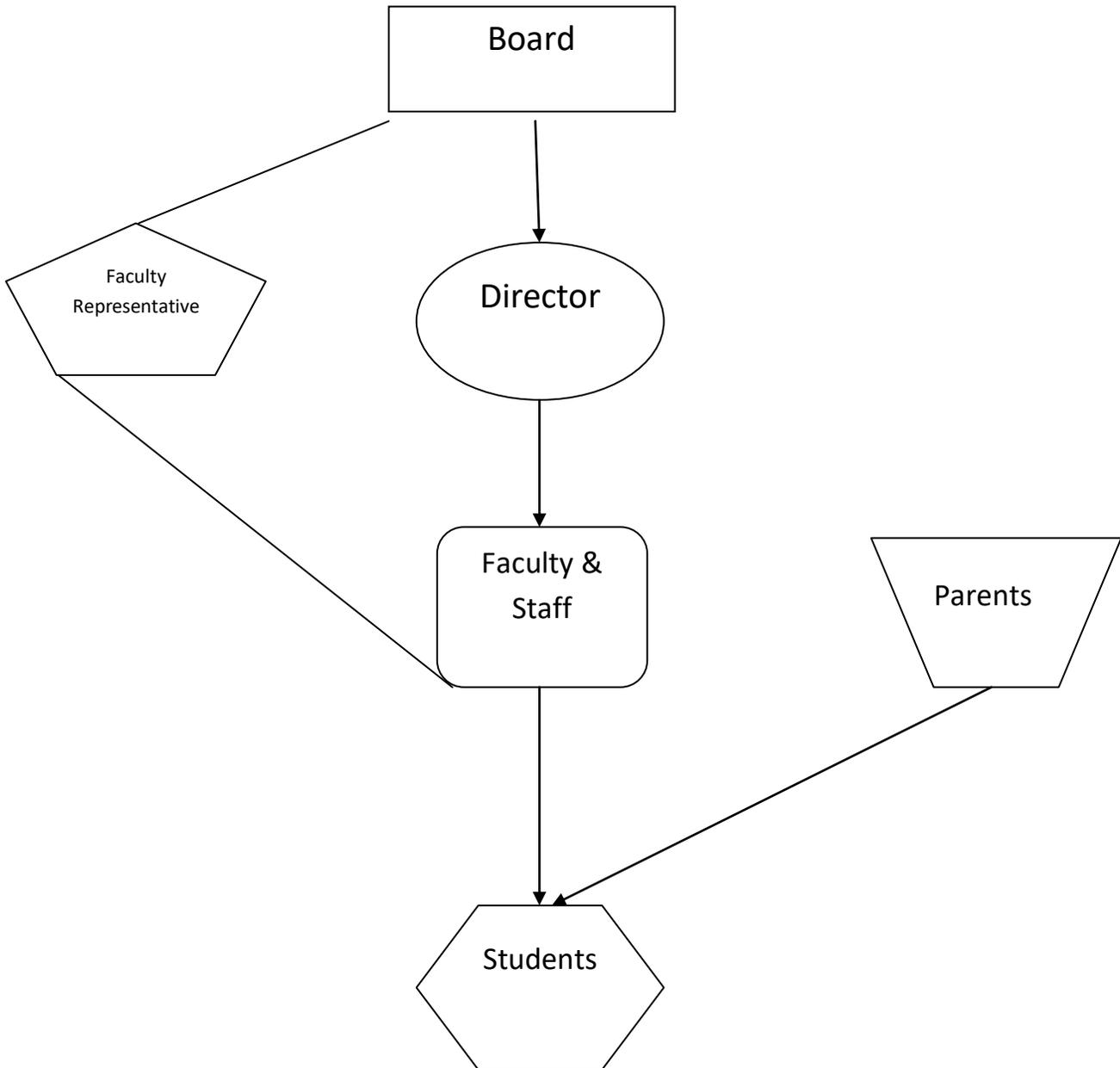
7/1, Wednesday	12-month administrators and support staff begin work year
8/10, Monday	Licensed employees begin work year.
8/10-18	Professional development.
8/20, Thursday	Student orientation and open house @6pm
8/24, Monday	Classes begin
9/7, Monday	Labor Day (No School)
10/12, Monday	Columbus Day (No School)
10/27, Tuesday	End of first grading period (45 days)
11/2, Monday	Parent conference day (No School)
11/11, Wednesday	Veterans Day (No School)
11/25-27	Fall Break (No School)
12/23-31	Winter Break (No School)

2020

1/1, Friday	New Year's Day (No School)
1/18, Monday	Martin Luther King, Jr. Day (No School)
1/22, Wednesday	End of second grading period (45 days)
2/15, Monday	Presidents' Day (No School)
3/25, Wednesday	End of third grading period (44 days)
4/4-9	Spring Break (No School)
6/1-4	EOG/EOC tests
6/10-11	Olympics Field Day
6/11, Friday	End of fourth grading period (48 days), end of school year (182 days)

The snow makeup days will start on 6/14.

Carolina Experimental School's Organizational Chart



Appendix F:

Charter School Board Member Information Form

Note: To be completed individually by each proposed founding charter school board member. All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and as a board member of a North Carolina public charter school; you are responsible for ensuring the quality of the school's entire program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter.

As part of the application for a new charter school, the State Board of Education requests that each prospective board member respond individually to this questionnaire. Where narrative responses are required, brief responses are sufficient.

The purpose of this questionnaire is twofold: 1) to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; and 2) to encourage board members to reflect individually as well as collectively on their common mission, purposes, and obligations at the earliest stage of school development.

Background

1. Name of charter school on whose Board of Directors you intend to serve: Carolina Experimental School

2. Full name: Wenyu Bai

Home Address: : 4112 Collamer Dr, Cary NC 27519

Business Name and Address:

Telephone No.: 919 930 9125

E-mail address: conwayzhiyin@hotmail.com

3. Brief educational and employment history.

- **Education**

- **Ph.D** in Educational Policy, Planning & Leadership- Gifted Education, The College of William and Mary in Virginia, 2005.
- **M.A.** in Foundations of Education, Beijing Normal University, China, 2000.
- **B.A.** in English Language and Literature, Heilongjiang University, Harbin, China, 1993.
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- **Teaching Experiences**

- 2016- 2018 EC Math Inclusion Teacher at Orange High School in Hillsborough, NC. Teaching Math I, II, and III.
- 1/2016-8/2016 Cross Categorical Resource Teacher at Holly Springs High School in Holly Springs, NC. Teaching curriculum assistance and Math II inclusion classes.
- 9/2012-1/2016 EC teacher/EC Coordinator at The Hawbridge School (charter) in Saxapahaw, NC. Teaching 6th-12th grades EC resource classes and middle school and high school math classes.
- 2011- 2012 Dual Language Chinese Teacher at Glenwood Elementary School in Chapel Hill, NC. Teaching 2nd grade Chinese, Science, Math & 3rd grade Chinese, Math, Science, & Social Studies.
- 2010-2011 Special Education Resource Teacher at McCormick High School in McCormick, SC.
- 2007-2010 Special Education Teacher in 6th-8th grades self-contained classroom at McCormick Middle School in McCormick, South Carolina.

1. Have you previously served on a board of a school district, another charter school, a non-public school or any not-for-profit corporation?

No: Yes:

2. How were you recruited to join this Board of Directors? Why do you wish to serve on the board of the proposed charter school?

I want to set up this school to address the problems in American schools. Here are some symptoms: About half of the NC 8th graders were below grade level in math and reading; students spend much more time on cell phones, TV, and video games than on learning; students rarely prepare for big tests; students are only willing to do the minimum amount of work. After comparing American students with Chinese students, I found out the root causes of these symptoms: American schools' testing is far less rigorous (both in standards and consequences) so students do not feel the need to achieve mastery; a flawed grade system is used to evaluate students and there are huge discrepancies between grades and standardized test scores. Shanghai's 15-year-olds were three years ahead of their American counterparts in math because they have been rigorously assessed since 1st grade. American schools have to raise the standards and make testing count. When they do, they get excellent results. The BASIS schools in Arizona have rigorous curriculum and they outperformed Shanghai students in the 2012 PISA study. America needs more schools like BASIS. I want to duplicate BASIS's success in North Carolina and set up a charter school to adopt China's best practice in basic skills instruction.

3. What is your understanding of the appropriate role of a public charter school board member?

- As a charter school board member, I am a guardian of public funding. I will make sure the school sticks to its mission and operates smoothly.

4. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.

I was a board member of another charter school in the planning stage. I had 3.5 years of teaching experience at The Hawbridge School (charter) so I know how a charter school is operated, what its priorities are, and what parents' concerns are.

5. Describe the specific knowledge and experience that you would bring to the board.

I have a Ph.D in gifted education administration from The College of William and Mary, a leader in developing curriculum for gifted children. I have over nine years of teaching experiences in special education self-contained, resource, and inclusion classrooms. I know what make students underachieve. I have taught students from 2nd grade to 12th grade in large variety of subjects (e.g., math, English, social studies, science, Chinese). I got my Master's Degree in Foundations of Education from Beijing Normal University, and I have a strong background in philosophy and sociology of education. My unique insider/outsider identity gives me insight into American schools' problems and solutions.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?

The mission of Carolina Experimental School is to apply best educational practices in the world to provide high quality education for all students. It will bridge two learning gaps: the gap between America and high performing countries, the gap between low SES students and high SES students. It is necessary

to jump out of the system to search for solutions when a system consistently fails to fix its own problems.

2. What is your understanding of the school's proposed educational program?

Carolina Experimental School adopts China's best practices in teaching basic skills. This will make CES a top performing school. China's education has the reputation of being test-driven and one-dimensional. CES uses schoolwide talent development to balance it and makes it acceptable to American parents. A few charter schools have been established in North Carolina to promote classic education. CES does not intend to turn back the clock. Instead it broadens the Great Books program by including modern classics, biographies of great people, and non-text classics. Great books will help students develop critical thinking, philosophical thinking, motivation, and purpose.

3. What do you believe to be the characteristics of a successful school?

- A successful school has high rankings (e.g., Raleigh Charter, Woods Charter).
- A successful school is a leader. It leads in student performance and educational reform.
- A successful school has solutions (to problems). For example, CES will be known as a school that can turn a mathematically weak student into a strong student.
- A successful school creates added values. Most high performing schools are good because the parents have high socio-economic status. A really successful school can make low SES students high achievers.
- A successful school is popular. It has a long waiting list.

4. How will you know that the school is succeeding (or not) in its mission?

There are many indicators for us to know that CES is succeeding in its mission:

- CES has achieved its goals listed in its five-year plan (e.g., reaching Raleigh Charter's level in Year 5).
- CES significantly outperforms schools with comparable SES level. We have created added values.
- Other schools are eager to learn from us.
- Parents see CES as a solution, and CES has a long waiting list.

Governance

1. Describe the role that the board will play in the school's operation.

The board will make sure the school is financially sound. It will maintain the school's financial stability by establishing a reserve fund. It will monitor the school's major decisions. It will ensure the school operates legally.

2. How will you know if the school is successful at the end of the first year of operation?

The school has good test scores. It has a balanced budget. The teachers are motivated to produce even better results. The stakeholders show satisfaction with the school.

3. How will you know at the end of five years of the school is successful?

The school has followed its mission. It has achieved its five-year plan. It is financially stable with a reserve fund equivalent of its three months' expenditures. The school is popular with a long waiting list.

4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?

The school board needs to ensure the school leader is competent and visionary. The school administrator needs to get the board's approval in making major decisions.

5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?

I will propose to discuss this at the board meeting and develop policies that clearly state the consequences for such behaviors.

*Please include the following with your Information Form

- a one page resume
- a national criminal background check

*If you responded within the application that disciplinary action has been taken against any past or present professional licenses, provide a detailed response below outlining the disciplinary action taken and the license validity.

Certification

I, Wenyu Bai, certify to the best of my knowledge and ability that the information I am providing to the North Carolina State Board of Education as a prospective board member for Carolina Experimental School Charter School is true and correct in every respect.

Signature

Wenyu Bai

Date

9/30/18

Wenyu Bai

4112 Collamer Dr., Cary, NC, 27519

Cell: 919-930-9125 conwayzhiyin@hotmail.com

Education

Ph.D in Educational Policy, Planning & Leadership- Gifted Education, College of William and Mary, 2005. 41 credit hours in special education.

M.A. in Foundations of Education, Beijing Normal University, China, 2000.

B.A. in English Language and Literature, Heilongjiang University, Harbin, China, 1993.

Teaching Experiences

- 2016 to 2018 Math Inclusion Teacher at Orange High School in Hillsborough, NC. Teaching Math 1, 2, 3 inclusion classes.
- 1/2016-6/2016 Cross Categorical Resource Teacher at Holly Springs High School in Holly Springs, NC. Teaching curriculum assistance and Math II inclusion classes.
- 9/2012-1/2016 EC teacher at The Hawbridge School (charter) in Saxapahaw, NC. Teaching 6th-12th grades EC resource classes and middle school and high school math classes.
- 2011- 2012 Dual Language Chinese Teacher at Glenwood Elementary School in Chapel Hill, NC. Teaching 2nd grade Chinese, Science, Math & 3rd grade Chinese, Math, Science, & Social Studies.
- 2010-2011 Special education resource teacher at McCormick High School in McCormick, SC.
- 2007-2010 Special education teacher in 6th-8th grades self-contained classroom at McCormick Middle School in McCormick, South Carolina.
- 3/2006-7/2006 6th grade special education teacher at Churchland Academy Elementary School in Portsmouth, VA.

Licensure

NC Professional Educator's License in Special Education General Curriculum, High School Math, Middle School Math, Middle School English, Elementary Education (grades K-6), ESL, & Chinese.

Internship

2/2003-5/2003 Administrative Internship at the New Horizons Governor's School, Hampton, VA

Professional Development

Explicit Direct Instruction, University of Kansas Learning Strategies and Content Enhancement Routines, Ruby Payne's Framework for Understanding Poverty, Backward Design, Classroom Instruction That Works, Capture Kids' Heart.

Appendix F:

Charter School Board Member Information Form

Note: To be completed individually by each proposed founding charter school board member. All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and as a board member of a North Carolina public charter school; you are responsible for ensuring the quality of the school's entire program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter.

As part of the application for a new charter school, the State Board of Education requests that each prospective board member respond individually to this questionnaire. Where narrative responses are required, brief responses are sufficient.

The purpose of this questionnaire is twofold: 1) to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; and 2) to encourage board members to reflect individually as well as collectively on their common mission, purposes, and obligations at the earliest stage of school development.

Background

1. Name of charter school on whose Board of Directors you intend to serve: Carolina Experimental School
2. Full name: Carolyn Bo Shao Wallace

Home Address: 209 Turtleback Crossing Dr, Chapel Hill, NC 27516

Business Name and Address:

Telephone No.: 919 622 9301

E-mail address: carolyn9988@hotmail.com

3. Brief educational and employment history.

Work Experiences

2016-Present	Capital Program Manager – Syngenta, US
2013-2016	Business Controller – Syngenta, US
2010-2013	Sr. Analyst Finance - BMO Financial Group, Canada
2007-2010	Business Analyst – National Express Corp, Canada
2006-2007	Financial Consultant - CDC Software, Canada
1997-2004	Inventory Controller, Office Manager – Dubai Optical, Dubai UAE

Education

2004-2006	MBA, University of Western Ontario
1990-1994	BA in English, Changchun University in Changchun, China

4. Have you previously served on a board of a school district, another charter school, a non-public school or any not-for-profit corporation?

No:

Yes

5. How were you recruited to join this Board of Directors? Why do you wish to serve on the board of the proposed charter school?

I volunteered when I learned of the opportunity through CAFA online community. I am a believer and strong advocate in education. I also would like to get involved and give back to the community I live in.

6. What is your understanding of the appropriate role of a public charter school board member?
I believe it is each of the board member's duty to ensure quality of the school program, good stewardship of public funds, and school's fulfillment of its public obligations and all terms of its charter.
7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.
 - I served as a board member for Pathways for Children, Youth and Families of York Region in Canada from 2009 to 2010.
8. Describe the specific knowledge and experience that you would bring to the board.
 - Board member experiences
 - Communication & leadership skills through 16+ years of work experiences
 - Financial budgeting, planning, forecasting, financial modeling knowledge and skills
 - Accounting knowledge and accounting management skills
(Certified Management Accountant training)
 - ERP system knowledge and skills

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?
We will use China and other top performing countries' best practice to provide high quality education to all the students.
2. What is your understanding of the school's proposed educational program?
It has three focus areas, academic excellency through disciplined methodical studies (learning from Chinese Schools' successes in teaching Math and Grammar classes), inspirational programs designed to inspire and transform students to read voraciously, specific programs designed to cultivate individual student's talents.
3. What do you believe to be the characteristics of a successful school?
Great teachers, great school leadership team, great programs, engaged students eager to learn and grow.
4. How will you know that the school is succeeding (or not) in its mission?
Students are all fully engaged in learning. They not only perform well in exams, but also thrive in extra curriculum activities. Majority of the students would be accepted by good/great undergraduate schools to continue their study. They do well not only at schools but also become outstanding citizens contributing to the society after they graduate.
For a small number of students, they may find out they are not as talented in academics, however they would still learn the basic academic skills that give them a solid base to take up a vocation and live a solid life making positive contributions to the world.

Governance

1. Describe the role that the board will play in the school's operation.

The board would approve the leadership team of the school; approve the budget, and school programs. The board will review major decisions and monitor operations to make sure the school is financially sound and operating legally.

2. How will you know if the school is successful at the end of the first year of operation?
The school has a great leadership team in place. It is joined by many great teachers. The school's mission is clearly understood and embraced by the board, school leadership team, teachers, parents and most importantly the community in large. The programs are established as designed and running well. Students are learning and have good test scores. More students want to join the school.
3. How will you know at the end of five years of the schools is successful?
Students and parents love the school. School leaders and teachers are proud to work here. The school is financially solid. Majority of the students not only have great test scores but also developed artistic/engineering/scientific/computer/sport talents and are sought after by good/great undergraduate schools. The school has built such a good reputation and there is a long waiting list for the school.
4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?
Have a clearly defined mission.
Gather talented people with the right skills (board members, school leaders, teachers and other school administrative staff) who embrace the mission to carry out the mission and make it true.
5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?
This will be discussed at the board meeting. It's likely the rest of the board will vote to terminate this board member.

*Please include the following with your Information Form

- a one page resume
- a national criminal background check

*If you responded within the application that disciplinary action has been taken against any past or present professional licenses, provide a detailed response below outlining the disciplinary action taken and the license validity.

Certification

I, Carolyn Bo Shao Wallace, certify to the best of my knowledge and ability that the information I am providing to the North Carolina State Board of Education as a prospective board member for Carolina Experimental School is true and correct in every respect.

Signature

Date

1 Oct 2018

CORPORATE CAREER SUMMATION

SYNGENTA

Syngenta AG is a global agribusiness, based in Basel, Switzerland with revenues of \$13.4 billion in 2015

CAPITAL PROGRAM MANAGER

Business Controller – R&D Finance

2016 – Present
2013 – 2016

BMO FINANCIAL GROUP

The oldest, and fourth largest bank in Canada, has substantial operations in the Chicago area and elsewhere in the US

Sr. Analyst Finance – Scientific Research & Experimental Development, Technology and Operations

2010 – 2013

NATIONAL EXPRESS CORPORATION

A leading provider of student transportation services in North America with revenues of approximately \$1 Billion

Business Analyst – Canada Headquarters

2007 – 2010

CDC SOFTWARE

A US based provider of enterprise software applications and services with revenues in excess of 240 million

Financial Consultant – Canada Based

2006 – 2007

SMITH BITS (SMITH INTERNATIONAL)

A US based global provider of a comprehensive line of advanced products and engineering services including drill bits, drilling and completion fluids, liner hangers and tubular products with revenues in excess of 10 billion

Operations Assistant Manager – Dubai Office

2002 – 2004

PANASONIC AVIONICS CORPORATION

A US based world-wide leader in In-Flight Entertainment and communications, approved supplier to both Boeing and Airbus and the primary entertainment provider for a large number of prominent airlines worldwide with revenue in excess of 2.7 billion

Office Manager – Dubai Office

2000 – 2002

PASTUER MEDICAL INSTRUMENT / DUBAI OPTICALS

Dubai based family owned company dealing in wholesale and retail of optical frames and sunglasses with revenues in excess of 30 million

Inventory Controller – Dubai Office

1997 – 2000

ACADEMIC ACHIEVEMENTS

THE SOCIETY OF MANAGEMENT ACCOUNTANTS OF ONTARIO

Certified Management Accountant (CMA) – inactive due to moving out of the country

2006

RICHARD IVEY SCHOOL OF BUSINESS, UNIVERSITY OF WESTERN ONTARIO

Master of Business Administration (MBA)

2004 – 2006

- Recipient of **MBA Excellence Award**; **Dr. Samuel and Vera Kanovski MBA Award**; **Mical Equities Limited MBA Bursary** – all for academic excellence

CHANG CHUN UNIVERSITY, FOREIGN LANGUAGE INSTITUTE, China

Bachelor of Arts, English Major

1990 – 1994

VOLUNTEER EXPERIENCE

- **Director**, Board of Directors, Pathways for Children, Youth and Families of York Region 2009-2010
- **Director**, Board of Directors, Wake Charter School – new, in application phase 2016

OTHER EXPERIENCE

- **Income Tax Preparer**, H&R Block, Canada (moonlight job, great experience) 2010-2011
- **Treasurer – Syngenta Toastmaster Club** 2014-2015
- **CEO/President – Oharrison Inc.** 2015 -

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Background

1. Name of charter school on whose Board of Directors you intend to serve: Carolina Experimental School
2. Full name: Yiyi Jiang

Home Address: 1128 Woodlands Creek Way

Business Name and Address:

Telephone No.: 9199868879

E-mail address:

3. Brief educational and employment history.

- **Education**

- Ed.D in Curriculum and Instruction with specifications in special education, early childhood education, and elementary education, University of South Dakota, Vermillion, SD.
- M.Ed. in Curriculum and Instruction, Hunan Normal University, Changsha, China.
- B.A. in English, Hunan University of Commerce, Changsha, China.
-

- **Teaching Experiences**

- 2018-2018 Full-time teacher at Lincoln Heights ES and Farmington Woods ES
- 2017-2018 Full-time kindergarten teacher at Peak Charter Academy
- 2016-2017 Full-time kindergarten teacher at Gentry Primary School
- 2015-2016 Full-time Infant teacher at Chesterbrook Academy & Part-time teacher in Cary Chinese School
- 2013-2016 Graduate Teaching Assistant in School of Education at University of South Dakota
- 2006-2012 Full-time Assistant Professor at English Teaching and Research Section of Department of Primary School Teaching, Hunan First Normal University
- 2003- 2012 Reinforcement Class in Winter & Summer Reading Camp

1. Have you previously served on a board of a school district, another charter school, a non-public school or any not-for-profit corporation?

No: X Yes

2. How were you recruited to join this Board of Directors? Why do you wish to serve on the board of the proposed charter school?

I was introduced to Mr. Wenyu Bai from a friend who knows my major, interest, and passion in education. After I talked with Mr. Bai, I joined this proposed board of directors without any hesitation. Since both of us are teachers for years, we communicated frequently with each other about how to teach students in a better way, the methods of teaching math in the US, and the differences in education between US and China. As a teacher, I totally understand where Mr. Bai got his ideas. I feel the same way that here in the US teachers have too much responsibility and burden- teachers prepare everything so that students do not need to do anything at home. Learning is not only the job of teachers, but most importantly the job of being a student. Students should have shared the same responsibility for their studies. Especially in math teaching, the way that math is taught here in the US is very slow and inefficient. Starting from 3rd grade, students are always provided a calculator when they do EOG math. Some students cannot survive without a calculator in exams. Students should have known how to calculate instead of just clicking the buttons on the calculator. In math teaching, China has a much more systematic and efficient way that may benefit American students.

3. What is your understanding of the appropriate role of a public charter school board member?

As a board member, we will try our best to write/revise our proposal in order to get it through. Getting the permission to establish a charter school is our current goal and is also the most important step. Board members can vote and have right to give final approval/denial of school personnel including the principal.

4. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.

In more than ten years, being a full-time classroom teacher from infant classroom through higher education, I worked in diverse school settings (public, private, and charter) in both China and the United States. This provides me with a unique critical perspective of seeing both education systems in the East and West. My previous experience in teaching builds up my ability to be an effective board member.

5. Describe the specific knowledge and experience that you would bring to the board.

Before I came to the United States in 2012, I had been a public university teacher in China for 7 years, teaching English to pre-service elementary school teachers; and at the same time, I was a school counselor for 150 students per year for 4 years. The work experience of having been a teacher as well as a school counselor in China provides me with rich opportunities to understand students, including their developmental and psychological needs, in order to communicate effectively with them and meet their needs. While in North Carolina, I was also a full-time infant room teacher at Chesterbrook Academy in Cary, then a full-time teacher in kindergarten in both public and charter school. I am passionate about helping students to achieve their goals. My teaching is always student-centered. In addition, having a master and doctorate in curriculum and instruction with specification in special education and elementary education equipped me with knowledge to supervise teaching and the implementation of inclusive education. Therefore, I believe I will be an effective board member.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?

The mission of CES is to apply best educational practices in the world to provide high quality education for all students. It will bridge two learning gaps: the gap between America and high performing countries, the gap between low SES students and high SES students. I think this school is a reform of American education because we need to bring those good values back to American education. We emphasize the responsibilities of both teachers and students, instead of just teachers, like most schools do now. When children learn how to ride a bike, parents know that it is ok for their children to fall and get injured because parents know that in that way their children will finally learn how to ride a bike. But when parents send children to school, parents in America cannot accept their children's failure at school. If anything goes wrong, teachers become the soft target. This is not right. Children do not deserve to have high grades if they don't put their most effort in, and it is better for children to fail at school rather than fail in college or in their later life.

2. What is your understanding of the school's proposed educational program?
CES will have a more efficient and better curriculum to teach math. The math curriculum and teaching methods are China's best practices. CES will emphasize students' responsibility of learning- spend certain amount of time at home daily to practice and reinforce what they learned in school. I expect the students' grades will be high in CES.
3. What do you believe to be the characteristics of a successful school?
 - 1) Have a great leader/principal
 - 2) Students love the school
 - 3) Good reputation among students and parents
 - 4) Highly qualified teachers
 - 5) Advanced teaching philosophy
 - 6) High expectation for students' achievement
 - 7) A large number of students' enrollment, e.g. a long waiting list
4. How will you know that the school is succeeding (or not) in its mission?
 - 1) By surveying students and parents whether they love the school and whether teachers teach them appropriately
 - 2) By surveying students whether they feel this school inspired them to learn
 - 3) By reviewing students' academic achievement, such as test scores
 - 4) By communicating with teachers to see whether they love to work for the school

Governance

1. Describe the role that the board will play in the school's operation.
Supervise curriculum and instruction. Supervise the implementation of inclusive education. Vote for or against things related to school.
2. How will you know if the school is successful at the end of the first year of operation?
 - 1) By looking at students' academic performance, which include test scores and informal assessments such as learning projects.
 - 2) By reading parents' comment about the school/or the reputation of the school.
 - 3) A successful school would definitely attract more students in enrollment in next academic year.
3. How will you know at the end of five years of the schools is successful?
 - 1) By reviewing students' academic achievement and their progress during the five years

- 2) By looking at the number of students' enrollment each year and the growth
 - 3) By investigating the reputation among students, parents, and people in the community
 - 4) By monitoring whether each student is developmentally appropriately served
4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?
- 1) Hire a great leader-the principal
 - 2) Recruit highly qualified/ certified teachers, both general and special education teachers
 - 3) Enroll students that accept the mission of our school
 - 4) Purchase sufficient teaching materials and equipment for teaching and learning
 - 5) Provide training and collaboration opportunities to teachers for professional development
5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?
Discuss at board meeting and vote to stay on the board or opt out.

*Please include the following with your Information Form

- one page resume
- a national criminal background check

*If you responded within the application that disciplinary action has been taken against any past or present professional licenses, provide a detailed response below outlining the disciplinary action taken and the license validity.

Certification

I, Yiyi Jiang, certify to the best of my knowledge and ability that the information I am providing to the North Carolina State Board of Education as a prospective board member for CES is true and correct in every respect.

Yiyi Jiang
Signature

Yiyi Jiang

09/01/2018

9/1/2016
Date

Yiyi Jiang

Status: Permanent Resident (Green Card Holder)

Email: yjiang@wcpss.net

yiyi.jiang@usd.edu

Cell phone: 919-986-8879

Educational Background

University of South Dakota, Vermillion, SD, USA

Major: Curriculum and Instruction Degree: Ed.D

Hunan Normal University, Changsha, Hunan, China

Major: Curriculum and Instruction Degree: Master of Education

Hunan University of Commerce, Changsha, Hunan, China

Major: English Degree: Bachelor of Arts

Teaching Licenses & Certifications

- **07/2016** Professional Educator's License/Teaching License in Elementary Education (K-5), Middle School English (Grades 6-9), Middle School Math (Grades 6-9), Chinese (K-12), ESL (K-12) issued by North Carolina Department Public Instruction, NC, USA
- **11/2010** Qualification Certificate for Professional Technique Occupation: Assistant Professor, China
- **06/2007** Teaching License for High School, China
- **07/2006** Teaching License for Higher Education, China

Work Experience

2015-2018 Full-time classroom teacher at Chesterbrook Academy, Gentry Primary. Cedar Fork, Peak Charter Academy, Lincoln Heights, and Farmington Woods Elementary

09/2015-12/2015 Teacher in Cary Chinese School (nonprofit educational organization), located at Panther Creek-High School, Cary, NC

08/2013-08/2015 Graduate Teaching Assistant in School of Education at University of South Dakota

06/2006-07/2012 Assistant Professor at English Teaching and Research Section of Department of Primary School Teaching, Hunan First Normal University

Conference Presentations

Jiang, Y. & Drew, M (2016, November 2-5). *Helping All Children Learn, Especially Children with Special Needs*. Presentation at 2016 NAYEC Annual Conference. Los Angeles, CA.

Jacobs, G. & Jiang, Y. (2015, November 19). *A View of Best Practices in Early Childhood Programs, Teacher Preparation, and Professional Development in the United States and China*. Presentation at 2015 NAYEC Annual Conference. Orlando, FL.

Jiang, Y. & Kindle, K. (2015, October 3). *Cultural Authenticity in Children's Multicultural Texts: Exploring Different Perspectives*. Presentation at the 25th National Association of Multicultural Education Annual Conference. New Orleans, LA.

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Background

1. Name of charter school on whose Board of Directors you intend to serve: Carolina Experimental School

2. Full name: Fangping Zhao

Home Address: 205 Pebble Springs Rd, Chapel Hill, NC 27514

Business Name and Address:

Telephone No.: 215 8172851

E-mail address: zhaofp@yahoo.com

3. Brief educational and employment history.

- **Education**

- **Master** in Biotechnology, University of Pennsylvania, 2007.

- **Master** in Molecular Biology and Biochemistry, Peking Union Medical College, Beijing, China, 1998

- **Bachelor** in Clinical Medicine, Shanxi Medical University, Taiyuan, China, 1995.

-

- **Professional Experience**

- 12/2017-now: co-owner of Triangle Trilingual Campus LLC

- 6/2015- now Lab Manager, Genetron Health Technologies Inc., RTP, NC

- 4/2011-6/2015 Senior Scientist/Investigator, GlaxoSmithKline, RTP, NC

- 10/2000-2010 Research Specialist, University of Pennsylvania, Philadelphia, PA

- 1/1999- 10/2000 Graduate research assistant, Temple University, Philadelphia, PA

4. Have you previously served on a board of a school district, another charter school, a non-public school or any not-for-profit corporation?

No: x

Yes

5. How were you recruited to join this Board of Directors? Why do you wish to serve on the board of the proposed charter school?

As a mother of 3, I am fully aware of how the social changes have affected education which is the reason a few others and I established Triangle Trilingual Campus to provide a real life learning experience outside of school. Ms. Bai's idea triggered my desire and passion and serving on the school board will be able to bring my experience in education (from both STEM and my experience in trilingual school). In addition, as a Chinese parent with experience in both Chinese and American education, I echo on Mr. Bai's idea of using more personalized strategy to give students their own chances of success.

6. What is your understanding of the appropriate role of a public charter school board member?
As a charter school board member, I will be sharing my views on education and make sure the school sticks to its mission and operates smoothly.

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.

I am a board member of our biotechnology company I am currently working for.

8. Describe the specific knowledge and experience that you would bring to the board.

From the family point, I am a working mother of 3 with 2 school kids. My oldest son (13) is in gifted program in our school district (Chapel Hill). I have been involved in their education all the time. I recently started a trilingual preschool/afterschool learning campus, aiming to complement important aspect of real life learning which normal schools do not offer enough. I could bring suggestions and comments from parents' view, as well as my experience from our trilingual school. From the professional perspective, my career is always filled with learning and teaching at different levels. I would be an advocate on STEM related courses

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?

Carolina Experimental School has double missions: educational reform and maximum personal development. Unlike most school mission statements which emphasize in what areas students are expected to develop (e.g., intellectually, morally, physically), CES's mission is focused on how learners make maximum use of resources (e.g., time, great books) to achieve maximum personal development.

2. What is your understanding of the school's proposed educational program?
A good combination of teaching/learning practice of Chinese style and the Western style.

3. What do you believe to be the characteristics of a successful school?
Leadership, community and a compatible teaching philosophy.

4. How will you know that the school is succeeding (or not) in its mission?
If CES achieves its five-year plan (e.g., reaching Raleigh Charter's level in Year 5), and if other schools are eager to learn from us, then CES achieves its educational reform mission. If CES students perform as well as Raleigh Charter students in Year 5, then CES achieves its basic skills mastery mission. If CES students are highly visible in regional, state and national academic and other competitions, then CES achieves its talent development mission. If CES students make efficient use of time and are passionate about great ideas, then CES achieves its autonomous learner mission.

Governance

1. Describe the role that the board will play in the school's operation.

The board will make sure the school is financially sound. It will maintain the school's financial stability by establishing a reserve fund. It will monitor the school's major decisions. It will ensure the school operates legally.

2. How will you know if the school is successful at the end of the first year of operation?
The school has good test scores. It has a balanced budget. The stakeholders show satisfaction with the school.
3. How will you know at the end of five years of the schools is successful?
The school has followed its mission. It has achieved its five-year plan. It is financially stable with a reserve fund equivalent of its three months' operation. The school is popular with a long waiting list.
4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?
The school board needs to ensure the school leader is competent. The school administrator needs to get the board's approval in making major decisions.
5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?
I will propose to discuss this at the board meeting.

*Please include the following with your Information Form

- a **one page** resume
- a national criminal background check

*If you responded within the application that disciplinary action has been taken against any past or present professional licenses, provide a detailed response below outlining the disciplinary action taken and the license validity.

Certification

I, Fangping Zhao, certify to the best of my knowledge and ability that the information I am providing to the North Carolina State Board of Education as a prospective board member for Carolina Experimental School Charter School is true and correct in every respect.

Signature

Date : Sept 28, 2018

Fangping Zhao

205 Pebble Springs Rd

Chapel Hill, NC 27514

zhaofp@yahoo.com

215-8172851

Education

School	Degree	Major
University of Pennsylvania	MS	Biotechnology
Peking Union Medical College of China	MS	Biochemistry and Molecular Biology
Shanxi Medical University of China	BM	Clinical Medicine

Experience

<i>Co-owner at Triangle Trilingual Campus LLC (Chapel Hill, NC)</i>	2017-
<i>Lab Manager at Genetron Health Technologies Inc (RTP, NC)</i>	2015-
<i>Senior scientist, investigator at GlaxoSmithKline (RTP, NC)</i>	2011-2015
<i>Research Specialist at University of Pennsylvania, Philadelphia, PA</i>	2000-2010

Other activities

Fall 2012 Professional mentor at NC State University Poole College of Management for Class M100 (Professionalism, Diversity & Academic Success in Management)

2008-2010 Editor/Senior Writer for biomedical manuscript editing for peer reviewed publications for Majaden and Ivyediting

Appendix F:

Charter School Board Member Information Form

Note: To be completed individually by each proposed founding charter school board member. All forms must be signed by hand.

Serving on a public charter school board is a position of public trust and as a board member of a North Carolina public charter school; you are responsible for ensuring the quality of the school's entire program, competent stewardship of public funds, and the school's fulfillment of its public obligations and all terms of its charter.

As part of the application for a new charter school, the State Board of Education requests that each prospective board member respond individually to this questionnaire. Where narrative responses are required, brief responses are sufficient.

The purpose of this questionnaire is twofold: 1) to give application reviewers a clearer introduction to the applicant team behind each school proposal in advance of the applicant interview, in order to be better prepared for the interview; and 2) to encourage board members to reflect individually as well as collectively on their common mission, purposes, and obligations at the earliest stage of school development.

Background

1. Name of charter school on whose Board of Directors you intend to serve: Carolina Experimental School

2. Full name: Jansen Niu

Home Address: 7224 Starcross CT, Cary NC 27519

Business Name and Address: CAML Academy 133 Keybridge Dr. STE D, Morrisville NC 27560

Telephone No.: 9194348260

E-mail address: jason.niu@camlacademy.com

3. Brief educational and employment history:

Master of Science in Computer Science Cleveland State University

Founder & CEO CAML Academy 2015 - present

Application Architect Sensus Metering Inc. 2010 - 2015

Senior Software Engineer Carquest Auto Parts 2008 - 2010

Instructor Wake Tech Community College 2010 - 2016

4. Have you previously served on a board of a school district, another charter school, a non-public school or any not-for-profit corporation?

No: Yes:

5. How were you recruited to join this Board of Directors? Why do you wish to serve on the board of the proposed charter school?

Had same interest in education with the chair of board. I started education business in 2015 and have passion in K-12 STEM education

6. What is your understanding of the appropriate role of a public charter school board member?

As a charter school board member, I understood my role is to participate board meetings and other activities to make sure school follow regulations, keep implementing and strengthen school missions.

7. Describe any previous experience you have that is relevant to serving on the charter school's board (e.g., other board service). If you have not had previous experience of this nature, explain why you have the capability to be an effective board member.
I'm currently service as the chair of board for a for-profit education company
8. Describe the specific knowledge and experience that you would bring to the board.
I have 6 years college teaching experience and more than 3 years business operation, STEM education experience.

School Mission and Program

1. What is your understanding of the school's mission and guiding beliefs?
Bringing in international education experience open more doors to America kids and will benefit them a lot in this fast-changing world.
2. What is your understanding of the school's proposed educational program?
I believe in CES' education methodology which learn from other countries and combine good education experience together to fit in students here.
3. What do you believe to be the characteristics of a successful school?
 - a. Have a great administrative and academic management team
 - b. Excellent curriculum
4. How will you know that the school is succeeding (or not) in its mission?
Having regular review meetings and get feedback from parents/students is the key to the success of school's mission

Governance

1. Describe the role that the board will play in the school's operation.
Supervise school management team and help making sure school is successful in it's mission.
2. How will you know if the school is successful at the end of the first year of operation?
Students and parents feedback is the key to verify whether the school is successful
3. How will you know at the end of five years of the schools is successful?
Student's academic performance, graduation rate in the long term is the key to measure whether school is successful.
4. What specific steps do you think the charter school board will need to take to ensure that the school is successful?
 - a. Develop curriculum based on school's mission
 - b. Hire a great principal
 - c. Recruit highly qualified/ certified teachers, both general and special education teachers
 - d. Provide professional development opportunities
5. How would you handle a situation in which you believe one or more members of the school's board were acting unethically or not in the best interests of the school?
I would report such person to other board members and vote him/her out during the board meeting.

*Please include the following with your Information Form

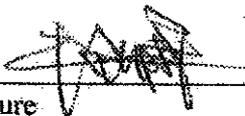
- a one page resume
- a national criminal background check

*If you responded within the application that disciplinary action has been taken against any past or present professional licenses, provide a detailed response below outlining the disciplinary action taken and the license validity.

Certification

I, Jiansen Niu, certify to the best of my knowledge and ability that the information I am providing to the North Carolina State Board of Education as a prospective board member for Carolina Experimental School Charter School is true and correct in every respect.

Signature



Date

09/29/2018

Jiansen Niu

Cell Phone: (919)434-8260 Email: aoeshang@gmail.com

EDUCATIONAL QUALIFICATION:

- Master of Science, Major: Computer and Information Science, ClevelandStateUniversity (Cleveland, Ohio)
- Bachelor of Science, Major: Computer Science, FranklinUniversity (Columbus, Ohio)

PROFESSIONAL EXPERIENCE:

CAML Academy

February 2015 – Present

Founder & CEO

Manage a team of 6 teachers, 3 other staffs

Responsible for curriculum design, marketing, LMS development and financial planning of the company.

Sensus Metering Inc.

August 2010 – February 2015

Morrisville, NC

Technical Lead – Professional Service Team

Responsibilities:

- Meet with internal/external clients to gather requirements, work together with business analysts to create software statement of work, document and present proposals, project sizing, resource estimation, and lead, mentor other developers.

Wake Tech Community College

January 2009 – Present

Raleigh, NC

Adjunct Instructor

Responsibilities:

- Worked as Adjunct Instructor at Wake Tech Community College Computer Science Department. Taught Java programming, Relational database design etc. classes.
- Responsible for preparing course materials, teaching lessons, grading assignments etc.

CARQUEST

August 2008 – August 2010

Raleigh, NC

Technical Lead – Java

Responsibilities:

- Technical Lead for CARQUEST Weblink V2 application, responsible for lead architect role on the full Software Development Life Cycle of Weblink project, developing and maintaining application architecture throughout the project.

Nationwide Insurance

February 2004– July 2008

Columbus, Ohio

Application Architect

Responsibilities:

- Defined Contribution Direct (DCdirect)2.0, 3.0 requirements translation, application design, develop, debug, and testing.

Sterling Commerce

June 2001– January 2004

Columbus, Ohio

Senior Java Developer

By Laws of Carolina Experimental School

ARTICLE I: NAME

Section 1: Name The name of the nonprofit corporation is Carolina Experimental School (sometimes referred herein as —The Corporation).

Section 2: Principal Office and Registered Agent The principal office is in Cary of Wake County in the state of North Carolina. The street address is 4112 Collamer Dr, Cary NC 27519 and the registered agent at this address is Wenyu Bai.

ARTICLE II: PURPOSE

Section 1: Purpose The purpose of the Corporation is to apply for, establish, and govern charter schools under North Carolina Charter School Statutes and to pursue related educational endeavors.

The purpose of the Corporation is to apply for, establish, and govern charter schools (Schools) under North Carolina Charter School Statutes and to pursue related educational endeavors.

ARTICLE III: MEMBERSHIP

Section 1: Membership The corporation shall have no members.

ARTICLE IV: BOARD OF DIRECTORS

Section 1: Powers The activities, affairs and business of the Corporation shall be conducted by or under the direction of the Board of Directors (referred to herein as the Board).

Section 2: Mission

The school director will manage the day-to-day operations of the school. The mission of the Board of Directors is to make policy decisions and provide oversight of the school.

Section 3: Number, Qualifications, Election and Tenure

a) The number of persons constituting the Board of Directors who have voting authority shall be no less than five (5) and no more than nine (9).

b) A person needs to be at least twenty-one (21) years old and in good standing to be qualified as a Director.

c) Election procedures to the Board of Directors are outlined as follows:

- Nominations may be made by any Board member

- Vote to be taken publicly by show of hands

- A nominee is declared a Director as long as he/she receives the votes of the majority of the Directors.

d) Directors shall serve for a term of three years, or until their successors are elected. A Director will be removed by a majority vote of the Board at any meeting. In order to be re-elected, he/she can be nominated by a Board member similar to any other nominee; Directors can nominate themselves as well.

Section 4: Duties

The Board is committed to the education of all students to the best of their individual abilities; to a constant awareness of the concerns and desires of the community regarding the quality and performance of the School with the Board assuming an educational leadership role; and to the employment of school personnel who, under the direction of the Principal, will see that the school maintains an outstanding position and will carry out the policies of the Board with imagination and dedication.

Additionally, the Board's specific policy and direction goals are: To interpret the education needs and aspirations of the community through the formulation of policies which stimulate the learner and the learning process, in accordance with the mission and philosophy of the school; To govern the school in accordance with federal and state laws; To provide leadership in order to carry out the goals and objectives of the school effectively; To facilitate communication with the community served by the school To develop and provide the data appropriate for the management functions of planning, evaluating, organizing, controlling and executing.

The Board should know the prevailing educational philosophies and practices may not to the best interests of students. Board members must look to top performing countries and the future more clearly than is required of the average citizen. The results of many of the decisions and actions of the Board may not be realized at once, but will set the course of education for future years. The Board should fearlessly support those educational philosophies and procedures needed to promote proper education for this community based upon the needs of the pupil population.

In addition, Directors shall meet at such times and places as required by these bylaws. The Board may consider a Director with three consecutive un-excused absences from regular meetings as having resigned. Directors shall register their home/business address, home/office/cellular phone numbers and e-mail addresses with the Secretary of the School.

Section 5: Meeting Procedures

All meetings of the Board shall be open to the public, including the news media, except when permitted or required by law to be closed. Visual and sound recordings shall be permitted during open meetings. The President of the Board shall preside at Board meetings and shall rule on questions of order. In the absence of the President, the Vice President shall preside. In the absence of both the President and Vice President, the attending members shall elect one of their

numbers to preside. Meetings of the Board shall be formal enough to allow for the orderly conduct of business but informal enough to encourage free discussion among Board members and to promote group thinking and action.

Section 6: Meeting Schedule

The Board annually shall adopt a schedule for the upcoming year stating the date, time and place of its regular meetings. The meeting schedule shall be posted in a prominent place at the School's administration building and at any other locations where such scheduled meetings will be held. Electronic and other means of informing the public about the Board meetings shall be used where feasible. Any scheduled meeting may be cancelled, postponed or adjourned.

Section 7: Regular Meetings

Unless otherwise specified in the schedule or changed in a manner allowed by law, the Board's regular meetings shall be held regularly on the dates that will be publicized by the Board. The schedule shall call for the meetings to be held at the School's administration building or any other appropriate place. The board's regular meetings are legislative in nature. This is where most of the Board's formal actions are taken.

Section 8: Special or Called Meetings

In accordance with the state law, special meetings may be called by the Board President on the request of three or more Board members. Due notice of such meetings shall be given to the public and shall include at a minimum the posting of a written notice for at least 24 hours at the place of regular meetings and by the giving of written or oral notice at least 24 hours in advance at the front door. Board members will be given at least a 24-hour notice of the meeting and the topics to be addressed. Notice to Board members may be by telephone, texting, e-mail, fax or some other means to achieve notification.

Section 9: Emergency Meetings When special circumstances occur and are so declared by the Board, the Board may meet on less than 24 hours notice. Board members and the public shall be given as much notice of the meeting and subjects expected to be considered as is reasonable under the circumstances, including the posting of a written notice at the place of regular meetings. The minutes of the meeting shall reflect the reason for holding the meeting on the less than 24 hours notice and the nature of the notice given.

Section 10: Quorum

A majority of the Board members having voting authority and currently in office shall constitute a quorum for the transaction of business. If a quorum is not present at the time and place of any meeting, the Directors present shall adjourn the meeting until a quorum shall be present.

Section 11: Voting

Except as otherwise expressly provided by statute, or by the Charter of the Corporation, or by these by-laws, the action of a majority of the Directors present at a meeting in which there is a quorum shall be the action of the Board of Directors.

Section 12: Resignation of Directors

A Director may resign at any time by giving notice in writing to the President or Secretary of the Corporation. Such resignation shall take effect at the time specified, or if no time is specified, at the time the President or Secretary receives such resignation.

Section 13: Compensation

Directors shall serve without compensation for their services to the Board except travel and related expenses as may be authorized by the Board for in-state or national conferences.

Section 14: Conflict of Interest

If any member of the Board faces a conflict of interest in a matter pending before the Board, such member shall make full disclosure to the Board of the nature of the conflict. Upon full disclosure, the Board may approve the transaction only by the majority vote of Board members having no conflict of interest. However, no such transaction may be approved if it would constitute self-dealing, prohibited under Section 4941 of the Internal Revenue Code of 1986, or the corresponding provisions of any later federal tax laws, or if it would result in the imposition of any excise tax under any other provision of Chapter 49A of the Internal Revenue Code of 1986, or the corresponding provisions of any later federal tax laws.

Section 15: Nepotism Policy

Consistent with the principle that School employees and prospective employees shall be hired, evaluated, and advanced on the basis of individual merit, without reference to considerations of race, sex, religion, sexual orientation, or national origin, or any other factors not involving professional qualifications and performance, the following restrictions shall be observed with respect to personnel matters to avoid the possibility of favoritism based on family or personal relationship:

- a) In the context of this nepotism policy, related individuals are defined as husband, wife, son, son-in-law, daughter, daughter-in-law, father, father-in-law, mother, mother-in-law, brother, brother-in-law, sister, sister-in-law, grandparents, and grandchildren.
- b) No one with supervisory responsibility shall hire, recommend for hire or supervise any related employee.
- c) Related persons currently employed by the School shall immediately disclose all family and personal relationships with other School employees. All persons wishing to be considered for employment with the School shall disclose family and personal relationships with then-current School employees.
- d) No Board member, member of the School administration or faculty member shall engage in recommendations, discussions, or otherwise participate in any final decision or recommendation relating to the appointment, promotion, retention, tenure, or other condition of employment of a related person.

e) In the event of a lack of candidates, a need for specialized skills, or other unique circumstances as determined on a case-by-case basis, the restriction against hiring related persons may be waived in the best interest of the School upon recommendation of a review committee comprised of non-related administrator(s), and upon the approval of the Board of Directors.

Section 16: Certain Director Liability

A member of the Board shall be subject to the liabilities imposed by law upon Board members of nonprofit corporations. In addition, all Board members who vote for or assent to any distribution of assets of the Corporation contrary to any restrictions imposed by the Nonprofit Corporation Act of North Carolina, the corporate articles of incorporation, charter, or by-laws, shall be jointly and severally liable to the Corporation for the amount of such distribution. Furthermore, such liabilities shall not exceed the debts, obligations and liabilities existing at the time of the vote or assent where the Board member relied on, and acted in good faith in the belief that, financial statements of the Corporation were correct and were based on generally accepted principles of sound accounting practice used by the president or the treasurer, or certified by an independent public accountant or firm of such accountants to fairly reflect the financial condition of the Corporation.

ARTICLE V: OFFICERS

Section 1: Designation of Officers Officers of the Corporation shall be President, Vice President, Secretary and Treasurer. The Board may designate and fill other officers as needed. Any two offices except for the office of President may be held by one person. No officer shall sign or execute any document in more than one capacity.

Section 2: Election, Term of Office and Qualifications At its regular annual meeting in September each year, the Board shall organize and elect officers among its own members. A President shall be elected to serve for a period of one year. A Vice President shall be elected to serve for a period of one year. The Secretary shall be elected to serve for a period of one year. The President shall preside over the election of the vice president and secretary unless decided otherwise by majority of the Board members.

Section 3: Subordinate Officers and Agents The Board may appoint other officers or agents to chair committees or perform certain other duties. Each such officer or agent shall hold office for such period, have such authority, and perform such duties as the Board determines. The Board may delegate to any officer or agent the authority to appoint subordinate officers or agents and to prescribe their respective authorities or duties.

Section 4: Duties Officers shall stand in a fiduciary relation to the Corporation and shall discharge the duties of their respective positions in good faith, and with that diligence and care which reasonably prudent men and women would exercise in similar circumstances and like positions.

Section 5: Removal Majority vote of the Board with or without cause. The persons who are officers or agents pursuant to Section 3 of this Article may be removed by majority vote of the Board.

Section 6: Resignations Any officer may resign at any time by giving written notice to the President or the Secretary of the Board, or, if that officer was appointed by an officer or agent in accordance with Section 3 of this Article, by giving written notice to the appointing officer or agent. Any such resignation shall take effect at the time specified or if no time is specified, at the time the President or the Secretary receives such resignation.

Section 7: Vacancies A vacancy in any office because of death, resignation, removal or disqualification, or any other cause, shall be filled for the unexpired portion of the term of such office in the manner prescribed by these bylaws for regular appointments or elections to such offices. The Board may also reassign some or all of the duties of an absent officer as provided in Section 8 of this Article.

Section 8: Reassignment of Officer Duties Should an office become vacant or should an officer of the Corporation be absent, or for any other reason the Board deems sufficient, the Board may reassign the duties of such officer to any other officer or to any member of the Board.

Section 9: School Director The Board shall appoint the School Director by entering into a contract with a person to serve in that capacity. The contract shall specify the period of time for which the person is employed as School Director as well as his or her authority and duties. The School Director shall generally be responsible for the business and affairs of the Corporation and shall be authorized to hire/fire and have control over its employees. In addition to the management of day-to-day operations of the Corporation, the School Director shall perform such other duties as are assigned by the Board. The School Director may be removed, with or without cause, by a majority vote of the Board.

Sections 10: President The President shall be the principal person charged with supervising, organizing and managing the business of the Board and shall have the responsibility of conducting Board meetings. The president shall perform such other duties as are assigned by the Board.

Section 11: Vice President At the request of the President, or in the absence or disability of the President, the Vice President shall perform the duties of the president and when so acting shall have all the powers of, and be subject to all the restrictions upon, the president.

Section 12: Secretary The Secretary shall keep the minutes of the meetings of the Board and shall see that all notices are given in accordance with the provisions of these by-laws or as required by law. The Secretary shall also be the custodian of the statements, books, records, reports, certificates, and other documents of the Corporation and the seal of the Corporation, and shall see that the seal is affixed to all documents requiring such seal. The Secretary shall perform all duties and possess all authority incidental to the office of the Secretary, and shall perform such other duties and have such other authority as may be assigned by the Board.

Section 13: Treasurer The Treasurer is responsible to manage the funds, receipts, disbursements and securities of the Corporation. The treasurer shall perform such other duties and have such other authority as may be assigned or granted by the Board. The treasurer may be required to give a bond for the faithful performance of the duties of the office in such form and amount as the Board may determine.

ARTICLE VI: PROCEDURES AND RESTRICTIONS

Section 1: Contracts Except as otherwise provided in these bylaws, the Board may authorize any officer or agent or the School Director to enter into any contract or to execute or deliver any instrument on behalf of the Corporation, and such authority may be general or confined to specific transactions.

Section 2: Loans The Board must authorize in advance the borrowing of any funds by the Corporation and the issuance of any promissory notes or other evidence of indebtedness in the name of the Corporation. Any officer or agent of the Corporation authorized by the Board to do so may obtain loans or advances on behalf of the Corporation provided said authority has been granted by means of a majority vote of the Board of Directors affirming the indebtedness or obligation, and in order to obtain such loans and advances, may make, execute, and deliver promissory notes, bonds, or other evidences of indebtedness of the Corporation.

Section 3: Deposits All funds of the Corporation shall be deposited to the credit of the Corporation in such banks or trust companies or with such bankers or other depositories as the Board may select, or as may be selected by any officer or agent of the Corporation authorized by the Board to do so.

Section 4: Checks, Drafts All notes, drafts, acceptances, checks and endorsements or other evidences of indebtedness shall be signed by: any two Board members, or any Board member and the Principal, or the Principal and the Assistant Principal for recurring expenses, contractual expenses, and expenses not exceeding \$5,000, or in such other manner as the Board may determine. Endorsements for deposit to the credit of the Corporation in any of its duly authorized depositories will be made by the Principal or treasurer or by any officer or agent who may be authorized by the Board to do so.

Section 5: Gifts

The Board may accept on behalf of the Corporation any contribution, gift, bequest, or devise granted for the benefit or perpetuation of the general educational or special educational purposes of the Corporation.

ARTICLE VII: GENERAL PROVISIONS

Section 1: Corporate Seal The corporate seal shall be in such form as shall be approved by the Board.

Section 2: Fiscal Year The fiscal year of the Corporation will commence on July 1 of each year and conclude on June 30 of each year.

Section 3: Amendments to Bylaws These bylaws may be altered, amended, or repealed, or new bylaws adopted at any regular or special meeting upon a super (2/3) majority vote of the Board members.

Section 4: Books and Records The Corporation shall keep correct and complete books and records of accounts and shall keep minutes of the proceedings of its Board.

Section 5: Officer and Director Indemnification The Corporation shall indemnify any present or former members of the Board, Officers, School Director or other employee or agent against liabilities and reasonable litigation expenses, including attorneys' fees, incurred in connection with any action, suit or proceeding in which that person is made or threatened to be made a party by reason of being or having been such Board member, Officer, School Director or other employee except in relation to matters as to which the person shall be adjudged in such action, suit or proceeding to have acted in bad faith, to have been liable or guilty by reason of willful misconduct in the performance of duty, to have taken actions known or believed by the person to be clearly in conflict with the best interests of the Corporation, to have received an improper personal benefit, or in connection with a proceeding by or in the right of the Corporation, where the person was adjudged liable to the Corporation. The indemnification authorized by this section shall be in addition to that permitted by the North Carolina General Statutes or otherwise as authorized in these by-laws. The Corporation may purchase and maintain insurance on behalf of any person who is or was a member of the Board, Officer, School Director or other employee or agent of the Corporation or is or was serving at the request of the Corporation as a Director, Officer, employee, or agent of another corporation, partnership, joint venture, trust, or other enterprise, against any liability asserted against and incurred by the person in such capacity, or arising out of the person's (Board member's, Officer's, employee's or agent's) status as such, whether or not the Corporation would have the power to indemnify that person against such liability. Expenses incurred by a Director, Officer, School Director or other employee or agent in defending a civil suit or criminal action or other proceeding may be paid by the Corporation in advance of the final disposition of such action, suit or proceeding as authorized by the Board upon receipt of an undertaking by or on behalf of the Board member, Officer, Principal or other employee or agent to repay such amount unless it shall ultimately be determined that the person is entitled to be indemnified by the Corporation as authorized by Section 55A- 17.2 or 55A- 17.3 of North Carolina General Statutes or as authorized in these by-laws.

Section 6: Meeting Regulation All meetings of the Board shall be held in compliance with the North Carolina Open Meetings Law, Article 33C. While the Board may elect not to proceed in full compliance with the Roberts Rules of Order, it will serve as a guideline for the conduct of all meetings

Section 7: Gender The masculine and feminine gender used in these by-laws shall include both the feminine and the masculine persons.

Section 8: Prohibited Activities The Corporation shall comply with all prohibitions against substantial lobbying and involvement in political campaigns for public candidates, contained in

Section 501(c)(3) of the Internal Revenue Code of 1986, or the corresponding provisions of any later federal tax laws. No part of the net earnings of the Corporation shall inure to the benefit of or be distributable to, its Board members or Officers. Notwithstanding any other provisions of these articles, the Corporation shall not carry on any other activities not permitted to be carried on by corporations exempt from federal income tax under Section 501(c)(3) of the Internal Revenue Code of 1986, or the corresponding provisions of any later federal tax laws, or by a corporation, contributions to which are deductible under Section 170(c)(2) of the Code.

Section 9: Disposal of Assets

Upon the dissolution of the Corporation, the Board of Directors shall, after paying or making provision for the payment of all of the liabilities of the corporation, dispose of all of the assets of the Corporation as directed pursuant to North Carolina General Statutes. The undersigned persons certify the foregoing by-laws have been adopted for the Corporation, in accordance with the requirements of the North Carolina Nonprofit Corporation Act.



NORTH CAROLINA

Department of the Secretary of State

To all whom these presents shall come, Greetings:

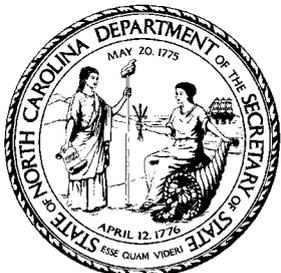
I, Elaine F. Marshall, Secretary of State of the State of North Carolina, do hereby certify the following and hereto attached to be a true copy of

ARTICLES OF INCORPORATION

OF

CAROLINA EXPERIMENTAL SCHOOL

the original of which was filed in this office on the 12th day of August, 2016.



Scan to verify online.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal at the City of Raleigh, this 12th day of August, 2016.

Elaine F. Marshall

Secretary of State

State of North Carolina
Department of the Secretary of State

ARTICLES OF INCORPORATION
NONPROFIT CORPORATION

Pursuant to §55A-2-02 of the General Statutes of North Carolina, the undersigned corporation does hereby submit these Articles of Incorporation for the purpose of forming a nonprofit corporation.

1. The name of the nonprofit corporation is: Carolina Experimental School

2. (Check only if applicable.) The corporation is a charitable or religious corporation as defined in NCGS §55A-1-40(4).

3. The name of the initial registered agent is: Wenyu Bai

4. The street address and county of the initial registered agent's office of the corporation is:

Number and Street: 4112 Collamer Dr
City: Cary State: NC Zip Code: 27519 County: Wake

The mailing address *if different from the street address* of the initial registered agent's office is:

Number and Street or PO Box: _____
City: _____ State: NC Zip Code: _____ County: _____

5. The name and address of each incorporator is as follows:

Wenyu Bai, 4112 Collamer Dr., Cary, NC 27519

6. (Check either a or b below.)

a. The corporation will have members.

b. The corporation will not have members.

7. Attached are provisions regarding the distribution of the corporation's assets upon its dissolution.

8. Any other provisions which the corporation elects to include are attached.

9. The street address and county of the principal office of the corporation is:

Principal Office Telephone Number: 919 930 9125

Number and Street: 4112 Collamer Dr

City: Cary State: NC Zip Code: 27519 County: Wake

The mailing address *if different from the street address* of the principal office is:

Number and Street or PO Box: _____

City: _____ State: _____ Zip Code: _____ County: _____

10. (Optional): Please provide a business e-mail address: conwayzhiyin@hotmail.com

The Secretary of State's Office will e-mail the business automatically at the address provided at no charge when a document is filed. The e-mail provided will not be viewable on the website. For more information on why this service is being offered, please see the instructions for this document.



11. These articles will be effective upon filing, unless a future time and/or date is specified: _____

This is the 9 day of August, 2016.

Carolina Experimental School

(Incorporator Business Entity Name)

Wenyu Bai

Signature of Incorporator

Wenyu Bai, Ph.D

Type or print Incorporator's name and title, if any

NOTES:

1. Filing fee is \$60. This document must be filed with the Secretary of State.

Purpose of Corporation

This corporation is organized for the following purpose(s) (*check as applicable*):

religious,

charitable,

educational,

testing for public safety,

scientific,

literary,

fostering national or international amateur sports competition, and/or

prevention of cruelty to children or animals,

including, for such purposes, the making of distributions to organizations that qualify as exempt organizations under Sections 501(c)(3) and 170(c)(2) of the Internal Revenue Code of 1986 (herein the "Code") (or the corresponding provisions of any future United States Internal Revenue Code).

Prohibited Activities

No part of the net earnings of the corporation shall inure to the benefit of or be distributable to, its members, directors, officers, or other private persons except that the corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of purposes set forth in these articles of incorporation. No substantial part of the activities of the corporation shall be the carrying on of propaganda or otherwise attempting to influence legislation, and the corporation shall not participate in or intervene in (including the publishing or distribution of statements) any political campaign on behalf of or in opposition to any candidate for public office. Notwithstanding any other provisions of these articles, the corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from federal income tax under Section 501(c)(3)

of the Code or (b) by a corporation, contributions to which are deductible under Section 170(c)(2) of the Code.

Distributions Upon Dissolution

Upon the dissolution of the corporation, the Board of Directors shall, after paying or making provision for the payment of all of the liabilities of the corporation, dispose of all of the assets of the corporation exclusively for the purposes of the corporation in such manner, or to such organization or organizations organized and operated exclusively for religious, charitable, educational, scientific or literary purposes as shall at the time qualify as an exempt organization or organizations under Section 501(c)(3) of the Code as the Board of Directors shall determine, or to federal, state, or local governments to be used exclusively for public purposes. Any such assets not so disposed of shall be disposed of by the Superior Court of the county in which the principal office of the corporation is then located, exclusively for such purposes or to such organizations, such as the court shall determine, which are organized and operated exclusively for such purposes, or to such governments for such purposes.

INSURANCE PEOPLE

Below are the estimated annual premiums Carolina Experimental School

Property Premium Estimate **\$1,300**

Building	\$1,000,000
Contents	\$200,000
Deductible	\$1,000
Form	Special
Equipment Breakdown Included	

General Liability Premium Estimate **\$1,365**

Rating Basis:	Students	200
	Faculty	17

Limits:

Per Occurrence Limit	\$1,000,000
Annual Aggregate	\$3,000,000
Sexual Abuse & Molestation	\$1,000,000 per occurrence \$3,000,000 aggregate
Employee Benefits	\$1,000,000 per occurrence \$3,000,000 aggregate

School District & Educators Legal Liability (D&O/ E&O)

Premium Estimate **\$4,380**

	\$1,000,000 per occurrence
	\$2,000,000 aggregate
Additional Defense	\$100,000/\$50,000/\$100,000

Named insured includes the insured Organization (School Entity), it's school board, School Committee, Board of Trustees, Board of Governors or similar governing body, elected or appointed members of the Board of Education, Board of Trustees, School Directors, School Committee, Board of Governors or similar governing board, Employees, Student Teachers, School Volunteers, and students while serving in a supervised internship program sponsored by the "educational institution".

Wrongful Act to include any actual or alleged act, error, omission, misstatement, misleading statement, neglect, or breach of duty by or on behalf of the Insured Organization, including educational malpractice or failure to educate, negligent instruction, failure to supervise, inadequate or negligent academic guidance of counseling, improper or inappropriate academic placement or discipline.

INSURANCE PEOPLE

Fidelity Bond Estimate		\$332
Limit	\$250,000	
Auto Premium Estimate		\$2,300
Hired & Non Owned Autos		
Limit of Liability	\$1,000,000	
2 School Buses		
Head of Class Endorsement		\$82
Workers Compensation Premium Estimate		\$5,355
Statutory State- NC		
Employers Liability	\$500/\$500/\$500	
Payroll Estimate	\$888,000	
Umbrella Premium Estimate		\$2,387
Limit of Liability	\$1,000,000	
TOTAL ESTIMATED PREMIUM		\$17,501
Student Accident Coverage		\$7.00/student

These premiums are subject to change based on Underwriter review and approval of completed applications.

Disclaimer: The abbreviated outlines of coverages used throughout this proposal are not intended to express legal opinion as to the nature of coverage. They are only visuals to a basic understanding of coverages. The policy terms, conditions, and exclusions will prevail. Please read the policy forms for specific details of coverage

09/26/2018

Why American Students Underachieve?

A Comparative Analysis

The U.S. has the best universities in the world. Half of the top 100 universities in the world are American ones (<http://www.shanghairanking.com/ARWU2016.html>). Talents all over the world come to America to study. In the 2015-16 academic year, there were 328,547 Chinese students in American universities. Ironically, America does not have the best K-12 education in the world, and that honor goes to China. In 2009, for the first time Chinese students participated in the OECD’s Program for International Student Assessment (PISA), and Shanghai students ranked the best in all the three categories (i.e., math, reading, science).

Generally speaking, students in richer countries tended to perform better than those in poorer countries but there were outliers. Qatar is one of the richest countries in the world but its students ranked near the bottom in math. In 2012, the U.S. spent \$11,700 per (full-time-equivalent) student at the elementary/secondary level, behind only Switzerland, Norway, and Austria among the 32 OECD countries (https://nces.ed.gov/programs/coe/indicator_cmd.asp). American students were below average in math in the 2012 PISA study so America’s K-12 education is a bad business: It has poor returns for its huge investment. In comparison, China’s schools give their investors nice returns. In 2012, Shanghai’s per capita GDP was 27% of that of the U.S. (\$13,524 vs. 49481) (Trading Economics, 2017; Wikipedia, 2017). So what made Shanghai students overachieve relative to their wealth and what made American student underachieve? This paper will answer these questions.

1. The Learning Gap

1) A Tale of Two Tests

A test reveals an education system’s rigor. Many Chinese’s first disillusion of America came when they took the first GRE practice test. This algebra heavy test looked like a middle school test for them. Most Chinese students will get a perfect or near perfect score on this test. The 2016 Shanghai High School Entrance Examination Math Test (http://sh.zhongkao.com/e/20160627/577096d99db36_2.shtml) looks more challenging than the ACT Math Test. Multiple choice questions only account for 16% of the test (6 items at four points each, 24/150). The 12 fill-in-the-blank items (four points each) account for 32% of the test (48/150). Over half of the points come from seven show-your-work items (78/150). China has nine-year compulsory education so this test was taken by all the Shanghai ninth graders.

2) The 2012 PISA study

The 2012 PISA study confirmed the learning gap between the two countries. First, the learning gap between Shanghai’s 15-year-olds and American ones was more than three years (Table 1). The gap between Shanghai students and North Carolina students could be as many as 3.5 years or more. In the 2014-15 academic year, only 52.2% of North Carolina students were proficient (Level 3 or above) in the math state tests. If the North Carolina eighth graders’ average actual math level is a grade equivalent of 7.5, then Shanghai 15-year-old’s average math level is an American grade equivalent of 11. It may be fairer to compare China’s best to America’s best. There is a 99-point gap between Shanghai’s 15-year-olds and Massachusetts’ in math. That is about a gap of 2.5 years. Second, Shanghai’s low socio-economic status (SES) students outperformed American’s high SES students by 30 points (562 vs. 532). American educators often find excuses in students’ socio-economic background. Shanghai students’ stunning performance shows that if American educators adopt China’s best practice, American low SES students may also create miracles.

Table 1: A Comparison of PISA Scores

	Math			Reading	Science
	Average	Highest SES Quarter	Lowest SES Quarter	Average	Average
Shanghai, China	613	660	562	570	580
Singapore	573	627	523	542	551
Finland	519	555	488	524	545
Massachusetts	514	576	459	527	527
Connecticut	506	570	450	521	521
UK	494	545	458	499	514
US	481	532	442	498	497
Florida	467	521	430	492	485
NC (2015)	471	516	437	500	502

2. How did the Improbable Become Possible?

1) The rules have been broken.

In the field of education, there are some iron rules:

- Students from high socio-economic status families perform much better than students from low SES families.
- Experts perform much better than amateurs

The 2012 PISA study confirmed the first rule. In some places the gap was smaller. In Finland, there was only a 67-point gap between high SES students and low SES students. In other places the gap was bigger. There was a 120-point gap, which is about three years' learning, between high SES students and low SES students in Connecticut. However, this rule was broken if we compare students from different countries. Shanghai's low SES students outperformed America's high SES students by 30 points (Table 1). It implies that Shanghai did something right while America did something wrong. It also implies that low SES students are not doomed. If they are taught in the right way, they can be highly proficient. The low SES students in Shanghai outperformed an average American student by 81 point, the equivalent of about two years of schooling.

Most Chinese teaching in America are college teachers or teaching assistants. They have innumerable stories about how poorly prepared the freshmen are. As a Chinese teaching in K-12 schools, I have my own first-hand experiences of the quality differences between the two educational systems. I scored on the 99th percentile on the middle school math teacher certification test (PRAXIS II Middle School Math) and 92nd percentile on the high school one (PRAXIS II High School Math). I was an English major in college, and I have never taken any math class after high school. Outperforming most high school math teachers was actually more shocking than outperforming almost all the middle school math teachers. The middle school contents were less advanced so it might be possible for an amateur to do well. The high school test had calculus in it, and I had never learned calculus in school. Even with such a disadvantage, I still managed to beat the experts.

2) What made a China's amateur outperform America's experts?

Doing better on the math teacher certification tests does not mean I am more qualified to teach pre-calculus than a math major. Quite the contrary, a math major who has taken 20 college math classes apparently has more math background knowledge than I have. However, it does reveal a few things. First, the Chinese K-12 math class digs much deeper than the American math class. This is obvious when you compare the ACT and China's college entrance exam (Gaokao). The ACT math test is pretty straight forward. Most Chinese high school graduates can solve them without much thinking. The Gaokao math is much more complex and difficult. Students have to try a few paths to find a starting point. In 2007, the Royal Society of Chemistry offered an award of 500 pounds for answering a solid geometry question taken from China's college entrance math exam (http://news.bbc.co.uk/2/hi/uk_news/education/6609415.stm). The British were also concerned with the poor math skills of their freshmen and marveled at Chinese high school graduates' sophistication in math. Each Chinese high school student does books after books of practice to reach this level of sophistication. Chinese students were not given a day to ponder over that solid geometry question. They were given 2 hours to complete the whole test so they might only spend 10 to 20 minutes on this question. This is why it is rare to have a perfect score on Gaokao.

Second, it reveals America is low in "math capital." In 2014, American math majors had an average SAT Math score of 613, which was 70% right, and education majors had an average SAT Math SAT score of 482 (43% right). The college or graduate courses a math major took might not have improved his understanding of the high school math.

There is a pervasive math-phobia among Americans. Many parents say they do not know the middle school math their children are learning. Many teachers say they are not good at math. An educational ideology that does not value practice has disabled a nation. A math teacher who has done only three practice tests for his SAT test is less likely to ask his students to do as many practice tests as possible. A math teacher who believes that test preparation only artificially and temporarily boosts students' scores does not know how expertise is developed. It takes 10,000 hours of deliberate practice to develop an expertise in any area. If a Chinese student spends one hour a day on math after school, he will have spent 4,380 hours on math before going to college. If he doubles his math time, he indeed will become an expert math problem solver. China's pro-practice and pro-test-preparation culture has produced a nation of "amateur math experts" like me. The Beetles were not music majors. Time, rather than degrees, makes an expert.

Third, it reveals why China caught up so fast in economy, science, and technology. If a Chinese non-STEM major outperformed most American math teachers in middle school and high school math content knowledge, you can imagine what Chinese STEM majors will be like. In May, 2015, about 80% of graduates from Columbia University's master's degree in statistics program were Chinese (<http://gbtimes.com/china/80-columbia-masters-graduates-statistics-are-chinese>).

3. How do the Chinese outlearn the American students? – a time match

1) Quantity of time

a. Longer school hours

Chinese students spend similar amount of time in school each day as American students do except in the last year of middle school and the last year of high school when the school day may run from 8am to 9pm. China wins 1:0.

b. More homework

American students on average spend about one hour a day on their homework (Gill & Schlossman, 2003). According to the PISA 2012 report, Shanghai students on average spent 14 hours a week on homework. China wins 2:0.

c. Voluntary investment of time in learning

Many American students do little to prepare for their tests. I had 40 students in my two Math 1 classes. None of them has done any practice test for their 8th grade math EOG test. In comparison, Chinese students do books after books of practice tests to perfect their skills. American students on average spend 7 hours and 38 minutes on entertainment media. It is pretty clear where the learning gap between the two countries comes from. China wins 3:0.

2) Quality of time

a. Grade level learning time

American students spend a lot of time on frills and non-grade-level activities (e. g., cut-and-paste activities, movies), especially in elementary schools. Chinese schools have no frills. China wins 4:0.

- b. Highly-prepared students make the curriculum rigorous

Chinese students are highly prepared in two ways. One is most students are on grade level, and the other is students have adequate practice. Highly-prepared students can handle more complex problems. In the 2014-15 academic year, nearly half of North Carolina students were below grade level as measured by the EOG tests. Poorly-prepared students make the curriculum far less rigorous. Teachers can only scratch the surface. American students in a regular 10th grade Math 2 class only spend about five days on geometric proofs while Chinese students spend a whole year on geometric proofs. China wins 5:0.

- c. Speed

Chinese schools emphasize not only accuracy but also speed. Multiple choice questions only accounted for 16% on the 2016 Shanghai high school entrance math exam but students were only given 100 minutes. In comparison, North Carolina students are given three or four hours on the 8th grade Math EOG test, and a majority of items on the test are multiple choice questions. All the Chinese students know the multiplication facts and other important facts (e.g., square numbers, formulas), which allow them to accomplish more in the same amount of class time. If an American math classroom is like a computer with a 286 CPU, then a Chinese math classroom is like a computer with a 586 CPU. China wins 6:0.

- 3) Can American students' deficits in time be compensated by other factors?

Chinese students outlearn American students because they spend more time on learning and their time on learning is also of better quality. Can the time gap be compensated by other factors? Do American students have better teachers? No, if China's non-STEM majors have better content knowledge than American math teachers. Do American students have better technology? Yes, but computers have not changed the stagnation in American students' performances in the past 40 years. Each student in Orange High School is assigned a chromebook but many students do not even complete their assignments online. Technologies have not changed students' motivation and work ethics.

This time analysis proves the learning gap between American students and Chinese students is real. If American students are not smarter than Chinese students but they spend much less time on learning, how do you expect them perform as well as Chinese students?

4. An Economic Analysis of the Learning Gap

- 1) The competition for scarce resources: parents vs. students' responsibility

Excellent schools are scarce resources. American students are assigned to their neighborhood schools while Chinese students use their entrance exam scores to get into the desired schools. This difference is essential in understanding why American students spend far less time on learning at home than Chinese students.

- 2) When students compete, the state wins.

East Asian economies all produced economic miracles. Japan went first, followed by Hong Kong, Singapore, Taiwan and South Korea in the 60's and 70's, and since the 80's it was China. All these economies use high-stakes tests in students' school choice, and students in these places spend the most time on learning. All these economies were top performers in the PISA studies. Their high quality workforce may be the primary reason behind their economic successes.

High stakes testing is the tradition in these places rather than a wise choice made by the governments. China started to use exams to select talents for civil services about 1,300 years ago in the Tang Dynasty. Low SES people could become officials by scoring high on the civil service exams. Other East Asian countries adopted China's civil service exam system, and people in these countries have a deep-rooted belief that doing well on exams can change one's fate. This belief is the invisible hand that motivates East Asians to maximize their time on learning to get into desirable schools and as a result create a well-educated workforce for the state.

- 3) The school district's monopoly

In China, students compete for entrance into better schools, and schools compete for better students. In America, there is a lack of competitions among students as well as schools. The school district enjoys a monopoly over its students. Charter schools bring about some competitions but they often attract high SES families. The school district can say charter schools cherry pick better students and use it as an excuse for continued mediocre student performance.

- 4) Return on the investment

In 2012, the U.S. had the fourth highest educational expenditure per capita in the world but its students were below average in math and average in reading and science in the 2012 PISA study. Apparently, American taxpayers got a poor return on their investment. In 2012, Shanghai's per capita GDP was 27% of that of the U.S. but its 15-year-olds led the world in math, reading, and science proficiency. The Shanghai government got a nice return on its investment. If K-12 education is as globalized as manufacturing, most American school districts would have been taken over by better school operators, and American schools of education would have given up their failed ideologies. The American K-12 education's lack of competition and its unopenness results in huge inefficiencies. The current American K-12 education is like the pre-Reform Chinese economy. No matter how outdated and inefficient the Chinese enterprises were before 1978, they were not driven out of business because of lack of competitions.

- 5) "Iron bowls", safety nets, and bailouts

In Mao's China, employees of state-owned enterprises had secure jobs which were called "the iron bowls." They did not feel the need to work hard. The U.S. has 12-year compulsory education so the government wants to keep students in school. Elimination by testing is not an option. North Carolina's middle schools are not allowed to retain students. Nearly half of North Carolina 8th graders are below grade level in math or reading. They move on to high school anyway. Many students are not qualified to pass but teachers can only fail a few of them. Students who failed a course are given a second chance to "recover" their credits. With all these iron bowls and safety nets, students have little incentive to work hard. They just wait to be bailed out. "Passing the course" becomes teachers' and schools' responsibilities rather than students'. This creates a moral dilemma and a moral hazard. If teachers do not bail these students out, they will drop out. If teachers bail them out, these students do not feel the need to work hard.

Compulsory education does not necessarily produce safety nets dependents. China has 9-year compulsory education but the competition for excellence is fierce. The secret is the three entrance exams for middle school, high school, and college. Attending a better middle school increases a

student's chance of doing well on the high school entrance exam, and attending a better high school increases student's chance of doing well on the college entrance exam. Students compete for those coveted spots in top schools or colleges. With its address-based school assignment policy, American government loses a valuable incentive for its students.

America only has one entrance exam—the college entrance exam. It comes too late. Most students have become safety net dependents. They just take the SAT/ACT without much preparation. Only those top students compete fiercely for coveted spots in selective colleges. Not letting students compete for entrance into better schools is the biggest policy blunder in American education and the biggest factor behind American students' underachievement.

6) The proletarianization of American students—no textbook ownership.

American students act like wage labors. Many of them do not do any learning not assigned to them by their teachers. How do they lose the goal of mastery? Karl Marx used “proletarianization” to describe the process of turning employers or self-employed people into wage labors. By keeping textbooks expensive, American publishers deprive students of textbook ownership and make them dependent on their teachers for handouts (pun-intended) and assignments.

Chinese textbooks are meant to be owned and carried so they are cheap and light. The 12-once paperback only costs \$1 while American textbooks are heavy and expensive. Few students can afford the \$100 five-pound hardback so they borrow it from the school for the semester. Chinese students own their textbooks. A student has about ten textbooks each semester so a 12th grader has accumulated about 240 textbooks. There are also dozens of, even hundreds of workbooks, companions, and test preparation books. Even a poor Chinese student is rich in books. Ironically, there is a poverty of books in American homes. Once I asked the 40 ninth graders in my Math 1 classes who had workbooks and test preparation books at home. Only two raised their hands. When I probed deeper to ask them to name the titles, none of them could. American students' neglect of practice can be attributed to the lack of practice books at home.

The lack of textbook ownership contributes to American students' underachievement. Students do not have the habit of constant review. Chinese teachers often tell their students that they are responsible for everything they have learned, not just in the current semester but everything since the first grade. Students use test preparation books to find out the gaps in their knowledge then use textbooks to self-remediate. Without old textbooks, most American students have to rely on their teachers for review. Many teachers just throw away textbooks and use handouts instead. Students will throw away these handouts sooner or later. Again, this makes review impossible.

7) The proletarianization of American students—How creditism turns American students into “wage labors”?

Chinese students play others' game while American students play their teachers' games. To prepare for others' game, students have to consider all types of scenarios because no one knows what will be in the game. They try to obtain all the test preparation books available in search of test items they have never seen. This is also how world class athletes prepare for their tournaments. Chinese schools also give letter grades but students do not care about them because it is the scores on the entrance exam that count. In America, the reverse is true. Students are obsessed with their grades but they do not care about their EOG/EOC test scores. Failing the EOG tests has no consequences for them. Students care a little about the EOC tests because they constitute 20% of students' final grade.

8) Conflict of interest—American teachers as game organizers, referees, and coaches.

Chinese colleges use a single-factor approach in admission while American colleges use a multiple-factor approach. Chinese high school students' eyes are on the grand prize at the end of 12th grade—the college entrance exam. Their teachers are coaches helping them prepare for the big game. American students' eyes are on the now, on their teachers' games because their teachers have the power to issue passes to them. Teachers can use study guides to narrow students' learning scope. They can allow students to correct the tests for better grades. They can let students reading at 5th grade level pass a 12th grade English class. By having the trinity roles of game organizers, referees, and coaches, American teachers give certainty to uncertain games. They achieve these by lowering the curriculum standards.

It is surprising that American schools could be run like this and few people expressed their concerns. The PISA study started in 2000. Some Western countries such as Finland performed as well as East Asian stars so American educators could treat East Asian stars as outliers and do not feel the need for change. Shanghai's debut in the 2009 PISA study changed the game. First, it was an outlier among outliers. Shanghai's 15-year-olds outperformed Singaporean students by 40 points in math. Second, the underdog took the grand prize. Singapore, South Korea, and Japan were considered overachieving rich countries but Shanghai's per capita GDP in 2012 was 27% of that of the U.S. Shanghai's success could not be explained by wealth. It also could not be explained by work ethics because students in other East Asian countries have similar work ethics. Having rigorous high-stakes testing is the best explanation for these East Asian economies' dominance on the PISA ranking, especially in math.

Not having rigorous high-stakes testing is the very reason why American students underachieve. Top students get A's and mediocre students get D's on their teachers' easy games. Both groups feel no need to prepare for the real big game (e.g., mastery, the college entrance exam). The PISA study exposed the lies told by American students' grades but so many American educators defended this corrupt system and attacked the winners instead.

9) What can American educators learn from China's economic reform?

After the founding of the communist rule in 1949, China developed some modern industries with the help from the Soviet Union but it also missed many opportunities due to its close to the West. In 1978, 29 years after the founding of the People's Republic, China was so backward that most families did not have basic household necessities such as refrigerators, washers and dryers, televisions, telephones, not to say cars. Deng Xiaoping let China drop its communist dogmas and open its door to the West. In the succeeding 38 years, China enjoyed miraculous economic growth at an average annual rate of 9%.

America's K-12 education is like China's economy in 1978. America is an open society but its K-12 education is a surprisingly closed system. Shanghai students' excellent performance has been known for six years but American educators have made no efforts to learn from China and examine their own practices. In comparison, the British educators have made some serious efforts to learn from the best. Their Minister of Education visited Shanghai. They invited Shanghai teachers to teach in British schools, and the BBC even made a documentary of five of these teachers (<https://www.youtube.com/watch?v=DYGxAWRUpaI>). About 8,000 British schools adopted Shanghai method of teaching math.

The progressive education dogmas are so deep-rooted that American educators are unable to see the system's problems and propose the right solutions. American students underachieve because rigorous high-stakes testing has not been used in school assignment but some American educators erroneously blame "too much testing" for American students' underachievement. It is a good example of why American schools need to bring in outsiders.

American K-12 education needs its own "open and reform" moment. The Chinese in 1978 threw away Marxist dogmas and let "practice be the sole criterion to verify the truth." The Americans need to throw away the progressive education dogmas and let numbers speak. They should stop denying and start to learn from the best.

5. Why American K-12 education loses its ability to self-correct?

If the culprits of American students' underachievement are so obvious in Chinese eyes, why do American educators fail to see them?

1) The provincialism of K-12 education. Compared with trade and economy, K-12 education is much less globalized. Each country minds its own school business. American educators know a few foreign educational theorists such as Piaget and Vygotsky but they do not care about what is going on in other countries' schools.

2) 10 ways to sweep the inconvenient truths under the carpet

Many American educators do not actively seek truths but sometimes inconvenient truths are thrown into their faces. How do they cope with the embarrassment, maintain their pride, and run business as usual?

a. We educate everybody but they don't.

China has 9-year compulsory education. The OECD compared 15-year-olds rather than 18-year-olds because all the participating countries have at least 9-year compulsory education. No one can claim apples are compared to oranges.

b. If American education is bad, why do they come here to study?

Most international students come to the U.S. to attend graduate schools which are the best in the world. More and more Chinese attend high school in the U.S. now. Some flee the cutthroat competition at home while others feel they have a better chance of getting into selective American colleges if they attend American high schools.

c. They are just good test takers

Everybody knows that multiple choice questions are easier than questions not giving clues. Multiple choice questions only accounted for 40% of the total score on the 2016 National College Entrance Math Exam (<http://edu.people.com.cn/n1/2016/0607/c1006-28419392.html>), while the SAT/ACT tests are all multiple choice questions. Multiple choice questions only accounted for 16% of the 2016 Shanghai High School Entrance Math Exam (http://sh.zhongkao.com/e/20160627/577096d99db36_2.shtml) (6 items at four points each, 24/150). Test taking strategies cannot make Chinese students ace on such tests. They have to really master the contents.

d. They are not creative.

This is a common misconception. A four-episode Danish documentary comparing a Danish school and a Chinese school (https://www.youtube.com/watch?v=Z_WSJUNxPZc) refuted this claim. Chinese students outperformed their Danish peers in math, reading, creativity, and cooperation, and lost to them only in foreign language (English).

e. The Nobel Prize winners are still predominantly Americans and Europeans.

The poor quality of American K-12 education may not affect its top students much. They compete as fiercely as Chinese students for the coveted spots in selective colleges. They tend to have well-educated and well-to-do parents who push them to learn. The problem is there are not enough such students to go around so American graduate schools have to take in international students. According to a National Science Foundation survey (Anderson, 2013), international students accounted for 70% of graduate students in electrical engineering, 63% in computer science, 60% in industrial engineering, and more than 50% in economics, chemical engineering, materials engineering and mechanical engineering. As a result, more and more new faculty members in American universities are foreign-born. Some of them will win the Nobel Prizes for America but their K-12 education was completed abroad.

The Nature Index tracks author affiliation of 68 high-quality science journals. China's high quality scientific research output was about 40.3% of that of the U.S. in 2016 but there was a clear trend of narrowing the gap (<https://www.natureindex.com/annual-tables/2017/country/all>). China has suspended its college entrance examination for 11 years during the Cultural Revolution and closed to the West until 1978. Almost starting from scratch since 1978, China has leapfrogged Western countries with hundreds of years of scientific research tradition to the second place. This actually confirms the high quality of China's K-12 education.

f. They are known cheaters so they must have cheated.

The Chinese steal Western countries' intellectual properties but they cannot cheat their way to the college entrance exams. Just look at what Shanghai students were expected to know on their high school entrance exam (http://sh.zhongkao.com/e/20160627/577096d99db36_2.shtml), then you can decide if their stunning performance on the PISA math test was convincing.

g. They are robots incapable of critical thinking.

Disciplined learning is a strength.

h. Their teenagers have higher suicide rates.

I do not have data on teen suicide rates but China's overall suicide rate was 94th place among 171 countries (https://en.wikipedia.org/wiki/List_of_countries_by_suicide_rate).

i. They have no life.

This one is subjective. Chinese students sacrifice their leisure time so that they can be in better positions in the future. This willingness to delay gratification makes them overachieve.

j. It is not fair to compare a city with a country

Shanghai is the richest city in China. It is fairer to compare it to America's best. According to the 2012 PISA study, Shanghai 15-year-olds outperformed Massachusetts students by 99 points in math (613 vs. 514).

k. American exceptionalism

This is an all-purpose shield. Any need for change can be swept aside in the name of American exceptionalism.

- 3) Blinded by research.

Without research to support one's beliefs, a person is willing to hear other people's reasoning. With research to support one's beliefs, a person feels the truth is on his side so he is unwilling to change. Educational research is far from a science. People with opposing views can both find research that supports their opinions. To avoid being blinded by research, American educators should pay more attention to comparative studies.
- 4) Research country's trap.

American scholars produce large percentage of educational research in the world while Chinese scholars produce little. As a research user country, China can focus on the most important findings. As a research producer country, the U.S. focuses on hot topics which are not necessarily the most important ones. For example, Ebbinghouse's forgetting curve is one of the earliest educational discoveries as well as one of the most important ones. Chinese schools make serious efforts to help students retain their knowledge (e.g., letting students own textbooks, having abundant workbooks and test preparation books, giving large amount of homework, asking students to memorize and recite multiplication table, key concepts, formulas, classic poems and texts), which is often belittled as rote learning by the Westerners. American schools have far fewer measures helping students fight against the forgetting curve. As a result, American teachers constantly complain how poorly prepared students end up in their classes.

American scholars often develop new theories, and K-12 educators follow these fads hoping they finally have a solution to American students' underachievement problem. Such hopes have been dashed again and again. Falling into the research producer's trap, American educators may emphasize learning styles one year and differentiated instruction the other year. The most important educational principles have not been given permanent attention.
- 5) Founder's burden

There are two major paradigms in K-12 education: progressive education and high stakes testing. The progressive education movement started in America about 100 years ago. It takes much longer for the founder than the followers to change. The founder's burden can nicely explain the British and the Americans' very different reactions to the 2012 PISA study. Similar phenomenon has happened in the East. The Westerners had conflicts with both China and Japan in the mid- 19th century. China had the Opium War with the British from 1839 to 1842 while the American navy forced Japan to open to the West in 1853 and 1854. The Japanese abandoned their Asian identity and were identified with the Europeans. The Meiji Restoration in 1868 led to the Westernization and modernization of Japan. Chinese reformers appealed to the Chinese leaders but they were reluctant to change. China was bullied by Western powers and Japan until 1949. After having lost so many opportunities and learned so many lessons, China was finally on the right path in 1978, 110 years after the Meiji Restoration. It was much harder for China, the founder of the East Asian civilization, to change than Japan does.
- 6) Paradigm shift.

The findings of PISA studies caused crisis to the progressive education paradigm. One type of reactions is denials as described above in the "10 ways" section. Another type is pick-and-learn, represented by the British's reaction to Shanghai students' stunning performance. They learn from Shanghai in math but not in other subjects. They learn the instructional method without fundamentally changing their progressive education beliefs and practices. This is similar to the Japanese and the Chinese's learning from the West. They learned the technologies without adopting the political system. Japan did not fully adopt the Western political system until it was defeated in World War II.
6. How hedonism and romanticism make American students underachieve?
 - 1) Learning has to be fun.

A core belief of progressive education is learning has to be fun. If students do not like it, then learning will not happen. Chinese teachers tell students a very different story: Learning is not always fun, and it is actually quite boring on many occasions. The "fun" belief makes many American students unable and unwilling to memorize the multiplication table while the "boring" belief makes Chinese students willing to take on tedious learning tasks. When American students are having fun doing hands-on math, the Chinese students are reciting the multiplication table. Solid grasp of basics gives Chinese students higher processing speed. If the American math classroom is like a computer with a 286 CPU, then the Chinese one has a 586 CPU. This means Chinese teachers and students can cover much more in the same amount of instructional time.
 - 2) Homework = Grade level × 10.

There is a well-known formula to calculate the amount of homework American teachers could give: Students' grade level times 10. That is one of the most damaging ideas in American education. When American 3rd graders spend 15 minutes a day on math, their Chinese counterparts may spend 60 minutes on math, some for homework and others for voluntary test preparation/practice. The learning gap between the two countries is really caused by this accumulated time gap. Does Kobe Bryant practice after group practices (assignments)? Is Serena Williams regulated by authorities on how much time she could practice her tennis? The way Chinese students practice for their math tests is like world class athletes practice for their games. When students are goal-oriented, they will practice until their goals are reached no matter how much time is involved. Completing assignments is like "running 30 minutes every day"; it can make you fit but it does not make you world class athletes. The "grade-level-times-10" formula is allegedly based on developmental psychology but it violates the principles of educational psychology. Memory is forever fading so students need to review and practice what they have learned before it fades into oblivion. American students' inadequate practice makes their learning hugely inefficient.
 - 3) How American students use their free time?

After analyzing several national surveys, Gill and Schlossman (2003) found that a majority of American students at all grade levels spent less than one hour studying each day. I asked my Math I students, and they confirmed this research finding. A Kaiser Family Foundation study (2010) shows that American 8-to-18-year-olds spent an average of 7 hours and 38 minutes on entertainment media (e.g., cell phone, music, TV, video games). In contrast, Chinese students spend many hours on learning at home. The huge learning gap between the two countries is really caused by the huge learning time gap.
 - 4) The Westerners may get the human nature wrong.

Communism failed because the Marxists got the human nature wrong. They underestimated humans' selfishness. Farmers in the communes did not work hard because their extra products would be shared by others. Deng Xiaoping privatized the collective farms and China's agricultural production shot up.

Children prefer play to work. The Westerners try to make children happy rather than put them on the right paths. They want to give children a happy childhood which means less book learning, less memorization, less stress, and fewer tests. What do they get? High school students do not know all the multiplication facts. Students who spend nearly eight hours on entertainment media a day but only one hour on homework. In K-12 education, stoicists outperform hedonists.

- 5) Higher order thinking skills vs. the basics.

According to Bloom's taxonomy, recalling basic facts and concepts is the lowest while creative thinking is the highest. Teachers often neglect lower order thinking skills although they are essential for students to develop solid basic skills.

- 6) The pride and prejudice towards textbooks, memorization and drills

One mantra of progressive education is "learning by doing." It is assumed that students may not truly understand a concept if they only learn it from the book.

- 7) Magical teaching

Because American students do not spend much time on practice, American educators can only wish to use magical teaching to compensate for this deficit.

7. How rigorous, high-stakes, consummative, curriculum-based testing makes Chinese students overachieve?

- 1) High-stakes testing

China has high-stakes testing at the ends of 6th, 9th, and 12th grades. America only has high-stakes testing at the end of high school. China uses a single-score approach in middle school, high school, and college admissions. The recommendation approach was used during the Cultural Revolution but it was abandoned for its subjectiveness. America's multiple-factor approach spreads the risks over four years and over different categories (e.g., standardized test scores, GPAs, recommendations, activities). The ACT/SAT tests are far less high stakes because they only account for 20-30% in college admissions. North Carolina has end-of-grade tests from 3rd to 8th grades. They are high stakes for schools and teachers but not for students. The end-of-course tests in Math 1, English II, and Biology account for 20% of students' final grades. Such small weights are often not enough to change students' learning behaviors. Most students still do not do much to prepare for these tests.

- 2) Curriculum-based testing

Chinese students on both the science track and the humanities track have exams in math, science, foreign language, and political science. Students on the science track also take exams in physics, chemistry, and biology while students on the humanities track also take exams in history and geography.

The ACT is often considered a curriculum-based achievement test but it is far less so compared with the Gaokao. The ACT only tests the three R's (i.e., reading, grammar and writing, and math) plus science. It does not test students' content knowledge in humanities and social science. ACT's science subtest is more like a reading test in science, and it does not test students' content knowledge in science. Students do not need to review their science textbooks to prepare for this science subtest. ACT's math subtest is the most curriculum-based among all the five subtests but it is algebra heavy and is light in advanced subjects such as trigonometry and permutation. ACT's reading test is not curriculum-based at all. Because the ACT is far less curriculum-based, most American students do not spend much time preparing for it. They may complete one, at most five, practice tests or none at all. Only those who plan to go to selective colleges make serious preparation for the SAT and ACT. American students lose an important reason and opportunity to review all they have learned in high school.

- 3) Consummative testing

China's college entrance exams cover everything students have learned in high school. They assess what students know on the last school days before entering college. In comparison, GPAs only tell what American students used to know. Chinese colleges get college ready students while American professors complain about the freshmen's unreadiness.

- 4) Rigorous testing

The SAT and ACT are far less challenging compared with the Gaokao. All the 60 items on the ACT math test are multiple choice questions, and a majority of them are covered in Math 1 and Math 2. An ACT subtest score of 20 is considered college ready. A student only needs to get 31 out of 60 items right on the math subtest to have such a score (<https://www.princetonreview.com/college-advice/act-score-chart>), so a student can miss half of the questions on this easy math test and still sits in the college classroom. There are five choices in each test item so a student can get about 12 items right if he guesses all the way (60 x 20%) and he will get a scaled score of 14! If he does better on other subtests and has a composite score of 20, he can go to college without knowing much about math! Actually many colleges lower the bar to admit students who are not ready for college. Five out of 16 North Carolina public colleges have a median ACT score of 17 (<https://www.thoughtco.com/act-scores-north-carolina-public-university-admission-788806>). It is no wonder a large percentage of freshmen in such colleges need remediation.

China's college entrance exams are much more rigorous. On the 2016 Gaokao math test (<http://edu.people.com.cn/n1/2016/0607/c1006-28419392.html>), there were 12 multiple choice questions five points each, four fill-in-the-blank questions five points each, five show-your-work questions 12 points each, and one 10-point question (Students could choose one out of three questions among items 22-24 to do) totaling 150 points. Only 40% were multiple choice questions (60/150). All the items were Math 3 or above. Chinese students take algebra and geometry in middle school. This is why all the Chinese students taking the GRE test are surprised that America uses a middle school level math test selecting graduate students.

- 5) Why American teachers often complain about their students' unreadiness?

American schools only have high-stakes testing at the end of high school so most students never feel the need to review the contents learned in the previous semesters. The ACT/SAT tests only account for 20-30% in college admissions so many students do not consider them high-stakes. They only do a few practice tests.

Only top students planning to go to selective colleges make serious test preparations. Only these students are comparable to Chinese students in curriculum mastery.

8. How grades make American students underachieve?

1) The seven principles of rigorous assessments: objectivity, assessing mastery, assessing at the end, assessing students' own products, comprehensiveness, uncertainty, difficulty and complexity.

2) How do we know grades are lies?

a. Grades are not indicators of mastery--the discrepancies between grades and standardized test scores

In the 2014-15 academic year, only 52.2% of North Carolina students were proficient (Level 3 or above) in Math state tests and only 56.3% were proficient in Reading (NC DPI, 2015). However, most students were promoted and had passing grades. Apparently, grades in American schools are not about mastery, and they lie about students' achievement.

b. Assess students when their memories are still fresh

This violates one principle of rigorous assessment—assessing at the end. I once played a Pimsleur Spanish conversation CD in my car. It had assessments right away, and I got 90% right. Three months later I forgot most of what I have learned. This is why letting unit test scores account for 30% of the final grade is flawed. This is why many American students do not have the concept of consummative review. They have earned credits for a topic so they think it is done and over.

c. Let spectators participate--projects and papers

This violates another principle of rigorous assessment—assessing the student's own product. Projects and papers are often completely or partially parents' products. Low SES students have a disadvantage because their parents often can offer no help.

d. Use study guides to narrow the scope of review and reduce uncertainty

A study guide narrows the scope students have to review. It implies that students do not have to prepare for the unknown. This violates the comprehensiveness and uncertainty principles of rigorous assessment. This is one reason why most American students below 11th grade do not own workbooks and test preparation books. Chinese schools do not give study guides. College, high school or middle school entrance exams are like tournaments, and each school is like a team. The coaches (teachers) and the players (students) have to prepare all types of scenarios (test item variations). America does not have middle school and high school entrance exams so most students have no test preparation experiences and habits. Inadequate practice from K to 10 has made a large number of students unready for college. There are plenty of SAT, ACT, or AP test preparation books but there are few test preparation books for 10th grade or below. In contrast, there are lots of test preparation books for each grade level and each core subject in a Chinese bookstore. High-stakes testing every three years makes Chinese students solidly build their academic skills.

The Chinese students and the American students are playing very different games. The Chinese students are playing an unpredictable and comprehensive others' game while the American students are playing a predictable and narrow teachers' game. The difficult games the Chinese students play make them stronger while the easy games the American students play make them weaker. It is no wonder that after eight years in school Shanghai students are ahead of American students by over three years in math.

e. Test correction for better scores

This is not a real game.

f. The passing game—who will be bailed out

There are so many subjective components in grades that teachers have ample opportunities to bail out their students if needed. Projects and papers can be done by parents. Tests can be corrected for better scores. Homework completion can be a part of the grade. Students know only a few students would be failed so they do not feel the need to study.

3) Why America adopts a fraudulent rating system?

Chinese schools also give grades but they are far less important than final exam scores, which clearly tell parents about students' levels of mastery and ranking. China has a long history of corruption. To minimize the possibilities of corruption in the talent selecting process, China adopts a single-factor, single-score approach in its middle school, high school, and college admissions. The American society is far less corrupted than China so Americans may not feel the need for objective assessments in K-12. That proves to be a big mistake.

American schools also have final exams but they only account for about 30% of the final grades. Why don't Americans use the final exam as the sole criterion in assessing students? One explanation is it puts too much stress on students thus violates the hedonist and romanticist principles. Another explanation is students have to do a lot of memorization for final exams. Again, it violates the hedonist and romanticist principles. Students do not need to memorize much for unit tests because their memories are still fresh. The third explanation is there are things such as projects that cannot be assessed by final exams. It seems the grade system fits the progressive education ideals. As students move up the grade ladder, more and more students fall behind due to neglecting memorization and practice for years. They need to be bailed out so that they do not have to be retained. Grades can serve this purpose nicely because there are many ways to inflating low grades. So the fourth explanation is the grade system is a handy tool to hide problems. If it is an absolute necessity for American students to have a happy childhood with minimum memorization and test preparation, then the grade system is here to stay. The fifth explanation is K-12 schools adopt the grade system because colleges are using it. Then colleges should blame themselves for their freshmen's poor quality. K-12 educators should be blamed too for this adoption. The core subjects in K-12 education need to be mastered. Content mastery is much better in the high-stakes testing environment.

4) How grades make American students underachieve?

a. Students do not feel the need for review

Many students do not review for unit tests because their memories are still relatively fresh. Some students do not review for final exams because they are only 30% of the final grades. Not having the habit of review makes many students unable to master what they have learned.

- b. Inadequate practice caused by the credit mentality
Because homework, unit test scores, participation, and efforts are all parts of the grade, students are unwilling to do anything that does not earn credits for them. This credit mentality makes them lose the ultimate goal—mastery. None of my Math 1 students did any additional practice test for their 8th grade math EOG test because it would not earn any credit for them.
- c. Students expect their teachers' leniency
American teachers are powerful. There are so many subjective elements in grades that teachers have multiple ways to bailing out their students. They can decide which students to fail and which ones to be bailed out. Many students know this so they spend little time on learning and use their teachers' leniency as their last resort.
- d. A critical mass of poorly prepared students lowers the expectations
The grade system causes massive underachievement among American students. The grade system allows teachers to adjust the curriculum rigor and the assessment rigor. American teachers hate standardized tests because these tests reveal the lies told by the grades and they cannot teach whatever they want.
The assessments in American schools are adaptive to students' levels. Teachers in some classes have to use study guides to narrow the scope; otherwise a large percentage of students will fail. If the ACT test assesses students' college readiness, it is supposed to give more weights to advanced contents. The ACT math subtest gives more weights to Math 1 and Math 2 to reflect students' prevailing levels. North Carolina's high school final exams are all multiple choice questions. They are not meant to give students a difficult time. The assessments in Chinese schools are also adaptive to students' levels, but in the opposite direction. Because every Chinese student does a lot of practice and review, tests have to be challenging so that the great can be distinguished from the good. In 2014, 583 students got a perfect score of 2,400 on the SAT. This will never happen in China. Some students get a perfect score in one subject but no student has ever got a perfect composite score on the college entrance exams.

9. How are low SES students hurt by the current practices in American education?

1) Lack of textbook ownership.

Low SES students tend to have few books at home. Student textbook ownership levels the playfield for China's low SES students. Many top high schools in China are in poor rural regions. The learning materials they own are comparable to high SES urban students while they can spend more time on learning due to the absence of distractions. Because of student textbook ownership, China's low SES students often own more books than America's high SES students. Chinese students also spend much more time on learning than American students. Chinese students have advantages in both resources (e.g., books) and labor (time on learning), which explains why Shanghai's low SES students outperformed America's high SES students.

2) The grade system does not help students form the habits of practice and review.

Most American students are not autonomous learners. The grade system gives students a worker mentality and deprives them of the will to mastery. Proficient students and unproficient students complete the same amount of homework. Students with deficiencies do not know how to self-remediate to catch up. Chinese teachers often say that slow birds should fly first. America's unproficient students do not have this concept. They have plenty time at home but they do not know how to use it. At my high school, most students seeking lunchtime tutoring are not struggling students.

American high SES students perform better because their parents schedule afterschool learning experiences for them while students from low SES families do not have such structured afterschool learning experiences (Lareau, 2003).

Chinese schools equalize students' afterschool learning experiences by assigning more homework and using high stakes testing to prompt students do practice and review at home. In America, the students who do not complete their homework and do not study for tests tend to be low SES students. Their deficiencies just keep accumulating to the point that nearly half of North Carolina students are below grade level. High SES parents know what it takes to get into selective colleges so they help their children form the habits of practice and review. High SES students have tutors and take test preparation classes.

America's top performing students (e.g., those AP students) are as busy as Chinese students. Their excellence hides the harm done by the grade system and the progressive education practices to the low SES students. American educators often use students' socio-economic status as an excuse for students' poor performances. They fail to see the grade system and the progressive education practices are widening the learning gap rather than closing it.

3) Projects and frills take away instructional time on the basics.

E.D. Hirsch (1999) pointed out middle class parents could teach their children the basics at home while low SES students relied on the school to teach them. When instructional time is spent on projects and frills, middle class students get the enrichment while low SES students' deficiencies are neglected. America has its clear-headed thinkers like Hirsch but why their voices are not being heard? The progressive education paradigm is so deep-rooted that many American educators have lost the ability to tell right from wrong.

4) High SES students have continuing education at home while low SES students do not.

High SES students have highly structured enrichment learning experiences at home. They take classes in music, arts, and sports. They go to museums and libraries. On average, American students only spend one hour on homework school. Low SES students may spend less than that on their homework.

Chinese schools leave no child behind by keeping students busy at home. Chinese students spend much more time on homework. Because of high stakes testing, Chinese low SES students also spend a lot of time doing practice and review. Shanghai's high SES students still outperformed its low SES students by 98 points in math (660 vs 562) but at least its low SES Students were highly proficient.

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Appendix P:

Charter School Required Signature Certification

Note: Outlined below is a list of areas that must be certified by the proposed Board of Directors. Any forms Not Applicable to the proposed charter school indicate below with N/A and provide a brief explanation for providing such response.

Serving on a public charter school board is a position of public trust and board members of a North Carolina public charter school; you are responsible for ensuring the quality of the school's entire program, competent stewardship of public funds, the school's fulfillment of its public obligations, all terms of its charter, and understanding/overseeing all third party contracts with individuals or companies.

- ❖ The selected Board Attorney that he/she has reviewed with the full Board of Directors, listed within the application, all the governance documents and liabilities associated with being on the Board of a Non Profit Corporation.

- Name of the Selected Board Attorney: _____ N/a. We have not selected a board attorney yet.

- Date of Review: _____

- Signature of Board Members Present (Add Signature Lines as Needed):

- _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____

- ❖ The selected Board Auditor that he/she has reviewed with the full Board of Directors, listed within the application, all the items required for the annual audit and 990 preparations.

- Name of the Selected Board Auditor: _____ N/a. We have not selected a board auditor yet.

- Date of Review: _____

- Signature of Board Members Present (Add Signature Lines as Needed):

- _____
 - _____
 - _____
 - _____
 - _____
 - _____
 - _____

❖ If contracting with a CMO/EMO, that the selected management company has reviewed with the full Board of Directors, listed within the application, all the items required and the associated management contract and operations.

○ Name of the Contact for Selected EMO/CMO: n/a. We will not use an EMO/CMO

○ Date of Review: _____

○ Signature of Board Members Present (Add Signature Lines as Needed):

- _____
- _____
- _____
- _____
- _____
- _____
- _____

❖ If contracting with a financial management service provider that the selected financial service provider has reviewed with the full Board of Directors, listed within the application, all the financial processes and services provided.

○ Name of the Contact: n/a. It is too early to contract with a financial management service. One of our board members works in corporate finance. She can give us professional advice during the planning stage.

○ Name of the Selected Financial Service Provider: _____

○ Date of Review: _____

○ Signature of Board Members Present (Add Signature Lines as Needed):

- _____
- _____
- _____
- _____
- _____
- _____
- _____

❖ If the proposed Board of Directors, listed within the application, is contracting with a service provider to operate PowerSchool that the service provider has reviewed all of the financial processes and services provided.

○ Name of the Contact: n/a. We will contract with a PowerSchool service provider if our application is approved.

○ Name of the Selected PowerSchool Service Provider: _____

○ Date of Review: _____

○ Signature of Board Members Present (Add Signature Lines as Needed):

- _____
- _____
- _____
- _____
- _____
- _____
- _____

Certification

I, Wenya Bai , as Board Chair, certify that each Board Member has reviewed and participated in the selection of the individuals and vendors attached to this document as evidenced

by the full Board of Director signatures outlined above. The information I am providing to the North Carolina State Board of Education as Board Chair of Carolina Experimental School _____ true and correct in every respect.

Signature

Wenju Bai

Date

10/1/18