The school's philosophical approach to improving pupil achievement in the target population

21st Century Liberal Arts philosophy, research and approach to education

Sierra Prep Academy embraces a 21st Century Liberal Arts philosophy and approach to education. Typically, any serious definition of the liberal arts must begin at least as far back as Plato's creation of his academy. In particular, his dialogue *Gorgias* contains the essence of his educational philosophy as a process toward achieving the "good" which leads to personal happiness. Building upon this, Eva Brann, author of *Paradoxes of Education in a Republic*[1], believes in the Aristotelian notion that there is an inherent tension between the cultivation of good citizens and of good human beings. She ties together the nature of education with the nature of the republic. Essential to the idea of republic is the promise of life, liberty, and the pursuit happiness. Brann further highlights the Platonic and Aristotelian idea that philosophical inquiry is the most important factor in improving liberal arts education.

For millennia the Classical World has been closely associated with education itself. Ancient Greek traditions clarify why Western culture is inimitably dynamic with the ideas of democracy, republicanism, civic and civil liberty. Michael Strong, author of *The Habit of Thought*[2], also advocates a Classical approach to education; specifically, the use of the Socratic Method of philosophical inquiry for high school students. He believes in fostering a culture of learning and trust that produces mature, independent thinkers with a heightened awareness of their surroundings. He is adamant that students must be taught to think for themselves and rely on their own judgment. In keeping with the tradition of preserving Classical educational principles, Victor Davis Hanson and John Heath, authors of *Who Killed Homer?*[3], argue that if knowledge of the ancient Greeks is lost, then so too is the beauty and perils of American culture. Hanson and Heath advance the notion that the failure of modern Classicists has caused the decline of formal studies of Western Civilization from American education at what they believe is the time when it is most needed to elucidate the marvels and menaces of their own culture.

Although there is a clear division between specialist education and the liberal arts, one is not subordinate to the other. Even in a climate that demands specialization beyond the possibilities conceived by Adam Smith, the generalist is sorely needed for the demanding work of synthesis, whether it is in the sciences or the humanities. The first industrial revolution was sparked and led by men broadly educated, men like Erasmus Darwin, Joseph Priestly, and Benjamin Franklin. As the second industrial revolution took hold in Britain and the United States, specialization and education in the practical arts were not only normalized, but codified in the rise of public education. Today, a quick computer search will reveal myriad articles, blogs, and essays pleading for a return to a system that cultivates generalists in all disciplines to provide guidance and vision in an overly specialized world.
Furthermore, Thomas Sowell, author of *Inside American Education*[4], charges that American education is not only too specialized, but morally and intellectually insolvent. Among the more serious problems he noted was school management's preoccupation with institutional image and ranking over fiscal integrity or education of the youth. Sowell's comprehensive research puts a spotlight on the textbooks and other instructional materials which foster essentially totalitarian ideas of political correctness, values clarification, and unjust ideas of political and social orthodoxy. These baleful curricular developments, Sowell holds, combined with irresponsible authoritative figures, undermine the American ideal of education that the founding fathers fought persistently to establish.

The more specific articulation of what a liberal arts curriculum should include appears in the medieval age with the well-known logic, rhetoric, and grammar of the trivium, in preparation for the companion

[1] Brann, Eva. "Paradoxes of Education in a Republic", Chicago, IL: University of Chicago Press. 1979
[2] Strong, Michael. "The Habit of Thought: From Socratic Seminars to Socratic Practice", Chapel Hill, NC: New View, 1996
[3] Hanson, Victor Davis, Heath John, "Who Killed Homer?: The Demise of Classical Education and the Recovery of Greek Wisdom", Encounter Books, 2001
[4] Sowell, Thomas. "Inside American Education". Simon and Schuster, 2010

disciplines of arithmetic, music, geometry, and astronomy of the quadrivium. David Carr from the University of Edinburgh offers a more modern iteration of the liberal arts in his 2009 article "Revisiting the Liberal and Vocational Dimensions of University Education." [5] He states that: "…liberal education ought to exhibit three main characteristics: (i) it should involve initiation into forms of knowledge and understanding that are worthwhile for their own sake; (ii) such initiation should also be broad in scope and avoid narrow vocational or professional specialization; and (iii) such broad initiation should also assist learners to grasp meaningful connections between diverse forms of knowledge explanation and truth.

In a speech entitled "Liberal Arts Education in the Twenty-First Century" Professor W.R. Connor traces the history of the liberal arts and defines these generalist goals in terms of "skills rather than content" which "give special emphasis to leadership and citizenship."[6] Emphasizing this need for skill-based instruction, Arizona State University Professor David Hestenes[7] draws a sharp distinction between conceptual models and the mental models required to understand them. In other words, he noticed a difference between problem solving and understanding the concepts behind the problems. He argues that most people who take conventional lecture-based courses do not understand the fundamental concepts behind physics. Moreover, he believes people assimilate information better through interactive engagement techniques, such as peer instruction. He concludes that students must actively learn concepts and skills, rather than passively memorize problem solving techniques.

Jacques Barzun has tied together the liberal arts and a need for skill-based education and further emphasizes in his writings the role of storytelling over academic jargon and detached analysis to convey concepts and skills to students. He pioneered novel typographic devices in his survey of Western History entitled *From Dawn to Decadence: 500 Years of Western Cultural Life, 1500 to Present*[8]. Additionally, he created a rich system of cross-referencing to tie together myriad threads of thought to advance specific historical concepts and academic skills. To be effective, these skills must have some specificity which author and former president of Beloit College Victor Farrell lists in his book *Liberal Arts at the Brink*[9]. These include, but are not limited to: Critical self-examination; Persuasive and graceful disputation; Sophisticated technology-based exploration; An appreciation of creativity and beauty; An intellectually entrepreneurial spirit; A commitment to service to others and the community. These skills or habits of thought sired by a liberal education are at once broad and specific with a focus on persuasiveness and appreciation defined in Aristotelian terms as a synthesis of ethos (noble character), pathos (passion in the pursuit of justice), and logos (logic), the essential raw materials of leadership.[10]

Sierra Prep's Liberal Arts philosophical approach to education includes the Paideia philosophy as expressed *The Paideia Proposal*[11], by Mortimer Adler. Adler asserts that high-quality education ought to

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[5] Carr, David. "Revisiting the Liberal and Vocational Dimensions of University Education."
[6] Connor, W. R. "Liberal Arts Education in the Twenty-First Century." American Academy for Liberal Education, Occasional Papers #2.
[7] Research references on Modeling Theory and Instruction retrieved from http://en.wikipedia.org/wiki/David_Hestenes:

- D. Hestenes, Modeling Software for learning and doing physics. In C. Bernardini, C. Tarsitani and M. Vincentini (Eds.), Thinking Physics for Teaching, Plenum, New York, pp. 25–66 (1996)
- Hestenes (1997), Modeling Methodology for Physics Teachers. In E. Redish and J. Rigden (Eds.) The changing role of the physics department in modern universities, American Institute of Physics Part II. pp. 935–957
- D. Hestenes, Notes for a Modeling Theory of Science, Cognition and Physics Education, In E. van den Berg, A. Ellermeijer and O. Slooten (Eds.) Modeling in Physics and Physics Education, (U. Amsterdam 2008)
- D. Hestenes, Modeling Theory for Math and Science Education. In R. Lesh, P. Galbraith, Hines, A. Hurford (Eds.) Modeling Students' Mathematical Competencies (New York: Springer, 2010)
- M. Wells, D. Hestenes, and G. Swackhamer, A Modeling Method for High School Physics Instruction, American Journal of Physics 63: 606–619 (1995)

[8] Barzun, Jacques. "From Dawn to Decadence: 500 Years of Western Cultural Life 1500 to the Present". HarperCollins, 2001
[9] Farrell, Victor. Liberal Arts at the Brink. Cambridge: Harvard UP, 2011
[10] Edward Denny "The Importance of Liberal Arts Education in the 21st Century", paper presented in 2011 at an international conference at the Kazakh-American Free University in Kazakhstan.
[11] Mortimer Adler. *The Paideia Proposal: an education manifesto*, New York, MacMillan. 1982.

be provided for all students, not just the most eager, based on the assumption that all human beings are by definition activist learners, capable of a full life propelled by intellectual growth. Adler suggests a rigorous, single-track curriculum at the center of a school that he envisioned as a ―community of learners.

Principles and concepts fundamental to the school's proposed program of instruction

Mission

Sierra Preparatory Academy's Liberal Arts philosophy and approach to education define the mission of the school, which is to educate students for the lifelong pursuit of truth, beauty, and goodness. Students will have a foundation in the liberal arts defined as grammar and rhetoric, logic and mathematics, history, natural science, and philosophy. Students will also practice the fine arts of music, drawing and painting, and drama. Students are subsequently prepared for every career, every course of advanced or specialized study, and every kind of leisure.

Sierra Preparatory Academy will fulfill its mission by the following means:

- Service to a rigorous, core liberal arts curriculum in the Western tradition.
- Small classes of 22 or fewer.
- Dedicated, enthusiastic, and intellectually excellent teachers who serve as models of learning and of character.
- Comprehensive student evaluation, with an emphasis upon frequent individual evaluation conferences and written narratives rather than upon grades and percentages.
- Regular and meaningful homework assignments grounded in the great books.
- High standards of personal conduct and comportment for students.

Our goal is to provide an environment that allows every student who is curious and diligent the opportunity to fulfill her or his potential.

The Liberal Arts philosophy as incorporated in the program of instruction highlights:

The program of instruction as incorporated by Sierra Preparatory Academy reflects closely the philosophical principals of Liberal Arts education in fulfillment of the school's mission and exemplifies the following elements:

1. **Common, coherent and integrated core curriculum for all students**, including fine arts, music and foreign language, giving students the opportunity to explore these areas as they relate to the core academic subjects. The common curriculum allows all children to develop the skills needed to speak the languages of human conversation: the spoken and read language, but also the languages of mathematics, science, music, drama, and art. A common curriculum assures that all students spend their time on what is essential. An integrated curriculum ensures that each element of the curriculum is purposefully related to the learning environment and to the rest of the curriculum. With a coherent curriculum, each course builds on those that precede it. This makes the curriculum rigorous, relevant, and engaging, and increases the opportunities for students to excel in that type of curricular environment.

   Sierra Preparatory Academy's core curriculum is planned and designed for all students at all grade levels with a variety of educational needs. The curriculum in all of its parts meets the rigor of Arizona's Common Core Standards. It is important to note that the school's entire curriculum will be cross-aligned – what Sierra Prep students learn in one class is often purposely utilized in another. No class is designed and/or implemented in isolation. Our goal is to provide an environment that allows every student who wants to learn, the opportunity to achieve academically. Appropriate accommodations will be made for Special Education and ELL students when and where needed. Remediation will be provided for students who enter the academy below grade level based on school

generated assessments as well as to students who have not reached mastery level of performance targets based on school generated assessments and evaluations.

Sierra Preparatory Academy's curriculum has been carefully selected to reflect research-based and best practices of other schools regionally (Tempe Preparatory Academy[12] and Great Hearts Academies[13] in Arizona) and nationally (Trinity Schools[14] in Indiana, Minnesota, and Virginia) and has been proven to increase student academic achievement with similar target population groups.

Curriculum Overview: Sierra Preparatory Academy's curriculum is based on the study of great texts and great ideas in all of these disciplines, and it not only exposes the students to great ideas, but also engages them and encourages them to think critically about the ideas they study. The curriculum will be a modified Great Books curriculum and will focus on the Socratic method. In the sciences, we will employ the Modeling Method of instruction which was developed by David Hestenes at ASU through a National Science Foundation Grant. Furthermore, we will employ a "physics first" approach to the sciences and a Socratic math program in order to create a cohesive sequence.

- Unique to Sierra Prep Academy is the course listed as **Humane Letters** in the high school grades. This class forms the backbone of the curriculum in which students are trained in the habits of rational thought about the humanities (history, literature, and philosophy).
- Unique to Sierra Prep Academy is also the **Writing** class, which the Academy will treat as a separate subject of the core curriculum at the high school grades and not as an adjunct skill as part of the Humane Letters curriculum.
- In addition to the study of literature, history, philosophy and composition, students at Sierra Preparatory Academy will take **seven years of mathematics** - pre-algebra, algebra I, geometry, algebra II, two trimesters of analytic trigonometry, and four trimesters of calculus.
- In science, students will study physical science, life and earth sciences in the junior high before embarking on four years of required laboratory science (two years of physics, one year of chemistry, and one year of biology).
- All Sierra Preparatory Academy students will be required to take **Latin** in 6th, 7th and 8th grade for three years, continuing Latin and beginning **Ancient Greek** in 9th grade, and adding **modern language** (French or Spanish) for three years of study in 10th, 11th and 12th grade.
- Each Sierra Preparatory Academy student will take three years of Physical Education (in 6th, 7th and 8th grade), 7 years of Fine Arts (6th through 12th grade), including classes in music and art theory and history, music and art appreciation, poetry, studio art, and drama/rhetoric.
- Seniors will also be required to complete a *Senior Thesis* over the course of their final year at the Academy. Students will select texts from outside of the curriculum and through close textual reading and analysis will form a question of fundamental human importance, which will be explored through regular meetings with faculty advisors, a paper of significant length, and a defense before a faculty panel and the community-at-large.

2. **Community of Learners:** The primary idea of Sierra Preparatory Academy is to revive – in a deliberate and authentic way – the "community of learners." Several components contribute to this:

   - Keeping the school small: Only by limiting the size of the school will everyone (students, faculty, and parents) be able to have direct interaction with each other.

   - Parent Education: As much as students need education, so too do the parents. At Sierra Preparatory Academy, parents will have the opportunity to be involved in the educational process beyond helping with homework, volunteering, and attending conferences. All parents will be interviewed before submitting applications to the lottery in order that they are fully informed of

[12] Tempe Preparatory Academy, http://www.tempeprep.org
[13] Great hearts Academies, http://www.greatheartsaz.org/
[14] Trinity Schools, http://trinityschools.org/

the style, purpose, method, and spirit of the school's mission. They will be invited to participate in regular discussions and symposia over great works so that they practice – right along with their children – the act of learning through the Socratic method. These events will be initially coordinated by the headmaster, but will later become part of a broader habit of academic life through the efforts of the Parent Organization in partnership with the Faculty.

- Not only will the Headmaster serve as an ex officio member of the PO Board and the PO Board president serve as an ex officio member of the Sierra Preparatory Academy Board, but the Headmaster will host weekly coffees/desserts in order to give parents dedicated time for informal conversation.
- The Lunch period will be extended by 30 minutes every day in order to avoid the American habit of "eating on the go." Faculty will dine with students where students will learn/employ the habits of informal civil discourse and manners in a leisurely setting.
- With a small faculty, the opportunity to engage in meaningful group activities will be far more likely and manageable. Monthly excursions/faculty development events (beyond the usual business activities of faculty meetings) will be organized – trips to museums, hiking excursions, dinners with local authors/community leaders/sports figures, etc.

3. **Faculty who embrace the value of Liberal Arts in education:** Just as the students will be asked to embrace the value of a Liberal Arts education, so too will the faculty. Sierra Preparatory Academy will employ a modified St. Johns approach, i.e. all faculty will be required to teach across the curriculum. Under this approach, teachers will have their specialties and all will have the proper credentials under NCLB, but all teachers will be required to have, or acquire during their tenure, the ability to teach at least elementary Latin, Physics I, and Algebra/Geometry, and all teachers will actively participate in the Senior Thesis program. Furthermore, Humane Letters teachers will teach all four levels of Humane Letters in sequence throughout their career so that they may appreciate the curriculum in its entirety. A full sequence (teaching each grade level for two years and then moving on) will take eight years. Generally it takes 10 years to develop true expertise and by continuously cycling through the Humane Letters program, teachers will gain better perspective in order to achieve that level of expertise.
4. **Teaching Writing as a separate course:** Sierra Preparatory Academy will treat writing as a separate subject of the core curriculum and not as an adjunct skill as part of the Humane Letters curriculum. Such an approach will allow for teachers to approach writing in a consistent, deliberate and extensive manner. By adding a seventh hour, we will be able to include a course dedicated to writing in the 9th and 10th grades before integrating with the 11th and 12th grade Humane Letters curricula.
5. **Languages:** All students beginning in the sixth grade will take four years of Latin (with the final year including a semester of ancient Greek). Students transferring into the school will be required to take summer school to ensure that they at least have proficiency in elementary Latin and will be required to have at least one high school Latin credit. In the 10th -12th grades, all students will take a spoken language. The aim is to avoid the decision that students are asked to make between the classical and modern languages, both of which offer essential skills.
6. **Sciences Sequence:** We will take a "Physics First" approach, a sequencing that has extensive research supporting its effectiveness, as developed by Arizona State University professor David Hestenes.
7. **Humane Letters Sequence:** The Humane Letters sequence will culminate in the Senior year with a true "capstone" course, which combines the best and most advanced elements from the previous three years. Additionally, the seventh hour will be dedicated to a combination "Contemporary Issues/Senior Thesis" class. The traditional Liberal Arts curriculum has a natural bias against the

modern/contemporary which the program of instruction at Sierra Preparatory Academy would like to change. Students need awareness of their contemporary context. Furthermore, the Senior Thesis has always been a requirement without any time dedicated to it. With this schedule, we can offer much more support to seniors as they prepare these projects.

8. **Fine Arts Sequence and Design:** Sierra Preparatory Academy's approach to Fine Arts is believed to more consistent in its sequence and design with the drama program focusing more on Rhetoric and speech, thus aligning and supporting the Writing program, which gives opportunities for all students to learn the fundamentals of public speaking. All seniors will be required to give a speech to the entire school as part of their gradation credits.

9. **Evaluation as a Community Building:** Although we will provide regular written evaluation in short narratives, evaluations will be primarily done through conferencing with parents and students – again as a way to build community. Formal conferences will be held following each trimester.

10. **International component:** We have spoken with officials at Kazakh-American Free University (KAFU) about hosting exchange programs and we would like to offer unique travel opportunities to our students. Although our community will be small and tight-knit, we must make deliberate efforts to engage people beyond our boundaries. In addition to forming partnerships with institutions like KAFU, our trimester approach will enable students and faculty to travel during breaks on officially sponsored, school organized trips. This will be similar to programs offered by private schools.

11. **Calendar:** Sierra Preparatory Academy will offer a trimester system in order to accommodate the features of the Liberal Arts philosophy and approach to education at the secondary school level. Sierra Preparatory Academy's calendar will include more than the required 180 days of school through a modified year-round schedule that would begin in mid-August and end in mid-June/late June. This schedule will also allow teachers to still participate in summer professional development opportunities.

Rationale for the selected approach for the target population, including research and/or experience

Sierra Preparatory Academy targets to serve students in grades 6th through 12th. Sierra Preparatory Academy targets all students in the 6th through 12th grade span in the 10-mile radius from a planned location at the intersection of Ellsworth and Brown Rd. in Mesa. Our study of the target population shows that it is currently academically underserved; there is no true liberal arts school to serve their needs and increase their academic achievement to levels that would allow them to apply and get accepted at leading colleges and universities. Several schools in Arizona and nationally, which serve similar target population – 6th through 12th grades and use the Liberal Arts program we are proposing for Sierra Preparatory Academy. Students in these schools are recognized for their consistent high academic achievements, while serving similar student population as the one, which Sierra Prep Academy targets to serve. This is a strong attestation that the liberal arts educational approach works for all students; it is time-tested, research-based and evidence-proven that it will increase student achievement in the target population, which Sierra Preparatory Academy will serve. Following is evidence for the proven record of success in educating students in those schools as evidenced by standardized test scores and other measures, and it will be equally successful in educating and meeting the needs of the target population. We are also presenting research and personal experience of the founder of Sierra Preparatory Academy in support of the effectiveness of the liberal arts approach in relation to the target population**:**

Tempe Preparatory Academy was founded in 1996 as a public charter school with the first liberal arts program in a public education setting in Arizona, based on the proven academic legacy of the Trinity Schools (a network of renowned private, liberal arts preparatory schools in the Midwest and East). The school requires a common and rigorous sequence of courses for all students; there are no electives (except some choice in foreign language study). Tempe Preparatory Academy serves a student population of 450 students in sixth through twelfth grades. Tempe Preparatory Academy leads the state's schools in performance:

- Tempe Prep Academy is fully accredited by the American Academy for Liberal Education (AALE) in Washington, D.C.
- Tempe Prep's students score near the highest in Arizona on standardized exams.
- The school was one of only three schools in the state to receive the "Excelling" rating from the Arizona Department of Education during the first year ratings were awarded.
- Since the inception of the AIMS test, Tempe Prep has ranked each year as one of the highest-achieving schools in the state among charters and traditional public schools.
- 100% of Tempe Prep's students pass the AIMS test, required for graduation
- It is currently ranked number 5 out of 380 "A" rated schools in Arizona for 2011-12 SY.[15]
- Tempe Prep was recognized as a Blue Ribbon School of Excellence by the US Department of Education in 2008, the highest award that any US school can receive.
- Academic Honors - Class of 2010:[16]
  - 5 National Merit Semi-Finalists
  - 5 National Merit Commended
  - 4 National Hispanic Scholars
- 5 Year Test Scores 2006-2010(table below):[17]

Test	Median Range	Median	Number Tested
SAT (CR+Math)	1180/1375	1280	204
ACT (Composite)	25/30	28	124

[15] http://www.azed.gov/blog/2011/05/12/top-school-district-ranking/
[16] Tempe Preparatory Academy, http://www.tempeprep.org
[17] Tempe Preparatory Academy, http://www.tempeprep.org The test scores in this table reflect the best scores, across multiple tests. For the SAT, the best Critical Reading and the best Math scores are added for an individual student. The Median Range reflects the middle 50% of test scores.

- College Attendance: An average of 95% of Tempe Prep's students enroll in colleges or universities after graduation: Tempe Prep's graduates have been accepted at leading colleges and universities including Barrett, The Honors College (Arizona State University), Bryn Mawr College, Cal Tech, Cornell, Carleton, Dartmouth, Catholic University of America, University of Dallas, University of Southern California, Embry-Riddle Aeronautical University, Catholic University of America, Harvey Mudd College, Miami University of Ohio, Miami University, Middlebury College, Hamilton College, Pomona College, Pepperdine University, Reed College, Scripps College, Swarthmore, Stanford, St. Mary's College (IN), U. C. Berkeley, UCLA, University of Chicago, Texas A.M., Santa Clara University, Dickinson College, Drury University, Elon University, Loyola Marymount University, the Air Force Academy, the Naval Academy, and the US Military Academy.

- **Great Hearts Academy** network of charter schools was established in 2004 in an effort to replicate the success of Tempe Preparatory Academy. The network currently has 16 schools serving over 4,000 students in K-12 grades in Metro Phoenix area. Great Hearts academies are proving that schools can do a superb job of educating students through a core, classical liberal arts curriculum. The Great Hearts curriculum requires a common and rigorous sequence of courses for all students; there are no electives (except some choice in foreign language study).
  - Since the establishment of the first academies in 2005, students at Great Hearts schools have scored near the highest in Arizona on standardized tests.
  - The network is ranked 11th among the 29 top-ranked "A" rated districts in Arizona for 2011-12 SY[18].
  - Great Hearts Academies: Class of 2013: Academic Achievements and Honors (table below)[19]

	Veritas Prep	Chandler Prep	Scottsdale Prep	Glendale Prep	Mesa Prep
Percent of Class Attending 4-Year College	92	85	96	90	94
Percent of Class Attending 2-Year College	8	10	4	3	0
Percent of Class Entering Military Service	--	<1	--	3	6
Percent of Class Admitted to "More or Most Selective" Colleges	59	56	69	66	65
Percent of Class Attending "More or Most Selective" Colleges	56	42	56	45	35
Percent of class attending ASU, UA, or NAU	21	49	53	34	47
Percent of Class Receiving Full or Partial Scholarships	79	80	96	83	94
Percent of Class Commended or Better by National Merit Foundation	13	12	9	3	6
Percent of Class Named National Merit Semifinalist	2	10	3	--	--
Percent of Class Named National Merit Finalist	--	1	6	--	--
SAT Average (Out of 2400 – CR+Math+Writing)	1831	1822	1883	1816	1818

  - College Attendance: An average of 91% of the 2013 graduating classes at Great Hearts Academy has matriculated to a four-year college. Great Heart's graduates have been accepted at leading colleges and universities including Barrett, The Honors College (Arizona State University), Ave

[18] http://www.azed.gov/blog/2011/05/12/top-school-district-ranking/ "A" grades were awarded to school districts and charter holders* that earned at least 140 of a possible 200 points using the Arizona Department of Education's new A-F School Accountability Letter Grade System. *In addition to receiving an "A" letter grade, charter holders had to meet the following criteria to qualify: Operate a minimum of three charter school sites and Enroll a minimum of 750 total students

[19] Great Hearts Quarterly Report, June 2013, retrieved from http://www.greatheartsaz.org/downloads/June%202013%20QR.pdf

Maria University, Barnard College, Baylor University, Brown University, Boston College, Boston University, Bradley University, Catholic University of America, Columbia University, Cornell College, Cornell University, DePaul University, DePauw University, Fordham University, Franciscan University of Steubenville, Hamilton College, Harvard University, Hillsdale College, Stanford University, MIT, Pomona College, Pepperdine University, Purdue University, University of Chicago, Rhodes College, St. John's College, University of California at Berkeley, University of California at Irvine, University of California at Los Angeles, University of Dallas , University of Portland, University of Southern California, University of Michigan, Tulane University, The Citadel, Wittenberg University, Worcester Polytechnic Institute, Texas A & M University.

- **Trinity Schools:** Tempe Prep and Great Hearts owe much of their success to the implementation of the award-winning curriculum developed by Trinity School, a private school, founded in 1981 in South Bend, Indiana with campuses in Minnesota and Virginia, serving approx. 450 students in 7th through 12th grades.
  - Trinity Schools have received national recognition for its quality academic core curriculum: its core-curriculum was awarded the Blue Ribbon Award by the US Department of Education in 1989, 1993 and 2002, the highest award that any US school can receive.
  - On average, SAT scores of Trinity School students are consistently 190 to 250 points above the national average, even though the curriculum gives them no specific preparation for the test.
  - Trinity School's SAT scores are regularly among the highest in Indiana.
  - 2012 SAT Averages (table below)[20]

2012 SAT Averages	Trinity School at Greenlawn	Indiana	US
Composite	1839	1470	1498
Critical Reading	627	493	496
Math	604	501	514
Writing	608	476	488

  - SAT Averages for the past five graduating classes (2008-2012) are:[21]

Trinity School at Greenlawn	2008-2012 SAT Averages
Critical Reading	631
Math	611
Writing	622

  - Awards over the past five years:
    - 8 National Merit Semifinalists
    - 16 National Merit commended scholars
    - 4 National Achievement referred scholars
    - 5 Lilly Endowment scholars
  - College Attendance: 99% of the last five graduating classes have matriculated to a four-year college. Some Colleges Which Have Accepted Trinity Schools Students: American University of Paris, Amherst College, Arizona State University, Ave Maria University, Barnard College, Baylor University, Bellarmine University, Benedictine College, Boston College, Boston University, Bradley University, Bryn Mawr College, Butler University, Calvin College, Carnegie-Mellon, Carroll College (WI and MT), Carthage College, Catholic University of America, Christendom College, College of William and Mary, Concordia College, Cornell University, Creighton University, DePaul University, DePauw University, Duke University, Emory University, Fordham University, Franciscan University (OH), Georgetown University, Grinnell College, Hillsdale College, Hofstra University, Illinois Wesleyan University, Indiana University,

[20] http://www.trinityschools.org/greenlawn/about/scores/
[21] Ibid.

Johns Hopkins University, Kansas State University, Kenyon College, Loyola University (Chicago), Macalester College, Marquette University, Miami University of Ohio, Michigan State University, New York University, Northwestern University, Pennsylvania State University, Princeton University, Purdue University, Randolph-Macon College, Reed College, Rensselaer Polytechnic Institute, Rice University, Rose-Hulman Institute of Technology, Southern Catholic College, Saint Mary's College (IN), St. Olaf College, St. John's College (MD), St. John's College (NM), St. Louis University, Stanford University, State University of New York at Buffalo, Tulane University, U.S. Naval Academy, University of Chicago, University of Dallas, University of Dayton, University of Michigan, University of Minnesota, University of Notre Dame, University of Portland, University of Southern California, University of Washington, Valparaiso University, Washington University (St. Louis), Wabash College, Webster College, Wellesley College, Wittenberg University, Worcester Polytechnic, Xavier University, Yale University.

Research

In addition to the successful experience of public and private schools with a classic liberal arts curriculum, Sierra Preparatory Academy has incorporated into its structure several key features that have been proven to be successful in education and to improve student achievement in a diverse student groups. The decision to implement a rigorous core curriculum that includes Humane Letters, Great Books and Socratic seminars, Latin, Greek and Fine Arts are all strategies that have been carefully researched and proven to work with the targeted student population. Based on those findings, we are confident that Sierra Preparatory Academy serves the needs of the students in the target area by offering a rich education suited for any young person with curiosity and a desire to know. A summary of the research is presented below:

The Core Curriculum:

1. **ACT Research:**[22]

ACT recommends a high-school core curriculum consisting of four years of English and three years each of mathematics, science, and social studies. ACT has found that:

- Students who take at least this core achieve higher scores on the ACT than those who do not regardless of the students' gender, family income, and racial / ethnic background
- Taking upper-level courses beyond this core improves the achievement of all students, again regardless of gender, family income, and racial / ethnic background.

ACT researchers also controlled their analysis to determine whether taking upper-level courses only benefited high-achieving students. They studied the scores of students in various grade levels with a broad range of grade-point averages who also took advanced mathematics and / or science courses (trigonometry, calculus, chemistry, and physics, for example). ACT concluded that:

- Even when student's achievement levels are taken into account, all students gain from taking more rigorous courses.
- Cumulatively, the potential score increase for those who take trigonometry, calculus, and at least one other advanced mathematics course beyond core is 5.6 score points, regardless of prior achievement.
- Taking chemistry and physics can increase student scores on the ACT Science test by as much as 2.7 points over the scores of students taking only biology, regardless of prior achievement.

2. **Research on Paideia Schools**:

The Paideia philosophy, as implemented in Paideia schools, which have liberal arts core program delivered through the Socratic seminar method, has proven itself through data-based research as a successful, innovative educational model with long-lasting results. Among the general outcomes of research in Paideia schools or systems across the country is the growth in academic test scores, advancement in student social skills, increased student security, increased parental awareness and involvement in school programs, and fundamental shifts in understanding of teaching and learning. These

[22] ACT, Inc. "Benefits of a High School Core Curriculum", 2006. http://www.act.org/research/policymakers/pdf/core_curriculum.pdf

gains have been documented in grades K-12 across all subject areas and among students of diversified backgrounds.

- The U.S. Department of Education's "Continuum of Evidence of Effectiveness"[23] has been expanded to include the Paideia philosophy and instructional methodology as evidence of student intellectual and social growth beyond that represented by standardized test data. This movement is significant because recent evaluations of the Paideia Program have shown important gains in school culture, student engagement, and self-efficacy as well as growth in achievement test scores.
- Studies on school systems in Chicago, Cincinnati, and Chattanooga observed that Paideia instructional methods had a direct impact on the climate of individual classrooms and entire schools, increasing both student and teacher interest in academic study and democratic self-governance.[24]
- Since the early 1990s, research data have demonstrated dramatic gains in writing test scores in North Carolina schools that use Paideia teaching practices. Similar results have been shown more recently in schools in New York, Wisconsin, Florida, and multiple cities in North Carolina, even in schools facing what might seem to be insurmountable socio-economic odds.[25]
- The Paideia Philosophy and instructional methods have proven successful in closing the achievement gap between poor and minority students and their affluent and white counterparts, as demonstrated in a study of eight schools in Colorado that managed to close that achievement gap.[26]

Latin in the Core Curriculum

- The study of Latin provides greater exposure to classical culture, ancient history and literature.
- Learning an inflected language increases memorization skills and attention to detail;
- Learning a different approach to grammar aids in the understanding and proper usage of English grammar;
- Latin enriches vocabulary and increases understanding of word derivations;
- The study of Latin is relevant to many disciplines, the vocabulary of politics and government, as well as the technical language of the sciences and students who take it gain quantifiable advantages over those who do not.

Research Basis:[27]

- Researchers have established that in the elementary grades, studying Latin can move low-level readers to much higher levels of reading and comprehension (Mavrogenes, 1977; Sussman, 1978).
- Latin improves English skills and the learning of foreign languages (Macro, 1981; Sparks, Ganschow, Fluharty and Little, 1995).
- High school students who took Latin scored consistently higher on vocabulary than those who had not studied a foreign language (Mavrogenes, 1977).
- Latin students demonstrated higher math achievement (Sussman, 1978; Masciantonio, 1982).
- On the SAT, Latin students had higher average verbal and math scores than other students (LaFleur, 1981; Cooper, 1987; Sparks et al., 1996).

Fine Arts in the Core Curriculum

Numerous studies (Champions of Change, 1999)[28] have shown the connection between participation in fine arts and success in academics. A large body of research shows that studying the fine arts prepares

[23] The Continuum of Evidence of Effectiveness. US Department of Education (October, 1999)

[24] Wheelock, A. (1994). Chattanooga's Paideia Schools: A Single Track for All—And It's Working. Journal of Negro Education, Vol. 63, No. 1, 77-91.

[25] Robinson, E. (2008). Evaluation of Academic Achievement at Nine Paideia Schools. Baylor University. Unpublished report available from the National Paideia Center.

[26] Ross, S., Wang, L., Sanders, W., Wright, S., and Stringfield, S. (2000). Fourth-Year Achievement Results on the Tennessee Value-Added Assessment System for Restructuring Schools in Memphis. Memphis,TN: University of Memphis, Center for Research in Educational Policy.

[27] Cited research summary from a research paper entitled "Efficacy of Latin Studies in the Information Age" by Alice K. DeVane (1997), Paper submitted for PSY 702: Educational Psychology. Valdosta, GA: Valdosta State University, http://teach.valdosta.edu/whuitt/files/latin.html

students to understand and appreciate works of art, improves communication skills, and stimulates skills that lead to higher levels of achievement in core academic subjects. Examples of findings discussed in the study:

- Students involved in performing instrumental music and drama increased their achievement in every academic measure vs. arts-poor students (Catterall, 1999).
- Arts-rich programs in elementary and middle grades improved the thinking and social skills needed for overall academic success (Burton, Horowitz & Abeles, 1999).
- Involving high school students in studying and performing Shakespeare raised students to high levels of literacy and developed higher order thinking skills (Seidel et al., 1999).
- The arts improved achievement for struggling learners and challenged gifted students (Catterall, 1999; Oreck, Baum & McCartney, 1999).

Great Books

- National research, presented by the Great Books Foundation strongly supports the use of the Great Books reading program for increased student achievement, thus addressing the needs of a variety of learners in the elementary and middle school grades (www.greatbooks.org).
- According to the National Great Books Curriculum Academic Community, research provides clear evidence of the damage done to underserved and minority students by being undereducated as a result of watered down curricula and low expectations. Great Books reverses these two conditions by offering students a focused core curriculum of challenging books of universal and lasting importance. Great Books faculty argue that assigning more complex materials will encourage students to improve their vocabularies, critical thinking skills, cultural literacy, and reading skills (www.nationalgreatbooks.com)

Socratic Method:[29]

Sierra Prep Academy believes this to be the one of most effective methods of teaching, since through this approach the students are primarily responsible for their own learning. Such responsibility serves to both increase student interest in the topics studied and promote long-term retention of the material covered.

- Qualitative and anecdotal evidence attests to the effectiveness of Socratic seminars in engaging students in learning and fostering higher-order thinking and social skills. Seminars can be adapted to suit different age groups and content areas or to target specific skills (Metzger, 1998; Polite & Adams, 1997; Tanner & Casados, 1998; Tredway, 1995);[30]
- Educators drawing on various research techniques (including surveys and protocol analysis) as well as personal observation, report that students' participation in Socratic seminars over time leads to increases in:
    - reading comprehension and problem solving skills; Teachers do this by modeling, demonstrating, and explaining thought processes and strategies to assist in comprehension (National Reading Panel, 2000);[31]
    - connections between seminar material and other content areas and real life;
    - communication skills, both listening and speaking;
    - motivation and engagement;
    - empathy and respect toward others (Metzger, 1998; Tanner & Casados, 1998; Tredway, 1995).[32]

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[28] *Champions of Change*, 1999 - Report funded by The GE Fund and The John D. and Catherine T. Macarthur Foundation under the auspices of The Arts Education Partnership and The President's Committee on the Arts and the Humanities. The report is a compilation of research on the effects of arts education on student achievement.

[29] Cited research in the section below found at http://ims.ode.state.oh.us/ode/ims/rrt/research/Content/socratic_seminar_what_we_know.asp

[30] Ibid.

[31] The National Reading Panel (2000). *Teaching Children to Read: An Evidence-Based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction*

- Socratic Seminars are beneficial in the classroom, to the whole school environment, and as a means to develop caring and critically thinking citizens – all part of the 21st century skills. The metacognitive nature of the Socratic Method encourages all students to think about how to reason and how to connect their experiences to their learning.

Experience:

Mr. Edward Denny, the founder of Sierra Preparatory Academy has over 20 years of experience, including teaching at Tempe Preparatory Academy and Great Hears Academies, teaching students similar to those which Sierra Preparatory Academy targets to serve. As a faculty member at Tempe Preparatory Academy (TPA), the leading charter school in liberal arts education in Arizona, he has had a significant role in shaping and influencing the Humanities studies there as the Humanities Department Chair and Director of the Senior Thesis program. Edward Denny developed TPA's curricula for Chemistry, U.S. Humane Letters, and Senior Thesis as well as the TPA Style Guide to improve the writing curriculum, and a documentary text to improve the Humane Letters American history curriculum. At present, Edward Denny is an instructor for 9th grade Humane Letters, American Literature and History, at Great Hearts' Chandler Preparatory Academy as well as a Curriculum Consultant assisting in the training and evaluation of chemistry teachers at the Great Hearts Academies network of liberal arts academies.

[32] Cited research found at http://ims.ode.state.oh.us/ode/ims/rrt/research/Content/socratic_seminar_what_we_know.asp