

Sahuaro High School: First Choice Technology Focus

The vision for Tucson Unified School District specifically states that every student is able to “compete and to succeed in a global economy.” This is in accordance with the mission of Sahuaro High School. It is universally recognized that to be competitive in a global economy, students and workers of the future will need not just technical skills, but technical mastery.

SAHUARO’S MISSION STATEMENT

Believing every child has a right to an education, Sahuaro High School is committed to providing an educationally sound environment which is safe and well maintained. This environment is designed to motivate, teach and encourage all students to attain the highest levels of academic proficiency, technological skill, mental and physical well-being, social adaptability and awareness of diverse cultures in accordance with their abilities and interest.

TECHNOLOGY OBJECTIVES

- To provide ALL students with access to the technology needed to allow them to compete in the 21st century marketplace.
- To provide quality instruction to the help students prepare for their future career choices, as well as their post-secondary choices, such as college or technical school options.
- To provide students with opportunities to work collaboratively, engage in higher-level thinking, and develop analytical skills with real-world applications.

SAHUARO HIGH SCHOOL FACTS

- Sahuaro High School is an excelling school of approximately 1700 students.
- Approximately 80% of Sahuaro’s graduating seniors go on to further their post-secondary education at either a two- or four-year institution.
- Sahuaro is a school of diversity in ethnicity, socio-economic status, student interests, and work force potential and choices.
- Approximately 34% of our students are minority students.
- Sahuaro has achieved the Excelling school label for the past seven years in a row.
- The drop-out rate at Sahuaro is 0.26%.
- The attendance rate is 94.76%.
- We have the third-highest rate of students mastering the AIMS test in the district, with more than 80% of our students passing the reading and writing AIMS tests the first time it is taken.
- On the AIMS math test, 75% of our students show mastery the first time, compared to the district pass rate of 56%.
- Last year, approximately \$3,800,000.00 was awarded to Sahuaro students in scholarship money.

LOCATION

The computers will be located in teacher classrooms, beginning with the 200 building (housing primarily the English and Social Studies departments), then moving to the 100 building (Science and Modern Languages), and the 300 building, (Math and Special Education).

STUDENT ACADEMIC PERFORMANCE AND TECHNOLOGY: RESEARCH FINDINGS

In 2000, the Gates Foundation submitted a report on computers and educationⁱ. In short, the research found that the use of computers in schools impacts students in virtually every way.

- Computer use enhances traditional instruction and improves basic skills;
- Using computers results in improved academic achievement over the use of traditional instruction alone;
- Student retention of material is increased with the use of computer instruction;

- Students enjoy learning more when computer and technology use at school is increased;
- At-risk students benefit tremendously from the use of computers in school.

This is not new information for educators, and additional research proves that enhanced learning with better computers and supportive technology improves education for students on all levels. Technology use is the single-most important factor for encouraging and developing 21st century skills in today's students. Student understanding and retention of information improves, academic performance improves, higher order thinking skills and problem-solving abilities are developed, skills necessary for a 21st century workplace are enhanced when combined with regular involvement with computers and technology at school, and traditional skills such as reading, writing and math improve when the school environment is technology-rich.

One problem facing today's youth is the digital divide.ⁱⁱ Compared with their white counterparts, minority students are less likely to have regular computer and internet access at schools. This reduced access results in reduced use and mastery of computer skills. Further studiesⁱⁱⁱ show that educational equity would improve if the digital divide was addressed. The logical outcome then, if students were given greater access to computers and technology at school, would be greater student academic success and a reduction in the achievement gap.

Studies also indicate that at-risk students benefit greatly from enhanced computer use at school because such technology use improves their attitudes toward learning and education.^{iv} Rather than lose students to charter schools that focus on distance learning, online education, and computer classes, Sahuaro and TUSD would benefit by being able to meet the needs of those at-risk students by offering more technology and computer-based learning.

Student achievement, for all students, would increase with improved computer and technology access at Sahuaro. The Center for Applied Research in Education (CARET) has done numerous studies about the use of technology and computers at school. Those studies have proven the following:

- Student achievement on standardized test scores rose when classrooms were equipped with 3-4 computers, a printer, and access to the internet.^v
- Use of multimedia (such as PowerPoint presentations, videos, etc.) in the classroom improved the long-term understanding and retention of material presented in the classroom. Students not exposed to multimedia in the classroom remembered virtually nothing of the lessons that they had been taught one year later. Students exposed to multimedia “displayed elaborate concepts and ideas that they had extended to other areas.”^{vi}
- SAT scores are improved at schools that integrate technology with curriculum that addresses the standards, with an increase of 94 points on the SAT scores in students without integrated technology.^{vii}
- Student achievement was increased through the use of digital video clips in the classroom.^{viii}
- Technology use in the classroom improved student collaboration, an essential 21st century skill.^{ix}
- Higher-order thinking skills (writing, math, problem-solving, teaching others) and self-confidence and self-esteem improved in students with home and school computer access, compared with students without such access to computers and technology.^x
- Skills necessary for success in the 21st century workplace (developing hypermedia skills, taking notes, research, collaboration, designing presentations) were better developed when technology use is encouraged and enhanced.^{xi}

EQUIPMENT NEEDS:

The following items are needed to upgrade the computer system, improve computer access, improve and modernize the networking infrastructure, and bring 21st century skills into each and every classroom:

Year 1 (200 Building)

ITEM	VENDOR	#	UNIT	TOTAL
Wireless Access Point (12 port managed switch)	TUSD	2	\$1,300.00	\$2,600.00
Cabling per room	TUSD	21	\$1,500.00	\$31,500.00
Mini Network Cabinet	TUSD	21	\$300.00	\$6,300.00
Access Point Back to Comm Closet	TUSD	21	\$750.00	\$15,750.00
Classroom switch back to Comm Closet	TUSD	21	\$750.00	\$15,750.00
24 port managed switch to support classroom switch and Access Point.	TUSD	4	\$4,700.00	\$18,800.00
<u>Computer Workstation - Instructional</u> HP dc7900 SFF, Core 2 Duo E8400 / 2.66 GHz - 2GB memory -160GB Hard drive- DVDRW (R/ DL) / DVD-RAM - Gigabit Ethernet , 3YR Warranty, Windows XP Pro. AR380US#ABA	TUSD	126	\$649.00	\$81,774.00
Instructional Image # ZX854AV	TUSD	126	\$12.00	\$1,512.00
<u>Monitor</u> HP LA1951G Flat panel display - TFT - 19" - 1280 x 1024/ 75Hz - 250 cd/m2 - 1000:1 - 5 ms - 0.294 mm - DVI-D, VGA - silver EM890AA#ABA	TUSD	126	\$205.00	\$25,830.00
Sub Total				\$199,816.00
Tax				\$16,185.00
Total				\$216,001.00

Year 2 (300 Building)

ITEM	VENDOR	#	UNIT	TOTAL
Wireless Access Point (12 port managed switch)	TUSD	2	\$1,300.00	\$2,600.00
Cabling per room	TUSD	25	\$1500.00	\$37,500.00
Mini Network Cabinet	TUSD	25	\$300.00	\$7,500.00
Access Point Back to Comm Closet	TUSD	25	\$750.00	\$18,750.00
Classroom switch back to Comm Closet	TUSD	25	\$750.00	\$18,750.00
24 port managed switch to support classroom switch and Access Point.	TUSD	4	\$4,700.00	\$18,800.00
<u>Computer Workstation - Instructional</u> HP dc7900 SFF, Core 2 Duo E8400 / 2.66 GHz - 2GB memory -160GB Hard drive- DVDRW (R/ DL) / DVD-RAM - Gigabit Ethernet , 3YR Warranty, Windows XP Pro. AR380US#ABA	TUSD	150	\$649.00	\$97,350.00
Instructional Image # ZX854AV	TUSD	150	\$12.00	\$1,800.00
<u>Monitor</u> HP LA1951G Flat panel display - TFT - 19" - 1280 x 1024/ 75Hz - 250 cd/m2 - 1000:1 - 5 ms - 0.294 mm - DVI-D, VGA -	TUSD	150	\$205.00	\$30,750.00

silver EM890AA#ABA				
	Sub Total			\$233,800.00
	Tax			\$18,938.00
	Total			\$252,738.00

Year 3 (100 Building)

ITEM	VENDOR	#	UNIT	TOTAL
Wireless Access Point (12 port managed switch)	TUSD	2	\$1,300.00	\$2,600.00
Cabling per room	TUSD	23	\$1,500.00	\$34,500.00
Mini Network Cabinet	TUSD	23	\$300.00	\$6,900.00
Access Point Back to Comm Closet	TUSD	23	\$750.00	\$17,250.00
Classroom switch back to Comm Closet	TUSD	23	\$750.00	\$17,250.00
24 port managed switch to support classroom switch and Access Point.	TUSD	4	\$4,700.00	\$18,800.00
<u>Computer Workstation - Instructional</u> HP dc7900 SFF, Core 2 Duo E8400 / 2.66 GHz - 2GB memory -160GB Hard drive- DVDRW (R/ DL) / DVD-RAM - Gigabit Ethernet , 3YR Warranty, Windows XP Pro. AR380US#ABA	TUSD	138	\$649.00	\$89,562.00
Instructional Image # ZX854AV	TUSD	138	\$12.00	\$1,656.00
<u>Monitor</u> HP LA1951G Flat panel display - TFT - 19" - 1280 x 1024/ 75Hz - 250 cd/m2 - 1000:1 - 5 ms - 0.294 mm - DVI-D, VGA - silver EM890AA#ABA	TUSD	138	\$205.00	\$28,290.00
	Sub Total			\$216,808.00
	Tax			\$17,562.00
	Total			\$234,470.00

High School Principal Signature _____ Date _____

Director of Technology Services _____ Date _____

*All Technology needs & estimated costs were discussed with John Bratcher of IT

Director of Engineering, Facilities & Planning _____ Date _____

ⁱ Fouts, Jeffrey T., "Research on Computers and Education: Past, Present and Future." Prepared for the Bill and Melinda Gates Foundation, February, 2000.

ⁱⁱ Trotter, Andrew. "Minorities Still Face Digital Divide." *Education Week* 26.3 (2006): 14. *Education Research Complete*. EBSCO. Web. 18 Mar. 2010.

ⁱⁱⁱ Mason, Christine Y., and Richard Dodds. "Bridging the Digital Divide." *Principal* 84.4 (2005): 24-30. *Education Research Complete*. EBSCO. Web. 18 Mar. 2010.

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- ^{iv} Hancock, Vicki E. "The at-risk student." *Educational Leadership* 50.4 (1992): 84. *Education Research Complete*. EBSCO. Web. 18 Mar. 2010.
- ^v Mann, D., Shakeshaft, C., Becker, J., & Kottkamp, R. (1998). *West Virginia story: Achievement gains from a statewide comprehensive instructional technology program*. Santa Monica, CA: Milken Exchange on Educational Technology.
- ^{vi} Lehrer, R. (1993). Authors of knowledge: Patterns of hypermedia design. In S. P. Lajoie & S. J. Derry (Eds.), *Computers as cognitive tools*. Hillsdale, NJ: Lawrence Erlbaum.
- ^{vii} Bain, A., & Ross, K. (2000). School reengineering and SAT-1 performance: A case study. *International Journal of Education Reform*, 9(2), 148-153. <http://caret.iste.org/index.cfm?fuseaction=evidence&answerID=1>
- ^{viii} Boster, F. J., Meyer, G. S., Roberto, A. J., Lindsey, L., Smith, R., Strom, R., & Inge, C. C. (2004, September). *A report on the effect of the unitedstreaming(TM) application on educational performance: The 2004 Los Angeles Unified School District mathematics evaluation*. Cometrika, Inc., Baseline Research, LLC, & Longwood University. Retrieved November 28, 2005 from: <http://unitedlearning.com/streaming/evaluation.cfm?id=315>.
[\[go to CARET review\]](#)
- ^{ix} Scardamalia, M. & Bereiter, C. (1996). Computer support for knowledge-building communities. In T. Kotchmann (Ed.), *CSCL: Theory and practice of an emerging paradigm*. Mahwah, NJ: Lawrence Erlbaum Associates.
<http://caret.iste.org/index.cfm?fuseaction=evidence&answerID=2>
- ^x Coley, R., Cradler, J. & Engel, P. (1997). *Computers and classrooms: The status of technology in U.S. schools*. Princeton, NJ: Educational Testing Service, Policy Information Center, 37. <http://caret.iste.org/index.cfm?fuseaction=evidence&answerID=7>
- ^{xi} Lehrer, R., Erickson, J., & Connell, T. (1994). Learning by designing hypermedia documents. *Computers in Schools*, 10(1-2), 227-254. <http://caret.iste.org/index.cfm?fuseaction=evidence&answerID=9>