

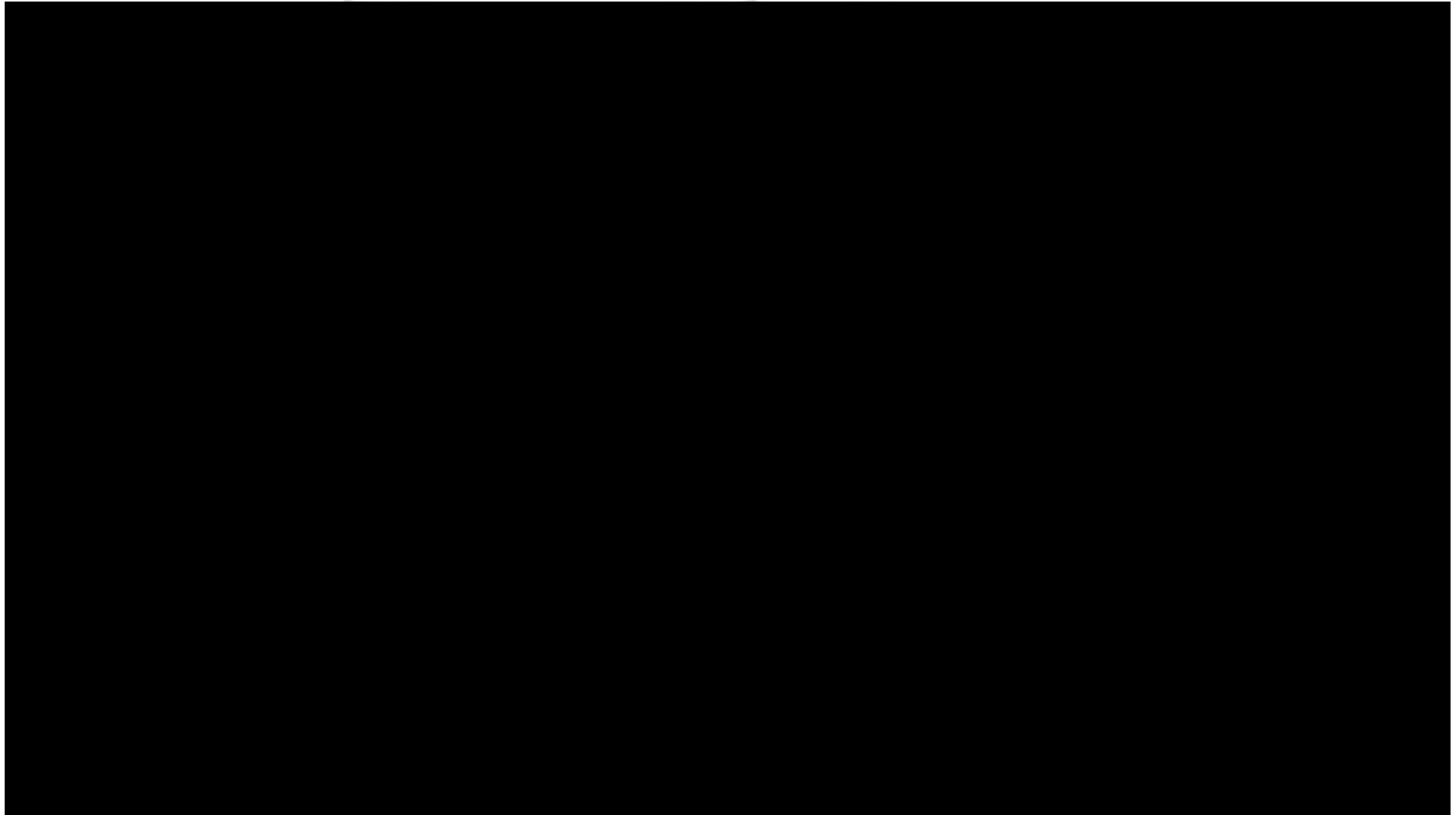
STEM School Design

DSST Public Schools

About DSST Public Schools

- ◆ DSST Public Schools creates and manages STEM charter schools serving a diverse student population with the goal of sending 100% of its graduates to college
- ◆ DSST Public Schools are free, open- enrollment public schools serving middle and high school students.
- ◆ Through DSST Public Schools Vision 2020 Growth Plan, DSST will open at least 1 additional 6-12 campuses with 4 schools serving 4,300 students (12% of DPS 6-12)

DSST: At a Glance



Accomplishing our Initial Vision

- ◆ DSST has delivered extraordinary results in both student growth and achievement
- ◆ **100%** four-year college acceptance for five years in a row
- ◆ 47% of our graduates are choosing STEM fields of study in college

DSST Vision: DPS becomes the leading Urban Public School District in the Nation



#1 Student Achievement Growth



- **#1 high school student growth in Colorado over the last three years**
- **GVR & Stapleton are the top performing (growth and status) Middle School and High Schools in DPS**



College Remediation Rate:
11% DSST, 59% DPS, State 32%

Why STEM?

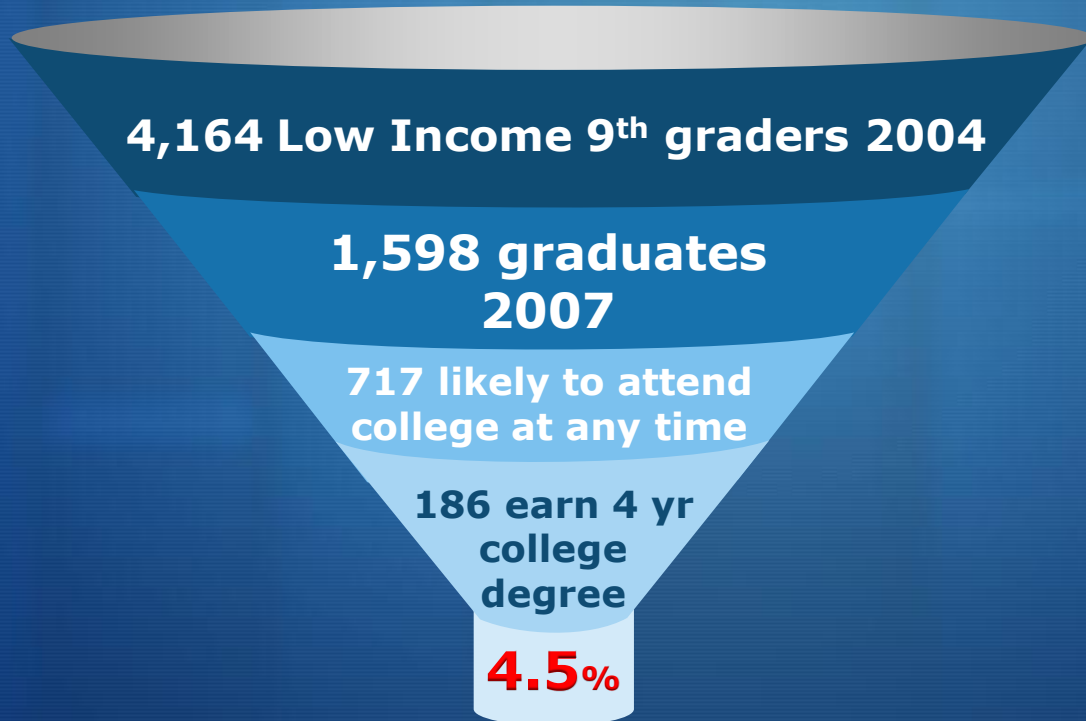


Denver Public Schools Graduation Funnel: Low Income

4,164 Low Income 9th Graders in DPS in 2004.

186 or only 4.5%

are likely to earn a four year college degree

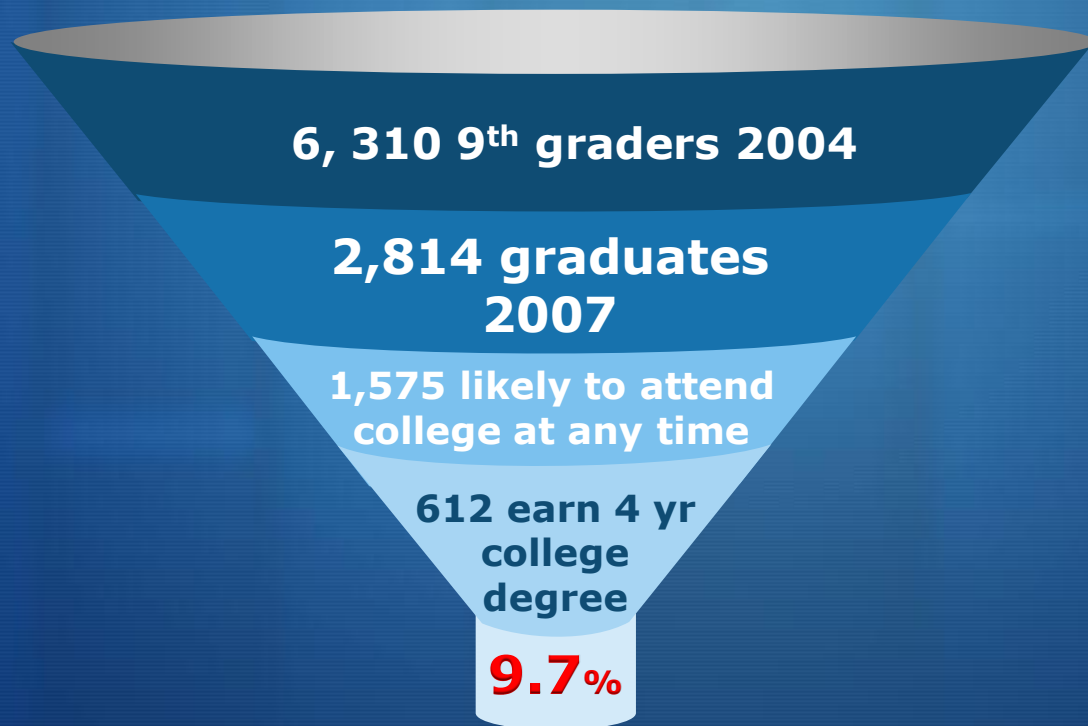


Denver Public Schools Graduation Funnel

6,310 9th Graders in Denver Public Schools in 2004.

612 or only 9.7%

are likely to earn a four year college degree



....Is
STEM



DSST Graduation Funnel:

625 9th Graders in DSST in 2016.

400 or 64%

are likely to earn a four year college degree



625 9th graders 2016

500 graduates 2020

**500 likely to attend
college at any time**

400 earn 4 yr college degree

64%

Why STEM?

- ◆ STEM traditionally reserved for the selected few.
- ◆ Level of math completed in HS is the highest correlated factor with college success
- ◆ For underserved low income students, provides the highest paid career prospects.
- ◆ Prepare the next generation of entrepreneurs and innovators to lead our country.
- ◆ Stem needs a diverse perspective!

DSST: STEM Program

- ◆ DSST Core Design Elements
 - ◆ **School Culture**
 - ◆ Heavy Skill Focus – leads to Rigorous Application
 - ◆ Core liberal arts curriculum
 - ◆ STEM curriculum program
 - ◆ STEM experiences
 - ◆ One-to-One Technology Program

STEM Core Program

- ◆ STEM Curriculum
 - ◆ Pre-calculus math finish
 - ◆ Physics First science sequence
 - ◆ Five and half years of science
 - ◆ Coupled Senior science classes
 - ◆ Support Classes
 - ◆ 8th, 9th and 12th Grade Engineering Courses
 - ◆ 10th Grade Big History Course















STEM Core Program

- ◆ STEM Experiences
 - ◆ Elective courses
 - ◆ Internship Program
 - ◆ Summer Programs
 - ◆ Senior Project

STEM Core Program: Internships

◆ Internship Overview

- ◆ 10 week experiences – two afternoons per week
- ◆ Laboratories, engineering firms, architecture firms, museums, zoo etc
- ◆ Real world application
- ◆ Self discovery

◆ Success Factors

- ◆ Rigorous core curriculum
- ◆ Diversity and quality of internship partners
- ◆ Strong school culture
- ◆ Well articulated program components

productive

internships



program

Professional Experience

STEM Curriculum

21st Century Skills

snapshot

communicationinnovation

collaborationcreativity

21st

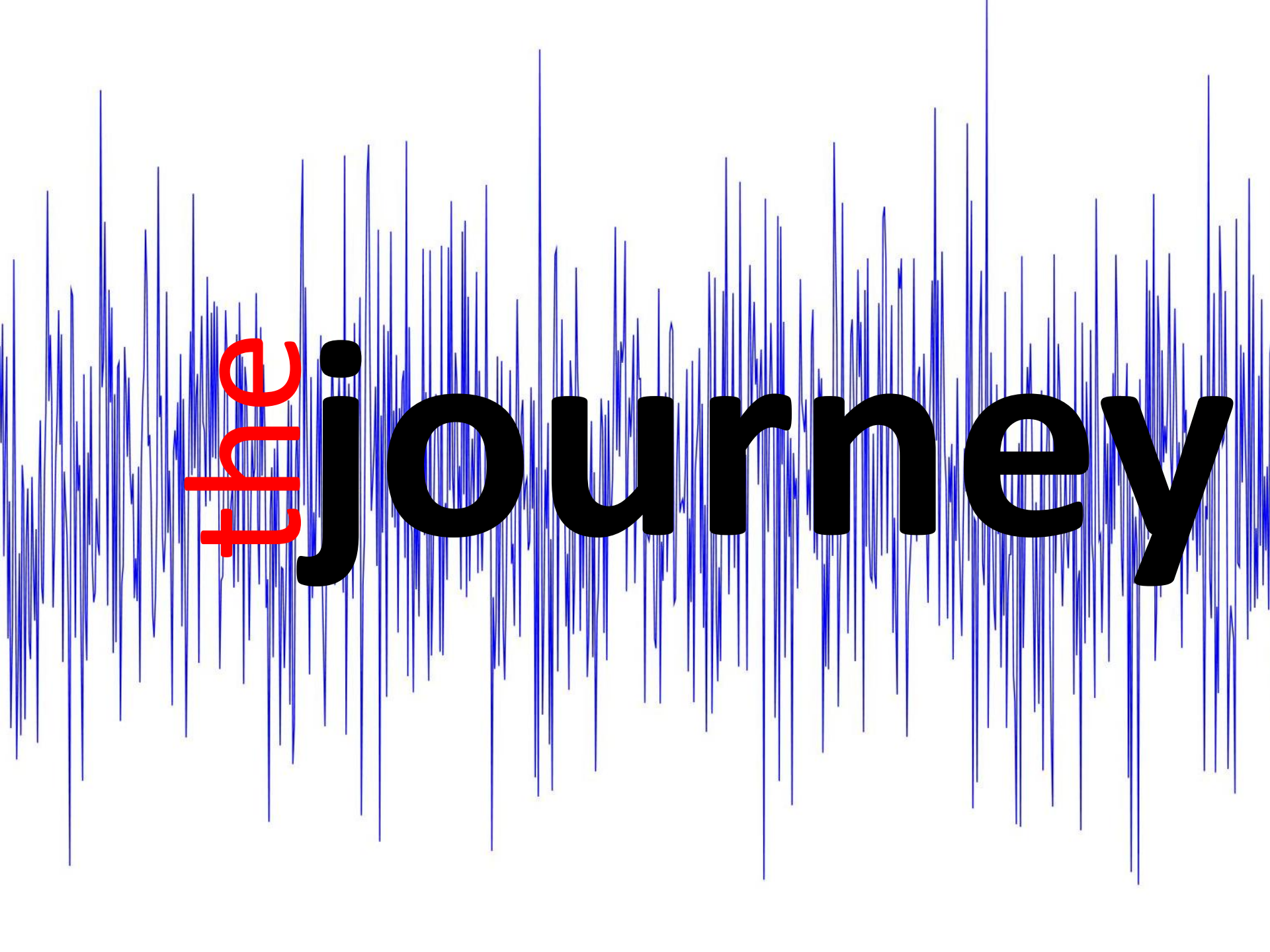
problemsolving

criticalthinking

selective
partnerships

MC²

North Star
Lockheed Martin



the **journey**

placements

CU Health Science Center
Denver Museum of N&S
Denver Zoo

STEM Core Program: Senior Projects

- ◆ Senior Project Overview
 - ◆ A capstone project
 - ◆ Topic of students choice
 - ◆ Work Product, Senior Thesis, Presentation to Panel
 - ◆ Solar cars, cell research, guitar building, etc.
 - ◆ Graduation requirement
- ◆ Success Factors
 - ◆ Strong internship program
 - ◆ Strong core curriculum
 - ◆ Structured project management program
 - ◆ Strong student interest



CITIZENS of the world



DESIGN **YOUR** OWN

PATH

TO CREATE CHANGE

DESIRE

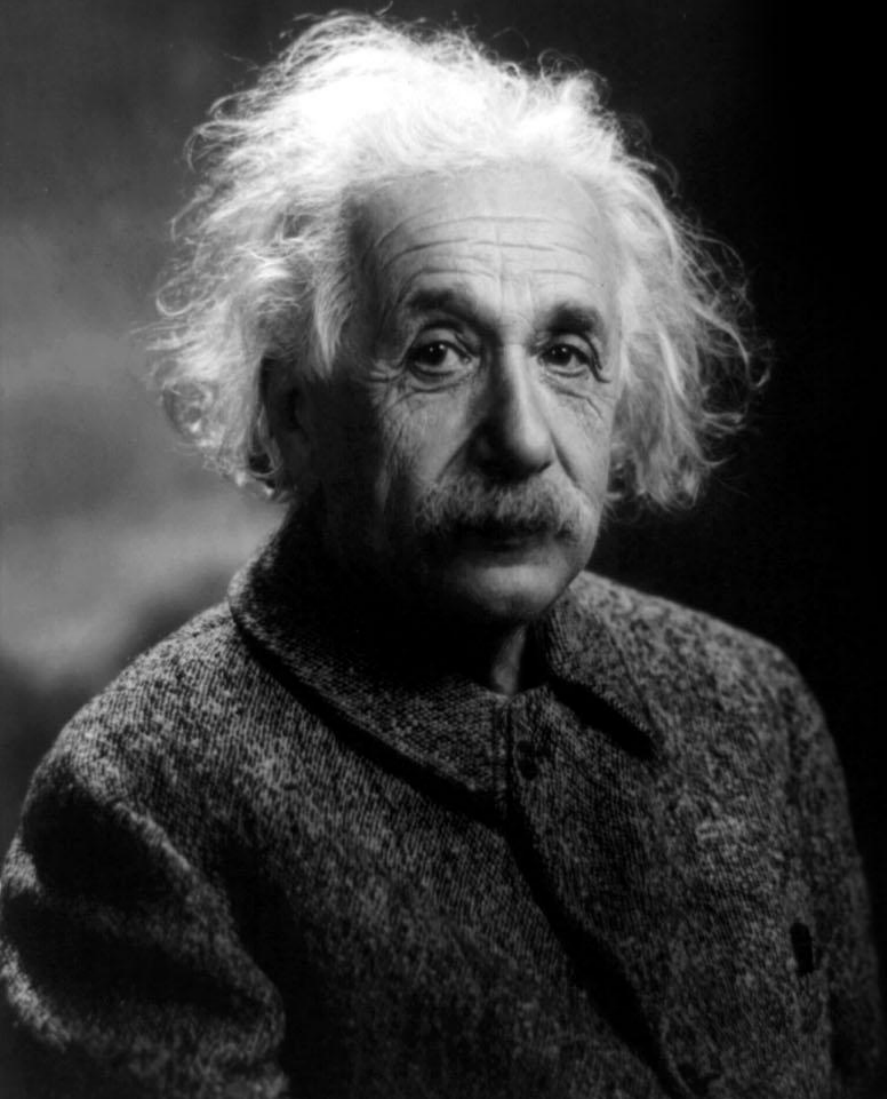




DESIGN

creativity as an experience, not just a tool

THINK DIFFERENT



*“Try not to become a man of success
but rather to become a man of value.”*



The T in STEM

How DSST uses technology to collect,
analyze, and implement data to
transform instruction

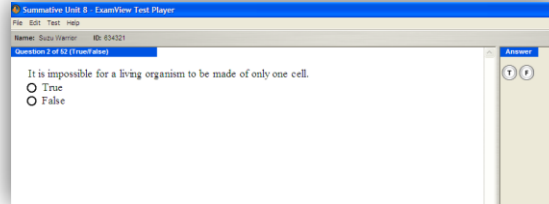


Does Technology Improve Student Achievement?

YES!!!

- ◆ Efficiently accelerates the instructional strategies that high performing charters networks care most about.
 - ◆ Drives daily data into the hands of students and teachers
 - ◆ Accelerates skills mastery through individualized, differentiated remediation – Flipped Classroom...
 - ◆ Prepares students for college

Data Feedback Loop



Assessments are given electronically and grades are generated instantly

Denver School of Science and Technology			
Lesson Plan			
Teacher(s):	Liu	Grade:	6
Course:	6th Grade Tech		
Tuesday			
Standards:			
Exposure (E)			
Mastery (M)	T21.3 Name and install various peripherals used with a personal computer		
Spiral (S)			
Vocabulary			
Assessment of Mastery	Students will identify and label all the parts of a computer using research from the internet		
Classroom Activities			
Do Now	Do Now – Mad Minute – Hardware Parts		
Learning Activities	<input type="checkbox"/> Overview – Hardware Specs (10) <input type="checkbox"/> Independent Practice – Checking hardware on local computers (20) <input type="checkbox"/> Mastery Check – Hardware Specs Handout (10) <input type="checkbox"/> Save Clean Up (5)		

Standards mastery is used intentionally in planning for the next lesson

First name	Last name	ID	S2.5	S6.1	S48.1	S48.7	S6.1a	S6.3	S48.4	S48.3	S48.3b	S48.6	S6.1b	S1.3	S48.5	S4.1
Mean number of items			2	2	4	4	2	5	4	5	2	5	1	5	5	
Percent of students mastered			44	66	70	71	71	73	73	76	79	80	82	83	83	
Average for this report			72	81	80	70	77	74	76	84	85	84	83	83	85	
504518	36.818	100	50	0	50	0	0	25	40	0	20	0	70	20	0	
572049	46.682	50	100	50	25	50	60	25	60	50	0	12	15	60	5	
497893	53.045	100	50	25	50	0	40	50	60	50	60	12	40	80		
552335	57.045	50	50	43	25	37	66	75	60	0	60	50	80	60	5	
567484	58.136	50	50	37	50	62	40	50	40	50	40	25	45	80	0	
580638	58.955	50	50	62	50	50	20	75	40	0	60	25	45	60	0	
558969	62.091	100	0	87	25	87	0	75	60	100	20	62	80	60	0	
723866	63.227	50	100	56	25	0	60	50	80	50	80	75	25	60	0	
570239	69.409	50	100	68	75	62	40	100	20	50	40	62	100	100	0	
655391	70.636	50	0	12	75	75	40	75	100	100	80	87	50	80	0	
557594	73.591	100	50	37	25	62	80	25	60	100	60	75	100	100	2	
596506	75.636	50	100	62	50	50	80	25	60	50	80	62	100	80	2	
558652	77.364	50	50	75	75	25	80	75	80	100	40	87	80	60	10	
561399	77.727	50	50	75	75	75	80	75	40	100	80	75	80	80	10	
572247	77.955	50	50	75	50	75	60	50	100	100	60	100	80	60	2	
504126	79.318	50	50	93	50	75	40	50	80	100	80	100	80	80	0	
555391	79.318	50	50	100	75	25	40	50	80	100	80	75	45	100	10	
676072	79.355	100	50	87	25	62	80	75	60	100	60	75	75	60	10	
555786	80.318	100	100	25	75	100	80	60	100	0	100	75	100	100	10	
558370	81.727	50	100	68	75	75	80	100	60	100	25	80	60	10		
560395	81.909	50	100	87	50	100	60	75	80	100	80	50	60	80	0	

Student results are loaded into our data system and analyzed immediately

Technology Driving Student Achievement

- ◆ Students Owning Data
- ◆ Teachers Owning Data
- ◆ School Leaders Owning Data

Technology has played a significant role in our outstanding student achievement results and will continue to.... Our bet is technology will lead to innovative, high performing schools and well-prepared innovative leaders of the future.






"The Denver School of Science and Technology (DSST) has forced a new conversation in education and shown what can be done. DSST has become a destination of inspiration across the district."

- U.S. Senator Michael Bennet

DSST: A Student Perspective





Q&A