

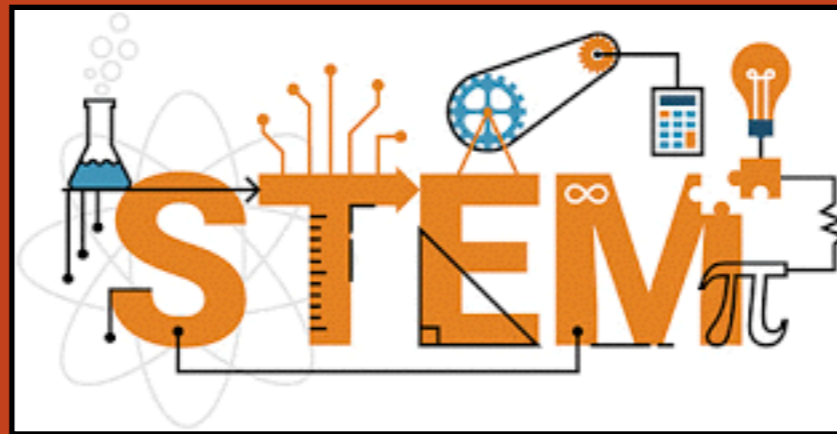
# FWISD JROTC

STEM Initiatives Brief

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**“Meet Molly”**

# What is



# ?

**STEM Education** is an interdisciplinary approach to learning where rigorous academic concepts are coupled with real-world lessons as students apply **Science, Technology, Engineering, and Mathematics** in context that make connections between school, community, work, and the global enterprise.

**“Rigor! Relevance! Relationships & Results!”**



### National STEM Crisis

- ❖ U.S. **behind** in student indicators.
- ❖ Foreign nationals **ahead** in jobs and degrees.
- ❖ **Urban** students are falling behind.
- ❖ Many plans exist to address this.
- ❖ New national STEM Initiative addresses programs and teachers.

# Our Nation's Goal

## 100Kin10 (2021)

There has been a concerted effort across the U.S. to train young students in STEM subjects (science, technology, engineering, and mathematics), which are crucial in preparing them for success and the jobs of the future.

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Nation's Goal also include training 100,000 teachers in STEM education.

# ENRICHING AMERICA'S CLASSROOMS

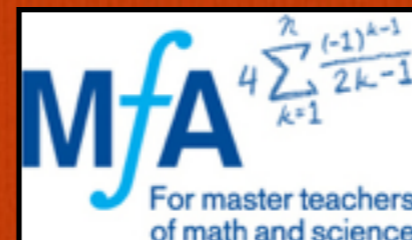
<https://100kin10.org>

“Today, 100Kin10 has become a massive platform for collaboration that connects and empowers nearly 300 partner organizations.”

AT&T  
*aspire*

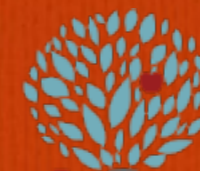


Google



EDUCATE TEXAS  
a public-private initiative of Communities Foundation of Texas

Fort Worth  
INDEPENDENT SCHOOL DISTRICT





# USACC JROTC Goal

## 2020

**There has been a concerted effort across cadet command to include STEM subjects (Science, Technology, Engineering, and Mathematics), in our annual JCLC camps which are also crucial in preparing Cadets for success as Leaders.**

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**Creating a system in which students want to be at School and in JROTC!**

# Methodology

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**United States Army Cadet Command and selected sponsors will provide funding to operate STEM Camps for the Fort Worth Independent School District's(FWISD) Junior Reserve Officer's Training Course(JROTC) to improve learning and academic performances as we prepare all students for college and the work force. FWISD has over 87,000 students and our department is responsible for 5,600 High/Jr. High School Students. As per the funding provided, the JROTC STEM CAMP will focus on educational activities that facilitate problem solving, technology integration, common core standards, and science and engineering to also promote a challenging academic program that help future leaders solve problems and prepare each Cadet for college and the workforce.**

**“Rigor! Relevance! Relationships & Results!”**

# Methodology

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**JROTC STEM CAMP** will focus on educational activities that facilitate problem solving, technology integration, common core standards, and science and engineering to also promote a challenging academic program that help future leaders solve problems and prepare each Cadet for college and the workforce.

**LEADERSHIP**

**= Solving Problems**

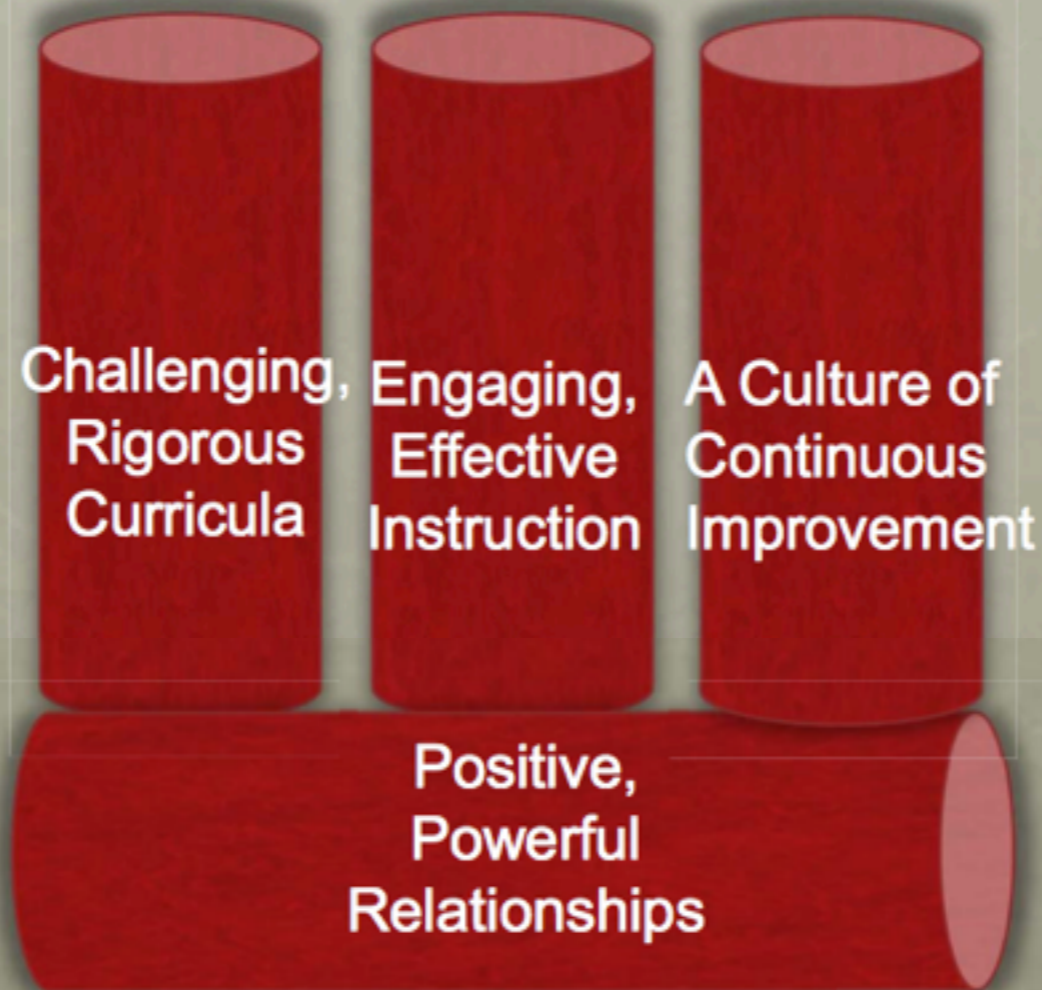
**= Problem Solving, Developing solutions**

**“Rigor! Relevance! Relationships & Results!”**

# FOUR PILLARS

- **Positive, powerful relationships:** that create a culture and climate in which students want to learn and adults want to work
- **Challenging, rigorous curricula:** that ensure that all students have the opportunity to learn
- **Engaging, effective instruction:** that is thoughtfully designed to maximize the likelihood that every student will master the curriculum
- **A culture of continuous improvement:** that inspires everyone to examine their work and continuously seek opportunities to improve

# FOUR Pillars found in excellent and equitable schools & JROTC



Positive, powerful relationships

# Results prove that JROTC is a program in which students want to be at school & learn.

## Goals

- Help students feel known, cared about, appreciated, respected, and valued
- Help students feel safe
- Help students feel hopeful
- Help students know they belong
- Help students feel intellectually challenged
- Help students feel capable
- Help students feel empowered to nurture their own growth

## Tools & Barriers

Routines

Policies

Pedagogies

Feedback Systems

Roles

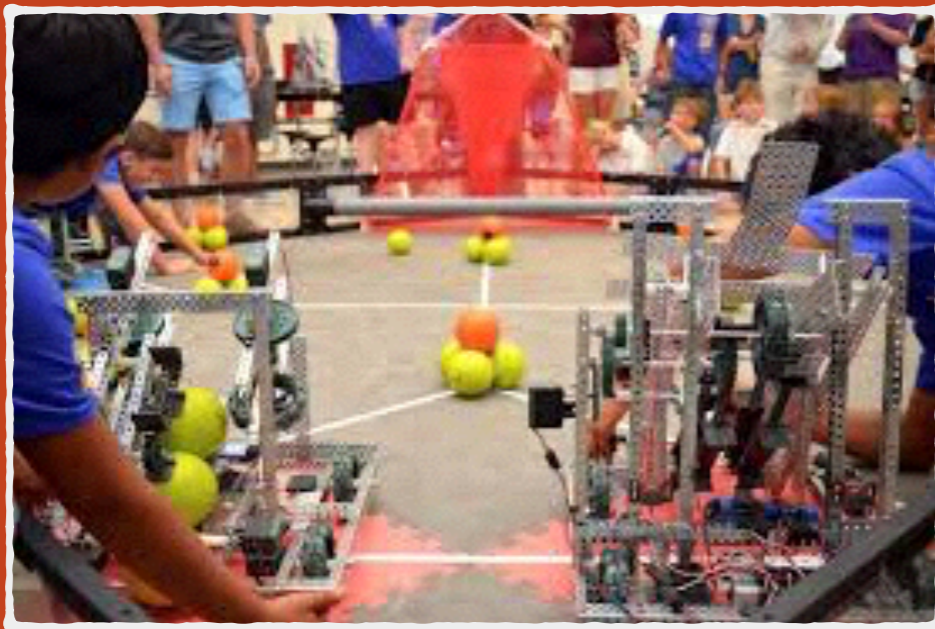
Spaces

Adaptations

# FWISD STEM Goal & Principles

Preparing JROTC Cadets for college and the workforce.

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- **Problem-solvers** – able to define questions and problems, design investigations to gather data, collect and organize data, draw conclusions, and then apply understandings to new and novel situations.
- **Innovators** – creatively use science, mathematics, and technology concepts and principles by applying them to the engineering design process.
- **Inventors** – recognize the needs of the world and creatively design, test, redesign, and then implement solutions (engineering process).
- **Self-reliant** – able to use initiative and self-motivation to set agendas, develop and gain self-confidence, and work within specified time frames.
- **Logical thinkers** – able to apply rational and logical thought processes of science, mathematics, and engineering design to innovation and invention.
- **Technologically literate** - understand and explain the nature of technology, develop the skills needed, and apply technology appropriately.

# FWISD JROTC CADET LEADERSHIP CHALLENGE

## “STEM Implementation”

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- Perot

Flight



Amon G. Carter Museum:

Museums offer interactive, standards-based activities complementing the school curriculum that can excite students and equip them with the skills to make informed decisions and pursue STEM fields.

# FWISD JROTC CADET LEADERSHIP CHALLENGE

## “STEM Implementation”

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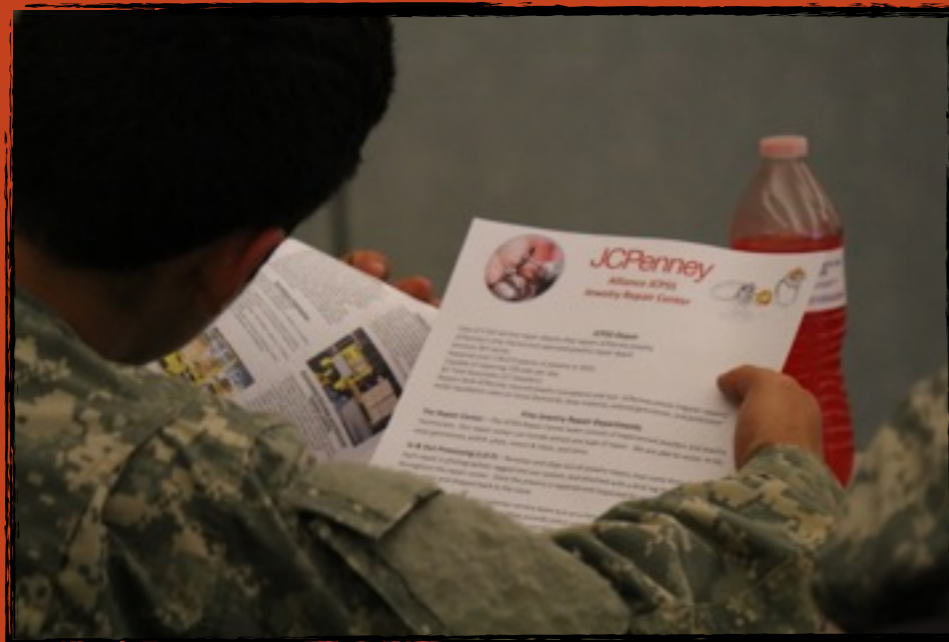


- **Public Service Tours** – Fire Department, Police Department, K-9/SWAT, City Council Brief (Public servant professions include police officers, judges and firefighters, as well as jobs that keep the government operating such as accounting, finance, information technology and logistics management.)
- **Military Post**– able to apply rational and logical thought processes of science, mathematics, and engineering design to innovation and invention.
- **Distribution Centers** – School curricula traditionally focus more on the natural world, not the technological one. But it is the human-made world that facilitates 95 percent of daily experience. Therefore, we selected **Haggar, Walmart, Dillard, J.C. Penny** and other organizations to become our new classrooms.

# FWISD JROTC CADET LEADERSHIP CHALLENGE

## “STEM Implementation”

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- **College Visit** – It is very important that students visit a variety of college campuses in order to determine which type of higher education institution best fits them. We have partnered with several to continuously ignite their passion to succeed in life. Tarrant County College District, University of Texas Arlington, Texas Women University, Texas Christian University and many more.
- **Service Academy Briefing** – The Military offers some unique educational opportunities for students who plan to pursue a college degree. These options — Service Academies, Senior Military Colleges and Maritime Academies — offer world-class education and a deeper understanding of military culture. Plus, most of these schools grant scholarship money in exchange for a period of service.
- **Technology** – STEM Kits, Cyber Patriot Teams, Labs, etc. **Water Distribution Center**

# RESULTS

## Eastern Hills High School

- Cyber Patriot Teams x4
- Robotics Program established
- Grant funding for SY 2018
- First Tech Robotics \$550
- Texas Workforce Commission \$1500

## Community Partnerships

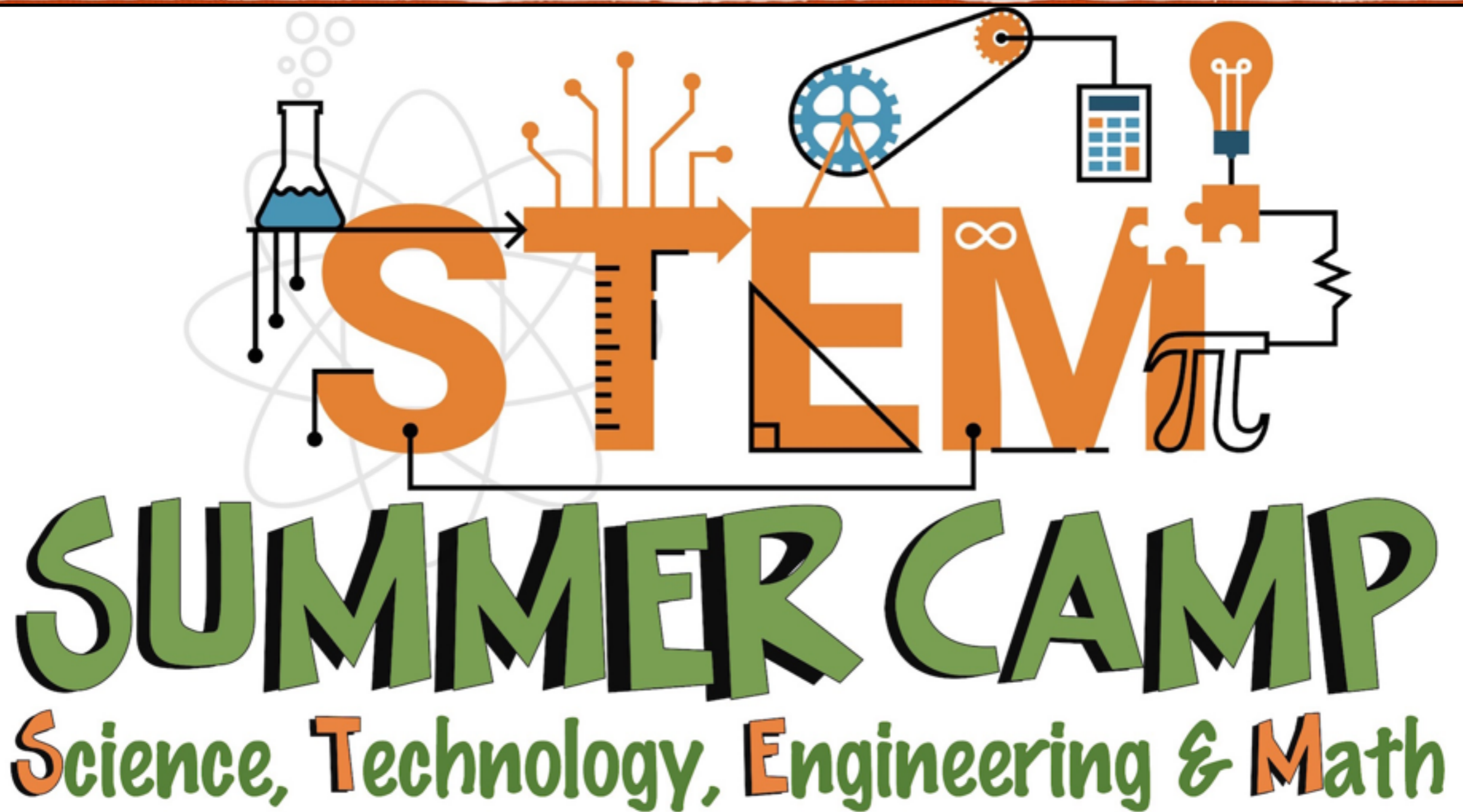
- College STEM Camps (UTA, TCCD)
- Local Museums (STEM + Art)
- Distribution Centers  
( Confirmed Jobs for JROTC Cadets)
- 30 Patriotic Organizations
- Naval Air Station Joint Reserve Base, Fort Worth

## Fort Worth ISD

- Superintendent Support  
Outdoor Learning Center  
Communication Department  
Social Media  
Budget Support
- National Science Foundation

## Measured Success

- Program Enrollment Increase
- Student Feedback
- Increased Collaboration
- Student Choice
- Program of Choice (POC)
- V-NEP Grants & Web
- Approved for JROTC/STEM Academy
- I.M. Terrell Academy for STEM / VPA

A graphic for a STEM Summer Camp. The word "STEM" is written in large, orange, block letters. The 'S' has a beaker with blue liquid and bubbles on top. The 'T' has a circuit board pattern. The 'E' has a gear and a pulley system. The 'M' has an infinity symbol and a pi symbol. To the right of the 'M' is a lightbulb and a puzzle piece. Below "STEM" is the word "SUMMER CAMP" in large, green, block letters. Below that is the text "Science, Technology, Engineering & Math" in a smaller, green, sans-serif font, with the first letter of each word in orange.

# STEM

## SUMMER CAMP

Science, Technology, Engineering & Math

**JROTC - 100 Years**

**and the next century.**



# ENGINEERING

FORT WORTH ISD MIDDLE SCHOOL  
PROGRAMS AND SCHOOLS OF CHOICE

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## How do you teach STEM?

# Teaching STEM

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- **Prepare to interpret the (4) STEM subjects...**
- **Prepare to use the Engineering Design Process (EDP)**
- **The EDP gives students a way to think systematically about solving problems...**
- **Build Successful student teams...**



# University of Texas at Arlington

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**Science Education & Career  
Department**



# Proposed Camp Overview

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- **UTA Sponsored Camp (“Stem Strong”) Date: 17-22 June 2018**
- **From 7:00am until 9:30pm Daily**
- **60 Cadets / 18-21 June 2018  
(Engineering & Science Research Projects)**
- **7:00pm to 8:30pm (Fun activities within College Environment)**
- **Trips: UTA Formula Car Team, Planetarium & Lockheed Martin Tours**
- **Reflections with Journal & Social Media**
- **22 June 2018 / Final Presentation of all events by groups & Closing**

# Proposed **STEM** Camp Schedule

	Sunday 6/17	Monday 6/18	Tuesday 6/19	Wednesday 6/20	Thursday 6/21	Friday 6/22	
7:00		Exercise		Exercise			7:00
7:30			Breakfast		Breakfast	Pack - luggage to counselor	7:30
8:00		Breakfast		Breakfast		Breakfast	8:00
8:30			Bus to JB Sands at 8:15		Bus to Lockheed Martin 8:15		8:30
9:00		Engineering Project 223 SH	John Bunker Sands Wetlands Center	Science Research Project 226 SH	Lockheed Martin	Engineering Project UTA Pool	9:00
9:30							9:30
10:00							10:00
10:30		Science Research Project 226 SH		Engineering Project 223 SH			10:30
11:00			Return to UTA		Return to UTA	Science Research Project 226 SH	11:00
11:30							11:30
12:00		Lunch		Lunch		Science Research Project 223 SH	12:00
12:30			Lunch		Lunch		12:30
1:00		UTA AeroMavs 100 NH	Engineering Project 223 SH	UTA Formula Car Team 100 NH	Science Research Project 226 SH	Lunch	1:00
1:30							1:30
2:00		Science Research Project 226 SH		Engineering Project 223 SH		Presentation Practice 100, 101, 102, 118, 119, 121, 122, 124, 138, Bio Conf? LS	2:00
2:30							2:30
3:00		Engineering Project 223 SH	Science Research Project 226 SH	Science Research Project 226 SH	Engineering Project 223 SH		3:00
3:30							3:30
4:00			UTA Science Ambassadors 121 SH		Science of Sleep - Dr. Henry 121 SH	Closing Ceremony 100 NH	4:00
4:30							4:30
5:00		Dinner	Dinner	Dinner	Dinner		5:00
5:30						Dinner Nedderman Hall	5:30
6:00	Check-In Lipscomb Hall	Comms Project Time	Comms Project Time	Planetarium Chemistry & Physics Bldg	Comms Project Time		6:00
6:30							6:30
7:00	Opening Cermony and Icebreakers Lipscomb Hall	223 & 226 SH	223 & 226 SH		223 & 226 SH		7:00
7:30		Movie 121 SH	Basketball and Volleyball Arlington Hall	Comms Project Time	Basketball and Volleyball Arlington Hall		7:30
8:00							8:00
8:30		<i>Something the Lord Made</i>		223 & 226 SH			8:30
9:00	Dorm room set up	Discussion	Journal - In Rooms	Journal - In Rooms	Journal - In Rooms		9:00
9:30	Journal - In Rooms	Journal - In Rooms					9:30
10:00	Lights Out	Lights Out	Lights Out	Lights Out	Lights Out		10:00
		Wear camp shirt tomorrow		Wear camp shirt tomorrow	Wear camp shirt tomorrow		

# OPERATION FOCUS

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- **Team breakdown:** Orange & Blue Teams
- **Group Structure:** (3 to 6 member groups)
- **Presentation Rubric:**
- **Group Competition:** Rubrics
- **Technical Resources:** (Computers, etc.)
- **Reflection:** Journals & (“It’s Learning”)
- **JROTC Instructor Roles**
- **Uniform Types**

**Whether it's climate change, food shortages, or economic inequality, almost all of the world's most pressing problems require STEM**

**(Science, Tech, Engineering, and Math)**

**-based solutions. Yet only a tiny fraction of our population has the STEM knowledge to even be at the table solving them.**

**So it's no surprise we haven't solved these challenges yet.**

# SPONSORS

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- Fort Worth Independent School District
- Veterans National Education Program(V-NEP)
- Kutztown University of Pennsylvania
- National Park Service (***\$50,000 Grant***)
- University of Texas at Arlington (UTA)
- Tarrant County Colleges District
- Mississippi State University (MSU)
- Achieve 3000
- Blue Zone Project
- Association of the United States Army (AUSA)



# FORT WORTH ISD JROTC

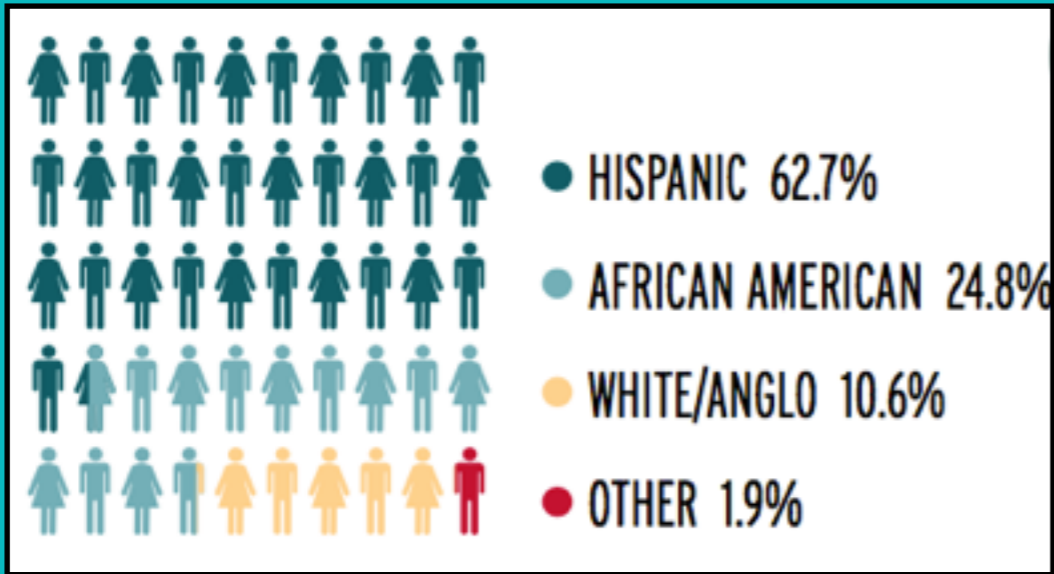
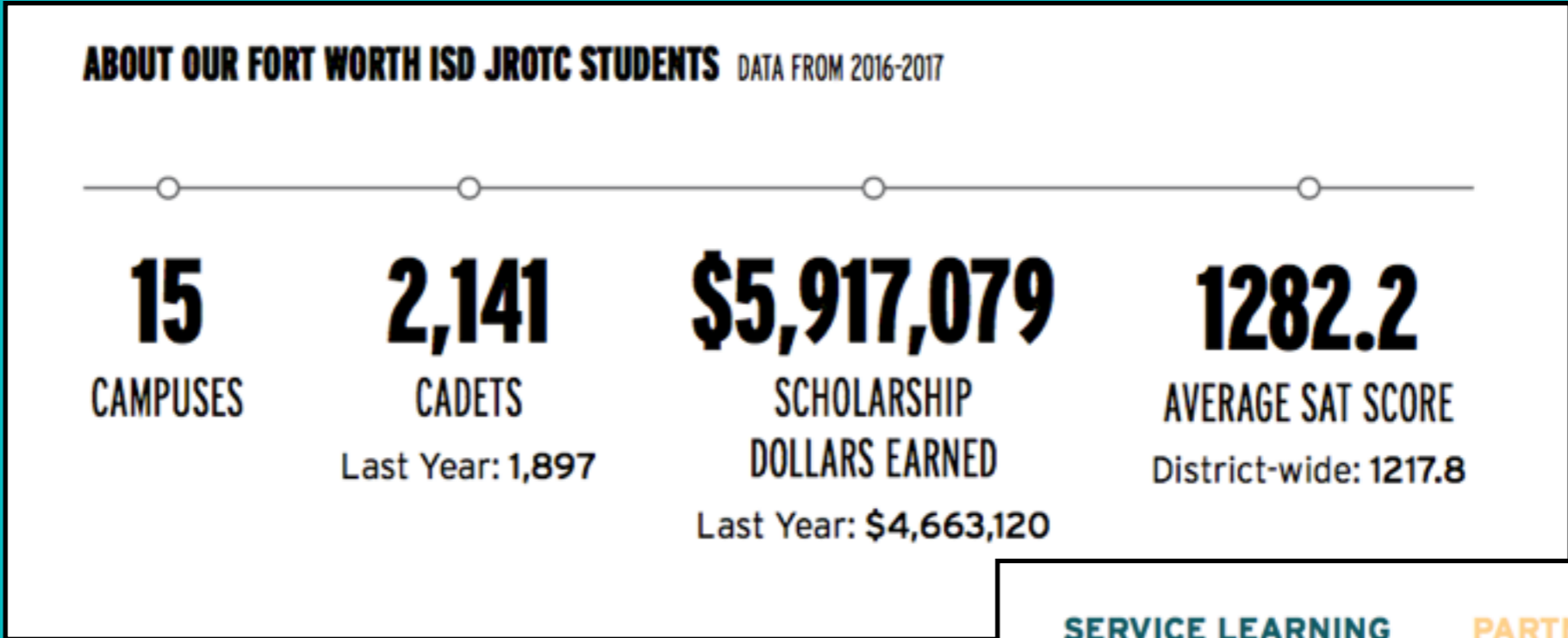
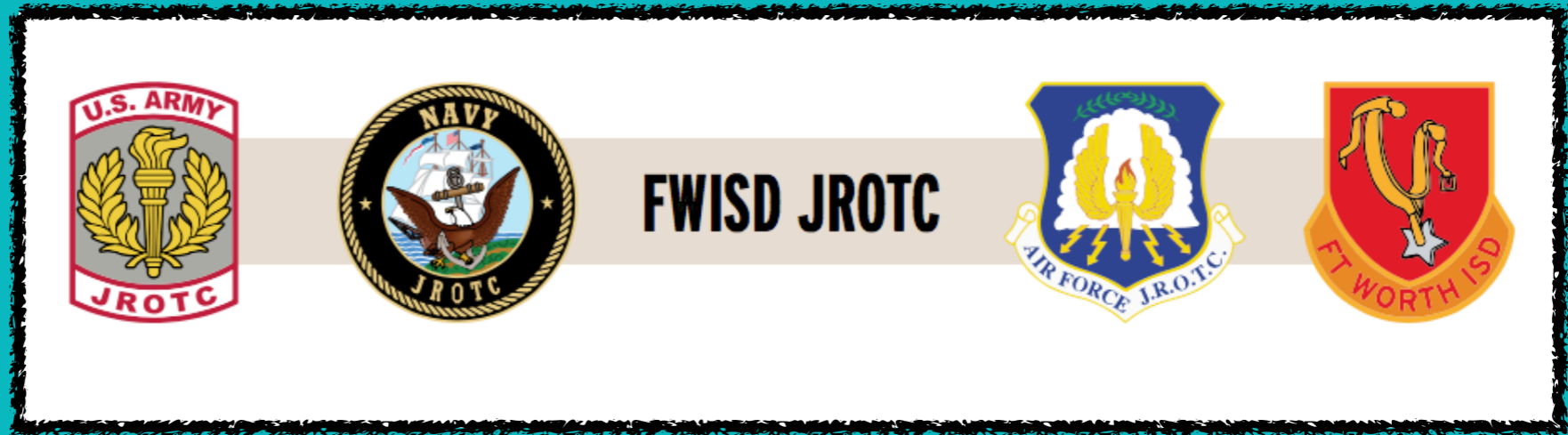
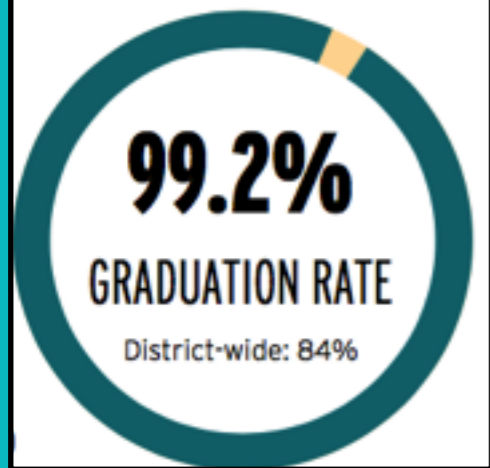
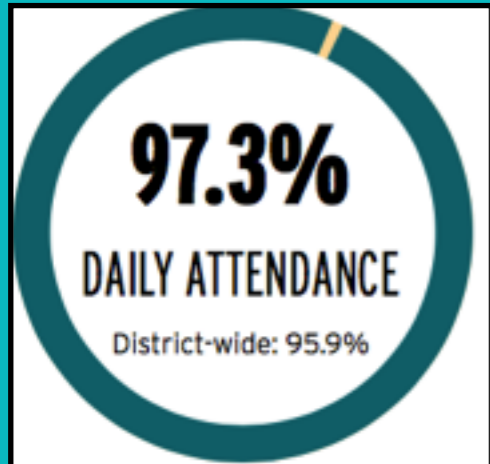
"RIGOR, RELEVANCE,  
RELATIONSHIPS, RESULTS"





**FWISD JROTC**





# Reflection

# **FWISD JROTC**

## **STEM Initiatives Brief**

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**Thank You**

