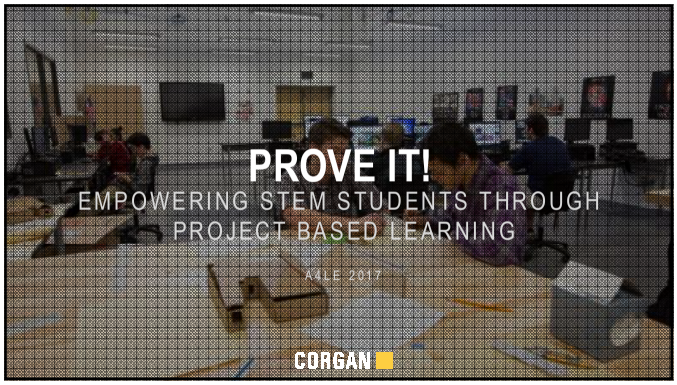


SANGEETHA KARTHIK
VICE PRESIDENT
CORGAN

BRETT SUMROW
ASSOCIATE PRINCIPAL
CORGAN

SPEAKERS

WHAT IS STEM?

12,400,000

RESULTS ON GOOGLE IN 0.5 SECONDS

GLOBAL LEADERSHIP
COMPETITIVE POSITION

SHAPING THE FUTURE
THROUGH INNOVATION

TRANSFORM EVERY FIELD
WITH ARITIFICAL INTELLIGENCE

WHY STEM EDUCATION?

PROBLEM SOLVING

ADDICITION TO LEARNING

CREATIVITY

KINDERGARTEN-AGE CHILDREN COULD BE TAKING A GRADUATION TRIP TO MARS BY

2024

WHY STEM EDUCATION FOR OUR CHILDERN?

PROVE IT!

The answer is not just a yes or no, but it is where it's coming from in your brain and making sure that you have the thought process to prove what your answer is.

Environments that foster collaborative, project-based learning create students that "Prove It!" and don't just answer it.

COGNITIVE SKILLS | INTERPERSONAL SKILLS | INTRAPERSONAL SKILLS

MEANINGFUL | MINDFUL | MOMENTS | MAKING

22ND CENTURY SKILLS

ESSENTIALS OF PBL

1. REAL WORLD CONNECTION

Solving authentic problems with real-life solutions

2. CORE LEARNING

Projects are not supplementary; students learn content through the projects

3. STRUCTURED COLLABORATION

Students learn to work as teams, as they would in a professional office or workplace

4. STUDENT DRIVEN

Teachers act as coaches and facilitators
Students have autonomy over their work

5. EFFECTS OF PBL

Improved problem-solving & collaboration skills
Perform as well as or better than other students on high-stakes tests
More engaged, self-directed learners
Transfer the knowledge they've learned into real world situations

- Use their problem-solving skills for real-world questions with significance beyond the classroom
- Plan and execute projects that directly affect their immediate environment

PBL OPPORTUNITIES

- Have authentic experiences that prepare them for future science careers
- Develop awareness of ecosystems and the need to protect them

PBL OPPORTUNITIES

E-PBL doesn't just benefit a student's academic performance; This method of instruction helps children to be ***healthier, motivated, and more compassionate*** *toward the environment.*

ENVIRONMENTAL PBL

A butterfly garden teaches about cross-pollination and native plants.

A raised stream table allows students to experiment with erosion and creation of rivers.

REAL WORLD EXPERIENCES

Composting & gardening teach about conservation, environmental stewardship, food chains, and life cycles.

Students learn business, math and science skills as they harvest and sell vegetables and eggs from the green house and chicken house.

LIFE SKILLS

Layout revolved around an outdoor learning area

Interactive learning and natural light for surrounding program

Learning concepts in geography and science

Size and design catered to every grade level

OUTDOOR CLASSROOMS

COURTYARD

TOP TEN JOBS IN
2050
STEM/STEAM FIELDS

MACHINES WILL OUTSMART HUMANS BY
2075

SMART ROBOTS

1/3
JOBS

2025
YEAR

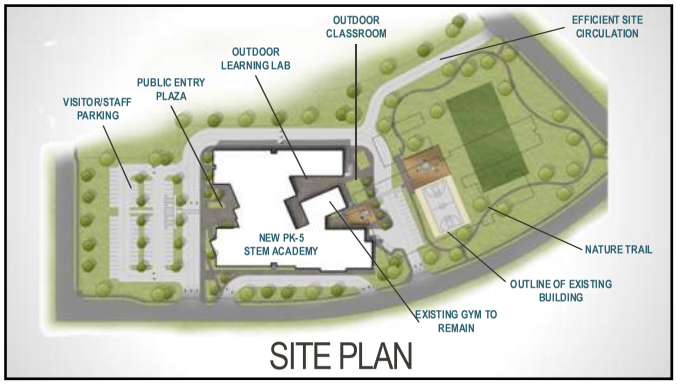
DID YOU KNOW?

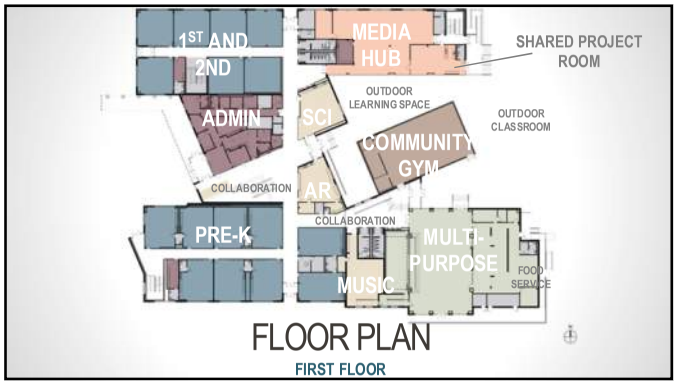
Provide a focused STEM curriculum that offers real-world insights and our goal is to help students become creative inquirers and confident communicators.
- School's Mission Statement

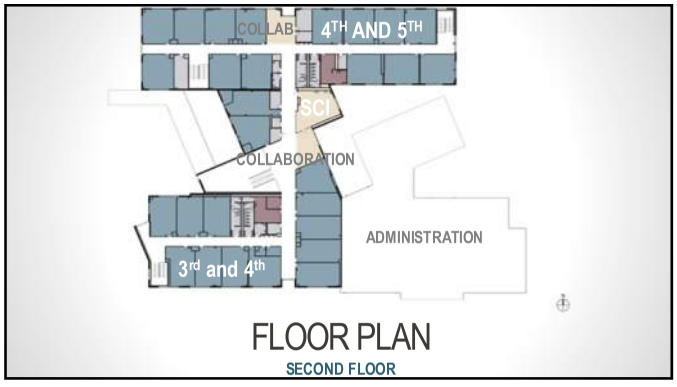
DESIGN FOR A MISSION

DESIGN FOR AN EXPERIENCE

ELLEN OCHOA STEM ACADEMY AT BEN MILAM ELEMENTARY SCHOOL


OUTDOOR CLASSROOM
EFFICIENT SITE CIRCULATION
OUTDOOR LEARNING LAB
PUBLIC ENTRY PLAZA
VISITOR/STAFF PARKING
NEW PK-5 STEM ACADEMY
NATURE TRAIL
OUTLINE OF EXISTING BUILDING
EXISTING GYM TO REMAIN
SITE PLAN


1ST AND 2ND
MEDIA HUB
SHARED PROJECT ROOM
OUTDOOR LEARNING SPACE
OUTDOOR CLASSROOM
ADMIN
SCI
COMMUNITY GYM
COLLABORATION
AR
COLLABORATION
PRE-K
MULTI-PURPOSE
FOOD SERVICE
MUSIC
FLOOR PLAN
FIRST FLOOR


COLLAB
4TH AND 5TH
SCI
COLLABORATION
ADMINISTRATION
3rd and 4th
FLOOR PLAN
SECOND FLOOR

LEARNING...

PROJECT BASED

HANDS ON

INTEGRATION INTO CORE DISCIPLINES

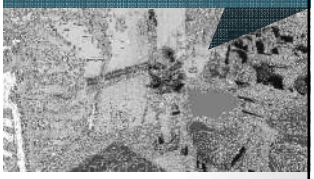
SCIENCE, TECHNOLOGY, ENGINEERING AND MATH

STEM ACADEMY

LIVING MACHINE FOR LEARNING

In an open environment… they feel safe messing up, or finding that discovery that they need in order to be successful on a project.
- School district

I think my favorite element about the school is the open environment, the spaces where so much collaboration can take place. Because ***we need to get out of the box of the classroom.***
- District STEM Coordinator



OPEN UP THE CLASSROOM

Kids can see not only the world outside, but the world inside. They see the infrastructure of this building. They know that more goes into this than just the plaster and paint on the walls.

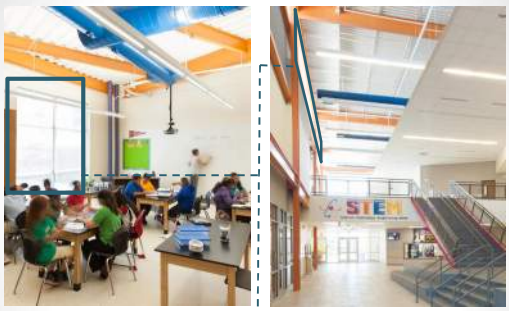
- District Director of STEM Education

BUILDING AS A TEACHING TOOL

Every piece has a purpose. Every piece is necessary. Every piece is needed.
- District

All parts of the building design communicate the STEM focus.
When cost reductions were needed, no programs were reduced and the design concept stayed intact.

BUILDING AS A TEACHING TOOL



NATURAL AND DAYLIGHT HARVESTING

"By incorporating the existing gym, we saved on costs and invigorated the design process."

"The new facility reinvigorates an aging neighborhood, bringing a sense of pride."

REUSING AND RENEWING

A dedicated facility for understanding and observing the natural world at multiple scales ***instills passion for the environment*** in tomorrow's leaders.

OUTDOOR LEARNING LAB

Classrooms are display cases for ongoing student research in the natural sciences, encouraging all students to consider the ***variety of ecosystems*** besides their own.

CLASSROOMS

These are spaces to inspire the future workforce, meant to foster collaboration between students, educators and professionals in STEM fields such as engineering.
- Lockheed Martin

GROWING COMMUNITY PARTNERSHIP

Our mayor and city council are very proud of this facility. At every opportunity, they come here to visit to talk with the students.
- District Superintendent

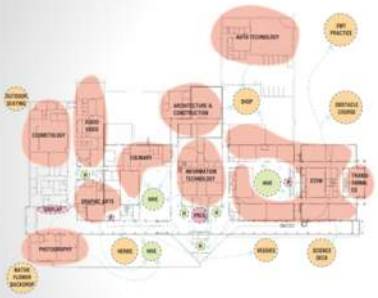
Flexible, accessible spaces invite the community through the doors of the school.

WELCOMING THE COMMUNITY

Our village is a very close community. It starts with our church that's next door and the Boy Scouts who come and help clean up the outdoor area.

- Academy's STEM Coordinator

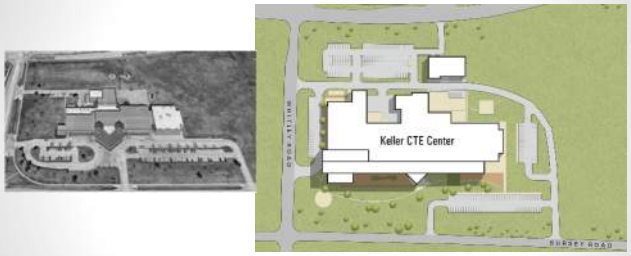
WORKING COLLECTIVELY



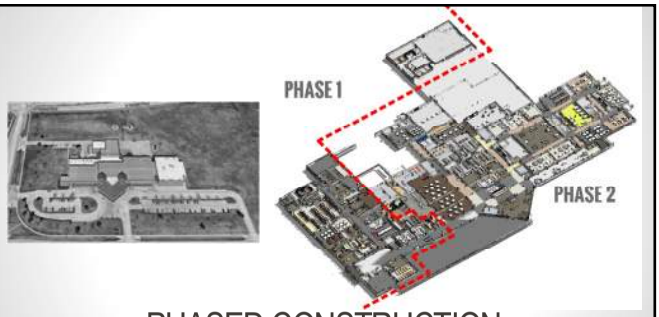
The openness in the layout is present to lead the student to a place where they have intrinsic motivation to learn the desired subject or task. Transparency is important as a student must feel that the instructor is placing their best interest at the forefront of all other matters.

- Leslee Shepherd
District Director of CTE, Keller ISD

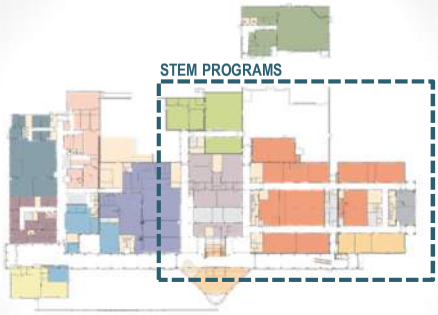
KCAL



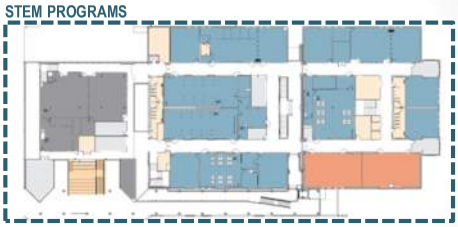
OLD VS NEW



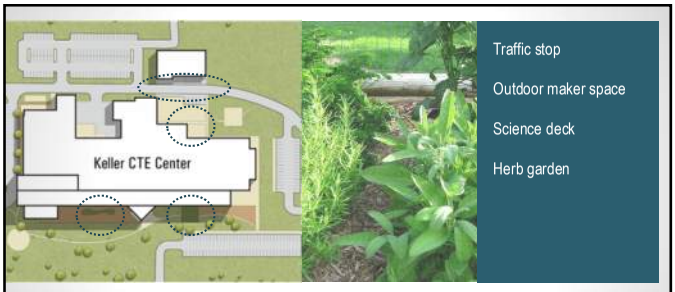
PHASED CONSTRUCTION



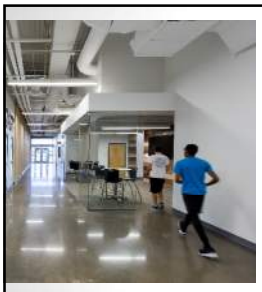
KCAL



KCAL



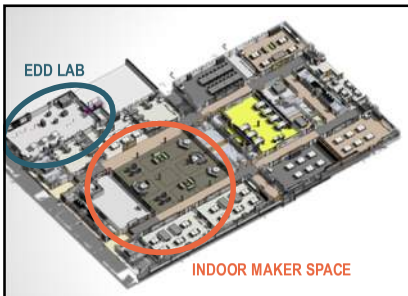
OUTDOOR LEARNING



Lab and collaborative spaces must have forethought and be integrated into the needs of the STEM program so that project-based learning (PBL) and creative processes flow from it naturally. To accomplish this, the Keller Center for Advanced Learning (KCAL) integrated learning/collaborative spaces into the STEM areas to allow for all a feeling of integration in all aspects of STEM.

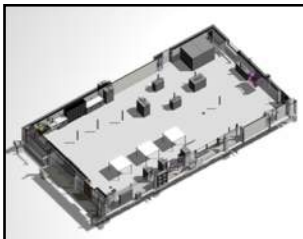
- Leslee Shepherd
District Director of CTE, Keller ISD

LAB AND COLLABORATIVE SPACES



- The STEM clusters are grouped together with interior Maker space
- Learning spaces equipped for hands on learning & flexible layout
- Power, data and required utilities are provided in each classroom

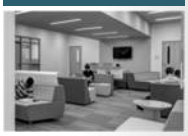
ADJACENT CLUSTERS



The EDD lab is designed for students to work on different types of projects

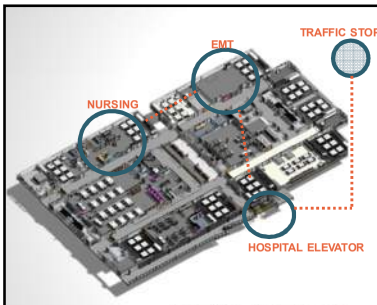
ONE SPACE TO BUILD IT ALL

The collaboration spaces are used by the different strands
Students work with other disciplines on projects



LEARNING ANYWHERE

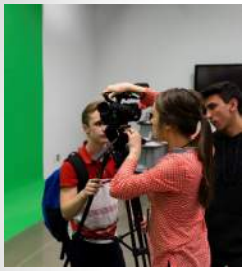
IDEA PRESENTATION



TRANSFER PRACTICES
Traffic stop
Emergency response
Patient transfer
Prescription dispensing

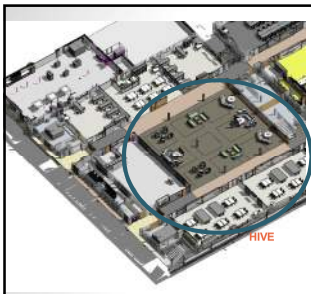
REAL LIFE SIMULATIONS

CROSS CURRICULAR TRAINING



Digital technology is used throughout the facility to enhance the learning experience

TECHNOLOGY EVERYWHERE!



Hive transforms from a workspace to a showcase or competition area

MULTI-USE SPACES

The Architecture, Construction and Engineering strands work together

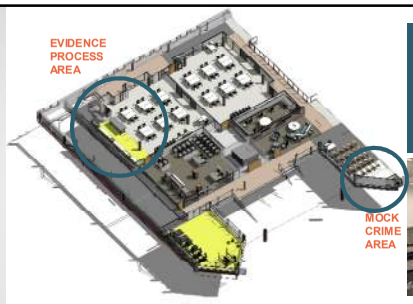
A fully equipped wood shop helps students turn their vision into reality

KEEPING IT RELEVANT

The Architecture, Construction and Engineering strands work together

A fully equipped wood shop helps students turn their vision into reality

KEEPING IT RELEVANT



The Criminal justice area has a space for microscopes and evidence processing .
The mock crime scene space aids with hands on learning

TO PROVE A CASE...

Shared maker spaces between different strands aid cross collaboration and learning by doing.

HANDS ON LEARNING

1. Digital Death Manager
2. Un-Schooling Counselor
3. Armchair Explorer
4. 3-D Printing Handyman
5. Microbial Balancer
6. Corporate disorganizer
7. Digital Detox Specialist
8. The Urban Shepherd

Source: fastcoexist.com

1. Big Data
2. R&D
3. Veterinarians
4. Medical technicians
5. Athletic trainers/physical therapists
6. Sales and Marketing
7. Human Factors Engineers & Ergonomists

Source: Challengergrey.com

2025 JOB LISTINGS

- Choose your career specialty
- Define the career & skills
- Outline spaces/ tools/ equipment to prepare students in your field of study
- Share your thoughts!

Ground rules:

- *Small groups*
- *Chime in*
- *No wrong answer- flex that creative muscle!*
- *Be ready to present!*

NOW THE FUN BEGINS….

GROUP ACTIVITY

Popular Careers in 2100:

- Gene Programmer
- Food Engineer
- Bioengineer
- Brain Augmenter
- Weather Controller
- Spaceport Traffic Control
- Human-related Spacecraft Maintenance
- Nature Conservationist
- Ethics lawyer- for memory augmentation, genetic programming, etc.
- Domestic Robot Programmer
- Organ designer
- Water harvester

Source: futurist.com

2100 JOB LISTINGS