UNITED INDEPENDENT SCHOOL DISTRICT
AGENDA ACTION ITEM

TOPIC: Approval of the Purchase of STEM Curriculum from Project Lead the Way (PLTW) for Middle School STEM Program

SUBMITTED BY: David R. Canales, Executive Director for Middle School Instruction

OF: Curriculum and Instruction Department

APPROVED FOR TRANSMITTAL TO SCHOOL BOARD: _____

DATE ASSIGNED FOR BOARD CONSIDERATION: February 21, 2018

Recommendation:
To approve PLTW STEM curriculum to be used for selected 6th graders at United Middle School effective 2018-2019 school year. The goal is to initiate this pilot setting, evaluate it, and explore possibilities for STEM program expansion within UISD.

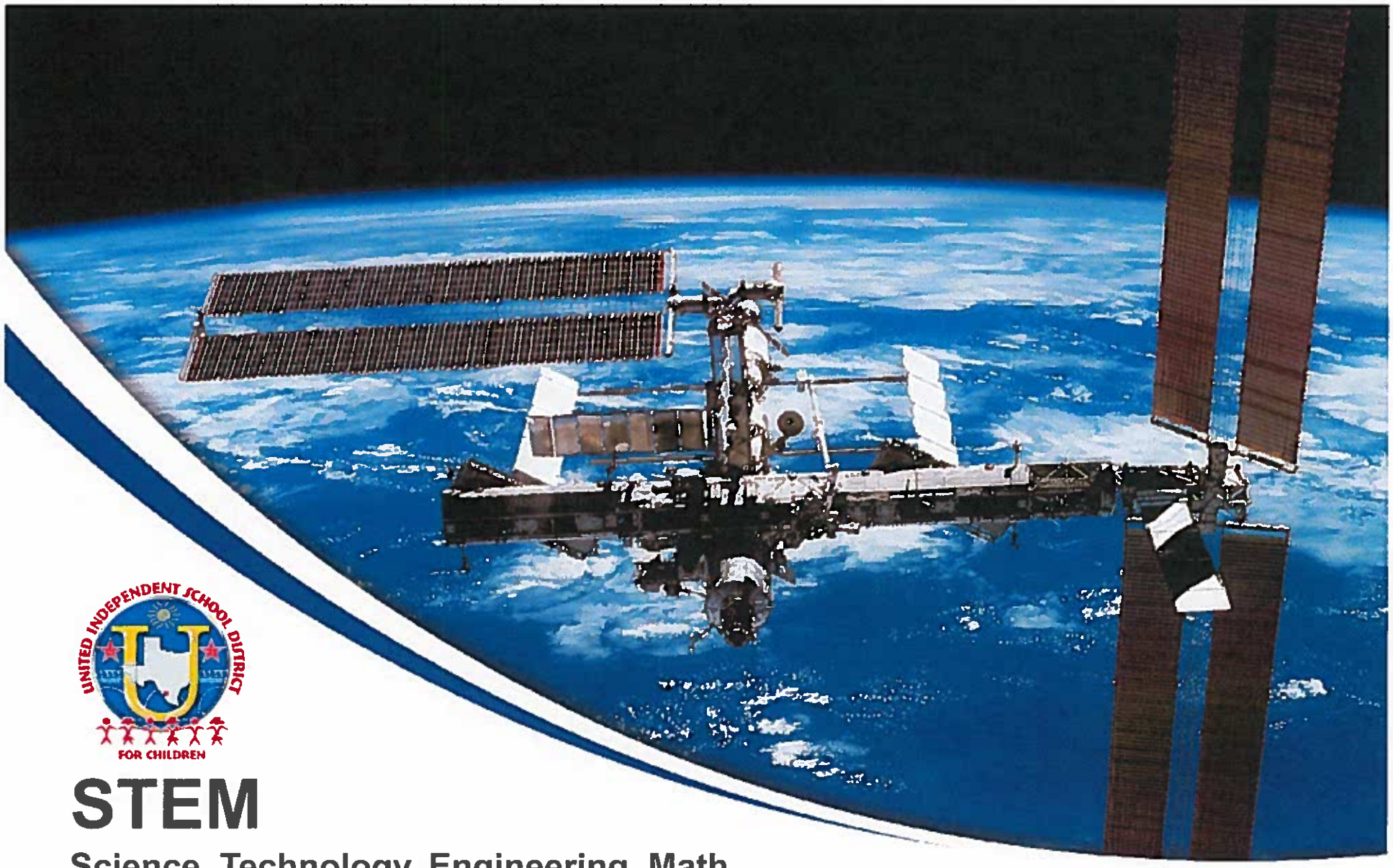
Rationale:

There were nearly 8.6 million STEM jobs in May 2015, representing 6.2 percent of U.S. employment and the future is even brighter 2024. Hence, PLTW empowers students to develop and apply in-demand transportable skills by exploring real-world challenges. Through pathways in computer science, engineering, and biomedical science, students not only learn technical skills, but also learn to solve problems, think critically and creatively, communicate, and collaborate (21st Century Skills).

Budgetary Information:

6th Grade: approximately $20,000.00

Board Policy Reference and Compliance:
EHAC (Legal) Courses in the foundation and enrichment curriculum in grades 6–12 must be provided in a manner that allows all grade promotion and high school graduation requirements to be met in a timely manner. The school district may provide instruction in a variety of arrangements and settings, including mixed-age programs designed to permit flexible learning arrangements for developmentally appropriate instruction for all student populations to support student attainment of course and grade level standards. *19 TAC 74.3(a)(1)*



STEM

Science, Technology, Engineering, Math

By David R. Canales
Middle School Education

Middle School STEM Initiative

Future Responsibilities & Implications

Nearly 8.6 million STEM jobs in 2015

There were nearly 8.6 million STEM jobs in May 2015, representing 6.2 percent of U.S. employment. Computer occupations made up nearly 45 percent of STEM employment, and engineers made up an additional 19 percent. Mathematical science occupations and architects, surveyors, and cartographers combined made up less than 4 percent of STEM employment.

Projected growth rates for types of STEM occupations

The STEM group that is projected to grow fastest from 2014 to 2024 is the mathematical science occupations group at 28.2 percent, compared with the average projected growth for all occupations of 6.5 percent. This group includes occupations such as statisticians and mathematicians. Since this group has the lowest employment among the STEM groups in 2014, this growth will result in only about 42,900 new jobs over the period. The only STEM group that is projected to show little or no change is drafters, engineering technicians, and mapping technicians, with a slight projected decline of 1.4 percent, a decline of about 9,600 jobs.

Employment in computer occupations is projected to increase by 12.5 percent from 2014 to 2024, and due to its large employment size, this growth is expected to result in nearly half a million new jobs, far more than any other STEM group. The group projected to add the second largest number of new jobs from 2014 to 2024 is engineering occupations, with 65,000 new jobs.

U.S. BUREAU OF LABOR STATISTICS
https://www.bls.gov/spotlight/2017/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future/pdf/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future.pdf

Middle School STEM Initiative Action Plan

- Initiate a STEM Pilot Program at United Middle School for the 2018-19 School Year
- Initial target population will focus on 6th-Graders
- Application selection up to 132 students
- Modeling Magnet Application Process
    1. Must Reside in UISD Boundaries
    2. Incoming 6th Grader for the 2018-19 School Year
    3. Composite grade average of a B (80) for content classes (Reading, ELA, Math, Science and Social Studies based on 1st Semester Report Card from 2017-18 School Year
    4. Score within the appropriate range on the Cognitive Abilities Test (CogAT) based on ranking of all applications
- Will add grade level each year until 6th - 8th Grade is complete
- Allows C&I and principals to modify plan for each grade level
- Goal is for other middle schools to participate

Middle School STEM Initiative

6th Grade Curriculum

- Project Lead the Way (PLTW) Curriculum
- PLTW empowers students to develop and apply in-demand, transportable skills by exploring real-world challenges. Through pathways in computer science, engineering, and biomedical science, students not only learn technical skills, but also learn to solve problems, think critically and creatively, communicate, and collaborate (21st Century Skills) students in real-world learning.
- Modular Base Curriculum
- Costs is determined by module selection

PROJECT LEAD THE WAY
PLTW

Design and Modeling
Automation and Robotics
App Creators
Computer Science for Innovators and Makers
Green Architecture
Flight and Space
Science of Technology
Energy and the Environment
Magic of Electrons
Medical Detectives

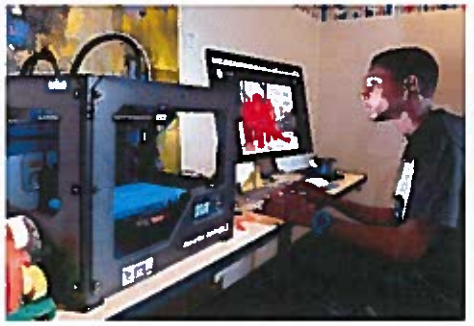
Middle School STEM Initiative

Anticipated Costs

2018-2019

- 6th Grade Implementation per campus = $20,000.00

  Design & Modeling and Flight & Space



2019-2020

- 7th Grade Implementation per campus = $44,000.00

  Medical Detective and Automation & Robotics

2020-2021

- 8th Grade Implementation per campus = $67,000.00

  App Creators, Computer Science for Innovators and Creative Lab Setting

- Note: Anticipated costs does not include teachers and robotics competition

PROJECT LEAD THE WAY

PLTW

FIRST

Questions