Action Plan
Prepared by Kyle Locke and Richard Morand, T.L. Hanna High School

The “Big Idea” is to educate districts and schools about STEM and Project Lead the Way and the best way to implement these into the classrooms and how to best achieve this. Broadcasting STEM through the district and individual schools!

(I also think that this “project” could be used to determine how to incorporate STEM into the district as well as how to incorporate it into classrooms. I believe there is a difference in approach to these two objectives).

It has been suggested that to wait for students to get to high school and then implement PLTW or STEM could be too late. These projects must start at the elementary school level and ensure that these programs exist in the schools where these students will then go. There cannot be a break at any stage or students will be lost in the system.

Teachers must be educated in the processes used in schools implementing PLTW and STEM so that they are familiar with the needs of students and to ensure that the academic rigor is maintained throughout their academic careers.

i. Administrators need to understand what STEM education is, to ensure that this is done during the first 90 days of school, this would include guidance counselors

ii. Invite elementary teachers and administrators to advisory board meetings – occurs twice during the school year, once in fall and once in spring

iii. In-service days – share ideas, meet with other departments invite teachers showing them what is available.

iv. Math and science departments meeting together and discuss common objectives and group projects – on days during pre-school. First topic is to introduce/educate about what STEM is. At later meeting, invite outside companies to discuss the advantages of STEM.

v. Requiring teachers to visit other classrooms during one of their planning periods each month to see what other teachers in math, science, technology, or engineering classes are doing and then asking how their lessons could incorporate one or (or more) of these different disciplines.

vi. Allow STEM representative teacher to go to middle and elementary schools to discuss the advantages of STEM in those schools, to ensure that students have the required background when entering high school
Learning Experiences

i. Level of education in the district is to be educated about STEM. Elementary teachers will have to start STEM and then this will filter through the higher grades, and will also all for greater recruitment.

ii. In the classroom, I would want to know how the students evaluate what I am teaching and the methods I used to achieve this. I want to focus on real life experiences so that students can see the relevance of the curriculum. Teaching photosynthesis is difficult if students do not see the relevance of this process. The effects of global warming on the rate of photosynthesis will be critical to all shortly!

Resources

i. Funding from companies to hold seminars, Duke Energy,

ii. In the classroom, there may be a parent of a student who works for a company that could donate supplies that can then be used to help a teacher deliver a lesson. In-service – within 90 days of start of school, all teachers, should be made aware of the presence of Project Lead the Way on a campus and if and where STEM is being implemented. This is especially important for new teachers to a school.

Getting students involved – camps to get students involved. Marketing, Make certain guidance counselors are aware of those students who could best benefit from these programs. Not just the best academic students but also those who may not like the traditional classes.

When meetings are being held involving outside companies, representatives of the news media should be invited so that the public are then made aware of what is being proposed in the schools. This would then generate parental knowledge and support.

Assessments – attendance as the measurement, instrument where those who attended seminars report on what they liked, disliked, or how the seminar could be improved.

Assessments for students at the classroom level is to determine how well the students understand a concept that is being delivered with the STEM approach. How students are able to interpret the data collected from the use of Vernier equipment to measure carbon dioxide production, heart rate, body temperature, EKG, blood pressure.

Looking at how plants respond to increased or decreased levels of carbon dioxide in an enclosed chamber. Asking students to interpret the obtained results.

Project lead the way teachers going to middle and elementary schools. PLTW teachers going to these schools and meeting with kids. Not quite certain of the best method but a
“traveling road show” where different activities are demonstrated to try and get the kids excited about the possibility of signing up in PLTW classes.

Teachers and administrators must ensure that STEM programs meet State Standards. Teachers should understand that STEM is not in addition to the curriculum but an alternative means or method of delivering the curriculum!

In-service classes can be used to demonstrate to all teachers what technology is available on campuses. Science teachers could benefit from the use of calculators that may be available in math departments and that these calculators could be used with Vernier probes that would provide the technology that can be used in science classes. Within science departments, teachers may find that technology exists that no one is using because they were not aware it existed, or did not know how to use it to deliver a topic or unit.

**Timeline**
During pre-school faculty meeting, STEM representative teachers introduce STEM to teachers. This makes all teachers and administrators aware of STEM and the need to incorporate this into the curriculum

On the day prior to the start of school, science and math teachers meet to discuss how STEM can be incorporated into the two disciplines. What lessons are or could be common to the two subjects and how STEM can be utilized to deliver the lessons.

During the fall and spring terms, STEM teachers together with elementary, middle, high school administrators meet with the PLTW teachers at the latters advisory board meeting. Included as a participant must be a representative of the district.