PMforSTEM: A Declaration of INTERDEPENDENCE

by Jim Noeldner

THE SPUTNIK IMPERATIVE. When I was young (a half century ago) the USA reaction to Russia's Sputnik called for more math and science in education. The space race accelerated the development of computer technology and project management techniques, among many, many other things. Sputnik spawned NASA and the National Science Foundation. Engineers proliferated. All school classes promoted a scientific approach to thinking and problem solving.

TOTAL QUALITY MANAGEMENT. Meanwhile, in Japan, Edward Deming, a statistician and engineer, was developing and codifying a process in business and production called Total Quality Management. As more logic and practical psychology was hung on this framework, smart companies adopted and adapted TQM. Boeing, for instance, called their focus in this arena Continuous Quality Improvement, and required all project managers to earn project management credentials.

SYSTEMS THINKING. A third major effort coalesced in the 60's. After a half century of gestation, Fredrick Taylor's and Henry Gantt's turn-of-the-century application of math and science to business cross-fertilized with mid-century government-standardized PERT (Performance Evaluation and Review Techniques) and gave birth to this more organic thing called Systems Thinking.

GLOBAL STANDARDS. The International Organization for Standards (ISO) was born a half century ago. The Project Management Institute (PMI) was born a half century ago. Today PMI has half a million certified Project Management Professionals (PMP®) around the globe.

GROWTH AND INTEGRATION. As I've grown through adulthood during the last half-century, math, science, business management, engineering, computer technology (and other technologies) have all continued to grow and expand and become more integrated with each other.

GLOBAL COMPETITION. What used to be third-world countries have become world competitors in business. India and China are producing prodigious numbers of Engineers.

GLOBAL VOCABULARY. Economic growth has validated the importance of education in the most populous countries and in the most entrepreneurial or hard-working smaller countries around the globe. PMI certifications lay the basis for a common world-wide vocabulary and understanding of standards used by all project managers across industries.

ENTER STEM. Because the U.S. is losing its position as the greatest high-tech economy on earth, with the most scientists, mathematicians and engineers, the first great emphasis on math and science education since Sputnik has materialized, named STEM (for Science, Technology Engineering and Math). There are huge government and business investments in STEM for K-12 public education.

BRINGING STEM TO LIFE. STEM alone in the classroom without the application of that knowledge in a project-based learning process for students is highly likely to be a flat and unengaging experience. STEM learning that is project based is more likely to be retained by the learner.

STEM AND PM INTEGRATION. Following a project-based learning process for STEM begs for the natural inclusion of learning the vocabulary and processes of project management. Furthermore, that learning should be based on the worldwide PM standards set by the Project Management Institute and used by internationally connected businesses that need to communicate using a common business language.

STEM IN CONTEXT. STEM alone restricts student learning and career opportunities by not including the context of the best business management thinking that has been developing in the last half century. Middle and high school students don't know what career field they'll be pursuing within the world of STEM. Valuing Business Education along with STEM leverages their field of career opportunities with transferable skills and a higher-level awareness of STEM careers in business, industry, research, and government contexts.

SUMMARY. Therefore, it seems imperative that STEM emphasis in US education must be integrated with the best of business management learning from the last half century and the natural application of scientific thinking in project management. Students should learn one vocabulary and set of standards for project management if they are going to interact with worldwide businesses in their careers, and we are all increasingly interdependent globally.

Declaration of ARTICULATION: PMforSTEM

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If you believe in PMforSTEM as a model for student learning, it follows that you easily see the horizontal articulation of that interdependence: We should be teaching the fundamentals of project management at the same time we are teaching the fundamentals of science, technology, engineering and math.

Just as there are beginning, intermediate and advanced classes flowing in increasing complexity from fundamentals to the mastery level in STEM and PM, the vertical articulation opportunities for students need to be identified and offered.

Educators try not to interfere with the speed of learning on the part of the student. If students are ready for the next level of math or science, for instance, we provide them the opportunity. In high school, students who are doing college level work can earn college level credit through AP, Tech Prep, College in the High School and similar vertical articulation agreements.

The same is true in the developing world of PMforCTE: Students who are learning PM standards in their CTE classes should be and in some cases are earning credit for college level work. Existing PM articulation agreements between 2 year college programs and 4 year university programs are working their way down into high schools with the growth of PMforCTE.

As students in high school benefit from PMforSTEM learning, they should be able to get recognition for their accelerated learning. Forging those agreements to benefit student learning will be part of the efforts of PMforSTEM. 2 + 2 + 2 articulation agreements in STEM and PM from high schools through 2 year programs to baccalaureate degrees and beyond are inevitable. ***Join us.***

PM FOR CTE™