NIU STEAM Framework Design

NIU STEAM programming is offered within a conceptual framework that is robust, comprehensive and research-based. There are six content components of this framework, called catalysts, and these catalysts are used in generating 3 tiers of delivery. Each catalyst is identified in research and our practice as essential to effective systemic program improvement and successful development of a STEAM culture. While identified individually, we know that all elements of a system are unavoidably interconnected and involved. Our commitment is to work together to change the lived experience of members of your program and community.
NIU STEAM – Research-Based Content through our Catalysts

**NIU STEAM Catalyst 1: Problem (Project)-Based Learning** Effective STEAM education focuses on increased learning through engagement with a meaningful, real world problem.

**NIU STEAM Catalyst 2: STEAM Concepts and Content** Effective STEAM education increases learner understanding of the educational concepts and content being explored.

**NIU STEAM Catalyst 3: 21st Century Skills** Effective STEAM education positively impacts learner outcomes of collaboration, communication, critical thinking and creativity.

**NIU STEAM Catalyst 4: Growth and Persistence** STEAM education positively impacts students’ engagement in productive struggle and their focus on growth rather than on a fixed perception of their academic ability.

**NIU STEAM Catalyst 5: Career Connections** Effective STEAM education fosters persistence in pursuit of STEM/STEAM degrees and careers, responding to and helping to shape the future of local communities and their economic development.

**NIU STEAM Catalyst 6: Trans-disciplinary Approaches** Effective STEAM education engages learners with meaningful, real-world problems (see NIU STEAM Catalyst 2) in a manner that empowers them as researchers and co-directors of their own learning, encouraging them to discover the roots of the issues they are exploring across a myriad of disciplines instead of a limited number of pre-identified choices.

**NIU STEAM Differentiated Outcomes**

Tier 1 – Inspiration: sparking curiosity, interest and imagination through fun activities we provide for you and your students to enjoy (“I do”)

Sample Tier 1 outcomes would include
- enhanced awareness of the interconnectedness of subjects in their program’s curriculum as a part of phenomena they encounter in the world,
- increased interest in a variety of those subjects,
- expanded recognition of the connection between academic subjects and professional occupations,
- accelerated interest from faculty/instructional staff in curricular collaboration, etc.

Tier 2 – Amplification: building organizational capacity and skills by teaching you how to do these types of activities (“We do”)

Sample Tier 2 outcomes would include
- augmentation of problem-based and coorperative learning techniques,
- acceleration of lesson development or design/redesign,
- expansion of efforts toward collaborative teaching

Tier 3 – Transformation: cultivating systemic change by working with you so that you have the skills to develop these activities and attitudes yourself (“You do”)

Sample Tier 3 outcomes would include
- partial or systemic curriculum design to fully incorporate all 6 catalysts in the school or program instruction and assessment,
- development and deployment of districtwide events and initiatives
- conversion of one or more schools to STEAM Schools or STEAM programming resulting in a transformation across the entire school or program
- creating STEM/STEAM career pathways that result in endorsements on high school diplomas and/or dual credit for acceleration in postsecondary degrees or credentials