A Balanced STEM Program©

A*cademics* + **B***usiness* = **C***ommunity*

"It is easier to build strong children than to repair broken men."

Frederick Douglas

"You can't be what you can't see."

Judge R. Eugene Pincham
Cook County (IL) Appellate Court Judge
Civil Rights Activist
Northwestern School of Law

Global Learning and Leadership

Building Capacity in Individuals and Organizations©

1. Relationships and Achieving

- Relationships lead to Achievement
- Achievement fosters Success and Positive Self-Concept

(Hallowell@Harvard)

2. Adult Roles

- Individual Contributors and Family Members
- Employees in the Workplace and Participants in the Community

3. College and Career Readiness

- Extensive career awareness critical for all students
- Expanded college and post-secondary learning

4. 21st Century Skills: The 4 "C's"

- Critical Thinking
- Creativity
- Communications
- Collaboration

5. STEM – Breadth and Depth

- CCSS, ELA and Math with NGSS and/or State Standards
- Research-based instruction
- Inclusive K-12 STEM preparation for successful future

6. Impacts the Total Learning Community

- Students
- Parents
- Educators
- Community Members
- Business and Industry
- Civic and Government Entities

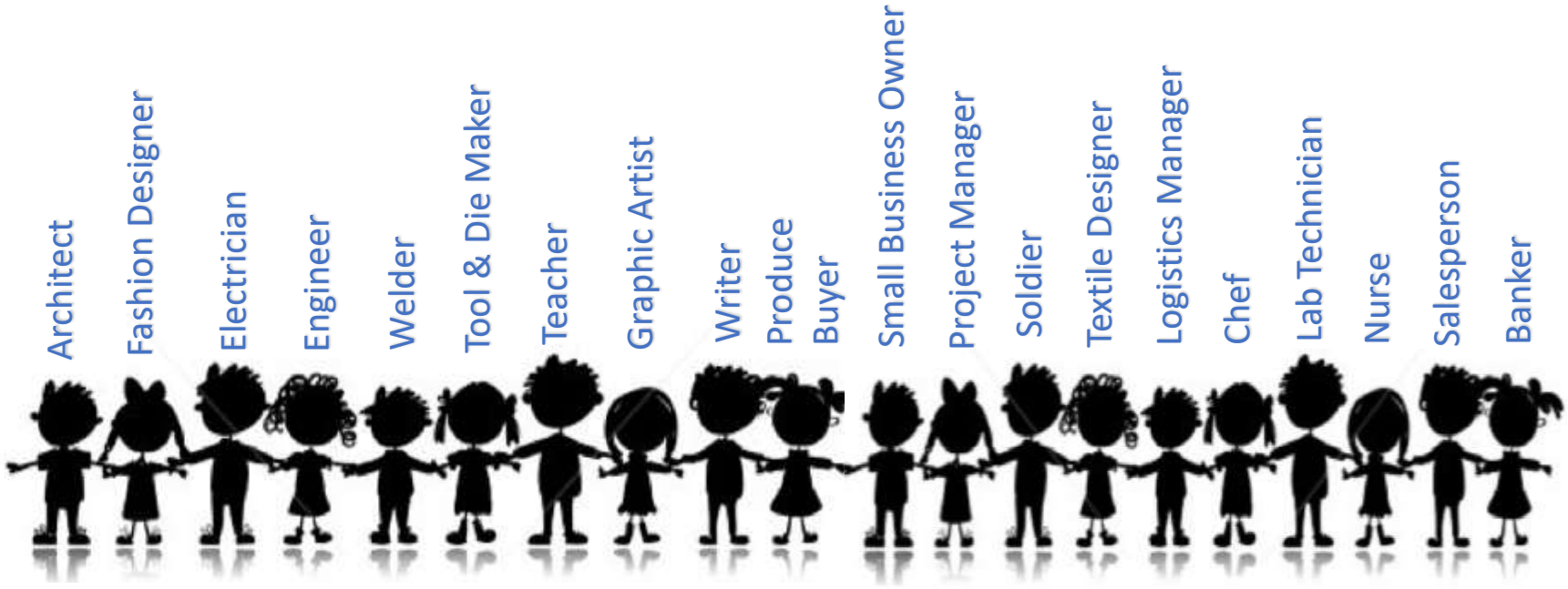
www.gl2edu.org

"The coming world war is an all-out global war for good jobs. If you were to ask me, for all the world polling Gallup has done for more than 75 years, what would fix the world – what would suddenly create worldwide peace, global well-being, and the next extraordinary advancement in human development, I would say the immediate appearance of 1.8 billion jobs – formal jobs. Nothing would change the current state of mankind more . . . this new world war for good jobs will become the root cause of almost all world problems that America and other countries will attempt to deal with through humanitarian aid, military force, and politics. The lack of good jobs will become the cause of hunger, extremism, out-of-control migration patterns, reckless environmental trends, widening trade imbalances, and on and on."

Jim Clifton, CEO of Gallup

The Immutable Laws of College and Career Readiness in the 21st Century©

1. While the four-year college degree is a worthwhile goal, it is **NOT THE ONLY PATH TO CAREER SUCCESS.**
2. Many college graduates are now enrolled in community colleges **SEEKING NEW CAREER TRAINING**.
3. No post-secondary choice prevents someone from **PURSUING FURTHER EDUCATION**.
4. High school and post-secondary education are all dependent on **SUCCESS AT THE ELEMENTARY LEVEL**.
5. **STEM** infused learning integrates all subject areas in a **HIGHLY ENGAGING, REAL-WORLD APPROACH.**
6. Children, teachers, parents and communities need **VISION, HOPE, KNOWLEDGE, SKILLS, and a FUTURE**.



STEM or STE"A"M

GL2 believes that whether you call it ***STEM*** (Science, Technology, Engineering, and Math) or ***STEAM*** (by adding "A" for the Arts) the focus is on a ***balanced curriculum*** showing the presence of STEM in all subject areas. Students today must be shown the ***integrated nature of all subjects***, not a siloed approach. The world today does not operate in a silo.

"And it really starts at the elementary school level. Unless you give students an appreciation for why this is important to them (science) and then, by the way, it's really cool stuff, they're going to drift away from it as they go on through school." Dr. Sally Ride, Former Astronaut and Teacher

GL2 Three Key Areas of Concentration

LEADERSHIP ENHANCEMENT

Alignment is critical for School Leaders, Business and Industry, and Local Community to ensure systemic growth

Specifics: Why, Where, Who, What, How, and When of Change must be clear and impactful

Capacity Building, Engagement, Continuity, Transferability, and real Sustainable Growth

PROFESSIONAL DEVELOPMENT

Action based training in Research-based instruction

Highly trained & experienced teacher-coaches modeling and observing

Shoulder-to-shoulder in-classroom coaching

A balanced STEM approach which engages all subjects

Integration among subject areas to reflect real-world approach to learning

COMMUNITY ENGAGEMENT

Business and industry (B&I) engaged in an on-going basis through classroom visitations, internships, mentorships, on-site B&I visitations, jobs, support, etc.

Mapping of B&I skills and competencies to state standards, CCSS, and NGSS to provide local examples

Parent and public participation in support of the Longwood *"total learning community"*

Global Learning and Leadership

Building Capacity through Growth in Practice©

GL2 K-12 STEM Year-long Program

1. District/School/Community Assessment Visitation
2. Establish Program Leadership Team (PLT)
3. STEM Institute for Program Staff
4. Establish network of local STEM related community links through engagement of business, industry, and other agencies
5. Map local business and industry competencies to state academic standards
6. Job-embedded coaching and support during program
7. Meeting with PLT during the program year
8. On-going relations with community partners, including site, presentations, and more.
9. End of Year Review, Evaluation, and Next Steps

To develop a complete mind:
Study the science of art;
Study the art of science.
Learn how to see.
Realize that everything connects to everything else.

– leonardo da vinci

"Children are not genetically encoded to fail; it is we adults who must not fail our children." Mark Mitrovich

GL2 Four Phase Program for STEM Success

1. PROGRAM DESIGN

- Staff Interviews & Feedback
- Establish Program Leadership Team (PLT)
- Classroom Observations
- Development of Program by PLT and GL2
- Establishment of Growth Metrics

2. PD TRAINING

- Integration of STEM concepts through a **balanced curriculum** approach
- Model lesson design around CCSS, NGSS, and State Standards
- Research-based Instruction
- Leadership growth and support

3. ESSENTIALS OF SUCCESS

- Regular PLT Meetings with GL2
- Modeling of Instruction
- Classroom Observations/Feedback
- Program Monitoring and Adjustment
- Shoulder-to-shoulder Coaching
- Business and Community Involvement

4. PROGRAM MONITORING

- Continuous monitoring of program efficacy and impact
- Input from staff, students, parents, business, and community
- Team preparation of EOY report
- Determination of next steps

Global Learning and Leadership

Building Capacity through Growth in Practice©

Developing a Community-wide Approach of Support for STEM-Qualified Globally Competitive Students in the Southland Region

Phase I Design

- Staff/Community interviews and feedback
- Strategic planning and training (school board, superintendent, principals, and teachers)
- Establish district and school leadership team
- Establish Community/Industry/Park District Advisory Boards
- Assess current level of curriculum/instruction
- Review student data and learning preferences
- Establish time lines and performance metrics

Phase II Professional Development

- Integrate STEM principles, concepts, methods, and best practices
- Model lesson design using CCSS, NGSS, and Illinois State Standards
- Intensive summer training (principals, teachers, park district leads, and volunteers)
- Provide leadership growth and support

Phase III Essentials of Success

- Model and observe in-classroom activities and job-embedded coaching of teachers
- Continual program review/development by GL2
- Refine curriculum, instruction, and apply data
- Establish local STEM-related links through engagement of business and industry (B&I)
- Map B/I competencies to CCSS, NGSS, and Illinois standards

Phase IV Program Monitoring

- Continuous monitoring to insure positive impact
- Process input from teachers, students, parents, Business/industry and community groups
- Continue/expand relationships with partners
- Conduct visits for teachers to partner facilities to demonstrate workplace STEM applications and potential career options for students
- Access teaching methods to stimulate learning
- Conduct end of year evaluations and define changes

Examples of Strategies and Methods

- Use Advanced Information Communication Technology (individually or with team projects)
- Integrate and emphasize workplace experience-based learning directly to achieve academic standards
- Foster virtual classroom interaction and afterschool programs
- Apply lessons learned by major STEM programs
- Emphasize digital content learning and teaching resources including applications
- High performing students serve as mentors

Business and Industry Community Support

- Serve on Industry/Community Advisory Boards
- Collaborate with GL2/school districts/schools/park districts
- Business/Industry/Community Leaders present STEM content in classrooms or virtually
- Sponsor site visits for educators and students
- Sponsorship of teacher specialized training
- Provide financial assistance (general, specific, or in-kind support (e.g. equipment, materials)
- Show technology at community or park district STEM events
- Access to research laboratory scientists

Education-related Outcomes

- Documented increases in academic achievement in STEM-related content, applications, and awareness of STEM careers
- Greater job satisfaction by educators and teachers as a result of improved effectiveness with students
- Parent engagement increases, active participation in classrooms, school events, direct contact with teachers, and support of child's learning
- Data-informed approach to the development of curriculum and focus of instruction
- More effective instruction tailored to the needs of students, impacted by a multiple measures approach to student achievement
- Student awareness and demonstration of 21st Century Skills of Critical Thinking, Collaboration, Creativity, and Communication
- Development of after-school STEM program to extend support experiences of in-class curriculum and instruction

Community-related Outcomes

- Consistent and focused leadership within the school district, schools and the community it serves
- Community perception of positive changes within schools and with student engagement, and achievement
- Increased substantive participation by area business, industry, governmental, higher education, community and labor organizations
- Curriculum aligned to state education standards, embedded with numerous application examples from community partners