Service-Learning

Our mission: To help every girl explore her unique voice and to develop the skills, confidence, and courage to share it with the world.

Our values: Respect, Integrity, Kindness, Service

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What You'll See In This Presentation

- EPICS High - Purdue University
    - Engineering Projects in Community Service
- EPICS at Foxcroft School
- How to implement the EPICS curriculum
- Partnerships
- Impact on Students

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- Founded by Purdue University in 1995.
- Mission Statement:

  "The EPICS K-12 Program will be a leader in developing, disseminating, and supporting service learning models that engage students in engineering and computing-based design projects that meet the needs of their communities."

The EPICS K-12 Program

Summer Training:
- Workshops offered in several states

Workshop Goals:
- Be able to identify the components of the EPICS Human-Centered cycle and how it would mesh with their classroom and community.
- Identify essential elements of the EPICS curriculum and how the components are utilized in the Design process.
- Identify a plan for implementation of the EPICS model within the learning community of the participants school.

EPICS High Provides Curriculum

- User Centered Design
- Service Learning
- Cultural Context and Ethics
- Teamwork
- Communication

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Explorations in Engineering

- Semester science elective.
- Open to students with all levels of math and all interests.
- Introduces students to the engineering design cycle.
- Taps into their passion for service.

First Step: Find a community partner

- What are the needs in the community that are consistent with curricular topics?
- What are the capabilities of the students?
- What is the duration of the partnership? (quarter, semester, trimester, year)
- Set expectations at the beginning of the partnership.

The EPICS Design Cycle

Problem Identification
Redesign
Retirement
Specification Development
Conceptual Design
Disposal
Detailed Design
Service Maintenance
Production

EPICS PURDUE
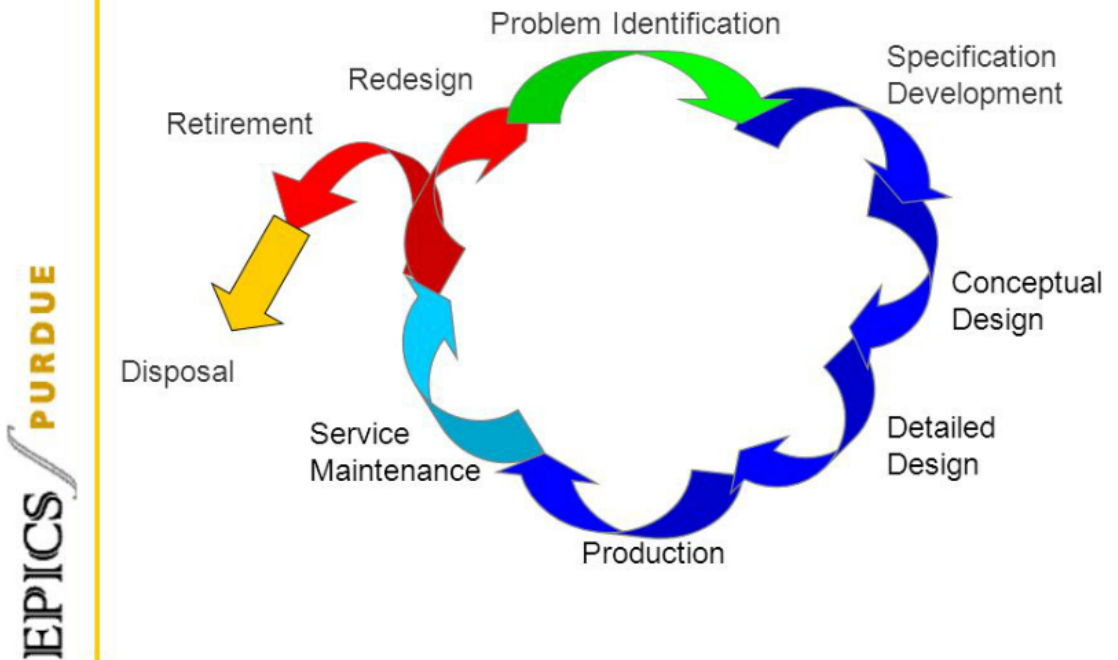
Choosing Community Partners

- Non-profits in the local community.
- Goal is to establish long-term relationships.
- Four possible categories for project ideas.

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Education

K-12 schools, museums, adult learning programs, after school programs

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Access and Ability

Adaptive services, clinics for children with disabilities, programs for adults with disabilities, assistive technology.

Human Services

Homelessness prevention, Habitat for Humanity, family and children agencies, neighborhood revitalization, local government;

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em Identification

Specification
Development

Conceptual
Design

Detailed
Design

Production
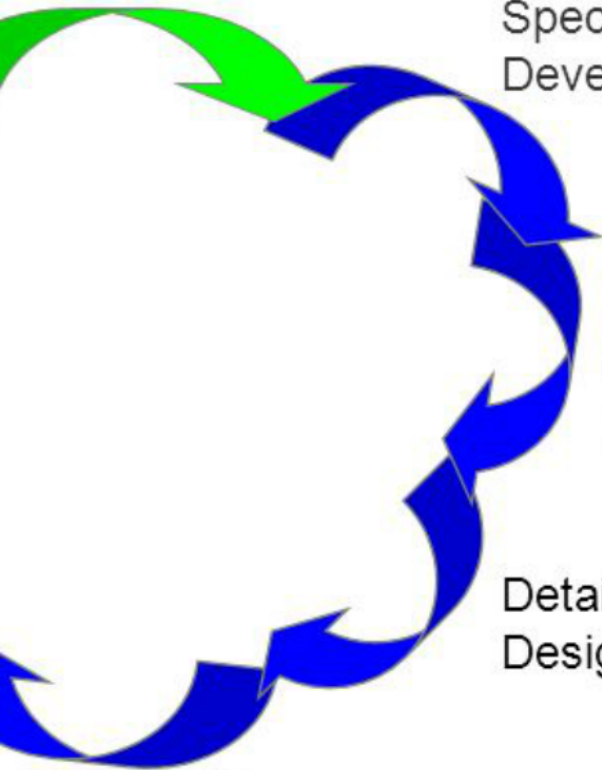
Communication
- **Each team identifies one student to lead communication with the project partner**

Site Visit
- **Visit the project partner, tour, ask questions, determine design specifications.**
- **Investigate partner needs and discuss possible projects that meet with course limitations.**
- **Possibly volunteer with project partner in order to help determine project needs.**
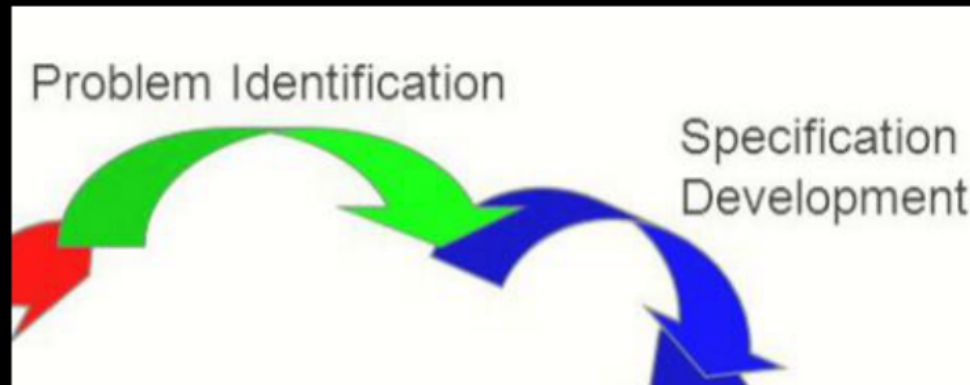
Project Charter

- Description - Summarize what problem you or your team will be solving, how you will solve it, and for whom.
- Objectives - List the project objectives and why are you doing the project
- Outcomes or deliverables - What will be provided to the project partner?
- Duration - Provide an outline of the schedule
- Community Partners - Who is being served?
- Stakeholders - Who else will be affected?

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Preliminary Design

Site visit/meetings with project partner lead to
- Design criteria.
- Brainstorming.
- Trade studies.
- Preliminary design review with project partner and industry experts.

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Decision Matrix Lesson

COLLEGE CHOICE DECISION MATRIX	0-10	0-10	0-10	0-7	0-7	0-7	0-10	0-10	0-10	0-10
College	Location	Campus Life	Job Placement	Living Amenities	Food	Atmosphere	Size	Major	M/F Ratio	Total
University of Alaska Anchorage	0	6	4	5	5	5	2	6	4	37
Washington State University Pullman	5	8	5	4	7	7	1	5	7	49
The University of Hawaii Leeward	10	7	7	2	6	6	9	5	4	56
Muskingum University	6	5	5	7	5	6	5	7	9	55

Rating Scale:	0	1	2	3	4	5	6	7	8	9	10
	THE WORST!	Horrible	Bad	Unappealing	Below Average	Average	Above Average	Appealng	Good	Great	THE BEST!

Gantt Charts

Note	Status	Tasks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		General	8/19-8/23	8/26-8/30	9/2-9/6	9/9-9/13	9/16-9/20	9/23-9/27	9/30-10/4	10/7-10/11	10/14-10/18	10/21-10/25	10/28-11/1	11/4-11/8	11/11-11/15	11/18-11/22	11/25-11/29	12/02-12/06
N/A	N/A	Transition Checklist																
N/A	N/A	Project Familiarization																
		Contact Project Partner																
		Semester Plan																
		Individual Eval. Rubric																
		Chem Team Project																
		Understand Stakeholders																
		Brainstorm Ideas																
		Project Jusification One Pagers																
		Decide Project																
		Attain Project Partner Approval																
		Functional Decomposition																
		Prototype Lab components																
		Prepare for Mid-Semester Design Review																
		Complete DFMEA																
		Evaluate project components																
		Field Test lab																
		Finalize Presentation Slides																
		Work on Lab components																
		Complete User Manual																
		Complete Usability and Reliability Testing																
		Complete Devlivery Review																
		Prepare for End-of-Semester Design Review																
		Evaluate Project Performance																
		End of Semester Paper Work																
		Physics Team Project																
		Understand Stakeholders																
		Brainstorm Ideas																
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Mid-semester Design Review (week 7)

Projected Delivery Week (week 12)

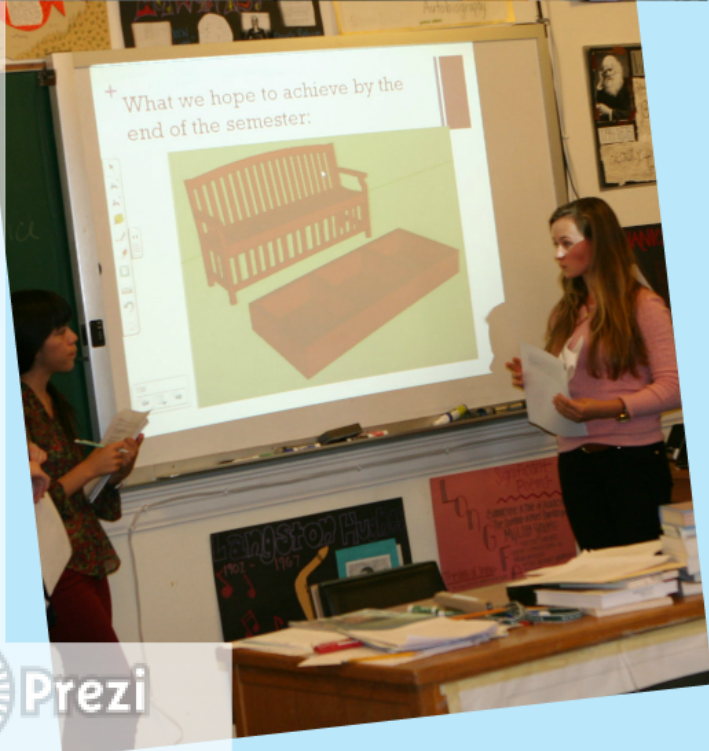End-semester Design Review (week 14)

DEAD WEEK (week 16)

Preliminary Design Review

Students present
- Summary of project.
- Objectives.
- Trade studies.
- Budget.
- Timeline in Microsoft Project.
- Prototype produced on 3D printer.
- Final proposal for approval to proceed to development.
- Opportunity to get expert advice on any remaining issues.

Construction and Delivery

Leadership:

- Students alternate jobs on their team each week including project manager, schedule, budget, devils advocate, etc.

Interpersonal and Professional Communication:

- Students are encouraging to positively support each others ideas.
- Students learn how to communicate professionally and present themselves.

Student Perspective
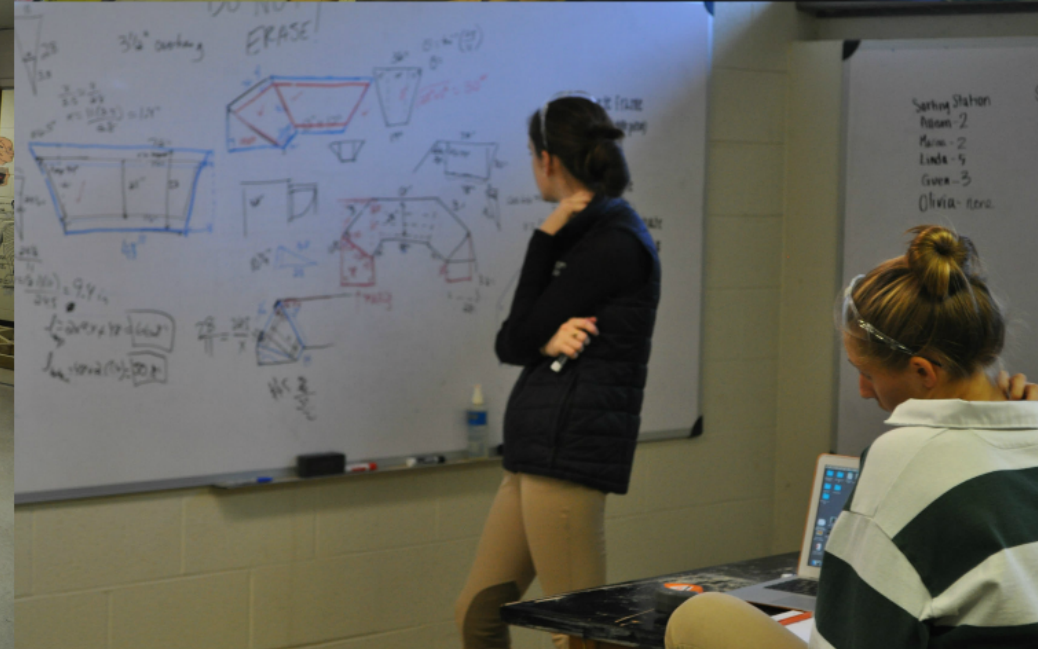
Community Partnerships

- Focus is on building long-term relationships
- Continue to support projects as they need maintenance or redesign
- Project partners often ask for additional projects

Banneker Elementary
The Hill School
The Aldie Mill
NW Works
Middleburg Humane
Banshee Reeks Nature Preserve

Golden Dreams Therapeutic Riding Center
Sprout Therapeutic Riding Center
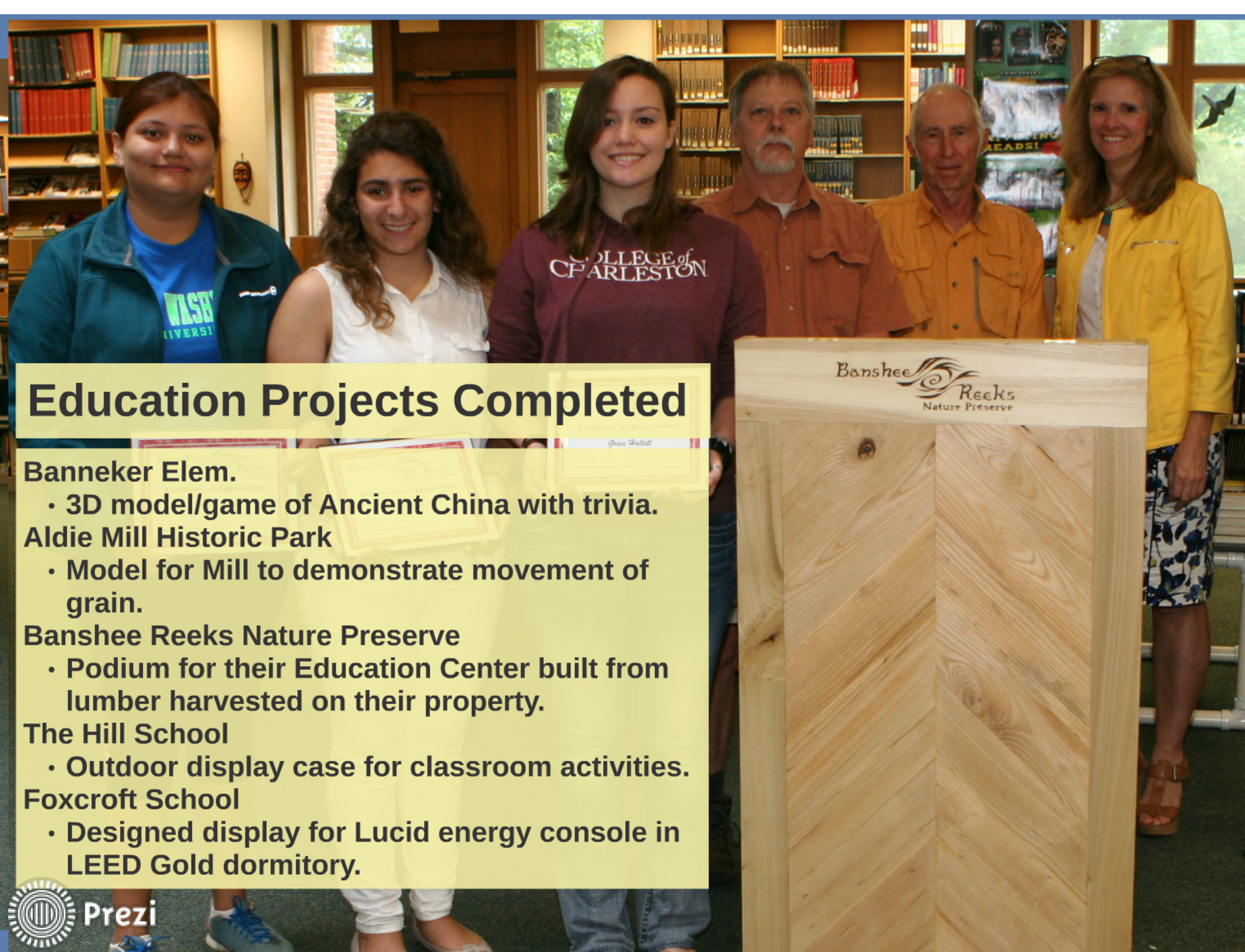*Seven Loaves Food Pantry*
Boulder Crest Retreat

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Lessons Learned

- Teams need to be balanced for skill and interest areas.
- Class needs to start with a short project that exposes students to power tools and design.
- Site visits and allowing students to choose projects that they are passionate about are keys to success.

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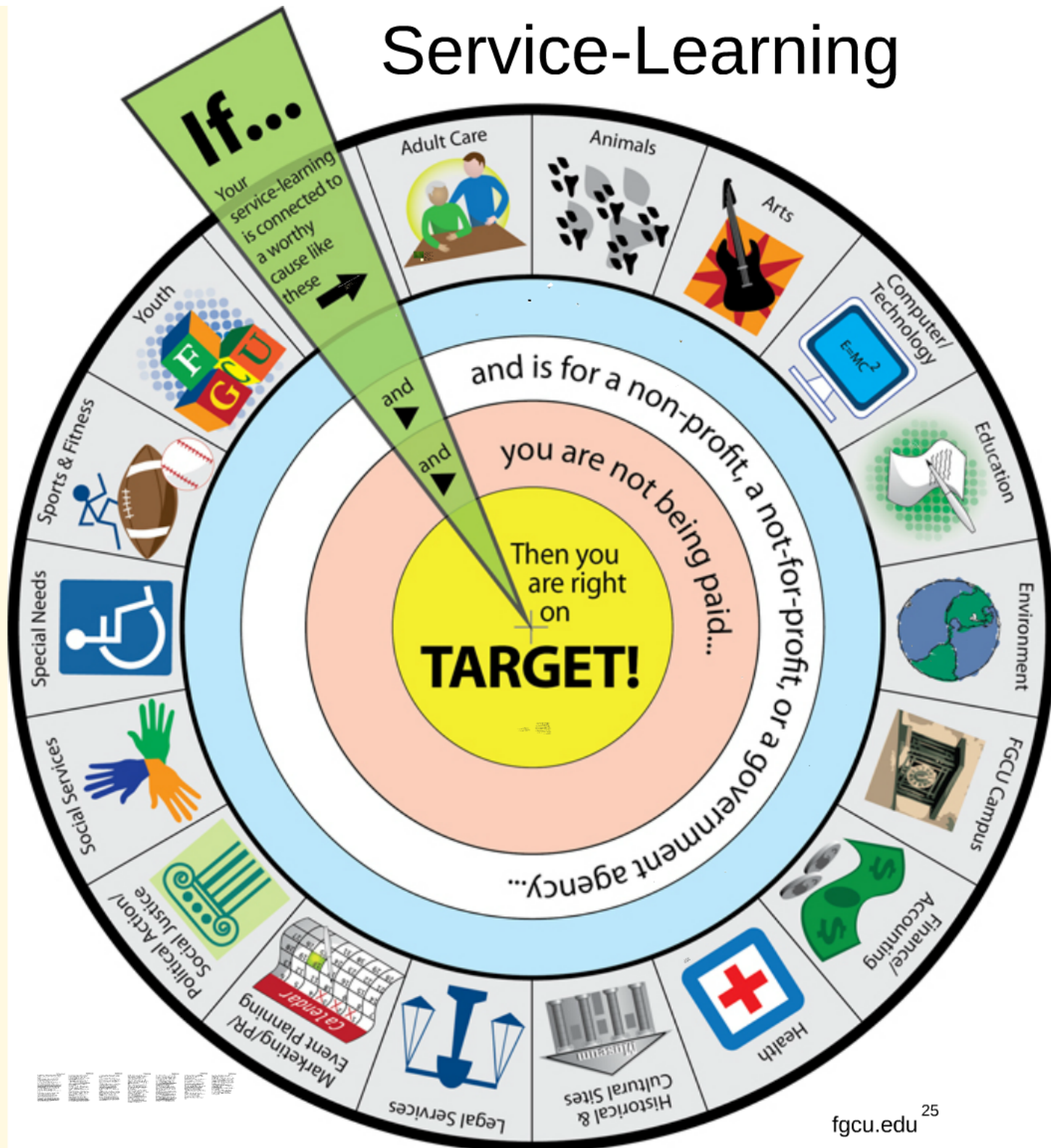
Education Projects Completed

Banneker Elem.
- 3D model/game of Ancient China with trivia.

Aldie Mill Historic Park
- Model for Mill to demonstrate movement of grain.

Banshee Reeks Nature Preserve
- Podium for their Education Center built from lumber harvested on their property.

The Hill School
- Outdoor display case for classroom activities.

Foxcroft School
- Designed display for Lucid energy console in LEED Gold dormitory.

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Access & Abilty Projects Completed to Date

Golden Dreams Therapeutic Riding Center
- Handicap-Accessible benches and flower beds.
- Grain bins

NW Works (Vocational workshop for adults with disabilities)
- Wheechair-Accessible planting beds for their commercial kitchen venture.
- Handicap-Accessible produce sorting station
- Farm cart for marketing of their produce and baked goods

Sprout Therapeutic Riding Center
- 2 Stations for a Sensory Trail
-

Boulder Crest Retreat
- Wheelchair-Accessible picnic tables for Wounded Warrior Rehabilitation Center.

Middleburg Humane
- 4-piece agility course

Human Services Projects Completed to Date

Seven Loaves Food Pantry

- Redesigned waiting room for better flow
- Designed and built 2 benches for waiting room.
- Designed new food storage room.
- Would like a design for outdoor waiting space.