



Overview

Student projects at High Tech High incorporate the HTH design principles of personalization, adult world connection, and common intellectual mission. As such, HTH projects cut across subject area boundaries and open the door to integrated curriculum planning. The aim is to help students to experience their studies as more coherent and more connected with the adult world. This planning guide offers teachers a method for working together to plan integrated units. It can be adapted by individual teachers, especially where the teacher is responsible for more than one subject area.

What Is an Integrated Unit?

Integrated units bring together academic and/or technical subject areas around a common theme. An effective integrated unit aligns with academic content standards. It follows from students' needs and interests, and prepares students for success in college and career.

Integrated units:

- provide fertile ground for high-quality student projects
- help students and teachers make connections across academic disciplines
- link academic and technical content and skills
- foster professional growth by encouraging teachers to go beyond the boundaries of their academic and technical fields
- establish a culture of professional dialogue about student work
- connect students and their work to the larger community
- bring coherence to the curriculum by providing a thematic focus for a school program, a small learning community, or a classroom.

What Does it Take to Build a Successful Integrated Unit?

From teachers:

- Cooperation and teamwork
- Agreement on core learning goals
- Risk-taking and flexibility
- Focus on deeper structures and understandings of a discipline
- Willingness to forego some specific content goals
- Peer observation and feedback
- Encouragement of student ownership

From the institution:

- A common intellectual mission that cuts across curricular disciplines
- An intellectual focus that cuts across curricular disciplines
- A flexible schedule that allows integrated project work and involvement with the world beyond school



Step 1: Learning Goals

Working in teams or alone, teachers proceed as follows:

Identify Learning Goals

- List 5–15 learning goals, concepts, objectives, competencies, or outcomes for your particular discipline or course(s).

Create Learning Goals Map

- Hang a long piece of butcher block paper on the wall.
- Draw a two-column grid on the paper. Enter each course or discipline title in the left column and the corresponding learning goals in the right column.

Share Learning Goals

- Each teacher on the team explains his/her learning goals.
- Identify common themes, ideas, competencies, and student outcomes.
- Allow for questions, clarification, and general discussion.
- Clarify common core learning goals.

Step 2: Generative Theme

What Is a Generative Theme?

Generative themes:

- are the focal point of the integrated unit
- cut across disciplines and may be addressed from a variety of disciplinary perspectives
- lend themselves to student investigation and projects
- link with student interests
- link with community issues and needs

Sample Generative Themes (HTH examples here?)

- The Environment: Love it or lose it?
- Day of the Dead: Cultural perspectives on death and dying
- What Counts: What do we measure and how do we measure it?
- The Two-Edged Sword of Technology
- Immigration and Assimilation: What does it mean to be American?
- Building Bridges: Connecting history, culture, and time
- Nutrition and Health: What's good to eat?

Brainstorm and Agree on a Generative Theme and Sub-Themes

- Brainstorm until you arrive at a generative theme that can accommodate the learning goals of the school and can be addressed through various disciplinary lenses.
- Brainstorm sub-themes that “unpack” the generative theme.

Establish “Essential Questions”

Identify four to six “big questions” that relate to the generative theme, address core learning goals, and may engage student interest.

Planning Backward: Set Goals and Objectives

Review the “essential questions.”

Develop a list of possible integrated unit outcomes, using the questions below as a guide.

At the completion of the integrated unit:

- What do you want students to understand?
(Consider this question in relation to the HTH Habits of Mind)
- What do you want students to be able to do?
(Consider this question in relation to the HTH Learning Areas.)
- What resources will students have used?
- In what ways will you have fostered student ownership?
- What interdisciplinary connections will you have made?
- What connections will students have made with the community?
- What roles will community partners have assumed?
- How will students demonstrate their learning?



Sample Generative Theme and Sub-Themes

Generative Theme

The Environment: Love it or lose it?

Generative Sub-Themes

- Global warming: rumor or reality?
- Environmental controls and roles: the government, corporations, and individuals
- The environment and developing countries: whose standards count?
- The global economy and the environment
- The local economy and the environment
- Wetlands preservation versus development
- Urban and suburban sprawl
- Pollution prevention
- Water quality
- Cars and the environment: from SUVs to electric cars
- Historical perspectives: effects of urban migration, the industrial revolution, and recent technological innovations
- The environment: teaching the next generation
- Endangered species
- Issues in recycling
- Nuclear power and the degree of risk
- Cultural perspectives on the environment: western, eastern, Native American
- Environmental illness: causes, symptoms, treatments

Essential Questions

- How can we preserve the environment for future generations?
- What is the overall impact of technological and economic progress on the environment?
- What are our priorities and who is responsible for the environment?
- Economic progress and environmental preservation: can they co-exist?

Sample Backward Planning

At the completion of the integrated unit:

What do you want students to understand? (ref. HTH Habits of Mind)

- Individuals and groups share responsibility for the environment (Relevance)
- Views of the environment are linked to culture, time, and place (Perspective)
- Everything we do affects the environment, for good or bad (Connection)
- Every solution generates new problems and opportunities (Supposition)
- There are human costs to ignoring the environment (Evidence)
- We have the power to effect change

What do you want students to be able to do?

- Demonstrate good habits with respect to the environment, e.g.-- (recycle as appropriate, be mindful of waste, exhaust, etc.) (Ethics and Responsibility)

Notes

- Explain the theory of global warming (Communication)
- Help develop, analyze, or evaluate “environmentally friendly” products (Art and Design)
- Know and interact with environmental agencies (Collaboration)
- Explain how humans and their innovations impact the environment
- Recognize various cultural perspectives toward the environment
- Be aware of careers in environmental fields
- Prepare presentations of their thinking and work (Collaboration, Technology)



Step 3: Activities, Diagram, and Timeline

Generate Integrated Projects

- Working together or alone, review your learning goals, generative theme, and essential questions.
- Brainstorm integrated projects for students that address these goals and questions.
- Brainstorm activities that use community services, businesses, and families.
- Identify possible initiating, mid-point, and culminating activities.

Generate Discipline-Specific Activities

- Working alone, think of activities and projects for your classroom that relate to the generative theme and the integrated projects. You may want to consider the following components:
 - HTH Learning Areas and Habits of Mind
 - New Standards (University of Pittsburgh)
 - Materials, equipment, resources needed
 - Assessment strategies
- Share your proposed activities with your team.
- Brainstorm projects that link two or more academic or technical areas.

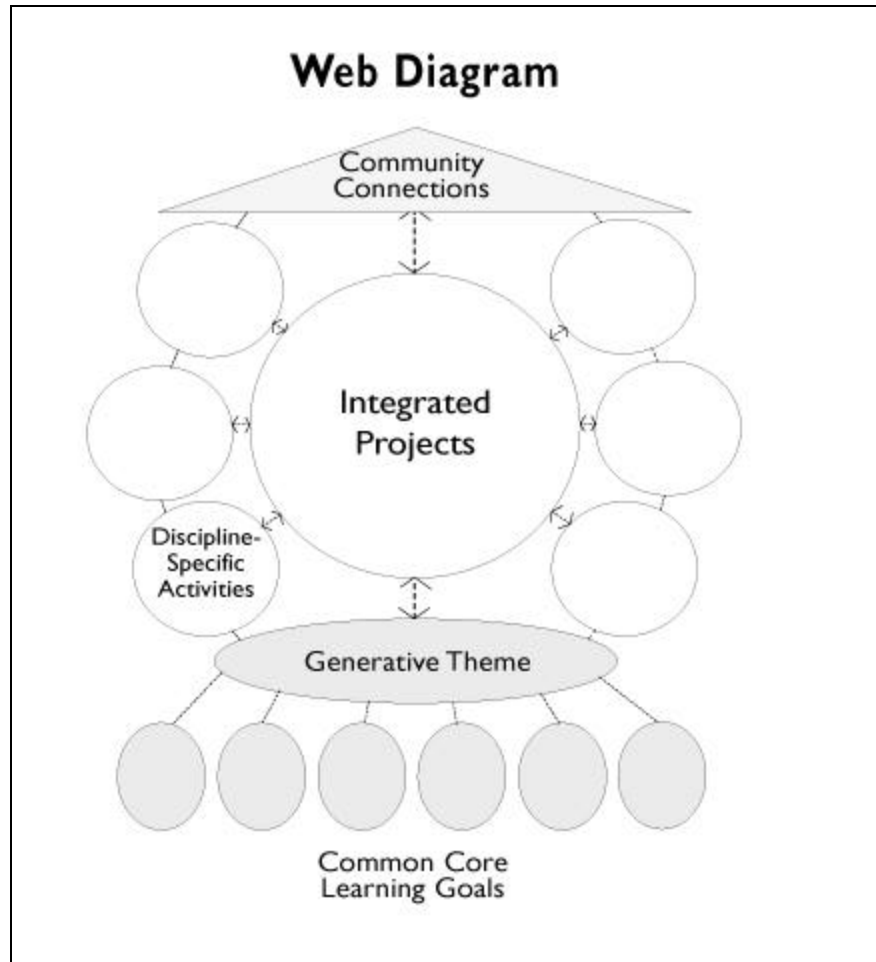
Connect with Community Partners

- Identify community resources, such as local professionals, businesses, organizations, or libraries that can assist students in their research and project work.
- Assemble an “expert panel” of local professionals with experience related to the generative theme. Ask panelists to assist in reviewing student work.
- Establish a network of “Critical Friends,” including colleagues from other schools who can offer feedback on curriculum development and activities.

Create a Diagram

Attach a large piece of butcher block paper to the wall, and draw a diagram similar to the example on page 12.

- Insert your essential questions, core learning goals and skills, generative theme, integrated projects, and discipline-specific activities into the diagram, drawing connections where appropriate.
- Refer to the diagram to generate new connections and projects.
- Discuss ways in which the theme and projects might connect to the community.
- Further develop the initiating, mid-point, and culminating activities.
- Reflect on your generative theme:
 - Is it focused enough? Is it too focused?
 - Will students find it meaningful and accessible?
 - Is there room for student input?
 - How can the community become involved?
 - How will it accommodate various content standards?



Make a Timeline

- Decide on the final activities.
- Hang a piece of butcher block paper to create a timeline:
 - Coordinate times and dates for activities.
 - Determine preparation time for mid-point and culminating activities.

Note: Remember to keep the integrated unit open to student input. The more students can generate their own sub-themes and project ideas, the greater the chance for student engagement and learning.

Sample Integrated Projects

Generative Theme

The Environment: Love it or lose it?

Integrated Projects

- Hold an environmental fair with presentations and visual displays
- Create a web site that focuses on environmental issues
- Hold an Earth Day event: develop songs, dances, plays, and games that celebrate the beauty of the earth and raise awareness
- Run a recycling campaign in the neighborhood
- Organize a whole-school activity where students and teachers “live naturally;” e.g. refrain from using any form of technology for a day
- Write and produce an original drama that predicts the earth’s environment in the year 3000 from two perspectives: (1) if we do not change our actions; (2) if we implement more environmental controls
- Analyze the impact of specific technologies on the local environment
- Participate in an ongoing wetlands reclamation project
- Create a data bank of environmental jobs for students
- Plan and paint a mural about the environment

Sample Discipline-Specific Projects and Activities

English Language Arts

- Create presentations or brochures to teach the community about “eco-friendly” habits; present the information to other classes, schools, and community groups
- Read and discuss age-appropriate books on the environment
- Write a fictional story about the environment (e.g., a fable, a science fiction story about the colonization of another planet, a profile of a doctor who finds a cure for environmental illness)
- Write a persuasive essay on a particular environmental issue
- Write and produce a one-act play that addresses environmental quality

Mathematics

- Track and graph changes in pollution levels at a bio-remediation site
- Graph rates of hearing loss in different occupations
- Survey children’s attitudes toward environmental issues; compile results and interpret data

Social Studies

- Evaluate environmental quality of life across historical periods
- Hold a debate about free trade and the international call for environmental standards in developing countries
- Interview parents and grandparents on their views of the environment
- Study and discuss the present administration’s policies toward the environment; compare with past administrations
- Visit and interview environmental political action groups

Science

- Study acid rain and its effect on local woodlands
- Investigate wetlands reclamation and beach preservation
- Interview health professionals about environmental illness
- “Adopt” an endangered species and develop a project to protect that species

Business

- Interview local industry leaders about their environmental policies
- Design and market an “eco-friendly” product

Computer Studies

- Build a web site on environmental issues
- Surf the Internet to create a resource booklet and/or web site on environmental agencies and resources
- Create a spreadsheet that calculates the average temperature of the earth over the next 10, 20, 50, 100, 1000 years



Step 4: Evaluate the Integrated Unit

Teacher Integrated Unit Evaluation

Use the questions below to reflect on your integrated unit.

1. What links did you make with among the subject areas?
2. What links did you make with the community?
3. In your view, what aspects of the integrated unit engaged and inspired the students?
4. How effectively did your unit incorporate the HTH Learning Areas and Habits of Mind?
5. What would you do differently the next time?

6. What ideas and suggestions do you have for improving the integrated unit process?

7. Thinking back, what two or three moments in the integrated unit process stand out for you? Why?

8. In what ways did your integrated unit team work well together? What were the biggest challenges?



Student Integrated Unit Evaluation

Use the questions below to reflect on your integrated unit.

1. What moments stand out as most meaningful to you? Please explain why.

2. What skills have you developed in the course of this integrated unit?
(Refer, if you wish, to the HTH Learning Areas: and Habits of Mind)*

3. What would you say is the major lesson you have learned about the theme of the integrated unit?

4. What suggestions do you have for the next integrated unit?

* HTH Learning Areas: Collaboration, Technology, Communication, Art and Design, Ethics and Responsibility, and Habits of Mind
HTH Habits of Mind: Perspective, Evidence, Relevance, Connection, Supposition