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Professor
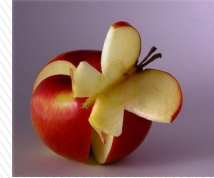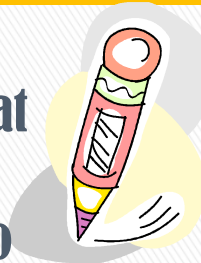University of Arkansas
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Designing Independent Projects for All Students

Big Idea

To Differentiate and Engage Students

Teachers plan authentic learning experiences that cause students to work on real-world projects to meet their diverse learning needs.

Distinctions Between Systematic Instruction and Project Work

Systematic Instruction	Project Work
For acquiring skills	For applying skills
Activity at instructional level	Activity at independent level
Teacher directs the student's work	Teacher guides the student's work
Student follows instructions	Student chooses from alternatives
Extrinsic motivation may be important	Intrinsic motivation characterizes the work particularly
Teacher addresses student's deficiencies	Teacher builds on student's proficiencies

The types of activity or task the teacher plans will be different according to which kind of learning is intended.

	Systematic Instruction for Acquiring Skills	Project Work for Applying Skills
Examples	telling the time bar graphs designing experiments	investigating change doing a survey and representing the results investigating water pollution
Activity	unknown, new challenging required closed, limited steps	familiar (maybe in new context) intrinsically satisfying chosen exploratory, open-ended
Teacher	instructs prescribes directs encourages effort	gives guidance suggests alternatives observes, listens, questions encourages ideas
Child	is as yet incapable follows instructions acts with help is uncertain about ability accepts teacher's evaluation works alone	is capable, proficient practices skills unaided acts independently is confident about ability judges own success often consults, collaborates

Source: http://www.projectapproach.org/

» By definition, the term "authentic learning" means learning that uses real-world problems and projects and that allow students to explore and discuss these problems in ways that are relevant to them.

» Authentic learning is also an approach to learning that is solidly grounded in research on learning and cognition. One widely held learning theory, *constructivism*, postulates that students learn best by engaging in authentic learning tasks, by asking questions, and by drawing on past experiences. In short, for learning to occur for students, it must take place in a way and in a place that is relevant to their "real" lives, both in and outside of the classroom.

What is Authentic Learning?

1. An activity that involves real-world problems and that mimics the work of professionals; the activity involves presentation of findings to audiences beyond the classroom.

2. Use of open-ended inquiry, thinking skills and metacognition.

3. Students engage in discourse and social learning in a community of learners.

4. Students direct their own learning in project work.

Four themes supporting authentic learning are:

Authentic learning experiences include

» **Real-world problems**
One component of authentic learning is that it targets a real problem and that students' engagement holds the possibility of having an impact outside the classroom, Rule says. "This audience beyond the classroom changes the problem from an 'exercise' to something more important, allowing students to become emotional stakeholders in the problem," she writes.
In science, for example, this may be accomplished when students collect water quality data from local streams. Model lessons that address authentic learning in social studies could include students' analysis of primary documents related to the Pledge of Allegiance. In developing literacy, reading resources could be connected to real life with bus schedules, maps, diaries and interviews with people.

» **Inquiry and thinking skills**
For authentic learning, students must exercise higher levels of thinking, according to this analysis. For example, science teaching should reflect the scientific process of knowledge construction. Learning in mathematics should occur through discovery, inquiry and induction. Instead of math problems that require that students merely apply a known procedure, authentic mathematical tasks require solvers to use different representations in their solutions and to work with realistic and complex mathematical data. In art education, students can use thinking skills to deconstruct visual and textual information in media ads.

Authentic learning experiences include ›

» **Discourse in a community of learners**
A community of learners can be a group of learners working together to unravel a problem or refer to the community setting in which the project is based. Science investigations should link students to scientists through data sharing, critiquing, and direct communication. Multiculturalism can be brought to the classroom by exploring numbers in other languages, symbols of ancient societies and games of skill and chance from around the world.

Authentic learning experiences include ›

» **Student-directed learning**
For authentic learning, problems must have a personal frame of reference and be open-ended, according to this article. "This cannot happen without student choice in defining the problem and selecting the path of its solution," Rule writes. In the field of health promotion and wellness, for example, educators provide information so that individuals may make informed choices.

Choice also occurs when students make their own interpretations of literature and art. "Research related to effective instructional practice emphasizes the need for greater personalization and individualization of instruction because learning is an individual experience," the article states. Instruction can be personalized by allowing the learner to choose from the rich variety of pathways.

» http://itunes.apple.com/us/itunes-u/from-worms-to-wall-street/id395540445?i=87793256

» *source: "Editorial: The Components of Authentic Learning" by Audrey Rule, Journal of Authentic Learning Volume 3, Number 1, August 2006, Pp. 1-10. retrieved from http://www.ernweb.com/public/908.cfm*

Authentic learning experiences include ›

Authentic Learning Examples

» **Authentic Learning for Elementary Students with Disabilities**
Numerous authentic learning opportunities exist for elementary students, and the rewards are incalcuble. Barbara McLaughlin's self-contained, grade 3-4 students at Chebanse Elementary in Chebanse, Ill., took their study of the butterfly beyond reproduction to helping the environment. McLaughlin's students got an up-close glimpse into the insect's life cycle when they grew monarch butterflies from larvae, then studied the monarchs' migration patterns and their role in pollinating plants in Canada, Mexico, and the United States. McLaughlin incorporated reading, writing, math, social studies, and art in the assignments.

» When the students released the butterflies, they also made paper butterflies and wrote messages on them as part of an exchange with students in Mexico. In the spring, McLaughlin's students received butterflies with messages from Mexican children.

» "The kids feel really important that they have a part in preserving wildlife and in communicating with children from another country," McLaughlin says. McLaughlin also noted that her students with autism made significant gains as they became engaged in the project. They related more positively to their peers, became more expressive in their language, and increased their receptive language skills.

» Source: **Authentic Experiences Foster Deep and Lasting Learning for Students with Disabilities and Gifts and Talents**
» *By Terrey Hatcher Quindlen*
http://www.cec.sped.org/AM/Template.cfm?Section=Home&CONTENTID=6248&TEMPLATE=/CM/ContentDisplay.cfm

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Student-Centered Learning

Student-centered learning can lead to mastery, because the lesson has personal meaning that they can see has the potential to increase their success and skill in achieving something they care about.

Research-Based Strategies to Ignite Student Learning by Judy Willis, M.D. • ASCD • p. 20

The brain-based learning research reinforces the need for classrooms to once again become places where the

IMAGINATION	SPIRIT	CURIOSITY

are encouraged, rather than left outside in the playground when the school bell rings.

Research-Based Strategies to Ignite Student Learning by Judy Willis, M.D. • ASCD • p.73

Independent Projects

Description of Strategy

Process through which student and teacher identify problems or topics of interest to the student. Both the student and teacher plan a method of investigating the problem or topic and identifying the type of product the student will develop. This product should address the problem and demonstrate the student's ability to apply skills and knowledge to the problem or topic.

Independent Projects

Rationale for Use

- » Builds on student interest
- » Satisfies curiosity
- » Teaches planning and research skills at advanced levels
- » Encourages independence
- » Allows work with complex & abstract ideas
- » Allows long-term and in-depth work on topics of interest
- » Taps into high motivation

›

Independent Projects

Guidelines for Use

- » Build on student interest
- » Allow the student maximum freedom to plan, based on student readiness for freedom
- » Teacher provides the guidance & structure to supplement student capacity to plan and ensure high standards of production
- » Use present timelines to zap procrastination
- » Use process logs to document the process involved throughout the study
- » Establish criteria for success

›

Steps for Guiding Student Research

- Assess, Find, or Create Student Interests
- Help Students Find a Question(s) to Research
- Develop a Plan of Action to Guide the Research
- Help Locate Multiple Resources
- Provide Methodological Assistance
- Develop a Research Question(s) to Answer
- Provide Managerial Assistance
- Help to Find Products and Audiences
- Provide Feedback/Escalate the Process
- Evaluate

Assess, Find, and Create Interest

Investigations Stem from Many Sources:

- Individual interests
- Curricular units of study
- Problems that exist in the world (city, state, community, global, etc.)
- Unresolved questions
- Someone asking students to generate solutions to problems

Strategies for Generating Interest:

- Sharing articles from *Discover, Newsweek*, newspapers
- Guest speakers
- Student interest inventories/questionnaires
- Questions that students ask
- Student identified problems
- I wonder bulletin boards
- Interest centers

If *I* ran the school . . . .

Name _____ Grade_____Teacher_____

If I ran the school, I would choose to learn about these ten things.
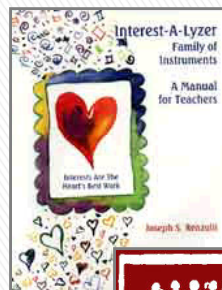
I am really interested in:

- The Stars and Planets
- Birds
- Dinosaurs and fossils
- Life in the Ocean
- The Human Body
- Genetics
- Animals
- Outer Space
- Insects
- Chemistry
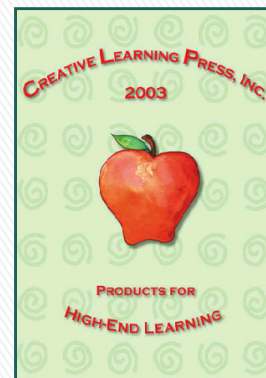- Diseases

I am really interested in:

- Families
- Countries
- My Community
- Famous People
- Holidays
- Explorers
- Travel and Transportation
- Wars
- History of Long Ago
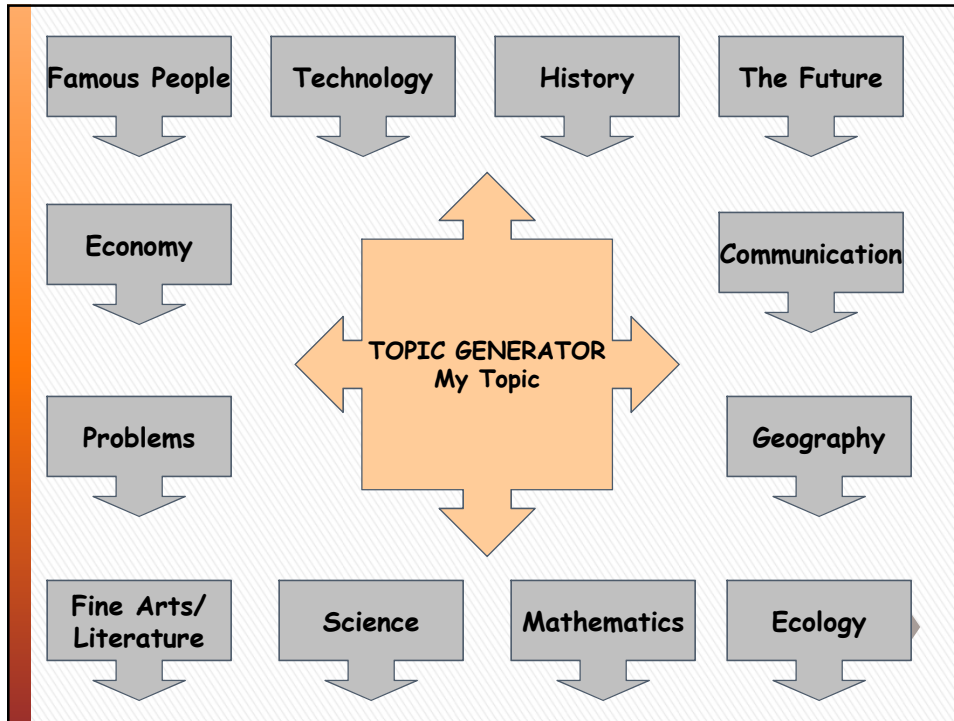- The Future

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Interest-A-Lyzers

Interest-A-Lyzer Family of
Instruments
Author: Joseph S. Renzulli
Copyright 1997
80 pages
ISBN: 0-936386-69-X
Grade Level: K-12
This manual describes the six
interest assessment tools that
comprise the Interest-A-Lyzer
"Family of Instruments." Dr.
Renzulli discusses the importance
of assessing student interests and
provides suggestions for
administering and interpreting
these instruments in the school
setting. Sample pages from each
interest assessment tool are
included in the appendix.

http://www.creativelearningpress.com

TOPIC GENERATOR

Famous People	Technology	History	The Future
Economy			Communication
Problems	**TOPIC GENERATOR** **My Topic**		Geography
Fine Arts/ Literature	Science	Mathematics	Ecology

Who Does Research?
What kinds of questions would these people ask?

Person	Questions They Ask?
Doctors	
Newspaper Reporters	
Teacher	
Writer	
Historian	
Geographer	
Wildlife Biologist	

Name(s) _____

Questions, Questions, Everywhere

Researchers are always asking questions about the world around them. They notice things that are interesting, they make observations and wonder why certain things behave as they do, and they are sensitive to problems. Generate some of your own questions that you WONDER about.

Categories
> Eating habits
> Rules
> Culture
> Community
> Friendship
> School
> Growing Up
> Beliefs
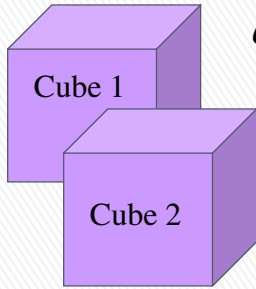> Homeless
> Elderly

?

?

?

Help Students Find a Question(s) to Ask

- Listening to their questions
- Observing their actions
- As they begin to wonder why
- Their pattern of reading interests
- Favorite subjects
- Extracurricular activities
- When they mention a concern
- Casual statements or opinion
- Interest in particular topics
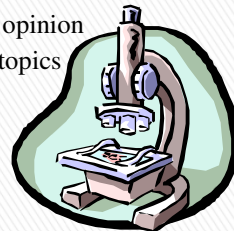
Generating Research Questions

Cube 1

Cube 2

Cube 1 Words
Who, What, When/Where,
Why, How, Which

Cube 2 Words
Is, Can, Will, Could (Should,
Would), Might, Did

- **Roll the dice to generate beginning questions. Select one word from each cube to generate possible questions.**
- **Use research phrases to prompt possible research questions.**

It might be interesting to know if?
It might be interesting to know how?
It might be interesting to know why?
Historically, I wonder how or why?
I wonder if _____ is related to _____?
What factors influenced..?
If I _____, I wonder if _____will occur?

›

QUESTION BOXES
FILL OUT THE BOXES WITH YOUR QUESTIONS.

	Is	Did	Can	Will	Might	Should, Would, Could
Who						
What						
When/ Where						
Which						
Why						
How						›

Name(s) _____

Provide Methodological Assistance

» Shift from <u>learning about to learning how</u> to gather, categorize, analyze, and interpret data.
» Learn the <u>different types</u> of research conducted by professionals and the <u>tools and methods</u> they use to conduct their research.

- How to gather data from your questions
- Interviews (questioning individuals, asking open-ended questions)
- Surveys and questionnaires (make one)
- Recording notes
- Recording references
- Designing an experiment

›

Provide Managerial Assistance

» Provide access to people and equipment.
» Help students to design a way to gather data, organizing findings, and report findings.

›

Develop a **Plan of Action** *to*
Guide the Research

WHAT:	RESOURCES:	STEPS:
This is what I plan to research.	These are the resources I need to conduct my study.	Here are the steps I need to take to accomplish my plan.
PROBLEMS: These are the problems that I may encounter.	**AUDIENCE:** This is the audience who could benefit from my research.	**PRODUCT:** This is the type of product that I could create.

Research Planning Sheet

Name_____Date_____Class_____

Problem Finding: Identify the research problem or the area of interest you wish to investigate.

Problem Focusing: State the research question(s) that will guide your study.

Research Design: Identify the type of research that you will use in your study.
❑ Descriptive
❑ Correlational
❑ Historical
❑ Experimental
❑ Developmental
❑ Case and Field

Sample Selection: Explain the type of sampling that you will use.
Who:_____ How many:_____
How: Random   Systematic   Stratified   Cluster

Data Collection: Identify how you will collect your data.
Observation   Survey   Experimental results
Interviews   Document analysis   Questionnaires

Data Analysis: Identify the type of research that you will use in your study.
❑ Qualitative
    •Mean, mode, median, range, variance, standard deviation, frequency
    •Chi Square
    •T-Test
    •Correlation
    •Other
❑ Quantitative
    •Domains
    •Themes
    •Taxonomies
    •Other

Reporting Results: In what format will you report your results? Who will be
your audience?

❯

Research Questions   *References*

Question #1	Books
	Journals
Question #2	Videos/CD/Films
	Person
Question #3	Newspapers

•Color code your question and answer cards
so they match.
•Glue computer disk holder on the back of
the research folder.
•Provide examples of how to cite sources on
each reference page.

Data File

❯

Research Folder Design

Name _____   Date _____

School ─────────────   Homeroom─────────────

My Activities:
- _____ _____ _____
- _____ _____ _____
- _____ _____ _____
- _____ _____ _____
- _____ _____ _____
- _____ _____ _____
- _____ _____ _____

Evaluation:
- ☐ **I completed my goals.**
- ☐ **I used my time wisely.**
- ☐ **I did my best thinking.**

Something I learned today:

Next time I plan to:

ACCOMPLISHMENT PLAN ❯

Help Locate Multiple Resources

» Books
» Magazines
» Individuals for interviews
» Places to write for information
» Historical documents
» Other researchers
» Use the "web" and other electronic resources

❯

Help Identify Final Products and Audiences

» **Products are authentic to the discipline**

» **Products show evidence of growth in content and in skill usage**

» **Products uses multiple references**

» **Products help to explain what has been learned**

» **Show evidence of increased problem-solving, planning, and decision-making abilities;**

» **Show evidence of increased proficiency with methodological skills;**

» **Show evidence of increased understanding of research procedures;**

» **Approximate the types of products that practicing professionals create in their fields.**

Evaluate the Process

Name of Student:
Title of Project:
Date Started: **Date Completed:**

1. Variety of Resources Used to Complete the Project ………………………………

2. Level of Resources Used to Complete the Project   ………………………………

3. Level of Advanced Knowledge Gained While Completing the Project …………………..

4. Time and Effort Put Into Completing the Project   ………………………………………………

5. Authentic Methodology Used During the Project   ………………………………………………

6. Care and Attention to Detail in Completing the Project……………………………………..

7. Quality of Final Project in Comparison to Others His/Her Age……………………………

8. Task Commitment While Completing the Project   ………………………………………………

9. Independent While Completing the Project   ………………………………………………

10. Appropriate of Audience for the Project   ………………………………………………

11. Originality and Uniqueness of the Final Project   ………………………………………………

Modified from

Guiding Questions for Independent Study Development

Selecting a Topic

1. What are the content parameters for the project? Have you stated clearly what the student should come to know, understand, and be able to do as a result of the independent study?
2. Once the student has selected a preliminary topic, did you have him/her "graze" among resources to see whether enough information (or too much) exists on the topic, whether the topic will have staying power for the student, and whether the student can understand the topic in a reasonable way?
3. Have you guided the student to do a cursory survey to understand important sub-topics or issues, essential information about them, and key questions that must be asked in order to probe the topic appropriately?
4. Have you helped the student focus and pose an actual question(s) to investigate?

Guiding Questions for Independent Study Development

Use of Resources

1. Are the range and types of resources the student uses important? If so, make that clear.
2. Have you helped the student think about resource quality?
3. Have you helped the student know how to keep track of sources and the data from those sources?
4. Have you helped the student know how to synthesize information and ideas (vs. stringing facts together without personal understanding)?

Guiding Questions for Independent Study Development

Planning the Quest

1. Should the student use a mentor? What will the mentor's role be? Should there be a written agreement with the mentor?
2. Do you need to see the data? In what format? Do you want to see the student's final research question(s)?
3. Should you and the student draw up a timeline for all phases of the independent study?
4. Should the student keep a process log or diary of what he/she is thinking and how she is working?
5. Will you suggest a range of possible modes of presenting findings (e.g., a drama, video, photo essay, essay, or formal speech)? Students would benefit from an explanation of each option.
6. Will there be a formal presentation to a school audience or a "real" audience beyond the classroom? How and when will it be set up?

Guiding Questions for Independent Study Development

Supporting Documents

1. Will you provide the student with a set of instructions or other "roadmap" for the project?
2. Should you develop guidelines for student behavior while working independently (e.g., when the student must be in class vs. working in another location)?
3. Will you send an informational letter to parents explaining the nature of the project, guidelines for positive parent support, timelines, etc.? Can the student play a role in developing explanations for parents?

Guiding Questions for Independent Study Development

Criteria for Success

1. What criteria for success will you develop related to content, thinking, planning, persistence, presentation? How will the criteria help the student understand growth toward excellence and expertise? Will the mentor play a role in establishing professional level criteria?

2. What criteria for success will the student develop? Does he or she need any samples or models of criteria?

3. Will this investigation be graded? Has that been clearly explained?

Source: Tomlinson, C.A. & Imbeau, M. (1999). Teacher to teacher: Making independent study work. *Teaching for High Potential, 1* (1), 104.

When possible, engage and maintain students' attention by providing opportunities for them to set their own pace, select the hook that will connect them to the topic, and have some choice in the way they learn the information.

Research-Based Strategies to Ignite Student Learning by Judy Willis, M.D. • ASCD • p. 43

Preserving Our Identity

DI and 21st Century Learning Skills

Know

– Various regions of the state, including how their characteristics and physical environments affect human activity.

Understand

– The study of state history reveals the *identity* of a particular place and people.
– Public historians use a set of tools and methods in their research to profile, chronicle, and communicate about the history of people.
– Humans seek to understand their historical roots and to locate themselves in *time*.
– Interconnections between state characteristics, culture, and physical environment create state identity.

Do

– Plan and make a written, oral, or visual presentation for a planned purpose and audience.
– Identify and communicate about the lives of people who helped build our state.
– Make connections between past and present using primary and secondary sources.
– Analyze primary and secondary sources.
– Retells historical stories about the community using a variety of sources: maps, photos, oral histories, newspapers, and letters
– Use creative and critical thinking skills to plan and create products that reveal understanding
– Identify tasks that require a coordinated effort and work with others to complete those tasks.

Give students curriculum that promotes thinking

"Making History Public"
A performance assessment for
a unit on state history

Our state is getting ready to open a museum that will celebrate our state's history. For our project, you will take on the role of creating a museum exhibit that communicates to others the identity of our state. Each of you will have a chance to apply for a position at the museum: museum curator, public historian, exhibit designer, or museum docent. Together you will design one exhibit that you feel symbolizes our state identity.

Beasley, 2007

» Some students may feel more comfortable working in partners for a particular job. It is important to make sure that each job has carefully delineated roles to allow all students to feel successful in the making of each exhibit. Offer all students specific dates and checklists if they would like to use them.

Commentary ›

Preserving Our Identity

We will each be a part of an exhibit team that will contribute to our state history museum. The following jobs are open for your application:

Museum Curator, Public Historian, Exhibit Designer, and Museum Docent

Curator

- » *Your role is focused on how the exhibit is interpreted. You are responsible for:*
- » Formulating the exhibit concept
- » Researching the interpretation of the historical evidence
- » Collection evaluation, selection, and development
- » Documentation
- » Preparation of the exhibition brief (the short paragraph about the exhibit)

Public Historian

- » *Your role is focused on how the information for the exhibit is collected and displayed. You are responsible for:*
- » Collecting and tagging historical evidence
- » Working with the Curator to determine the exhibit concept

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Exhibit Designer

- » *Your role is focused on the designing and executing of the museum space. You are responsible for:*
- » Designing the space and visual elements that enhance the information you are sharing
- » Working with the Public Historian and Curator to make their "Big Idea" come to life!
- » Working with the writer to place the artifact signs in the appropriate places

Museum Docent

- » *Your role is focused on conducting tours and encouraging visitors to explore the exhibit. You are responsible for:*
- » Preparing a script to lead audiences through the museum exhibit
- » Working with all members of your group to make sure that the "Big Idea" of the exhibit is clear to all audiences
- » Being cheerful and willing to work with visitors to the museum exhibit!

Preserving Our Identity

» The project can take a lot of managing on the teacher's part, but students will begin demonstrating their creative ability to pull together all they have been learning throughout the unit. As a facilitator, I needed to continue keeping students focused on the "big idea" behind their exhibit. It was easy to get wrapped up in the creative process and lose sight of the message the exhibit was trying to convey. This is a great conversation to have with students. Many museums wrestle with this idea all the time!

» Note the directions that are provided to the students in the form of a **Museum Exhibit Action Planning Guide.** This should assist students in remaining focused on this assignment.

» The teacher may also want to give explicit directions with regard to the following:
  > Noise levels
  > How to get help
  > Purposeful movement
  > Designated work areas in the room
  > Access to and distribution of materials
  > Provide a rubric and/or an exemplar for students to know what quality looks like

Museum Exhibit Action Planning Guide

An action plan is an outline or description of a project that serves as a step-by-step guide to making your team's project a success. Complete the steps below as you organize your project.

Promotes successful collaboration

Step 1: Define the "Big Idea" for your exhibit

Determining the "Big Idea" for your exhibit will provide the focus your team needs to make happen. Here is where you want to talk about how you want your state to be identified. What kinds of resources will you need to make this happen? List your ideas and resources.

Step 2: Ask Questions

Finding out the important questions related to your exhibit topic ensures that you will have a set of guidelines for taking action in accomplishing your mission.

Step 3: Design Activities, Create Timelines, and Assign Roles

Describe the actions that will help the team answer the questions developed in the previous step. Put together a step-by-step outline or plan for each task associated with each activity. This plan should include which team members will participate, when the activity will take place, and where it will happen.

*Action Plan adapted from J.H. Leppien & C. Bobbit "Using Biography and Autobiography to Understand Challenge, Choice, and Chance" in **The Parallel Curriculum in the Classroom, Book 2** (2006).*

Guide

Step 4: List Materials

List the materials and resources your team members need to complete the project.

Step 5: Implement Your Plan

Begin your team plan by implementing the activities that you listed in step 3. Keep track of your team progress by recording findings in a notebook.

Step 6: Develop the Product

Determine the type of exhibit that is best for the type of project that you selected. In some cases some of you will be creating virtual exhibit or audio tour as products, while others may create a traditional artifact-centered exhibit. Describe the type of exhibit you will create.

Step 7: Reflection

Don't wait until the last minute to evaluate your team project. Take time to reflect along the way. This way you can revise your plans and make the necessary adjustments to ensure success.

Expert Teachers

1. Can identify the most important ways in which to represent the subject that they teach (deep knowledge vs. surface knowledge).

2. Are proficient at creating an optimal classroom climate for learning (atmosphere of trust; okay to make mistakes; trust between teacher & student and between student & student; everyone—including the teacher is involved in the process of knowing; cool to learn; confidence that we can all know).

3. Monitor learning and provide feedback. (Through information gathering and responsiveness to students, they anticipate when interest is waning, know who is not understanding, and make adaptations as needed. A typical lesson never goes as planned.)

3. Believe that all students can reach the success criteria. (Requires teachers to believe that intelligence is fluid rather than fixed, have a high respect for each student, and show a passion that all can attain success.)

4. Influence surface & deep student outcomes. (The teacher must set, challenging goals, invite students to engage in the challenges, & commit to achieving the goals.)

Hattie, J. (2012). *Visible learning for teachers: Maximizing impact on learning*. New York: Routledge, pp. 25-27

Teachers Comfortable with Differentiation and Authentic Learning Exhibit:

A growth mindset, teacher-student connections, and community of learners typifies the class

Routines are fluid, designed by teacher and students, taught, practiced, refined together

Curriculum consistently demonstrates engagement, understanding (meaning and sense) for all students. Teaching up is a norm.

Assessment routinely addresses KUDs with emphasis on understanding and transfer

Real-world projects that engage students and cause them to use the skills of professionals

A repertoire of instructional strategies is broad and often teacher-invented to address particular student and group needs