



The NAF Learning Handbook

Implementation of NAF's Curriculum

The NAF Learning Handbook

The purpose of *The NAF Learning Handbook* is to familiarize teachers with the principles underlying the NAF curriculum, the instructional approach, the organizational structure, and the strategies and activities commonly used. The goal is to make teachers more confident and competent in the classroom.

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Foundation of NAF's Curriculum

Much groundwork went into developing the NAF curriculum. The objective is to offer courses that embody the principles of *NAF's Educational Design*, that prepare students for college and career by focusing on both career skills and literacy skills, and that truly engage students in learning by making instruction rigorous, relevant, and student-centric as much as possible.

NAF is a national network of education, business, and community leaders who work together to ensure that high school students are college, career, and future-ready. NAF's educational design ignites students' passion for learning and allows businesses to shape America's future workforce by transforming the learning environment to include STEM-infused industry-specific curricula and work-based learning experiences, including internships. Since 1982, NAF has been partnering with existing high schools in high-needs communities to enhance school systems at a low cost by implementing NAF academies—small learning communities within traditional high schools.

NAF has grown from one NAF Academy of Finance in New York City to hundreds of academies across the country focusing its curricula on growing industries, including finance, hospitality & tourism, information technology, engineering, and health sciences. During the 2018-2019 school year, 109,800 students attended 617 NAF academies across 35 states, including DC and the US Virgin Islands. In 2019, NAF academies reported that 99% of seniors graduated with 82% of graduates planning to go to college.

In 2014, NAF and corporate partners crafted the pioneering NAFTrack Certification, a rigorous and comprehensive assessment system that evaluates students on academic proficiency, project execution, and internship performance. Several of America's top companies have committed to NAFTrack Certified Hiring, a promise to give special consideration to college students and eventual job applicants who, as high school graduates, have earned NAFTrack Certification. For information on how to teach the course in the context of NAFTrack Certification—that is, how to ensure that students master the skills and knowledge they need to be successful on the assessments and get one step closer to earning their NAFTrack Certification—refer to any course's NAFTrack Certification Course Guide.

NAF's Education Design - Curriculum

NAF implements a flexible educational design through public and private partnerships to ensure that high school students are future-ready. The four elements of NAF's educational design build on each other to transform the high school experience, engage students, support school and district priorities, and allow businesses to shape America's future workforce. Curriculum & Instruction is one of these critical elements, and it works best when used in conjunction with the other critical elements of the NAF educational design.

1. **Academy Development & Structure:** NAF academies are structured as small, focused learning communities that fit within and enhance high school systems, allowing NAF to become an integral part of a plan for higher achievement at low cost. NAF promotes open, choice-based enrollment for its academies in order to maximize every student's chance at a successful future. The flexible structure encourages teacher collaboration across subject areas and fosters personalization to meet student, school, district, and state needs and goals.

2. **Curriculum & Instruction:** NAF provides a rigorous, industry-validated career-themed curriculum that incorporates current industry standards and practices, literacy strategies, and STEM components. NAF's instructional practices foster career-themed integration so students can make connections across subject areas. The NAF curricula are created in partnership with industry professionals and designed around projects that help students acquire valuable workplace skills and see their education as a step toward long-term career options. NAF empowers teachers to expand the boundaries of the classroom in nontraditional ways that ensure lessons have real-world applications to growing industries.
3. **Advisory Boards:** NAF advisory boards provide an essential bridge between schools and the workplace. Business people and community leaders volunteer on local advisory boards to play an active role in developing their future workforce by shaping talent in high school. Advisory board members collaborate with educators to inform curricula and help organize work-based learning activities. Advisory boards offer opportunities for students to build relationships with mentors early and learn from successful adults.
4. **Work-Based Learning & Internships:** Work-based learning brings the classroom to the workplace and the workplace to the classroom. This instructional strategy provides students with a well-rounded skill set that goes beyond academics and includes the 21st-century skills needed to succeed in college and the working world. NAF's approach to work-based learning is centered on a continuum of work-based learning experiences beginning with career awareness activities, progressing to career exploration activities, and culminating in career preparation activities, including internships. Business people guest-speak in classrooms, host college and career skills workshops, and take part in mock interviews. Students have the opportunity to tour worksites and to network with and shadow business professionals. Work-based learning culminates in a paid internship that allows students to apply their classroom skills and learn more about what it takes to succeed in their careers.

Developing Fundamental Career Skills

Part of NAF's mission is to help students master the career skills they will need to be successful in the work world. In each lesson, two or three activities are identified that focus on one or more of these career skills. As you work with your students, we encourage you to help them make the connection between what they are doing in class and the career skills that they are developing. The curriculum highlights the following skills:

- Demonstrating teamwork and collaboration
- Working effectively with a diversity of individuals and perspectives
- Demonstrating adaptability and flexibility
- Developing awareness of one's abilities and performance
- Using time efficiently when managing complex tasks
- Demonstrating initiative and resourcefulness in challenging situations
- Thinking critically and systemically to solve real-life problems
- Prioritizing and completing tasks without direct oversight
- Demonstrating ethical academic and professional behavior
- Demonstrating the ability to write effectively

- Demonstrating the ability to speak effectively
- Demonstrating the ability to listen effectively
- Using technology relevant to a profession effectively
- Locating, evaluating, and applying information
- Demonstrating creativity and innovation
- Using quantitative reasoning effectively
- Demonstrating precision and accuracy in communications
- Asking appropriate and effective questions
- Understanding the opportunities and requirements in this industry or field
- Understanding the career opportunities and requirements in the specific occupational area related to a project

Developing Literacy Skills

NAF knows that literacy, the ability to read, write, speak, and listen effectively, plays a dominant role in academic success as well as professional success. Every lesson in the NAF curriculum includes at least one formal literacy activity designed to strengthen students' skills in reading, writing, and speaking. The curriculum seeks to support teachers of all subjects in their role as literacy instructors by providing research-based strategies that help students improve in all aspects of literacy.

Students build proficiency in writing essays, reports, and other academic genres, but they also learn about the many genres specific to the professional world. They conduct interviews, write business proposals, develop PowerPoint presentations, and practice using a professional tone in emails and letters. Students create professional documents such as financial reports, how-to guides, travel brochures, and creative briefs. As students receive more and more exposure to writing for the professional world, the importance of learning new vocabulary, and using proper grammar and spelling, becomes increasingly apparent to them.

Literacy in the NAF curriculum also encompasses developing solid presentation skills. Students have numerous opportunities to speak before an audience. Considering how daunting speaking in front of a group can be, the curriculum eases students into strengthening this skill. Students' comfort level with public speaking and their ability to articulate improve as they routinely explain their thinking on various topics to a partner or in a small group. Sharing with partners and in small groups also helps to develop students' confidence in social situations. From here, students move on to presenting to the whole class and larger audiences.

Each NAF course provides students with tools to help them develop a working vocabulary of terms that are relevant to the industry sector they are studying. For example, at the outset of the Computer Networking course, students create an alphabetical taxonomy of all the words they can think of related to computer networking. As they work through lessons, students group new words they learn into categories, identifying characteristics that set one word apart from other words in the same category, and use the words they learn in written pieces. Rather than handing students' lists of words with definitions, the curriculum seeks to have students work with the information they learn to create definitions that are meaningful to them, and to practice using the words they learn in industry-related genres of writing.

Learning Strategies Engage Students

Student engagement is the cornerstone of effective curriculum and instruction. Students are engaged when they care about the material they are learning and have a stake in mastering the content. Engaged students are excited to invest in their learning efforts and find ways to incorporate what they are learning into their lives. They are involved in their work, persist despite challenges, and take pleasure in their accomplishments. NAF has implemented a set of strategies that foster student engagement. When you teach a NAF course, it is essential that you understand how and why these strategies are used, and that you make the best use of them for engaging your students.

Rigor and Relevance

Students are likely to be engaged in a learning activity when it is complex, ambiguous, and provocative and/or elicits an emotional response. At NAF, we refer to these elements collectively as "rigor." Students feel compelled to learn and push themselves to find answers or come to conclusions. NAF's curriculum begins each lesson with a rigorous springboard activity that is intended to help students answer the question, "Why should I care about what I am going to learn in this lesson?" Many opening activities are provocative, causing questioning and debate, drawing students into a position where they want to know more. Others intrigue students with content that is ambiguous and complex, drawing them into further exploration and reflection. Also, still others, like a video on the eradication of smallpox, draw an emotional response from students and awaken in them a desire to learn more because they feel it matters to them personally. As a NAF teacher, you can capitalize on these rigorous activities to bring your students to a deeper level of involvement with the course content.

NAF's curriculum is relevant to engage students by linking what students are doing in the classroom to what they will be doing in their future professional lives. Students should be fully aware that they are developing the skills that professionals in the industry use every day.

In addition to being relevant to the professional world, curriculum content is also intended to be relevant to students' daily lives. The curriculum is geared for urban teens, with their particular interests and lifestyles. Readings, presentations, and activities represent the diversity of American public high schools. The curriculum addresses a target audience that includes students who will be the first in their family to go to college and students who have limited experience interacting with professionals. While working through a course with your students, you may want to adapt activities to make them more relevant to your particular student population. Alternatively, at certain junctures, you may want to discuss with students how specific content is particularly relevant to their lives.

Cooperative Learning

Every NAF lesson includes activities that require students to work in groups or pairs. Small groups create an interdependence as students achieve learning goals. By discussing issues and solving problems together, students can learn from each other and develop autonomy and confidence in their problem-solving skills. The interaction that group work requires also increases retention of content and ensures that students are continually improving their communication and social skills.

Students learn the importance of maintaining group function and harmony and respecting personal views.

NAF identifies *cooperative learning* as a particular type of group work where students meet all five of the essential elements described in the following list. Most group work in NAF courses includes one or more of the elements, but not all of them. In all NAF courses, the culminating project is an example of authentic cooperative learning.

Five Elements of Cooperative Learning

1. Positive Interdependence (Sink or Swim Together)
 - Each group member's efforts are required and indispensable for group success.
 - Each group member makes a unique contribution to the joint effort through his or her resources, role, and task responsibilities.
2. Face-to-Face Interaction (Promote Each Other's Success)
 - Explaining how to solve problems
 - Teaching one's knowledge to others
 - Checking for understanding
 - Discussing concepts within the lesson
 - Connecting present with past learning
3. Individual & Group Accountability (No Hitchhiking! No Social Loafing!)
 - The entire group is collectively accountable for meeting the goals and objectives of the assignment, and each student is individually accountable for his or her piece(s) in the project.
 - You may want to use some of the following techniques to manage individual and group accountability:
 - Keep the size of the group small. The smaller the size of the group, the higher the individual accountability may be.
 - Give an individual test to each student.
 - Randomly examine students by calling on one student to orally present his or her group's work to you, in the presence of the group.
 - Observe each group and record the frequency with which each member contributes to the group's work.
 - Assign one student in each group the role of the checker. The checker asks other group members to explain the reasoning and rationale underlying group answers.
 - Have students teach what they learned to someone else.
4. Interpersonal & Small-Group Skills (Being a Team Player)
Students explicitly learn and practice:
 - Leadership
 - Decision making
 - Trust building
 - Communication
 - Conflict management

5. Group Processing (A Metacognitive 21st Century Skill)

Group members:

- Discuss how well they are achieving their goals and maintaining effective working relationships
- Describe what member actions are helpful and not helpful
- Make decisions about what behaviors to continue or change

Project-Based Learning

Project-Based Learning (PBL) is a cornerstone of the NAF curriculum. NAF has partnered with the Buck Institute for Education (<http://www.bie.org/>) to develop best practices for PBL and to construct meaningful culminating projects for each course. The Buck Institute for Education defines standards-focused PBL as “a systematic teaching method that engages students in learning knowledge and skills through an extended inquiry process structured around complex, authentic questions, and carefully designed products and tasks.” The culminating project in each NAF course adheres to this instructional approach. The project work is central rather than peripheral to the course; it engages students in the core concepts and principles of a discipline. Students are given a problem to solve that is either a real problem or a realistic scenario. It creates the “need to know” that pulls students through the curriculum—a situation in sharp contrast to the teacher having to push them through.

Project-Based Learning differs from traditional instruction in several ways:

- Projects involve inquiry. Students are asking questions, investigating answers to those questions, finding resources, and proposing various solutions to problems. Students become engaged with the question they need to answer and develop an inherent drive to learn. They are capable of doing important work, and they should be taken seriously.
- Projects involve independence. Students work as independently as possible as opposed to passively sitting while the teacher pours knowledge into their heads. Wherever possible, students do things on their own.
- In addition to learning content, skills like critical thinking, collaboration, working in teams, solving problems, being creative, and using technology are all enforced.
- Projects involve authentic learning. The work students do resemble the work professionals do. Students replicate the tasks professionals perform, work the way professionals work, and create professional products. PBL highlights provocative issues or questions that lead students to an in-depth exploration of authentic and essential topics.
- Students develop an in-depth understanding of the problem they are working to solve. A project is built around a question that requires a more in-depth understanding. For example, rather than building a model of a pyramid, in PBL students would answer a question such as, “How can we replicate the methods used for building pyramids in ancient Egypt?” Students might build a model in the course of answering that question, but it is a much deeper activity, a much longer experience than just building a simple model of a pyramid.

PBL Implementation Tips

As the teacher, you have a variety of roles to play in Project-Based Learning. In addition to being the content expert, you are the coach who motivates students, helps them practice, and gives them feedback. You also play the role of cheerleader and keep them going during the tough parts of the project. Also, you are the manager who sets up all of the logistics, facilitates groups as they work, sets up the checkpoints, and organizes the final performances. It may be challenging at the outset, but once students become involved in their projects, working alongside them is likely to be particularly rewarding. Here are some pointers that can help you and your students succeed:

- Spend adequate time planning and preparing for the culminating project before the semester begins. Read the Project Overview document that is in the Course Planning Tools folder of your course materials. Note what lessons include project work, and make sure you prepare ahead of time for each of those lessons. If the project requires recruiting clients for whom your students will produce a product, begin looking for clients at the beginning of the semester. Let your advisory board know what the project is and ask them how they think they can help students with this type of project. Map out the project's timeline and the resources you will need—this includes people resources! Start planning the final presentation early in the semester.
- Before you begin teaching the first lesson of the course, familiarize yourself with the driving question for the project. (You can find the driving question in the Project Overview document.) In Lesson 1, you will introduce students to the driving question. It is a question that does not have one right answer, so at the outset of the course, students can start thinking about how they might investigate and answer the question.
- In Lesson 1, you also show students an example project, and students begin thinking about the skills and knowledge they will need to learn in order to create a project that responds to the driving question. If you have examples of outstanding culminating projects from previous classes, consider showing one or more of them as an example during Lesson 1. A sample project is also included as a resource in the Lesson 1 folder of the curriculum.
- In most cases, it is best if you select group members. It tends to save a lot of time and argument if you can choose students who will work well together and who have the right mix of skills.
- You need to teach students how to work in a team. If they do not already know how to work well in a team and are not excellent collaborators, then before the project starts, do team-building activities, use cooperative learning methods, and teach students how to work collaboratively.
- The project launch is essential! Think ahead about any ways that you can hook students' interest when the project is introduced. A compelling hook could be a field trip, a guest speaker, a simulation with a call to action, a video, or a lively discussion of an issue to investigate or a problem to be solved. There is always a project launch activity provided in the curriculum, but you may want to tailor it to your particular situation to get maximum buy-in from your students.

- Projects are designed so that students work in ways that are authentic to the kind of work done by professionals. Let students play a role in planning how they might approach a task, identifying what resources they need, and deciding how they can demonstrate what they learn. Develop work processes so that students spend class time effectively. Arrange resources, checkpoints, feedback loops, and clear short- and long-term deliverables. These are all provided in the curriculum, but you will need to manage the logistics of making the work process function effectively.
- In every project, students create a range of assessment products. Provide rubrics early in the project, to guide students in producing high-quality work. Include formative assessments of student work during different stages of the project so that they have an opportunity to improve.
- Resist the urge to pre-teach the content or to direct students every step of the way. Start the project first and generate the “need to know,” and then students will be much more receptive and will remember what you teach them.
- Do everything you can to involve people outside the classroom in project work. Partners include community members, local businesses, outside experts and mentors, parents, other staff members, and organizations who can collaborate online. You may want to assign one or more adults to accompany each group in their project work. Have students present their work to an audience beyond their teacher and peers in the classroom. Formal presentations raise the stakes and create a more professional environment, which is likely to improve the students’ level of achievement.
- Be flexible about the time during a project, because it can take longer than you think, and you may need to adjust due dates. If the process is not going well, and students need additional feedback, allow that time, and also be flexible about how students might answer the driving question or solve the problem. The process is supposed to be open-ended—and just like in the professional world, there is more than one way to do it, so be open to where students might take you during the project.
- Do not forget to celebrate what you and your students accomplish. Having students present to a public audience is vital because it ups the stakes and encourages students to produce high-quality work. It also shows the public, your community, and your business partners that your school is doing good work and that your students are competent.
- Conclude projects with a reflection on both process and content. Take time to debrief and reflect on a project, both on the process and on the content that students have learned.

Active Listening

Activities that encourage active listening are another means of engaging students. As students become more aware of the ideas and opinions of those around them, they are likely to take a more profound interest in the topics they are learning. Active listening helps the listener focus on hearing the speaker’s intent and then working to achieve mutual understanding. In many NAF activities, the listener is requested to check in with the speaker, through paraphrasing and questioning, to verify that he or she has understood what was said. For example, most PowerPoint presentations have slides with discussion questions, so rather than just listening to a teacher give out information, students are required to interact with the information they hear. They may be asked to give their opinion, suggest solutions to a problem, or share some

preexisting knowledge they have about the topic. Participating in this way engages students in the content they are learning. In many NAF activities, students meet in groups and listen to each other's ideas and opinions before working as a group to develop a consensus. Active listening promotes greater respect and understanding among students.

As you work through NAF courses with your students, make sure to integrate active listening into activities whenever appropriate. The temptation is to be so intent on getting out content and producing results that students do not get to practice their active listening skills.

Here are some specific active listening techniques you can use with your students and teach them to use with each other:

- Look at the speaker and stop other things you are doing.
- Connect not merely with the words, but also the feeling and body language.
- Be sincerely interested in what the other person is discussing.
- Restate what the speaker has just said (respond with "mirroring" statements).
- Ask clarification questions once in a while.
- Be aware of your feelings and strong opinions.
- If you have to state your views, say those only after you have listened.

Curriculum Library Orientation

Downloading Courses

All NAF courses are accessible online through the NAF Curriculum Library. To access the curriculum library, you need to create an account on Okta, NAF's single sign-on portal at naf.okta.com. You will be able to access the Curriculum Library there and also through the Login link at naf.org.

The screenshot shows the NAF Curriculum Library website. At the top, there is a navigation bar with links for 'MYNAF LOGOUT', 'COMMUNITY', and 'CONTACT', along with social media icons for Facebook, Twitter, and LinkedIn. Below this is the NAF logo with the tagline 'BE FUTURE READY' and the text 'Curriculum Library'. A horizontal menu lists various NAF academies: 'HOME', 'IMPLEMENTING NAF CURRICULUM', 'ACADEMY OF ENGINEERING', 'ACADEMY OF FINANCE', 'ACADEMY OF HEALTH SCIENCES', 'ACADEMY OF HOSPITALITY & TOURISM', and 'ACADEMY OF INFORMATION TECHNOLOGY'. The main content area features a photograph of students in a classroom setting, with a teacher interacting with them. To the right of the photo is a green box titled 'THE NAF LEARNING HANDBOOK'. The text in the box describes the handbook as a resource for teachers, explaining course structures and instructional strategies. A 'DOWNLOAD' button is located at the bottom of the green box.


From this Curriculum Library home page, you can follow the links to select your academy theme (such as Academy of Finance), view information about the courses available for your academy, and download all of the course files that constitute the curriculum of a particular course.

Downloads Page

The Downloads page gives you access to all the materials you will need to teach a course. You have several options for how to download the materials. For example, you can download all course files in a ZIP file. You can also download individual components of the course, such as just the lesson plan for Lesson 1 or just student resources for Lesson 6.

The date next to a file tells you when it was last updated. NAF courses are reviewed regularly by industry experts, and NAF posts the latest version of each course in the Curriculum Library. It is essential to make sure that you are using the most current files.

PROFESSIONAL ETHICS
←
OVERVIEW
DOWNLOADS



We welcome questions and feedback about these course materials. For a prompt response, please email the NAF Instructional Managers directly at curriculum@naf.org

The ZIP file below contains the current version of every file for this course. Be sure to download it before the start of each school year. If you just need a specific file or two, it's quicker to use the individual links listed on this page.

[All Course Files \(ZIP file\)](#) *(last updated 06/05/2016)*

OVERVIEW

Course Planning Tools

- [Scope & Sequence](#) *(last updated 03/07/2016)*
- [Culminating Project Overview](#) *(last updated 05/18/2016)*
- [Semester Planning Table](#) *(last updated 05/17/2016)*
- [Correlations to the Common Core Standards](#) *(last updated 03/08/2016)*
- [Summary of Annual Course Updates](#) *(last updated 05/17/2016)*
- [Master Vocabulary List](#) *(last updated 03/07/2016)*
- [Required Equipment List](#) *(last updated 03/07/2016)*

Course Implementation Tools

- [PDF Copy of Whole Course](#) *(last updated 05/17/2016)*
- [PDF Copy of All Student Resources](#) *(last updated 03/07/2016)*
- [Guide for Teaching a NAF Course](#) *(last updated 04/25/2016)*
- [NAF Approach to Vocabulary](#) *(last updated 05/26/2013)*

NAFTrack Certification

- [NAFTrack Certification Course Guide for Professional Ethics](#) *(last updated 06/05/2016)*
- [Key Learning Objectives Chart for Professional Ethics](#) *(last updated 05/17/2016)*

UNIT 1: INTRODUCTION TO ETHICS

Lesson 1: Course Introduction

- [Lesson Plan](#) *(last updated 05/17/2016)*
- [Teacher Resources](#) *(last updated 03/07/2016)*
- [Student Resources](#) *(last updated 03/07/2016)*
- [Notebook TOC \(Word file\)](#)
- [Example Presentation \(ZIP file\)](#) *(last updated 09/16/2009)*

Implementing NAF's Curriculum

On the home page of the curriculum library, there is an Implementing NAF Curriculum tab that provides access to several resources that you may find useful. The following are tabs on the Implementing NAF Curriculum page:

- **FAQs:** The FAQs page provides a lot of helpful answers to questions about the curriculum, including information about technology requirements and whom to contact if you need help. The FAQs section has a listing of the course pairings that NAF recommends, based on the skills and knowledge they require and the opportunity to build on knowledge from the first-semester course during the second semester.
- **Sequencing:** There is not a specific four-year sequence of courses that works for every theme in every school district. The NAF Sequencing page in the curriculum library guides the development of appropriate NAF course sequences for students at your academy.

- **Go Paperless:** If you have a paperless classroom or are thinking about moving to one, you may find this multimedia presentation helpful. It explains the how and why of setting up a paperless classroom and gives tips for working with NAF curriculum materials in a paperless setup.

Structure of NAF Courses

All NAF courses have a similar structure. They are one-semester courses designed for approximately 75 50-minute class periods. Each course has between 14 and 20 lessons. The number of class periods per lesson varies, depending on the topic and the type of activities required for students to master the topic. Some lessons, such as introductory lessons, are just two class periods. Some lessons where students do extensive work on a project are as many as 11 class periods. Lessons are presented in sequential order, each one building on what students learned in previous lessons. If you teach lessons out of order for some reason, or if you skip lessons, your students may not have the knowledge and skills they need to succeed at a later lesson. For additional structure, lessons are organized into units based on key topics. For example, in the Graphic Design course, Unit 1 is called “Designing for Communication,” and it groups three lessons that teach introductory design concepts.

The **Scope and Sequence** document for each course lays out this course structure. It identifies the units and lessons in the course, tells how many class periods are in each lesson, and lists the learning objectives for each lesson. You can use the Scope and Sequence document to help you plan for teaching the course. In particular, seeing the course learning objectives all in one place can help you ensure that the course covers everything you want or need your students to learn. Below is an excerpt from the Scope and Sequence for the Graphic Design course.

Unit 1: Designing for Communication

Lesson 1: Course Introduction
 Estimated # of Class Periods: 2
 Learning Objectives

- Deduce the skills and knowledge about graphic design needed to be successful in an authentic project
- Identify general graphic design terms with which to build a taxonomy

Lesson 2: What Is Graphic Design?
 Estimated # of Class Periods: 4
 Learning Objectives

- Describe the components used in visual communication
- Explain how signs and symbols communicate meaning
- Compare and contrast different levels of visual perception
- List the skill set used by professional graphic designers

Lesson 3: The Graphic Design Process
 Estimated # of Class Periods: 3
 Learning Objectives

- Explain how to conduct research to solve a visual problem
- Develop a creative brief that outlines the strategy for a graphic design
- Identify the steps in the graphic design process
- Identify the goals, roles, and deliverables of a professional doing graphic design work

Every course includes a **culminating project**. The project engages students in the main concepts and principles of the course, so project work is central to the course rather than peripheral. In most courses, at least three weeks of course time are devoted to working on and presenting the culminating project. In some courses, the project is spread across many of the lessons, and in others, the actual project work falls in just two or three lessons toward the end of the course. In all courses, students are encouraged right from Lesson 1 to be thinking about the skills and knowledge they will need to learn so that they can complete the project.

The final unit in most courses is a **career unit** that helps students explore job possibilities and plan their future. Activities provide students with an outlook on careers related to the particular field they are studying. Students learn about specific jobs they might be interested in, potential salaries for those jobs, and the level of education required for each job. Students also hone their job search skills. In the first semester of their academy work, they write a resume detailing the skills and experience they have gained thus far. Then in each course they take, they add to their resume any new skills and experience they have acquired. Each course includes an activity where they develop an additional piece for a professional job search, such as a cover letter or a mock interview.

Lessons Structure

All the lessons in a NAF course follow a lesson arc that takes students from developing a need to know about the content of the lesson to interacting with the content and mastering it. Therefore, lessons go through a sequence of steps:

- The lesson opens with a springboard activity that creates a need to know.
- Content is presented, often in the form of a PowerPoint presentation or a reading.
- Students interact with the content by doing further research, practicing new skills, or applying what they have learned to solve a problem.
- Students work as individuals or in groups to produce some product that will be assessed.
- Students review each other's work and give each other feedback on how to improve their product.
- Students refine their work and present it for a summative assessment.
- The lesson closes with a summary, including reflections.

The following sections provide some pointers that may be helpful as you work through a NAF lesson.

Springboards Create a Need to Know

Every lesson in the curriculum begins with a springboard activity that hooks the students on the topic of the lesson. The springboard sets the students' expectations about what will be covered in the lesson, assesses their current knowledge of the subject, or establishes essential background knowledge. Do not expect students to get everything right in the springboard. If their best guess at the answer is not correct, or flat out wrong, that is okay. Rather than telling them the right answer, let them discover the right answer as they work through the lesson. In many springboard activities, such as anticipation guides and K-W-L charts, students make assumptions and

predictions at the outset of the lesson and then revisit them during the lesson to note what they have learned and how their thinking has changed.

Engaging Students in PowerPoint Presentations and Readings

PowerPoint Presentations - Best Practices

Each PowerPoint presentation is designed to be an interactive experience that provokes inquiry in students. Rather than just showing each slide and reading the notes that go with it, use the "Presentation Notes" chart in the teacher resource to develop your notes about how you want to explain the material on the slide to your students. Creating your notes enables you to approach the subject matter in a way that is comfortable to you and engaging for your students. In developing your presentation notes, consider what your students already know about the topic, terms that you think they will need help with, and examples from your own situation that are relevant.

On many PowerPoint slides, you will find a box with one or two discussion questions or prompts. Use these to check for understanding, to let students share their own experiences, to invite students to solve problems related to the content on the slide, or to elicit further questions students might have about the material. To make the presentations as interactive as possible, frequently stop to consider these questions, and encourage class discussion.

The slides and notes from each presentation are always included in the student resources so that students can use them for study-notes or can review the material at a later time. In some cases, you may choose to have students read the presentation and answer the discussion questions in their notebook, rather than presenting the slides.

Pre-Reading Activities

Readings and PowerPoint presentations always have a "pre-" activity to help students connect with the content they are going to learn about, rather than jumping in without prior knowledge. These activities are especially crucial for students who do not have strong literacy skills. A lead-in activity may consist of looking at keywords, eliciting what students already know about a topic, or helping students grasp why a topic is essential. The primary purpose is to make sure students are equipped to navigate the content.

Note Taking

For every reading and presentation, students are given a note-taking strategy or tool to make sure that they are actively engaging with the content while they are reading or listening. For example, they may fill in the "Learned" column of a K-W-L chart, complete a Venn diagram that compares significant themes in the presentation, answer a series of questions about the content, or use the Cornell Notes approach in their notebook. It is essential to guide students in note-taking; you want to help them figure out what the essential points are and give them suggestions about what kinds of information they should write down. As your students get more practice taking notes, they will need less guidance.

After readings and PowerPoint presentations, there is always a quick review to check for understanding and to answer any remaining questions. Often students check each other's notes

for accuracy and completeness. Your role as a teacher is to answer any outstanding questions that students cannot answer on their own and to clear up any misunderstandings.

Assessing Student Performance

Each lesson provides opportunities for both formative and summative assessment of student work. The goal is to check for understanding throughout the lesson so that students have every opportunity to succeed in the summative assessment product for the lesson.

Formative Assessment

- **Peer review** is a tool for formative assessment. Students look at each other's work before submission for assessment, either during a gallery walk activity, by exchanging papers with a partner, or by delivering a presentation to peers before presenting to an outside audience. One significant advantage of peer review is that it gives students a chance to share their work with a broader audience than just the teacher.
- For more significant assignments and projects, it is vital to include **advisory board members** who can provide formative feedback to students before they submit their work for assessment.
- For some assignments, you may want to give students a simple **credit/no-credit mark** for completion of a task, such as with worksheets or note-taking. Such a technique helps keep students accountable and gives you a chance to make sure they understand the material.

Formal Assessment Products

Every lesson has at least one assessment product that is designed for summative assessment of what students learned in the lesson. An assessment product is an artifact that students produce to show that they have mastered the content in the lesson. The products vary depending on the course, but assessment products for most courses include essays, oral presentations, quizzes, and writing assignments that give students practice with a professional genre of writing. Not every lesson has a quiz or a test because for professionals, or students training to be professionals; there are a variety of ways to show that they have mastered skills and knowledge. Some assessment products are completed by individual students, while others are completed in pairs or groups. Here are examples of assessment products from different academies:

- A written recommendation about tax management strategies
- A slideshow explaining the principles of MyPlate nutrition guidelines to a specific audience, such as children or the elderly
- A quiz on climate and climate change
- A poster and presentation about computer networking components

Assessment Methods

The NAF curriculum uses three types of tools for summative assessment:

- The most common assessment tool is the **criteria-based assessment**, which is a simple and straightforward way to check for evidence of student learning. Here, student achievement is measured against four to eight defined and objective criteria. The criteria

focus on demonstration of skills and knowledge learned in the lesson. It is essential to discuss the assessment criteria with students before they begin working on their assessment product. They will be more likely to succeed if they know precisely how their work will be assessed. The assessment criteria are always listed for students in a student resource so that they can refer to them as they work.

- **Rubrics** are holistic tools used to assess student performance on significant assignments. NAF rubrics clearly describe categories of proficiency, from “exemplary” to “needs attention,” and are phrased in an actionable way. Rubrics state clear performance outcomes to let students know what it will take to do well. They are particularly useful with those assignments in which there is an opportunity for formative assessment of multiple drafts so that students can be clear on what they need to improve before the summative assessment of the final draft. Students should always be given a copy of the rubric before they begin work on their assessment product, and you will want to make sure they understand each of the criteria on the rubric. Rubrics are not included in the student resources; you will need to print copies of the teacher resource document and provide them to students.
- For the recall subject matter knowledge, a quiz or a test may be used for assessment. Quizzes and tests are always short-answer questions so that students are required to show what they learned rather than making guesses. Short answers also give students practice writing clear sentences. All quizzes and tests have answer keys.

Point Systems and Grading Methods

Many schools have their set grading systems that teachers must adhere to; so, the NAF curriculum does not provide a system for assigning points or scoring assessment products. You will need to implement your points and grading system based on your personal preferences and the requirements of your school.

Closure

In the final stage of a lesson, students summarize, review, or synthesize what they have learned as well as how they learned it. During the closure, students may share and discuss the assessment product in pairs or small groups. Students are often asked to self-assess privately and then share their reflections with a partner, small group, or the class. This part of the lesson might also celebrate student learning and set the stage for upcoming lessons.

Lesson Documents

When you teach a NAF lesson, you will need at least three documents: 1) Lesson Plan, 2) Teacher Resource, and 3) Student Resource.

The lesson folder may also include PowerPoint, PDF, image, or ZIP files required for the lesson. Any separate files included with the lesson are listed in the table of contents of the Teacher Resource document as separate files, so you will know to look for them.

Lesson Plan

The lesson plan is the document that you will reference most frequently to prepare for and teach a lesson. At the top of the document, you will find the academy name, the lesson

number, and the title of the lesson, which in the following example is “Prevention and Public Health.” Underneath the title is a brief overview of what the lesson covers. Next, you will find suggestions for pre-planning, such as arranging for a guest speaker. The overview section will also tell you how many class periods the lesson is expected to take. The timeline helps orient you as to where the lesson occurs in the course.

AOHS Health Careers Exploration

Lesson 4

Prevention and Public Health

In this lesson students learn about major public health issues and the roles and responsibilities of public health professionals. They also learn about the pros and cons of nutrition interventions, and they research and write public health flyers.

Advance Preparation

- Your students may need some review or instruction of prerequisite science vocabulary for this lesson. To provide vocabulary support, use Teacher Resource 4.4, Vocabulary Support: Terms to Know for the Lesson (separate PowerPoint file). Depending on your classroom situation and the needs of your students, you can present the slides using an LCD projector and discuss the meaning of each term, print the slides as miniposters and hang them in the classroom for students to view as necessary, or print four to five slides on a page and give copies to students who need extra help with vocabulary.
- In Class Periods 3, 5, and 6, students will need access to the Internet.
- Prior to the first class period, make sure you have an up-to-date video player such as Windows Media Player or Apple’s QuickTime Player to show a video to the class. These players can be downloaded for free.
- Before Class Period 5, collect pamphlets and flyers on health topics from medical offices, the school nurse’s office, community health centers, and/or pharmacies for students to review. You may also wish to ask students prior to the activity to bring in pamphlets or flyers.

This lesson is expected to take 6 class periods.

LESSON 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Lesson Framework

The Lesson Framework section provides:

- A list of **learning objectives** so that you know from the outset what your students are expected to learn during the lesson.
- A list of **academic standards** correlated with each lesson. All courses are correlated to the Common Career Technical Core standards. Also, lessons are correlated to other academic standards that are relevant to the particular discipline. Because the relevant Common Core State Standards are too extensive to list with each lesson, they are provided for each course in the separate document “Correlations to the Common Core Standards” (available in the Course Planning Tools section of each course).
- A table with the **assessment product** and method of assessment for each lesson so that you know at a glance how student work will be assessed.

- A list of **prerequisite skills and knowledge** that students should have before beginning the lesson. This information is especially crucial if you are not doing lessons in order. Students are expected to have prior knowledge to do some of the activities in NAF lessons.

Instructional Materials

This section gives you an overview of all of the materials you will need to teach the lesson.

- **Teacher and student resources** are listed in the order in which they appear in the lesson. They are each identified by a number. The first number refers to the lesson number, and the second number refers to the resource number. For example, Teacher Resource 6.1 is the first teacher resource in Lesson 6. You can use this section to make sure students have all of the student resources and that you have all of the teacher resources, including separate files.
- The **equipment and supplies** list is designed to help you gather everything you need before you start the lesson. Computer resources, requirements for an LCD projector, art supplies, and sticky notes are often listed.

Lesson Steps

The lesson steps compose the bulk of the lesson plan. They are written to be complete, clear, and easy to follow so that you will feel comfortable teaching the lesson. Each activity begins with a purpose statement so that you know from the start what students will gain from the activity.

You will note that lessons are broken into 50-minute class periods, and most class periods include two or three lesson steps. The goal is to provide students with a variety of activities in order to hold their interest. Each class period has moments when students talk to each other or get up and walk around the classroom so that they can learn in other ways than just listening to the teacher or reading and writing.

Because the lesson plan is a Word document, you can easily modify it or make your notes. For example, if your school has block scheduling, you may need to rework the timing for each step, make sure homework falls at the right place, and make other adjustments.

| Lesson Steps | | |
|--------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step | Min. | Activity |
| | | CLASS PERIOD 1 |
| 1 | 10 | <p>Video: What Is Public Health?</p> <p>The purpose of this activity is to introduce students to the topic of public health.</p> <p>To prepare for this activity, make sure you can access the public health video at http://www.thisispublichealth.org/video_lowres.html. If you can't access this video, select another brief video that provides students with an overview of public health.</p> <p>Explain to students that they are going to watch a video about the meaning of public health and the professionals who work in the field. Before showing the video, write the following questions on the board:</p> <ul style="list-style-type: none"> • What issues does public health address? • What kind of jobs do public health workers do? • Why do people choose public health careers? <p>Ask students to think about the questions as they watch the video. Then, using an LCD projector and a computer, show students the video at http://www.thisispublichealth.org/video_lowres.html.</p> <p>After they have watched the video, ask students to share their responses to the questions on the board. Answer any questions students have about public health careers, and point out that they will learn more about public health issues and public health workers in the activities throughout the lesson.</p> |

Extension Activities

The final part of the lesson plan is a list of extension activities that you may want to use with your students:

- **Content Enrichment** extensions supplement the lesson and enable students to go deeper into some aspect of the lesson content through research, surveys, field trips, projects, guest speakers, video or movie clips, or additional readings. You may want to challenge students who work more quickly than the rest of the class with some of the enrichment activities.
- **STEM Integration** extensions enrich the current lesson by integrating science, technology, engineering, or math activities. Technology-focused extensions, for example, may employ relevant technologies and multimedia, such as online videos, cloud services, interactive websites, and web apps.
- **Additional Cross-Curricular Ideas** are activities that provide specific examples of how teachers can integrate other disciplines (such as history or English language arts) into a lesson, or how core course teachers can tie academy material into their curriculum. These activities can also be used to integrate topics or themes across the school curriculum.

Teacher Resources

Teacher resources are ancillary materials that you will need to teach the lesson. The Teacher Resource document is always in Word format so that you can modify it to suit your particular circumstances and preferences. This document includes:

- **PowerPoint presentation notes** which provide a copy of any PowerPoint presentations, along with notes about each slide and a column where you can write your notes to explain the slides to your class.
- **Rubrics and assessment criteria:** You will need to make copies of rubrics and give them to your students so that they know how their work will be assessed.
- **Tests and quizzes:** All tests and quizzes are included in the teacher resource, and you will need to print them or provide them to your students electronically when it is time for them to take the test or quiz.
- **Answer keys** for all tests and quizzes and for other assignments where it would be helpful for the teacher to have information about correct answers.
- **Guides:** These provide instruction for teaching complex activities and for organizing projects.
- **Essential vocabulary** which provides definitions of key terms introduced in the lesson. You can use this list to anticipate the terms students will encounter during the lesson. You may also want to use this resource to answer questions students have about terms or to clarify the meaning of terms that students find difficult. We do not recommend giving this list to students before the lesson and asking them to memorize the meaning of each word. They will have the opportunity during the lesson to work with these terms and learn their meanings in context.
- **Bibliography** provides a list of resources used to create the lesson and includes relevant resources that you may want to consult when you are preparing to teach the lesson.

Separate PowerPoint, PDF, image, and ZIP files may also be listed in the Table of Contents of the Teacher Resource document. These files are all available in the Lesson folder for the lesson.

Student Resources

The Student Resource document provides materials such as readings and assignment sheets that students need for each lesson. Like the Lesson Plan and Teacher Resource documents, it is a Word document so that you may modify it to suit your needs. You can duplicate the student materials in advance and make a complete student handbook for your course or give students the resources for the lesson when you begin the lesson. If your students have computers, you can provide them with the Word file online and have them complete all work online.

Advanced Planning for Course Success

Before the semester begins, there are several tasks that you can accomplish to make the semester easier for both you and your students:

Course Planning Tools

Each course has a Course Planning Tools folder that contains the documents you need to begin planning out your course:

- The Semester Planning Table is designed to help you plan out your calendar for the semester. It is a summary of the number of class periods in each lesson, the preparation you will need to do for each lesson, and the assessment products for each lesson. By coordinating this with your school calendar, you can determine the dates of important events that you need to plan for, such as guest speakers, project launches, and final project presentations.
- The Scope and Sequence document gives you information about the scope of each lesson.
- The Project Overview provides the information you need to begin planning your culminating project. Early planning can undoubtedly contribute to the success of your students' projects.
- The Required Equipment and Supplies document provides detailed information about computer software and hardware that you will need for a course. You may need to meet with your school's IT administrator to discuss any special requirements. Supply lists can also help you with ordering supplies for your course. In courses like Computer Networking that require a large number of materials and supplies, this list can enable you to order supplies for the entire course rather than ordering supplies lesson by lesson.

Computer and Internet Resources

The Semester Planning Tool maps out the computer resources that you will need lesson by lesson. If you do not have computers in your classroom, you need to figure out when and where you will be able to use computers before the semester begins. To be able to use the NAF curriculum effectively, these are the minimum technology requirements for an academy:

- Each teacher needs a computer with an LCD projector, speakers, and a screen to show PowerPoint presentations, conduct demonstrations and guided practice, and stream

videos. Teachers also need Internet access to YouTube and similar video streaming sites. If needed, teachers can download videos for classroom showing by using a program such as KeepVid (www.keepvid.com).

- AOIT students typically need access to computers and course-specific software during every class period.
- Students in AOF, AOHS, and AOHT classes need regular access to computers with software for academic research on the Internet, word processing, presentation authoring, and spreadsheet authoring. Whether the students each need access to a computer or can work in pairs or small groups with a computer is detailed in the Advance Prep section of the lesson plan. Lessons, where each student needs access to a computer, are also listed in the Required Equipment and Supplies document and The Semester Planning Table.

Guest Speakers

All courses require at least one or two guest speakers, and many courses require even more. Guest speakers are essential because they connect what students are learning to the work world. The Semester Planning Tool indicates which lessons require guest speakers and what topics they will need to present. If you can invite speakers and give them lots of advance notice, your recruiting might be more successful. If you have trouble finding guest speakers who are local or who can take time out to visit your school, you may want to consider using videoconferencing to bring a speaker into the classroom.

Professional Mentors for Culminating Projects

On nearly all projects, groups would do well to have a professional mentor working with them. In some projects, you will need to locate a client for each group. For example, in the Web Design course, each group develops a website for a real client; the teacher needs to line up a client for each group before the class gets to Lesson 6. If the teacher cannot present a client in need of a website to each group, creating an authentic project will become very difficult.

Advisory Board Members

Gather as much information as you can about the skills, experience, and interests of your advisory board members so that you can make the best use of them in your classroom. Present them with a variety of ways that they could be involved, such as serving as mentors, serving as clients for projects, mentoring a project group, coming in as guest speakers, helping with the career unit, or attending the culminating project presentations.

Detailed Reference: Key Activities and Strategies

The activities and strategies listed in this reference are used in many NAF courses. You may find this information helpful if you have questions about the purpose of an activity, if you need more information about how to conduct an activity, or if you are looking for variations that might work better in your classroom.

Anticipation Guide

What It Is

An anticipation guide asks students to make predictions about what they will learn. Students are asked to agree or disagree with a series of statements about a topic. The statements are often provocative or ask students to make connections to prior knowledge.

Why Use It

An anticipation guide is intended to stimulate questioning or curiosity in the classroom, giving students a “need to know” before they begin reading or viewing a presentation on new material.

Conducting the Activity

Follow these steps:

1. Refer students to the anticipation guide in their student resource. It will have several statements that look something like the following:

| It is better to save a little bit every month than to save one big lump sum each year. | |
|-----------------------------------------------------------------------------------------------|----------------------------------|
| My guess: | I agree I disagree |
| My reason: | |
| I learned: | |

2. For each statement, have students circle “I agree” or “I disagree” and then explain their choice in the My Reason row.
3. Have students share their guesses and reasons with each other, but do not give them the correct answers.
4. Provide students with content that will help them evaluate whether their guesses and reasons are correct. Typically, the content will be a reading passage or presentation, but there may be relevant content in several parts of the lesson.

5. As students work through the lesson and learn, instruct them to fill in the *I Learned* rows on their anticipation guide with the new information they learn, and have them correct any erroneous guesses.

Debate

What It Is

A debate is a formal exercise that enables students to discuss differences of opinion. It uses a structured framework for logical argument and other persuasive techniques.

Why Use It

Debating builds language arts skills in speaking and listening, as well as a range of higher-order thinking skills. It is always better to structure debates in ways that do not leave a part of the class as a passive audience.

Conducting the Activity

Follow these steps:

1. Divide the class into groups of four, six, or eight. The size of the groups will depend on your class size.
2. Present students with the resolution (the statement that will be debated) and ask students to split their groups into two teams: Affirmative (arguing in favor of the resolution) and Negative (arguing against the resolution). Have students choose the side that they prefer, but make sure that there is an equal number of people on each team.
3. Have students research the topic and follow a standardized debate format, which allows each side to present an opening argument, to rebut the other team's argument, and to offer a concluding argument.
4. Once the groups are prepared, have each group debate in front of the class.
5. Have students offer constructive feedback.

Composing with Keywords

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What It Is

In Composing with Key Words, students use selected words from taxonomies or text to compose main ideas in a sentence or paragraph format. This activity provides students with the practice they need before they can write effective essays or create writings in complex genres.

Why Use It

Composing with Key Words enables students to respond to new learning or to review previous information. Selecting keywords helps students to focus on main or related ideas or to think of

their ideas. This strategy also builds vocabulary and helps students create narratives or expositions. By writing the words in their sentences, students are actively interacting with the vocabulary and using it in a context that makes sense to them personally. It promotes writing skills, encourages fluency and creativity, and helps students build an authentic voice.

Conducting the Activity

1. Instruct students to select three words from a taxonomy or text.
2. Ask them to compose one sentence using all three words. Tell students they can add needed endings and use the words in any order they wish.
3. Pair students or form small groups, and have students read their words and then their sentences to each other.

Cornell Notes

What It Is

The Cornell Notes system was designed by a professor at Cornell University and has been in widespread use since the 1950s. The idea is to have students divide their paper in half, taking notes on the right-hand column only. Later, they go back and pull out main points, key ideas, terms, and dates and list them in the left-hand column (see the following examples), or they write cue questions about the material. Space is available at the bottom of the page for a summary of the key points. This note-taking system very useful when the information is given in a sequential, orderly fashion and allows for more detail.

Why Use It

Cornell Notes is just one of many double-entry notebook systems. Most students need to learn to take useful notes on what they read, discuss, or hear in class. Teaching this approach helps students to differentiate between major and minor ideas. Also, it teaches them an effective way to study. Students are encouraged to review their notes often and to test themselves by covering the right-hand column. It is, of course, essential to model the activity first, discussing why you are making the decisions about what notes to take in the right-hand column, and then which points seem most relevant to list in the left-hand column.

Conducting the Activity

1. Instruct students to divide their notebook paper into two columns, leaving a space at the bottom for a summary.
2. During a reading, lecture, or presentation, students record in the right-hand column essential words, phrases, and definitions. The class should develop a system of abbreviations they understand and write in telegraphic sentences (where you include only enough words to carry the essential meaning) or similar shorthand that is often used in cell phone text messages. As students take notes, help them realize that the emphasis should be on the key ideas rather than the actual words used to convey those ideas.

3. Immediately after a presentation or a reading, students write keywords, terms, and dates as well as "cue" questions in the left-hand column to help them remember the information and study later.
4. After each class, students summarize, at the bottom of each page, the notes they took.
5. While reviewing their notes, students cover the right-hand column and recite what they remember by looking at the critical words, phrases, and definitions.
6. Before creating assessment products or as preparation for tests or quizzes, students reflect on the notes and ask themselves questions such as "What is important about this concept?" or "How do these ideas fit with what I already know?"

Here is an example:

| Main Ideas | Details |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>War of 1812</i></p> <p><i>Who was president and whom did we fight?</i></p> <p><i>What were the causes?</i></p> <p><i>What were the crucial battles?</i></p> | <ul style="list-style-type: none"> • <i>James Madison went to war against the English</i> • <i>Causes included: Controversy over English taking sailors from American ships</i> • <i>Shawnee chief Tecumseh wanted an Indian confederacy, preventing westward expansion. This became an excuse for the anti-British sentiment.</i> <p><i>Battles: Old Ironsides - sea victory, American forces capture York (Toronto) and try to conquer Canada! The capture of ten Chesapeake ("Don't give up the ship"), Battle of Thames, siege of Baltimore (where FS Key was inspired to write The Star-Spangled Banner) and the Battle of New Orleans</i></p> <p><i>Treaty of Ghent ends the war - most of the issues causing the war are unresolved.</i></p> |
| <p>Summary:</p> <p>The War of 1812 was a war America was not ready to fight. England fought reluctantly, and no one won. It lasted three years.</p> | |

Variations

Double-sided notebooks can be used in any number of ways to encourage metacognition and reflection. For example, students can take notes in the right-hand column and then respond in the left-hand column with examples from their own lives, questions that come to mind, or drawings.

| Examples and Questions | Notes |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Jean Shepherd is the same guy who wrote "A Christmas Story." I must have watched that silly movie a thousand times with my family.</p> <p>I can relate to being scared on the first day of school. My science teacher was terrifying.</p> <p>I liked the way he uses all the imagery of drowning: "a tidal wave of fear" and "I was swept up in the flood..."</p> | <p>"Lost at C" by Jean Shepherd is a humorous short story about a boy entering high school and the way he manages to escape getting called on, especially in math class where he is completely lost.</p> <p>Shepherd compares school to being on death row, to going into battle, and to being lost at sea. He uses many metaphors, similes, and humorous exaggerations.</p> <p>There is a surprise ending that explains the title.</p> |

Defining Format

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What It Is

Defining Format is a strategy for developing a more precise and in-depth understanding of new terms. It moves the student away from vague definitions such as “poverty is something that....” For example, students may categorize poverty as a societal problem or an economic condition.

Defining Format provides a template for students to use consisting of three parts:

1. **Term:** What term is to be defined?
2. **Category:** Find the category to which the term belongs.
3. **Characteristics:** State the essential characteristics that separate the term from other terms belonging to the same category.

Students should imagine that their target audience is entirely unfamiliar with the term being defined and needs a clear, unambiguous definition.

Example

| Term | Category | Characteristics |
|---------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Poverty | is a societal problem that | <ol style="list-style-type: none">1. Involves a lack of personal financial resources.2. Is often cyclical: people born into poverty have trouble escaping it.3. Contributes to other problems - such as lack of health care, proper nutrition, and educational opportunities. |

Why Use It

Defining Format builds students’ understanding of a new term and their ability to construct and communicate the meaning of a term. Looking up a word in a dictionary or a glossary often fails to provide the student with more than a surface or cursory understanding, which can be quickly forgotten. When students construct the meaning of a new term, they form a deeper understanding of the term, which is retained longer.

Defining Format also has these benefits:

- Constructing meaning is more effective for comprehension than copying meaning.
- Greater clarity of meaning comes when the students can distinguish the general from the specific.

- Deeper learning occurs as students develop the ability to categorize results in distinguishing ideas; it promotes comparing and contrasting.
- Using templates and patterns enhances understanding.
- Students have a permanent template for organizing information that can be used for reports, presentations, and explanatory writing.

Conducting the Activity

Have students follow these steps to set up a Defining Format template:

1. Create a table with three columns and label the columns "Term," "Category," and "Characteristics."
2. Identify the term (e.g., *river*).
3. Under the Term column, begin the answer (e.g., "A river is a...").
4. Move to Category and write the category (e.g., "body of water that").
5. Move to Characteristics. List the characteristics numerically.

When two or more terms in the same category are defined using this strategy, the student can use the defining information to compare the items. For instance, in comparing a river and a lake, a student might write:

We can compare a river with a lake in several ways. Both are bodies of water but with different characteristics. A river begins at a source that is usually in high land and flows north or south toward its mouth. The mouth is where it empties into another body of water such as a lake, a bay, or the ocean. A lake is a body of water that is surrounded by land and may get its water from a river flowing into it. Rivers are thought of as long, and lakes are thought of as large. Both rivers and lakes may have freshwater, brackish water, or saltwater.

Fishbowl

What It Is

A fishbowl is a form of the Socratic seminar in which students are asked to read a piece of text and develop questions about it. They then discuss those questions as well as other questions posed by the teacher. Half of the students are placed in an inner circle (or fishbowl) where they ask and answer questions. The remaining students are placed in an outer circle, where they observe what is being said in the "fishbowl" and take notes. After a set time, students switch places so that each student has an opportunity to talk and an opportunity to listen/observe. You may stop the conversation and have the students all switch places at once, or you may choose to have those on the outside be able to "tap in" on the discussion, thus taking the place of someone in the inner circle. After all students have had a chance to be in the inner circle, you may wish to conclude the activity with a whole-class discussion.

Why Use It

The fishbowl format allows large classes to implement the Socratic seminar. The Greek philosopher Socrates engaged his students by responding to questions with questions rather than

answers and teaching them to think for themselves. The key to a Socratic seminar is to encourage students to think of questions and listen to each other's responses, to allow students to discover answers rather than providing them. The teacher can contribute a question or comment if the conversation lags, but the teacher should make an effort not to summarize, answer questions, or solve the problems students raise in the conversation. In a fishbowl, students are expected to talk to each other, not to the teacher. This discussion activity also allows students to respond to each other respectfully and to practice active listening without interrupting.

Conducting the Activity

Follow these steps:

1. Explain to students what a fishbowl discussion is and what is expected of them as participants.
2. Give students a reading passage and tell them to develop discussion questions. Provide prompts to get them started.
3. Students participate in the discussion, first as members of either the inner or outer circle and then switching roles, using the questions they developed and discussion questions that you provide.
4. If you are using this as an assessment activity, assess students via an in-class chart during the discussion. An in-class chart solves the dilemma of having to be fully attentive to the discussion, making it impossible to complete a full assessment of each student at the same time. Create an in-class chart by listing students' names down the left side of the page and listing summaries of the provided assessment criteria or rubric descriptors across the top. This way, you may check off the many aspects of the students' performance in situ and then use the chart to fill out individual student assessment criteria or rubric sheets after the activity is over.

Four Corners

What It Is

Four signs, which introduce new concepts or current myths or common misconceptions about a topic, are posted in four corners of the room. Students move to the corner of the room that represents their opinion or preference.

Why Use It

Four Corners allows students to express an opinion physically as well as verbally. Students are energized by the opportunity to move around and to talk with their peers. Students who are less comfortable talking in front of the class can still express their opinion by moving to the corner of their choice.

Conducting the Activity

Follow these steps:

1. Post signs in the four corners of the classroom. The signs will present four different topics, opinions, quotations, people, or concepts and ideas.

2. Have students move to the corner of the room that represents their opinion or preference.
3. Lead students in a discussion about why they made the choices they did.

Variations

The signs can represent potential responses to a question. Ask students one question and have students move to the sign that represents their answer. Then ask a second question and have students move to the sign that represents their answer to that question, and so on.

This activity can also be done as Three Corners or Five Corners if more or fewer signs are provided.

Gallery Walk

What It Is

Students post their work (e.g., posters, flyers, lists, and charts) around the classroom or on their computer screen. Students tour the room, reviewing each other's work, and posting their comments and questions on sticky notes on the work displayed.

Why Use It

A gallery walk allows students to view each other's work, comment on it, and in some cases borrow from it. The opportunity to ask questions gives an extra dimension to the discussion and facilitates a more in-depth look into the work by the creator. Knowing that the whole class will see their work can make students put forth their best effort. A gallery walk can also provide an opportunity for students to learn about other topics or other facets of an issue that they did not personally study, broadening their exposure to the subject.

One of the key aspects of a gallery walk activity is that students are asked to be mentally active as they view each other's work. Just walking around and looking at the other students' assignments is not enough. Students comment on each other's work or respond to a series of questions or prompts during or immediately after the gallery walk.

Conducting the Activity

Follow these steps:

1. Have students display their work around the room.
2. Provide students with topics or questions that they will consider as they view each other's work.
3. Instruct students to tour the room, reviewing each other's work. Have students respond to their classmates' work by posting comments on sticky notes.
4. Ask students to revise their work based on the peer input or on what they observed in their classmates' work.
5. Conclude the activity with a brief class discussion that encourages students to share their observations and what they learned from the gallery walk.

Keyword Notes

What It Is

Keyword Notes is a note-taking activity that helps students take notes during a longer or more difficult reading by breaking information down into organized chunks. It also provides a way to review information.

Why Use It

The activity helps students organize their thoughts during more prolonged or more difficult readings. It can also serve as a formative assessment for you, allowing you to see how well students grasp the material based on the terms they choose and the summaries they write.

Conducting the Activity

Follow these steps:

1. Organize students into pairs or groups.
2. Give students a reading that is divided into four clear sections.
3. Give students a graphic organizer that looks like the following example, or ask them to create one in their notebook.
4. Students read one section at a time. After they read the first section, instruct them to stop and reflect on what they read with their partner or group.
5. Ask them to write words from that section into the corresponding box in their graphic organizer. Instruct them to choose words that will help them remember the information.
6. Have students repeat the process with all four sections.
7. In the fifth box, instruct students to summarize the reading by writing one or two sentences.

Example of Graphic Organizer for Reading: How Programming Languages Work

| | |
|----------------------------------------|------------------------------|
| Different Programming Languages | Programming Methods |
| Choosing a Language | The Flow of a Program |
| Summary Sentence | |

K-W-L (Know, Want to Know, Learned)

What It Is

Created by Donna Ogle (1986), K-W-L is a note-taking method that activates students' prior knowledge about a particular topic. Students are asked what they already know about the topic. Students then set goals specifying what they want to learn, and as they read the material, they write down what they learn.

Why Use It

The primary purpose of K-W-L is to develop a framework that students can use as they read. It allows students to access their prior knowledge, making it easier for them to make connections between the new material and something familiar to them. After writing down what they already know, students generate questions for the "Want to Know" stage, which helps them develop a purpose for their reading. The "Learned" stage reinforces whether students have indeed reached their goals. It is essential to return to the "What I Know" column after reading to see if their original assumptions were correct.

Conducting the Activity

Provide a three-column chart such as the following to your students.

| K What I KNOW | W What I WANT to Know | L What I LEARNED |
|--------------------------------|----------------------------------------|-----------------------------------|
| | | |

1. Allow students to list the ideas and details that they already know about a topic. Have them list these topics in the K column of the chart.
2. Have the students review the topic again and consider what they still want to know (or, if some students are apathetic or indifferent to the topic at this stage, what they think they need to find out). They should list these items in the W column of the chart. Items should be listed as questions. (For example, students might say, "How can India stay a democracy when it is so culturally diverse?").
3. As they read or watch a presentation, have students add details that they learn. They should list these items in the L column of the chart. These can be unrelated to what the student wanted to know. Also, the students can add more items to the W column at any time as they go.
4. After learning the material, have students go back to the K column and see if any of their prior knowledge was inaccurate. Have them rewrite any of their statements that were inaccurate so that they are correct.

5. Have the students go to the W column and check any of their questions that remain unanswered. They could bring these unanswered questions up in class and share how they will find the answers.

Variation

Follow the same procedure but have the whole class work on the chart together while you write responses on the board.

List, Group, Label

What It Is

List, Group, Label is a strategy for developing categories within a broader concept. It is useful both as a way to introduce new material and as a review before a test or an essay. You provide—or ask the class to develop—a list of keywords about a topic (for example, terms introduced in a unit on job qualifications). Students then work individually, in pairs, or in small groups to sort the terms into categories and label them.

Why Use It

List, Group, Label activates prior knowledge, builds vocabulary, and aids in learning and retention. Students learn from one another and develop critical thinking skills about creating categories and discovering attributes of these categories. Clustering the words or terms helps students make sense of what they learn.

Using the Strategy

1. Identify essential vocabulary for a given topic or concept, preferably no more than 25 words. Have the students list the words or write them individually on cards or notepaper. (See the variation at the end of this section.)
2. Students can work in teams or individually to cluster the vocabulary words into logical categories. If the words are unfamiliar to the class, you should provide time for students to look them up or find them in context.
3. Have the students label the categories.
4. Have the students or teams discuss the categories they created and the rationale for their decisions.
5. Students can pose questions based on the categories (e.g., “Does Odysseus belong in the Hero category? Why or why not?”) and use the categories to define or question terms (“What do we mean by a *monster* in mythology?”).

Example: Qualifications for a Programming Job

Skills

- Strong analytical and problem-solving skills
- Good communication and presentation skills
- Ability to manage multiple assignments at once
- Ability to think logically

Knowledge

- Ability to write computer programs in Python and .NET
- Knowledge of Windows operating system
- Experience using an interactive development environment (IDE)
- Knowledge about and experience using debugging tools and techniques

Personal Characteristics

- Keen interest in computers and computer programming
- Attention to detail
- A team player
- Professional attitude
- Ability to cope with changing priorities

Variations

- You can write words or terms on slips of paper and place them in envelopes for student pairs to sort and label. If this strategy is used as a review for a test, students can be encouraged to make one category "Terms I do not know," and you can then gather and discuss or re-teach these.
- Sorted lists can be put on poster paper and hung around the room for students to refer to throughout the study of a unit.
- Word Sort: Write specific categories on the board at the start of a lesson and give students a list of words that would fall under these categories. The words should be in random order. Have students predict which category each word would fall under and then revisit their categories after the lesson, modifying their lists as necessary.

Multi-Pass Method

What It Is

The Multi-Pass Method is a way for students to view a PowerPoint presentation without a projector. Copies of the presentation slides are posted around the classroom, and students circulate multiple times to view them.

Why Use It

This activity provides an alternative to viewing PowerPoint presentations with projectors. More importantly, it asks students to engage with the material more actively. Keep in mind that a multi-pass approach only works with a presentation that can be viewed out of order.

In other words, if the presentation's early slides must be seen first in order to understand the following slides, the Multi-Pass Method may not be the best approach, because not all students will begin by viewing the first slide.

Conducting the Activity

Follow these steps:

1. Post copies of the PowerPoint slides around the room.

2. Instruct students to circulate the room several times and complete a different task or series of tasks on each pass. For example:

First Pass: Survey

- Read the title and introduction and note the sections of the presentation.
- Examine the illustrations: How do the Windows, Mac OS X, and Linux screenshots differ? How are they similar?
- Read the headings to see how the presentation is organized.
- Paraphrase the information acquired. What information has been the most surprising to you?

Second Pass: Size Up

- Identify key concepts by using titles and headings, visuals, bold print, and italics. Do you recognize the elements you see on the screen? Can you find them on your computer screen?
- Generate questions about key concepts in operating systems and organization, and answer them by looking at the slides.
- Paraphrase key concepts. How do Windows, Mac OS X, and Linux seem to differ? How can an operating system be used to keep your computer running smoothly? Can you take advantage of your operating system's tools to keep your files organized?

Third Pass: Sort Out

- Answer student-generated questions and reinforce critical concepts.

Panel Discussion

What It Is

A panel discussion is usually a group of three to six people who sit in front of the rest of the class and have a purposeful conversation on a selected topic. Panel members present opinions and points of view or debate issues.

The panel presents an opportunity for the rest of the class to hear arguments and discussions about pertinent topics as seen from a variety of viewpoints.

Why Use It

Panel discussions encourage active, participatory learning. Students analyze alternative ways of thinking and explore their own experiences so they can become better critical thinkers. It is undeniable that we learn best—and remember far more of—what we teach others.

Panel discussions give students the chance to hear different perspectives; they also enhance cognitive learning and foster a sense of empowerment and equality in the classroom. They are well suited for a wide variety of learning styles. Discussions also develop skills with speaking coherently and listening effectively to the exchange of ideas and opinions.

Conducting the Activity

1. Assign a group of three to six students to be members of the panel. Instruct them to research the topic from a variety of points of view and be prepared to answer questions and present both facts and opinions.
2. The students who are not on the panel may conduct research and develop questions to ask the panel in preparation.
3. A moderator—either the teacher or an assigned student—guides the panel discussion. The rest of the class participates by asking questions to the panel.
4. To assess an activity based on student presentation or dialogue, such as a panel discussion, it helps to have an in-class assessment chart. This tool solves the dilemma of having to be fully attentive to the presentations, making it impossible to complete a full assessment of each student at the same time. Create an in-class chart by listing students' names down the left side of the page and listing summaries of the provided assessment criteria or rubric descriptors across the top. This way, you may check off the many aspects of the students' performance in situ and then use the chart to fill out individual student assessment criteria or rubric sheets after the activity is over.

Variations

Ask the members of the panel to summarize their preparatory research on a single sheet of paper and then print it for the class or display it on a computer screen using an LCD projector. The group is then responsible for discussing the material more thoroughly and addressing the class's questions.

Peer Review Prompts

What It Is

This strategy is a peer-review activity. Students are given a series of specific prompts to help them provide useful feedback. You can require them to use every single prompt in their feedback or allow them to choose particular prompts that seem most appropriate for the draft they are reviewing.

This activity can be done with an incomplete draft or in a limited time (unlike other peer-review activities). It can also be done to provide peer review on a group activity rather than an individual assignment, such as an essay.

Why Use It

Peer review benefits the reviewer as well as the writer. It fosters literacy by encouraging active reading and writing skills. When checking the quality of their peers' work, students apply critical thinking skills. Students may be motivated to write more carefully and clearly when they know their work is going to be read and evaluated by their friends. Peer review is also an effective way for students to learn more about a topic by reading what their peers wrote.

Conducting the Activity

Follow these steps:

1. For an individual assignment, students work in pairs. For a group assignment, assign two groups to work together.
2. Post a series of specific prompts on the board to guide student feedback. You can require students to use all of the prompts or allow them to select particular prompts (e.g., 3 out of 5) that seem appropriate for the draft they are reviewing.
3. Have students (or groups) trade assignments and comment on the other student's (or group's) work. Students can use the Comments feature in Microsoft Word if they have access to computers, or they can write their comments on sticky notes to attach to a printed draft or write directly on the draft.
4. Once students complete their comments, they return the draft to its author(s). Students then have time to revise their drafts.

Peer Review Using a Rubric

What It Is

This strategy is a peer-review activity designed to strengthen students' writing. For this activity, students need to have a completed (or mostly completed) first draft of an assignment, such as an essay. Students use the rubric for the assignment to give feedback to a classmate. Students are asked to provide both positive and critical feedback and to write comments explaining their feedback.

Why Use It

This activity helps students recognize how their work measures up to the standards you have established.

Conducting the Activity

Follow these steps:

1. Provide students with copies of the assignment rubric (which students should have already seen and reviewed as a class).
2. Assign students to a partner and ask them to trade papers.
3. Have students use the rubric to evaluate their partner's in-progress work. The student marks one criterion where the author is already doing good work and another where the author needs to focus on improving the work. For each criterion marked, the student writes a brief comment explaining why he or she marked the rubric in that way.
4. When the rubrics are completed, have students trade papers back, along with the marked rubrics.

5. Allow students to discuss the comments they made with their partner and clarify as needed.
6. Instruct students to use the marked rubric to guide their revisions.

Reading Jigsaw

What It Is

Reading Jigsaw is a cooperative learning strategy where each student within a homegroup has a piece of information that covers one aspect of the topic they are studying, and each student is responsible for teaching this piece of information to the other students in the homegroup. When all the pieces are put together, the students should have all the information about the topic they are studying, or the completed puzzle.

Reading Jigsaw should follow these steps:

1. In each home group, every student receives a different portion of the materials to be introduced.
2. Students leave their home teams and meet in "expert" groups with the students who have the same piece of information to be learned.
3. Expert groups discuss the material and brainstorm ways in which to present their understandings to the other members of their homegroup.
4. The experts return to their home groups to teach their portion of the materials and to learn from the other members of their homegroup.

Why Use It

Jigsaw learning allows students to be introduced to material and maintain a high level of personal responsibility. Jigsaw learning fosters teamwork and cooperative learning skills and helps students develop a depth of knowledge not possible if they were to try to learn all of the material on their own. Because students are required to present their findings to the homegroup, jigsaw learning will often disclose a student's understanding of a concept as well as reveal any misunderstandings.

Research has shown that Reading Jigsaw not only has social benefits but also helps students learn and apply academic content. The Reading Jigsaw also offers these instructional benefits:

- It is an efficient way to learn the material.
- It encourages listening, engagement, and empathy by giving each member of the group an essential part to play in the academic activity.
- Group members must work together as a team to accomplish a common goal; each person depends on all the others.
- No student can succeed unless everyone works well together as a team.
- It facilitates interaction among all students in the class, leading them to value each other as contributors to their group task.

Conducting the Activity

To conduct a Reading Jigsaw in your classroom, follow these steps:

1. Assign students to home groups of four or five students. Have students number off within their teams.
2. Assign study topics to home team members by giving them an assignment sheet or by listing their numbers and designated roles on the board. For example, a science course exploring the theory and application of the laws of physics might have one member of the home team focus on the physics of light while another tackles energy conservation.
3. Have students move to “expert” groups where everyone in the group has the same topic as themselves. For example, all the students reading or researching energy conservation would then be in one group.
4. Students work with members of their “expert” group to read about and research their topic. They prepare a short presentation and decide how they will teach their topic to their home team. You may want students to prepare mini-posters while in their “expert” groups. These posters can contain essential facts, information, and diagrams related to the study topic.
5. Students return to their home teams and take turns teaching their team members the material. You might have team members take notes or record the information on a worksheet or in their notebooks. You could also have them complete a graphic organizer or chart with the new information.
6. Involve the class in a whole-group review of all the content you expect them to master on the assessment. A written test is usually given to the entire class to arrive at individual grades.

Variations

The expert groups can prepare large posters with a graphic depiction and a list of critical points. They then present the material orally to the class as a whole. You can type a summary of these presentations to assure that all the pertinent information is covered.

Sticky Note Review

What It Is

Sticky Note Review provides a quick way to review major concepts from the lesson and to help students make connections between what they have learned and the professional world. Students determine whether the concepts they are learning about have any implications for professionals.

Why Use It

By asking students to take on the persona of a person who works in their field, students are challenged to think more carefully about the professional-world implications of what they have learned. You can review their responses and determine if the class generally seems to understand the concepts.

Conducting the Activity

1. Post three or four key concepts from the lesson on the board and give a small stack of sticky notes to each student.
2. Ask students to imagine themselves in the role of a person working in their field. Would the concepts listed on the board have a positive, a negative, or an unknown impact on their work?
3. Students write "+" for positive, "-" for negative, and "?" for unknown, and post the sticky note by each term.
4. Lead a class discussion about the results.

SQ3R

What It Is

Survey, **Q**uestion, **R**ead, **R**ecite, and **R**evue (SQ3R) is a reading and note-taking method developed by Francis P. Robinson in his book *Effective Study*, published in 1946, to help students set the purpose for reading and engage them in reading for answers to critical questions. It teaches students first to skim the material and then develop questions to which they respond while reading. It consists of these five steps:

1. Survey. Overview of the text familiarizes the student with the material presented in a chapter.
2. Question. Formulate a question before reading encourages students to become more involved with the chapter.
3. Read. Reading with a specific purpose helps to promote concentration.
4. Recite. This action allows students to assess their understanding of the reading material by writing notes in their own words, speaking aloud, highlighting key points, or drawing what they feel is most important.
5. Review. This step challenges the student to recall the chapter's main points and comprehend the relationships between them.

Why Use It

While SQ3R is one of the most tried-and-true and commonly taught reading strategies, research (Caverly, Orlando, and Mullen, 2000) has shown it increases reading comprehension as much as rereading the material would.

Conducting the Activity

It is essential to model each step. Students often need to be shown what *recite* means. In this context, recitation can be oral, written, or graphic.

Following are the guiding instructions for SQ3R. It can be used as a student handout:

| | |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Before you read, Survey</p> | <ul style="list-style-type: none"> • Chapter titles, headings, and subheadings • Captions under pictures, charts, graphs, or maps • Questions or study guides • Introductory and concluding paragraphs • Chapter summaries |
| <p>Question while you are surveying</p> | <ul style="list-style-type: none"> • Turn the title, headings, and subheadings into questions. • Read questions at the end of the chapters or after each subheading. • Ask yourself: "What did my instructor say about this chapter or subject when it was assigned?" • Ask yourself: "What do I already know about this subject?" <p>Note: If it is helpful to you, write out these questions for consideration. This variation is called SQW3R.</p> |
| <p>When you begin to Read</p> | <ul style="list-style-type: none"> • Look for answers to the questions you first raised. • Answer questions at the beginning or end of the chapters or study guides. • Reread captions under pictures and graphs. • Note all the underlined, italicized, bold printed words or phrases. • Study any graphic aids. • Stop and reread parts that are not clear. • Read-only a section at a time and recite after each section. |

| | |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Recite</p> <p>after you have read a section</p> | <ul style="list-style-type: none"> • Ask yourself questions about what you have just read or summarize, in your own words, what you read. • Take notes from the text but write the information in your own words. • Underline or highlight important points you have just read. <p>Note: Use whichever recitation method best suits your particular learning style. The more senses you use, the more likely you are to remember what you read.</p> |
| <p>Review</p> | <ul style="list-style-type: none"> • Review critical points/text and summarize understanding. <p>Once you have finished the entire chapter using the preceding steps, go back over all the questions from all the headings. See if you can now answer them. If not, look back and refresh your memory; then continue.</p> |

Taxonomy

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What It Is

A taxonomy is a list of words related to a specific topic or subject matter area. Students can be asked to build taxonomies about almost anything they are studying, organizing the keywords or terms alphabetically. The purpose of building these taxonomies is both to increase vocabulary—especially vocabulary students may need to write about a given topic—and to encourage students to work together to share knowledge. Taxonomies become each student’s thesaurus.

Taxonomies are typically organized by alphabet, as shown here:

Example: Astronomy

| | |
|---|----------------------------------------|
| A | astrology, Andromeda galaxy, asteroids |
| B | black holes, Big Bang |
| C | constellation, Copernicus |
| D | dwarf star |
| E | |

| | |
|---|---------------------------------------------|
| F | |
| G | Galileo, galaxy |
| H | Hubble telescope |
| I | |
| J | |
| K | Kepler |
| L | lunar eclipse |
| M | moon, Milky Way |
| N | nebulae |
| O | |
| P | planet, pulsars |
| Q | quasars |
| R | |
| S | sun, solar flares, solar eclipse, supernova |
| T | |
| U | |
| V | Van Allen radiation belts |
| W | |
| X | |
| Y | |
| Z | |

Why Use It

When building a taxonomy, students get practice using these skills:

- Organizing prior, ongoing, and new knowledge
- Focusing on a topic
- Taking notes
- Expanding vocabulary
- Listening to others

Conducting the Activity

1. Students work alone for three or four minutes and think of as many words as they can that relate to the topic being studied. They write each word on their chart, next to its initial letter.
2. Students then collaborate by forming small groups and share their words, adding new words to their taxonomies.
3. The whole class forms a group to cross-pollinate thinking and suggest other words, or students can do a gallery walk to get ideas from other students' taxonomies.
4. Have all the students add these new words to their taxonomy.

Variations

Students can build a personal taxonomy to prepare for both autobiographical and biographical writing. This type of taxonomy contains the words that answer "Who Am I?" Students can include family relationships, geographical information, interests, and personality traits.

Example: Who Am I?

| | |
|---|----------------------------|
| A | American, athletic |
| B | bicyclist, baseball fan! |
| C | cousin, classmate, curious |
| D | daughter |
| E | energetic |
| F | friend |

In another variation, students can create taxonomies to build more expressive vocabularies.

Example: Words to use instead of *said*

| | |
|---|--------------------------------------|
| A | announce, add, argue, assert, allege |
| B | bark, bellow |
| C | cry, counter, contend |
| D | debate, drawl |
| E | exclaim, exhort, emphasize, explain |

Thumbs Up, Thumbs Down

What It Is

In this activity, students use a gesture (thumbs up or down) to voice their opinion or exercise their prior knowledge.

Why Use It

This activity can activate students' prior knowledge and create a "need to know" before a reading passage or presentation. It is a quick way to evaluate what students already know or believe about a specific topic. Since all students must have a thumb facing either up or down, it requires all students to participate. When you ask for a show of hands, some students may never bother to raise their hands.

Conducting the Activity

Follow these steps:

1. Read aloud a series of statements.
2. After each statement, ask students who believe the statement is true to give it a thumbs-up, and students who believe the statement is false to give it a thumbs-down.
3. Typically, these statements will be revisited later in the lesson, and students will be invited to vote again based on what they have learned.
4. Hold a brief discussion to allow students to share their thoughts.

Variations

In some cases, the statements may leave students uncertain enough to need a third choice: "I do not know." In that case, students can hold their thumbs out sideways (parallel to the floor) to signal "I do not know" or "I am not sure."

Think, Pair, Share

What It Is

Think, Pair, Share is a learning strategy that uses these steps:

1. Students think silently about a question.
2. Students pair up and exchange thoughts.
3. Student pairs share their responses.

Why Use It

Think, Pair, Share benefits students in the areas of peer acceptance, peer support, academic achievement, self-esteem, and increased interest in school and other students. Students spend more time on task and listen to each other when engaged in Think, Pair, Share activities. More students are willing to respond in large groups after they have been able to share their responses in pairs.

Other benefits include:

- Students become actively involved in thinking about the concepts presented in the lesson.
- Students retain more of the critical information in a lesson.
- Students' misunderstandings about the topic are often revealed (and resolved) during the peer discussion stage.
- Students are more willing to participate since they do not feel the peer pressure involved in responding in front of the whole class.
- Students practice articulating what they mean.
- The strategy is easy to use spontaneously and easy to use in large classes.

Conducting the Activity

Follow these steps:

1. Begin by asking students to think about an open-ended question that is conducive to discussion. You may want to provoke their thinking with a prompt or observation and have them write the prompt down.
2. Ask students to take a few moments to think silently about the question that you posed. Be sure to provide adequate "think time." You might have students give a thumbs-up sign when they have something they are ready to share.
3. Ask students to pair up and exchange thoughts. They should compare their mental or written notes and identify the answers they think are best, most convincing, or most interesting. Walk around and monitor the discussions. You might hear misunderstandings that you can address during the whole-group discussion that follows.
4. Ask student pairs to share their responses with other pairs, other teams, or the entire class. You can ask pairs to share by going around in round-robin fashion, calling on each pair, or taking answers as they are called out "popcorn style" (or as hands are raised). Record these responses on the board.

Switch the discussion partners frequently. If your students are seated at tables, they can pair with the person beside them for one discussion and the person across from them for the next discussion.

Variations

- **Write, Pair, Share:** This variation gives students a chance to write down their answers before sharing with a partner. You may wish to collect written responses from each student or each pair before or after their discussions.
- **Think, Group, Share:** Instead of pairs, you might break the class into groups; make sure they are small groups (no more than four students per group) so that each student has a chance to talk. After students share their answers with each other, have a representative from each group summarize for the rest of the class, some of their most interesting reflections.

- **Stand, Pair, Share:** Once the class has become more comfortable—and disciplined—with this strategy, you will be able to use it with more flexibility and freedom. You can have students stand and find a partner with whom to discuss an idea or a project. Sometimes allow students to get out of their seat and move around and talk to a partner as a needed break in-class routine, without losing the thread of the class discussion.
- **Four Corners:** Another variation is to present four alternative responses to an assignment or discussion topic and have students move to the four corners of the room you have designated for each response. Once there, they can discuss their reasons for their choice with their corner group members and then present their argument to the class as a whole.
- **Give One, Get One:** Ask students to write down two things they know about a topic and then mingle with the class to “give” one and “get” another from each student. You can provide a simple grid for the students to fill out with their newly acquired information.

True or False

What It Is

Students analyze a series of statements with each other and determine if they think they are true or false.

Why Use It

This highly interactive and potentially provocative activity reveals students’ prior knowledge of a topic and provides an avenue for revisiting preconceptions and seeing how much students have learned.

Conducting the Activity

Follow these steps:

1. Before class, create a series of statements, some of which are true and some false (or use the statements provided in a teacher resource). Copy these onto index cards (or print the teacher resource containing the statements and cut them into strips).
2. When class begins, assign students to a partner and pass out one index card containing a statement to each pair of students.
3. Have pairs hold a preliminary conversation about whether they think the statement is true or false.
4. Instruct the pairs to walk around the classroom, asking other students what they think while also offering their own opinions on other students’ statements.
5. After a set amount of time, ask students to make a decision. Tell them to write their answer on the other side of their index card, along with an explanation of their reasoning.
6. Ask pairs to share what their statement was, what they believed initially, and what they think now that they have talked to other pairs.

Venn Diagram

What It Is

A Venn diagram is a commonly used tool to help students identify similarities and differences. A Venn diagram is often completed in a Think, Pair, Share style where students begin the diagram alone, pair up (or work in small groups) to get ideas from their classmates, and then share the diagram with the class as a whole (or use the diagram as the basis for a class discussion).

Why Use It

Venn diagrams help students to develop the skill of comparing and contrasting information about concepts or elements that are similar but distinct. For example, using a Venn diagram to compare a Windows operating system to a Mac operating system helps students identify what most operating systems have in common and what specific advantages each operating system may have over the other. They can use their diagram to evaluate which operating system is the best for a specific situation.

Conducting the Activity

Follow these steps:

1. Refer students to their Venn diagram worksheet, which consists of two overlapping circles. Each circle is labeled with a term (e.g., "Windows OS" and "Mac OS").
2. Instruct students to write words or phrases in each circle that describe that term/concept exclusively (e.g., inside the circle labeled "Mac OS," students might write "uses Safari browser," "does not require special antivirus software," and "relatively expensive").
3. Then, inside the section where the two circles overlap, have students write words that apply to both terms/concepts (e.g., "work with printers, mice, and keyboards" and "run Microsoft Office applications" would be true of both Windows and Mac operating systems).
4. Conclude the activity with some sharing and discussion, such as a gallery walk or placing students in groups to share their diagrams. You may want to compile students' ideas into a class diagram that you post on the wall.

Vote with Your Feet

What It Is

In this debate activity designed to work in a short time frame, students move to the side of the room designated to represent their views on the topic under debate. Students express their reasons for their choice and attempt to convince other students to "vote with their feet" and join them.

Why Use It

In this activity, as in all debate activities, students have the opportunity to practice their verbal expression skills and learn how to make cohesive and coherent arguments. This debate also adds

a visual demonstration of which side is winning because students physically shift their position if they change their mind about the topic.

Conducting the Activity

Follow these steps:

1. Present students with a question or statement.
2. Designate one side of the room to represent one viewpoint on the debate question, and designate the opposite side of the room to represent the opposing viewpoint.
3. Ask students to indicate whether they agree or disagree with the statement by moving to the side of the room that represents their viewpoint.
4. Make a note of how many students are on each side.
5. Call on speakers from each side, in turn. The speakers' goal is to convince students on the other side to vote with their feet and join them.
6. Between speakers, allow students to move if they wish. At the end of the debate, the winning side is the side with the most students.

Strategies for Improving Vocabulary

These supplemental strategies for improving vocabulary are not commonly used in NAF lessons, but they can be a helpful supplement if your students are having difficulty acquiring or retaining new words.

Comparison Matrix

What It Is

A comparison matrix is a chart that can be used to compare specific attributes and characteristics that terms share. The comparison matrix can be used to highlight similarities and differences between terms, which allows students to recognize how seemingly different things can be similar. It also enables students to compare familiar terms with unfamiliar ones.

Why Use It

A comparison matrix is helpful when you have many terms that are closely related and would like students to chart the differences between them in order to solidify how they differ. Comparison matrixes can also increase students' understanding of new information.

Conducting the Activity

Here is an example of a simple comparison matrix that compares a few of the different animal groups:

| | Cold-blooded | Lays eggs | Has fur or hair | Breathes air through lungs |
|------------|--------------|-----------|-----------------|----------------------------|
| Reptiles | x | x | | x |
| Amphibians | x | x | | x (some) |
| Mammals | | | x | x |
| Fish | x | x | | |

Frayer Model

What It Is

The Frayer Model is a graphic organizer used for word analysis. For each term, students write its definition and characteristics; then they write both examples and non-examples of the term.

Why Use It

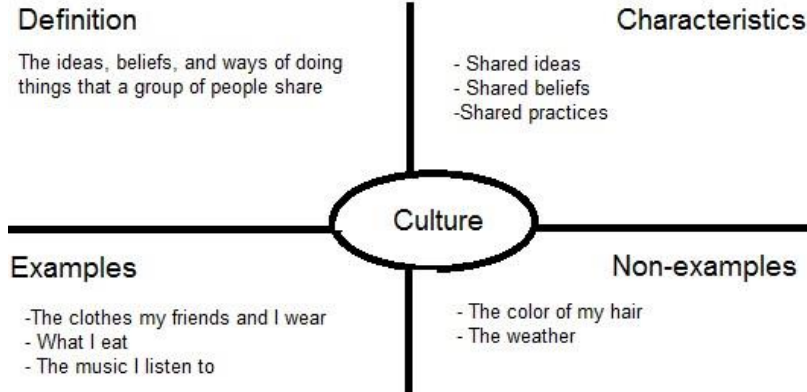
By writing about a term from four different perspectives, students develop a more thorough understanding of it. This activity lends itself to pair or small-group work so that conversation further enriches students' grasp of the word. The Frayer Model also allows you to gauge the depth of student understanding for key terms about a topic.

Conducting the Activity

Follow these steps:

1. Give each student a sheet of paper. Tell students to draw a line down the middle of the paper and across the middle of it, so that the paper is divided into four equal squares.
2. Have students draw a circle in the middle of the paper, where all the corners meet; then erase the corners so that the circle is empty. Ask them to write the vocabulary word that you choose in the circle.
3. Instruct students to fill in each corner of the sheet as follows:
 - o Define the term in your own words.
 - o List characteristics of the term.
 - o Provide examples of what the word means.
 - o Provide non-examples (examples of what the word does not mean).

Example



Variations

The Foursquare vocabulary technique uses a template similar to the Frayer Model. Students write a specific term in the center of a piece of paper. In the four corners, students must define the term, draw a picture of the term, use the word in a sentence, and list synonyms of the word. Having students create their mental images for the ideas and concepts they are learning provides them with a deeper understanding of each term.

Mystery Word

What It Is

Mystery Word is an interactive game similar to charades in which students review vocabulary terms. One team has to try to get the other team to guess the term written on a strip of paper.

Why Use It

Mystery Word is a fun way to review vocabulary before a quiz or a test. It also fosters team building and cooperation.

Conducting the Activity

Follow these steps:

1. To prepare, choose approximately ten (10) vocabulary words and write each word on an index card.
2. Divide the class into two teams.
3. Show one of the vocabulary cards to the members of one team only (i.e., the other team is not allowed to see it).
4. Members of the first team must try to get the second team to guess the word (without ever stating the word) by doing one of the following: offering clues, providing definitions, providing example sentences, acting out the word, and drawing pictures.

Possible Sentences

This activity is adapted from Moore, D.W., & Moore, S.A. (1986). "Possible Sentences." In *Reading in the Content Areas: Improving Classroom Instruction*, 2nd ed., edited by E.K. Dishner, T.W. Bean, J.E. Readence, and D.W. Moore. Dubuque, IA: Kendall/Hunt.

What It Is

Before starting a lesson on a new topic, students create "possible sentences" using both familiar and unfamiliar vocabulary related to the lesson. After students have learned new content involving this vocabulary, they reevaluate their sentences. Students can recognize when their first guesses were incorrect and revise their sentences accordingly.

Why Use It

Possible Sentences is a way to evaluate student knowledge of a topic. It takes what students know of a topic and their familiarity with English language sentence structure to activate prior knowledge, and later to build upon their knowledge of a topic. Students can complete this activity independently or work in pairs or small groups to generate possible sentences or reevaluate and revise them.

Conducting the Activity

Follow these steps:

1. Generate a list of 9–10 words related to your lesson. These words should represent concepts that are both familiar and unfamiliar to students.
2. Have students create five possible sentences by using two words in each sentence until all words are gone.
3. Teach your lesson on the topic.
4. After the primary instruction is over, have students go back and evaluate the accuracy of their possible sentences by placing a "+" (for correct), a "-" (for incorrect), or a "?" (for cannot determine) beside each sentence.
5. For sentences marked incorrect, students should write a corrected sentence. Students can research to figure out the accuracy of sentences in question or work in small groups to pool their knowledge.

Sample words for Possible Sentences activity on the topic of the Internet:

| | | |
|---------|----------|-------------|
| network | modem | ISP |
| URL | web page | hyperlink |
| graphic | text | web browser |

Semantic Mapping

What It Is

Semantic mapping extends the understanding of a concept or activates knowledge of related concepts to increase understanding and make intellectual connections.

Why Use It

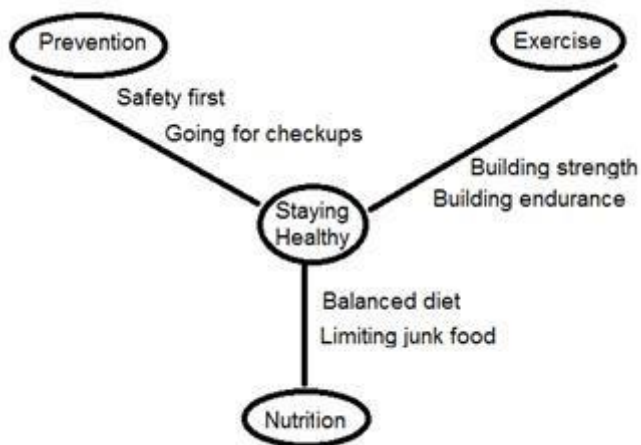
Semantic mapping is a great mind-mapping tool that helps students make connections between concepts by linking vocabulary words.

Conducting the Activity

Follow these steps:

1. Select a concept and have students place it in a circle or a bubble in the middle of a page.
2. Provide or generate three to four related concepts and have students place them in bubbles that radiate out from the original concept on the page.
3. Have students place each term you introduce along the lines that connect each of the outer concepts with the original concept. For example, between the primary concept "wealth" and the related concept "currency," students might list the terms *euro*, *dollar*, or *yen*. The terms may come from lessons, readings, or other media, and students can continue to add terms throughout the lesson.

Example



Variations

Word mapping is a variation of semantic mapping that is used to help students classify and make connections between terms being studied. Students are given a term and write it in the middle of a piece of paper. Students are asked to provide 5–10 examples of words that are associated with the term.

Students write the associated words around the middle term, with the associated words webbing out.

Vocabulary Bingo

What It Is

Vocabulary Bingo is just like the classic bingo game where students attempt to get “bingo” by matching the definition given by the teacher to the vocabulary word on their bingo card. There are many variations for the activity, and bingo boards can be made to introduce antonyms, synonyms, and other parts of speech.

Why Use It

Vocabulary Bingo provides students with an opportunity to interact with their vocabulary words. It is also a fun, low-stress way for students to review for quizzes and tests.

Conducting the Activity

Follow these steps:

1. Prepare a variety of bingo cards using the lesson’s vocabulary terms for each square, plus a square labeled “FREE BINGO SPACE” (terms should appear in a different order on each card; one card per student).
2. Prepare bingo placeholders (one set for each student).
3. Hand out a bingo card and one set of bingo placeholders to each student.
4. Save one bingo card and one set of placeholders for yourself to use as the calling card.
5. Tell students to begin by putting a placeholder on the square labeled “FREE BINGO SPACE.”
6. Read the definitions of the terms in random order (or share any other information you wish about them) aloud. Tell students to put a bingo marker on the correct term.
7. Cover your call card with placeholders as you read each definition to keep track of which words you have called.
8. Allow students to help each other by saying the term out loud when you give the definition.
9. Tell students that the first to cover five terms in a row (horizontally, vertically, or diagonally) should call out “Bingo!”
10. Have the student who calls “Bingo!” read the terms he or she covered aloud so that you can make sure the student’s answers match the calling card.
11. Optional: Give extra credit to the winner, or some small reward that you deem appropriate. The winner could also call a round. Play as many rounds of bingo as time allows to reinforce vocabulary.
12. At the end of the activity, collect the bingo cards and placeholders from students to reuse.