green STEM

science + technology + engineering + math

Introduction to Green Jobs

Grade Levels: 6 – 12

Objective: To Identify environmental issues important to the community and the rest of the world, explain why we need to learn about these environmental issues, define the "green industry and Identify important technologies associated with the green industry.

Standards:

National Science Education Standards

Unifying Concepts & Processes; Standard A - Science as Inquiry; Standard E - Science & Technology; Standard F - Science in Personal and Social Perspectives

National Council of Teachers of Mathematics Standards

Numbers & Operations: 6-8; Measurement: 6-8; Problem Solving: 6-8; Communication: 6-8

National Technology Education Competencies

TE8482.007 – Demonstrate creativity and resourcefulness, TE8482.009 – Demonstrate effective reading and writing skills, TE8482.049 – Identify emerging technologies, TE8482.051 – Describe how society affects technology and technology affects society.

National Educational Technology Standards

Standard 3 - Research and Information Fluency; Standard 4 - Critical Thinking, Problem Solving, and Decision Making

Virginia Standards of Learning

Science: 6.1, PS.1, LS.1

History and Social Science: CE. 1, CE.4, CE.11, CE.12, CE.17, USII.8, USII.9

English: 6.5, 6.6, 7.6, 7.7, 8.6

Mathematics: 7.11, 7.12, 8.13, 8.14

Computer/Technology: 6-8.5, 6-8.6, 6-8.8

Background: In this lesson, students will be introduced to the concept of "green jobs". Students will construct a definition for "green jobs". Students will learn about different "green jobs" and how they help the environment and economy. They will research a "green job" of their choice and create a presentation to be presented to the rest of the class.

Materials:
Computers with Internet
Microsoft PowerPoint

Procedure:

1. Introduction:

    a. Create green job title cards and corresponding green job description cards (enough for the whole class).

    b. Pass out the green job title and description cards, one to each student. Have each student find the other student with the matching card.

    c. Have each pair introduce their job and give the definition.

    d. After all students have told about their jobs, tell the class that all of these jobs are green jobs. Ask the students if they have ever heard of green jobs. Have the students discuss their definitions of green jobs.

2. Activity One: What Qualifies as a Green Job?

    a. Discuss the following questions with the students:

    b. What did all of the jobs on the cards have in common?

    c. Have the students write down on the board words and ideas associated with "green jobs".

    d. As a class, come up with an official class definition for a "green job".

    e. Have the students list the job titles from their cards on the board. Ask the students if there are any jobs on the board that do not fit the definition of a green job and explain.

    f. Challenge students to name additional green jobs that are not listed on the board.

    g. Ask students to share what they would like to do for a career or profession and then discuss if any of these could be considered a "green job".

    h. Ask the students why environmental education is becoming more important?

    i. Ask the students about the kinds of environmental education and activities they have done in the past.

j.   Ask the students what they think is the most important "green job"? What is the most important?

3.   Activity Two: Green Job Research

a.   Students will choose a "green job" off of the list on the board or come up with another "green job" that interests them. They will research this job and create a short PowerPoint or poster about the job to share with the class.

b.   The presentation should include the following information:

- Why is this considered a "green job"?
- Does this job fit the definition we came up with in class? Why or not?
- How does this job help the environment?
- What sector does it fall into?
- Why is this job important for the economy?
- How might this career be even more important in the future?
- Why were you interested in this job?

4.   Activity Three: Presentations

a.   Students will present their green job PowerPoints or poster to the entire class.

5.   Conclusion

a.   Go over the green job definition that the class created.

b.   Ask the students if their first ideas about green jobs has changed at all. How?

c.   After their research and presentations, ask the students if our class definition needs to be changed at all.

d.   If necessary, change the class definition.

Extensions:

Green Jobs and Careers:

The Bureau of Labor Statistics (http://www.bls.gov/green/) defines green jobs as:

"Jobs in businesses that produce goods or provide services that benefit the environment or conserve natural resources." And "Jobs in which workers' duties involve making their establishment's production processes more environmentally friendly or use fewer natural resources."

1.   Have students investigate the types of jobs are suited to their personality, skills and interests by using these online resources. The personality test center helps identify career options based on

personality indicators and the O*NET tool uses interests and skills to suggest potential careers. Students can choose to use both tools and compare the results or use each tool individually.

a. Personality Career Tool Activity: Complete your Meyers Briggs type indicator at the online site.

   i. Go to www.personalitytest.net/cgi-bin/q.pl

   ii. Answer the 68 quick "either/or" questions. Choose your best answer to each question.

   iii. When you click "RESULTS" your personality type will be listed.

   iv. With your four-letter reference type, choose an occupation from the list that might help suit your type and is a job that you might be interested in exploring.

   v. The listing can be found by clicking "Green Jobs List" at http://www.ctenergyeducation.com/greenjobs.htm

   vi. Do a web search of the listed resource sites and other sites to find out more about the job you chose.

      - What training/background is required?
      - What is the entry-level pay or average pay for this occupation?
      - Do there seem to be any jobs available in this occupation? If so where are they?
      - After completing your research are you more or less interested in this occupation that when you started? Explain why.

b. O*NET Interest Profiler Activity: Complete the O*NET Interest Profiler

   i. Go to http://www.mynextmove.org/explore/ip and complete the interest profiler

   ii. Answer the quick 60 questions with your best answers for each question.

   iii. When you have finished your interests will be shown in a graph, click Next to see the jobs suited to your interests.

      - Where any of the jobs you chose green jobs? If not you can go to www.onetonline.org/find/green to search the green economy jobs sector.

   iv. For the jobs listed, choose ones you are interested in.

      - What training/background is required?
      - What is the entry-level pay or average pay for this occupation?
      - Do there seem to be any jobs available in this occupation? If so where are they?
      - After completing your research are you more or less interested in this occupation that when you started? Explain why.

2. Have the students investigate green jobs related to their project topics. Suggested resources:

   http://www.bls.gov/green/greencareers.htm

Service-learning Projects:

Have students design a service-learning project implementing a green solution at your school or in your community.

1. Create a brochure or display explaining the project topics. Share this information at community or PTA meeting or Earth Day celebration.
2. Develop a fun lesson for K-2 students at the school. Have upper-grade student present this lesson to the young students in the school.

To learn more about service-learning, visit www.servicelearning.vcu.edu and http://www.servicelearning.org/what-service-learning.

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GreenSTEM@VCU Unit Plan

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Unit Description

Unit Overview

Our unit focus will be a school-wide recycling program. The major learning goals include identifying recyclables; cost/ benefit (organization & environment) of recycling; and proper protocols for recycling. Student learning goals are time-management, leadership, group dynamic, research, persuasive writing and technology skills. Our service learning project will consist of recycling mixed paper, cardboard, plastic, and aluminum from the classrooms, cafeteria, and common work areas . This project will follow our school calendar beginning in September and run through June. The bulk of our work will be conducted through the Ecology Club that meets monthly combined with individual and small group projects.

Unit Context

Topic/Learning structure

September   Special Speaker – Headwaters Soil and Water Conservation District

                       Review progress of Spring 2012 program

                       Scavenger hunt of recyclables and locations

                       Organize teams and weekly recycling schedule

October	Special Speaker -- Waste Management Officer Augusta County
	Organize research groups and guidelines – School Librarian
	Cost/Benefits of Recycling
	Appropriate procedures
	Community Partners
	Funding Sources
November	Small group work with experts
	PSA Scripts
	Posters
	Community Partners
	Funding Sources
December	Small group work with sponsors
January	Finalize removal service provider
	Final prep for school presentation
February	Continue research & development of PSAs
March	Evaluate progress
	Contact Community Partners to encourage community recycling center
April	Celebrate with Earth Day Emphasis
	Now What—student driven what's next
May	Continue education and recycling

Energy & Environmental Concerns

Our project includes the study of:

the amount of energy it takes to create new versus recycled item

the environmental effects of recycling as opposed to disposing of items in a landfill

the jobs that are created by recycling and what jobs are included throughout the recycling process.

STEM Discipline Integration

Our project will integrate the following STEM disciplines:

Science (the environmental impact of recycling versus landfill use, the energy conserved by recycling, renewable versus non-renewable raw goods, etc.);

Technology (research and create PSAs (video & posters) for our school and community as well as research partners and proper recycling protocols);

Engineering (research the manufacturing/production techniques used in recycling and other processes); and

Mathematics (collect data, compute volume of items collected, calculate monthly mean, percent decrease of paper usage as we educate the students and faculty on reducing usage, and make a cost/benefit analysis) .

Essential Questions

The essential questions are:

1) Why do we recycle?

2) What items are recyclable?

3) How do we encourage participation in recycling?

4) How can we pay for recycling?

Standards & Goals

Duration and Intensity:

Students and faculty will participate in our recycling initiative every school day for the entire school year. They will research recycling so that they can educate themselves and others. We will meet monthly to discuss, reflect, and continue to plan and implement the project.

Meaningful Service:

Recycling the items in our building will practically show students the consumable nature and wasteful tendencies of our society. This will be a student-led, student-centered, student-implemented project. Students feel the need to recycle because they are concerned about the trees that are used to make the paper.

Links to Curriculum:

The unit is closely linked to the VA Science SOL Energy and Resources strands in which "focuses on student understanding of the role of resources in the natural world and how people can utilize those resources in a sustainable way. An important idea represented in this strand is the concept of management of resource use. This begins with basic ideas of conservation and proceeds to more abstract consideration of costs and benefits. The topics developed include conservation of materials, soil and plants as resources, energy use, water, Virginia's resources, and how public policy impacts the environment."

The unit also links the VA Math SOL which states "While learning mathematics, students will be actively engaged, using concrete materials and appropriate technology such as calculators, computers, and spreadsheets. However, facility in the use of technology shall not be regarded as a substitute for a student's understanding of quantitative concepts and relationships or for proficiency in basic computations. Students will also identify real-life applications of the mathematical principles they are learning and apply these to science and other disciplines they are studying.

The unit also links to the VA Computer/Technology Standards of Learning which state that students are to use technology in core classes to enhance learning, develop technology literacy, and develop intellectual skills for information use and working responsibly and productively in a group.

Students will also learn how to communicate their new knowledge into a form that others can access and then will affect change. Students will learn how to be leaders in their community.

Youth Voice:

Students will engage in this initiative by choosing, planning, and implementing the recycling program, as well as, educating the student body and faculty based on their personal research. The students will assess their own effectiveness in bringing about a change in the students' attitudes towards over consumption. The teachers will be the facilitators; the students will be the decision-makers and the implementers of this program.

Partnerships:

Students will work with the student body, the teachers and staff, the local school administration, the school board, the district maintenance department, local businesses to donate materials and monies, and local service providers. The students will investigate partnerships with community-based organizations,

such as Moose, VFW, and the Ruritans. Students will communicate with these partners using a student-developed and maintained website, bulletin boards, and school newsletters to get community by-in and to evaluate progress.

Diversity:

Our project will be able to include all students; therefore, students of different socio-economic and racial backgrounds will be working together to develop mutual respect for each other and be able to share based on their backgrounds. Every child in this project will be an influential, important part of this project. We will have students use the skills that they have developed to further the project. Also, students will be working with students of different ages as well as the adults within and outside of our building.

Reflection:

As a part of every Ecology Club meeting, we will spend time reflecting on our month and the progress that we have made. We will start out with a format of: "What happened?" then "So what?" then "So NOW what?" This will provide the students with a framework to begin to develop their own critical thinking. We will allow students to choose different media to record their reflections. Some choices may be video, journal, blog, etc. We will use the reflections to develop more abstract thinking and seeing the community impact of what they are doing.

Assessing Impacts:

Students will ask the Financial Secretary (Bookkeeper) to provide documentation as to the amount of money that we are spending on paper goods. We will hope that the amount of paper required will be reduced as we educate students and faculty on the reduction aspect of "reduce, reuse, recycle." The students will interview the custodial staff to see if the reducing and reusing facet of our program is reducing their need to dump their trash cans into the dumpster. The students will keep track of how many kilograms of paper goods we recycle. They will also keep track of the pounds of aluminum cans we collect and the money made from selling that to a metal recycler. As science teachers, we will monitor Ecology Club members' scores on standardized test results compared to non-members and to their own individual improvements on these tests.

Sharing and Celebrating:

Students will use the school newsletter to inform the community about our progress with this project. Also, students will use a bulletin board in the school building to communicate improvement toward our

goals. We, as club sponsors, will recognize the Ecology Club members in an awards ceremony at the end of the year. At this ceremony, we will give the students a certificate and an "Ecology Club" t-shirt.

Learning- Service Goals:

Our students will have multiple opportunities to develop their civic knowledge, skills, attitudes and values as they invest time and energy on a project with the "greater good" as a primary objective. They will see their efforts in reducing our consumption of goods and in recycling the goods that we use as a help to our community, our environment, and our nation. The students will see themselves as a valuable resource to affect change in our area. Students will also develop character, social, and career skills as they problem solve as part of a team. As the students use their brainstorming time with other students to make decisions and to plan how to implement our project, they will be working together with students across grade levels and across clique groups to make a change. Many students who are not strong leaders can become better leaders through this experience. Furthermore, students will be interacting with the adult staff in our building and in our community. This interaction can build skills that students can take with them outside of the school building as well as into their adulthood. They will learn how to work with these adults in a respectful, confident manner. Also, students may have to "fight" for support from our school's administration and the district; this practice may show the students an aspect of civic responsibility and politics in our area. In addition, students will develop career knowledge as they research different green jobs and other peripheral jobs that students can target as an interest or as an occupational goal. Throughout this project, the students will engage with math, science, and technology in practical, interactive ways. Academic engagement will be achieved as students apply classroom educational objectives to the project in a way that can connect the abstract to the concrete. For instance, students who have had difficulty with fractions, decimals, ratios, and percents will be working with student partners calculating these with past versus present paper purchases. We can calculate (hopefully) percent decrease from these amounts.

State and National Standards:

Virginia State Standards

Science: 6.2, 6.9, LS.11, PS.5, PS.6

Math: 6.2, 6.14, 6.15, 6.16, 7.9, 7.11, 8.13, 8.14

Computer Technology: C/T 6-8.5, C/T 6-8.6, C/T 6-8.7, C/T 6-8.8, C/T 6-8.9

National STEM Standards: Science Grade 6 - 8

STANDARD / BENCHMARK F.2.

STANDARD / BENCHMARK F.4.

National STEM Standards: Math Grade 6 - 8

NCTM.5.

STANDARD / BENCHMARK 5.1.

STANDARD / BENCHMARK 5.2.

STANDARD / BENCHMARK 5.3.

NCTM.6.

STANDARD / BENCHMARK 6.1.

 STANDARD / BENCHMARK 6.2.

STANDARD / BENCHMARK 6.3.

STANDARD / BENCHMARK6.4.

Assessment Plan

Student Progress:

As science teachers, we will monitor Ecology Club members' scores on standardized and universal "Response to Intervention" test results compared to non-members and to their own individual improvements on these tests. We will assess their personal growth by listening to their oral reflections and reading their written reflections. We will also observe their interactions with fellow students and adults in and out of the building to see if they are developing stronger leadership and communication skills. We will investigate the impact of participating in this service-learning opportunity on attendance and discipline referral issues, if possible.

Impact on the Community:

A primary goal of the recycling initiative is to change attitudes through education. A survey regarding attitudes and habits will be given to faculty and students at the beginning and end of the year. Other data will include tracking kilograms of paper, aluminum, glass and cardboard recycled; comparing paper use to prior years as we educate students and faculty on the reduction aspect of "reduce, reuse, recycle"; and antidotal interviews of custodial staff to see if the reducing and reusing facet of our program is reducing their need to dump their trash cans into the dumpster.

These benefits will positively affect the community on many levels: reducing the amounts of garbage in the landfill, reducing the amount of disposable consumption in students and their families, and supplementing the county's budget toward our instructional supplies, etc. (though the amount of monies earned from recycling may be minimal).

Impact on Partners:

Our partners will also have an opportunity to share their reflections periodically and share in our end of the year celebration with the students. We will assess our progress based on the written or video reflections that students share regarding our partners as well as the reflections that our partners share with us. We will also hope to create increased recycling efforts and awareness in our partners by asking our partners if they are more actively recycling in their homes and businesses.

Unit Plans:

Lesson 1: The Price is Right or Is It?

This lesson introduces recycling as it impacts the nation and the world. This lesson could be used near the beginning of the unit to generate excitement for the project and to gather information for the development of PSAs and posters. Students will learn the resource savings associated with recycling various materials. This information will serve as a springboard for student research about costs and benefits of recycling. Students will use initial information and results of research to develop scripts for PSA videos to be presented to the student body.

Standards of Learning objectives:

Science SOL 6.9

C/T 6-8.5, C/T 6-8.6, C/T 6-8.7

Methods and Activities

A collection of recyclable materials will be placed on a center table. Student teams will be given cards stating resources saved by recycling various materials. Teams will be given one minute to match the card to the correct item. Use Price is Right format with teams coaching their player.

Materials/Resources/Partners:

Talking Trash in Tucson Lesson http://www.wvrecycles.org/KidsPage/TucsonRecycling.pdf

Various recyclable items including aluminum cans, stacks of paper, plastic water bottles.

Savings Cards

Computers with Internet access

Lesson 2: Recycling Audit

This lesson introduces recycling as it impacts the local level. This lesson should be used early, after students have selected the project and begin developing their plan. Students will complete recycling scavenger hunt in building to identify types and location of recyclable items.

Standards of Learning objectives:

Science 6.9, LS 11

Methods and Activities

Students will be divided into teams. Each team will be given a map of the building with areas highlighted. Student teams will go to the various parts of the building and identify recyclable items and where they are used. Students will record their findings on a chart and has a whole group develop a plan for collecting recyclables and assigning jobs.

Materials/Resources/Partners

http://greenfaith.org/resource-center/stewardship/waste-reduction-and-recycling/waste-audits

Lesson 3: Group Challenge

This lesson teaches students how to work successfully in groups. This lesson will take place at the beginning of the project so that all of the group work for our team will run effectively and efficiently.

Standards of Learning objectives:

Because this is an introductory activity to set up all of our group interactions, there are no SOLs directly related to this activity. However, the skill of being able to work cooperatively in a group will make learning the SOLs so much easier!

Methods and Activities:

At the beginning of our Ecology Club meeting, we will break up the students into smaller groups. Each group will have the same number of dry spaghetti strands and miniature marshmallows. Groups will be given 5 minutes to work together. After 5 minutes, the ecology teachers/facilitators will instruct student groups to measure the heights of their "tower." (Please note: students were not given any instruction as to their objective. The towers must be free standing, not horizontal.) At this point we will come back together as a large group and reflect on our experience:

- How well did your group do?
- How did it feel to be a part of this group?
- What could we as teachers do to make this experience better?
- What could you as students do to make this experience better?

- What rules and roles are important to make a group run efficiently and effectively? (we will write these down for the students to reference in the future)
- How can we decide which role each student plays at each new group assignment?

At this point we will re-group the students and pass out materials again. However, this time, we will give the students instructions as to what their goal is and time to decide roles for the team members, etc. give them 5 minutes to work together and measure again. At the end of this activity the students can reflect.

- How well did your group do compared to the first time?
- How did it feel to be a part of this group versus the first group?
- What could we as teachers do to make this experience better?
- What could you as students do to make this experience better?
- Did having the rules and roles help your group run more efficiently and effectively?
- Did assigning each student a role help with the assignment?

Materials/Resources/Partners:

Dry spaghetti

Mini-marshmallows

Metric measuring tapes

White board, chalkboard, chart paper, etc. and appropriate marking materials

Paper and pencils for students

Timer

Lesson 4: You Choose

This lesson guides students in selecting a meaningful service project. Students will view videos with examples of service learning projects, develop a plan to generate an asset map for our school.

Standards of Learning objectives:

C/T 6-8.8

Methods and Activities

1. Students will view a video showing examples of service learning projects. Two examples are listed below and others are available on the GreenSTEM@VCU site and YouTube.
2. Students will meet in small groups and brainstorm a list of assets (resources needed for the success of the projects.) Share with class on chart paper.
3. Small groups will be given the following tasks to complete:
4. Develop a list of school personnel

5. Develop a questionnaire based on questions from the "People section of the Community Asset Mapping Workbook available at www.ourunitedvillages.org. This information will be used to create a Individual Asset Bank.

6. Develop a list of Local Citizens associations using a Google Search or phone book. These organizations will be contacted to determine their activities. This information will be used to create a Community Involvement Directory.

7. Develop a list of Local Institutions using a Google Search or phone book. This information will be used to create a Community Involvement.

8. Develop a list of Local Businesses using a Google Search or phone book. This information will be used to create a Develop a Local Business Directory listing neighborhood businesses and nature of the business.

9. Information collected will be used to develop an ABCD Asset map. Example at www.abcdinstitute.org.

10. Students will then determine if the assets are available to foster the project they have chosen.

Materials/Resources/Partners

http://www.youtube.com/watch?v=vmcurHBXAas

http://greenstem.vcu.edu/

Chart Paper

Computers with Internet access

Projector and Screen for Videos

Phone Directories / Chamber of Commerce Directories

Copies of Community Asset Mapping Workbook

Lesson 5: Green Jobs: Pick it, then Act it or Stick it!

This lesson investigates green job opportunities. This lesson could be placed anywhere in the unit, but it may be beneficial to the student to see the green job opportunities early in the project so that they can see some of the community partners that we could enlist to help us!

In this lesson, student partners will <u>pick</u> a green job to do computer and/or library research in order to better understand some of the "green jobs" that are available in Virginia. Once the students have researched their job, they will either <u>act</u> it out for other students to guess the green job or draw (like Pictionary with <u>stick</u> figures, etc.) the job for the group to guess. The students will be assessed based on how much of their research they can incorporate into their act or drawing.

Standards of Learning objectives:

Science 6.9

C/T 6-8.5, C/T 6-8.6, C/T 6-8.7

Methods and Activities:

1. I will have several green jobs listed on separate pieces of paper, fold them, place them in a basket, and have students draw one job from the basket.

2. The students that have the same job (there will be 2 of each job in the basket) will work together to do an internet/library search on that job.

3. The students will fill out an interest form on their chosen field. This form will include: salary, educational requirements, job description, skills, interesting facts, etc.

4. After the students have completed their research, they will flip a "coin" that has "Act It" on one side and "Stick It" on the other. If they flip to act it, the pair of students will act out the profession to see if the rest of the class can guess what the job is. If they flip to stick it, they can draw clues for the students to guess from.

5. The teacher will time how long the class takes to guess the job. The pair that makes it so that the class guesses in the least amount of time is the "winner".

6. The class will have empty interest forms to fill out for each job. Once the class guesses the job, they can ask the pair questions to complete their forms.

Materials/Resources/Partners:

Green job titles on sheets of paper (2 of each)

Basket

Interest form for each job for each student

Computer lab

Library research assistance

Smartboard, chalkboard, whiteboard, etc. with appropriate writing utensils

Coin to flip

Partners

Beverley Manor Middle School Teachers and Staff

Augusta County Staff

    Science Curriculum Supervisor

    Director of Maintenance

Superintendent

School Board Members

Headwaters Soil and Water Conservation District

Teacher in Residence for Environment-Based Learning at Mary Baldwin College

Lowe's and/or Home Depot, partner in kind for recycling cart

Dominion Foundation

Valley Alliance for Education

New Life Recycling

Shenandoah Recycling

Staunton Moose Club

Beverley Manor Ruritan Club

Beverley Manor SCA

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Reflection

What

Reflection is an important aspect of meaningful service-learning. Reflection is a series of ongoing and structured activities designed to help participants examine their beliefs, opinions, values and knowledge related to the project and how these change over the course of the project. It includes observation, formulating questions, and synthesizing facts, ideas, and experiences. Through reflection, students integrate prior knowledge and experiences with new experiences to develop critical thinking and problem solving skills.

Reflection is also a way to monitor service experiences. Through the reflection process, changes in knowledge and skills can be documented and project progress can be tracked. Reflection can also provide insight into partner relationships and highlight successes and areas for improvement.

A Practitioner's Guide to Reflection in Service-Learning identifies "The 4 Cs of Reflection":

- **Continuous** reflection should take place before, during and after the Service-Learning project. This allows the students to constantly evaluate and synthesis new knowledge, experiences and opinions.
- When reflection is **Connected** to the student's academic and curricular program they are able to make connections between real life experiences and classroom learning.
- Reflections should be designed to **Challenge** to assumptions and preconceptions. It should encourage students to propose alternative explanations for initial perceptions and observations related to their experience.
- **Contextualized** reflection uses a variety of verbal, written, artistic, and nonverbal activities in a number of settings, such as the classroom, at the service site to demonstrate the students' changes in knowledge, skills and attitudes throughout the course of the project. The reflection plan should include individually and group activities and include community partners as well as students.

So What

Reflection in Service-Learning provides a number of benefits to students. These generally fall into three categories: academic learning, personal development and civic engagement. A few of the positive results in these areas are:

- Academic learning
  - increased engagement in school
  - improved basic skills, such as reading, writing, and speaking
  - increased problem solving skills and higher order thinking skills
- Personal development
  - more confidence in themselves and their accomplishments
  - improved ability to connect to others,
  - linking the personal with the academic
- Civic engagement
  - increased civic knowledge and more positive civic disposition
  - openness to new ideas and an improved ability to see issues in a new way,
  - a greater sense for being part of the community

Now What

There are many ways to structure reflection as part of your Service-Learning project, including group discussions, journals, presentations, blogs and videos. Some key features of successful reflection that it includes:

- opportunities for education and learning
- discussion and resolution of challenging aspects of the project
- thinking about the future
- problem-solving with peers
- team and community building
- self-examination
- Reality checks on inaccurate assumptions and bias

Resources:

- http://www.servicelearning.org/instant_info/fact_sheets/k-12_facts/reflection
- Eyler, J., Giles, D., Schmiede, A., A Practitioner's Guide to Reflection in Service-Learning, Nashville, TN.: Vanderbilt University, 1996.
- http://nylc.org/sites/nylc.org/files/files/Standards_Oct2009-web.pdf
- http://lift.nylc.org/