Geography
Teaching with the Stars

Watersheds

Facilitator's Guide

Gilbert M. Grosvenor Center for Geographic Education
Texas State University
601 University Drive
San Marcos, TX 78666
(512) 245-3615 (voice)
(512) 245-1653 (fax)

Printed in the United States of America

Table of Contents

Notes to the Facilitator 1
Conducting Face-to-Face Workshops 4
Conducting On-Line Workshops 8
Face-to-Face Workshop: Watersheds 12
On-Line Workshop: Watersheds 18
Reproducibles 26

Notes to the Facilitator

Introduction

Geographic literacy is crucial to the future of America. Learning geography creates citizens who are able to understand and make decisions about major issues facing their communities, the United States, and the world, including climate change, water resources, energy dependence, migration, war and regional conflicts, natural and technical hazards, and globalization.

Unfortunately, where geography is taught, many teachers lack sufficient content knowledge and training in geography. For example, a 2002 Roper survey done for National Geographic revealed that 72% of eighth-grade students are taught geography by teachers who do not have a major, minor, or emphasis in geography education in their undergraduate or graduate studies.

In 1985, the National Geographic Society (NGS) began to support a grassroots network of state alliances devoted to improving the quality of geography taught in the schools. The Geography Alliance Network works to improve geography education primarily through summer institutes and other face-to-face professional development initiatives. Because the need is great, and the opportunities for professional development are limited, only a small proportion of those teachers who teach geography are able to participate in Alliance workshops and courses.

Geography: Teaching with the Stars is intended to provide systematic professional development in geography to teachers. It is designed to broaden and complement the impact of the existing National Geographic Society's State Geography Alliance Network. This professional development project emphasizes pedagogical knowledge and skills as well as content knowledge, skills, and applications in geography. Project materials are designed to be accessible via a variety of delivery systems, thus making them available to the widest possible audience of those teaching geography.

Project Purpose

The purpose of this project is to contribute substantially to geographic education in middle/junior high and high school. These materials can be used by individual schools and districts, by NGS Alliances, and in pre-service education and training in colleges and universities. Materials can also be adapted for use in alternative certification programs and in educational service centers. The overarching goal is to help prepare geography teachers to achieve the "highly qualified" status as required by No Child Left Behind or other future national education initiatives.

Specifically, this project will:

- Assist teachers in providing effective geographic instruction to their students.
- Help students acquire the knowledge, attitudes, skills, and behaviors related to geography needed to understand and deal with the geographical aspects of important global issues.
- Provide visual reinforcement to learning.

The project is designed to support relevant national geography standards. These standards are presently under revision and will be available in an updated version in December, 2011.

Project Materials

Each ***Geography: Teaching with the Stars*** instructional unit includes the following video programming, print, and web-based elements that demonstrate how geographic perspectives, concepts, and skills together with relevant instructional and assessment strategies can be used to improve students' ability to understand and deal with the geographical aspect of important issues that affect their daily lives.

In-Class Demonstrations
At the core of every ***Geography: Teaching with the Stars*** unit are in-class video demonstrations, featuring actual teachers in a real classroom, focusing on content, instructional strategies, and assessment. The agriculture and water unit includes two separate high school in-class demonstrations. You can choose to use either or both in your workshop. Materials contained on the project web site extend the in-class demonstrations. For example, a comprehensive, interactive teacher guide for each unit is available on the web site. Teachers are encouraged to use these guides in their own classrooms and to share their experiences with other teachers on the web site.

Pedagogy Enhancements
Each unit includes a video enhancement that examines, in detail, the instructional and assessment strategies used in the in-class demonstration videos. These enhancements are hosted by teacher educators and include reflections from the featured teachers. In the agriculture and water unit, the pedagogy enhancement video features nine strategies from the in-class demonstrations. Again you can choose which strategies to use in your workshop. If you choose to use a particular strategy, make sure that you also use the in-class demonstration in which it is used. (Both in-class demonstrations and pedagogy segments are labeled by teacher.)The pedagogy enhancements are supported and extended by materials on the project web site. For example, after viewing a segment dealing with probing questions, teachers can go to the web site to learn more about probing questions.

Content Enhancements
Each unit includes a video enhancement that explores the geographic content dealt with in the in-class demonstration, in a real world situation. Each video features one or more content experts who help frame the content issue under consideration. Teachers can learn more about the content in each unit by going to the project web site.

Each of the in-class demonstration, pedagogy enhancement, and content enhancement videos is self-contained and may be used independently. The programs can be easily scheduled for flexible use in a variety of settings. They can be delivered effectively as digital video on storage devices installed in local area networks at schools or via the Internet as streaming video, as part of online professional development. The videos are close-captioned for the hearing impaired.

Video programming is particularly well suited for professional development:

- Video creates a common context in which teachers with varying backgrounds and experiences can examine issues in a positive setting.
- Video provides a vehicle for modeling skills and a base of knowledge upon which teachers can build. For example, viewers can first watch teachers and students in classrooms similar

to theirs using instructional strategies that have proven effective in classrooms. Then viewers can practice using these strategies themselves.

- Video offers a springboard for discussion and interaction that promotes learning, change, and growth. As a familiar and comfortable medium, video provides a non-threatening vehicle for discussion among people.

Web Site

The web site contains ideas for implementing and extending content and pedagogical strategies highlighted in each unit. It also includes links to student-oriented resources. In addition, the web site links to three forums. One forum enables teachers to share ideas, findings, and promising resources. Another forum encourages teachers to ask experts questions about content and pedagogy. And a third forum supports facilitators in forming online learning communities.

Facilitator Guide

Finally, each unit includes a comprehensive facilitator guide developed to assist teacher educators in using these professional development materials in a variety of learning environments. Since materials can be used in very different settings—by individual schools and districts, by NGS Alliances, and in pre-service education and training in colleges and universities—suggestions for both on-line and face-to-face professional development activities are included for each unit.

Conducting Face-to-Face Workshops

Each face-to-face workshop, covering one thematic unit, is designed to last about three or four hours. There are also on-line follow-up activities associated with each of these workshops. Sessions can be scheduled at intervals over several days, weeks, or months to meet the needs of the facilitator and participants.

The professional development materials you need to conduct this workshop—facilitator's guide with detailed teaching suggestions, transparency masters, and participant handout masters, as well as the video resources and project web site addresses—are provided with this package. To conduct a successful learning event, please consider the important issues listed below.

Preparation—Please view all of the video programs, explore the web site, create an on-line community (see below), read all materials, and complete all activities yourself *before* leading the workshop.

Videos—Each session includes three or four videos, varying in length from six to twelve minutes. You can show each video program without stopping and then conduct the associated activities. It is recommended, however, that you follow the activities as outlined in the workshop teaching suggestions and stop the video when prompted to by the facilitator guide. After showing each segment of the video program, allow participants time to comment on, express opinions, ask questions about the material seen and complete the activities suggested in the guide. If appropriate, you can replay portions of the videos as participants consider the questions and activities.

Internet Access—You will need to have access to the project web site at www.geoteach.org during the workshop.

On-line Learning Community—You will need to establish an on-line learning community for use with follow-up activities associated with each workshop. Complete directions for creating on-line communities (GeoLearning Communities) appear in the next section of this guide.

Location—The workshop should take place in an area that is large enough for individual, small team, and whole group work.

Equipment—You will need a DVD player(s) and monitor(s). Ideally, you will have one video monitor for every 10-12 participants. You will also need an overhead projector that can be connected to a computer.

Handouts—Masters for all participant handouts are included with this guide. The handouts should be duplicated before the workshop begins and be distributed to participants according to the workshop instructions. Masters for overheads transparencies are also included with this guide. They should be duplicated before the workshop begins.

Additional Equipment—You will also need flip charts, chalkboards, or whiteboards with appropriate writing materials to conduct the workshop.

Refreshments—The agenda for the sessions should include one or more breaks at which beverages are offered. Snacks are optional, but water should be available throughout the workshop.

Creating On-line Communities

When you receive your invitation from the project manager to join the ***Geography: Teaching with the Stars*** online learning communities (GeoLearning Communities) at http://geoteachersgroup.ning.com, accept the invitation. You will be taken to the "Main" page of the group web site.

Create Your Group

Follow these steps to create a Group (Community) for your teachers:

1. Click on "Groups"—the tab is located in the top bar on the community site.
2. You will see a list of the groups that have been created so far. To add your group, click on "+Add a Group" (upper right corner, next to your account box.)
3. Fill in the name of your group. Select a name that represents your school, school district, geographic area, or some other distinctive identifier.
4. Add a short description.
5. Make sure you are OK with the Group Address. This address is automatically generated when you enter a group name. If you prefer a different Group Address (URL) you can change it at this point.
6. You can leave the Website box blank at this time.
7. Identify your Location.

Confirm your Features, Privacy, and Messages settings

Features: Make sure the boxes are checked for Comments, Discussion Forum, and Text Box. You may wish to select the RSS Reader as well if you want your group members to be able to get an RSS feed of activity on your Group site.

Privacy: Click on the radio button "Moderated Membership." (This selection will enable the teachers you invite to join the group, but will not let others join uninvited. Clicking on "Anyone" will let anyone from the public who happens to find your group join without your permission.)

> When you select "Moderated Membership" you will have another choice to make. We suggest that you check both the "Members can invite other people to join" and the "Allow people to request membership."

Messages: Make sure the box is checked, allowing members to send messages to the entire group.

Click on "Add Group"

Invite Members to Your Group

Next, you will want to invite the teachers in your group to join.

1. *Ignore the "Import from Web Address Book" option at the top of the next screen.*

2. Click on the "Enter Email Addresses Manually" arrow, which will expand to present you with "Send To" and "Your Message" boxes.
3. Enter the email addresses of the teachers you wish to invite. (Separate the addresses with commas.)
4. Add a brief message inviting them to join.
5. Click "Send Invitations."
6. Each teacher you invite will get an email message with your invitation and a link to the group page. When the teacher accesses the page s/he will be asked to create a password and complete a profile with name and birth date. When the teacher submits his/her profile s/he will be taken to a page with a message at the top to "...click here to request access from the Group Creator." Teachers must click as directed.
7. You will get an email message that the teacher has joined the GeoTeachers online community. You will get another message that the teacher is requesting to join your group. You will need to approve the membership before the teacher shows up in your group list.
8. To do this, go to the "Manage Group Members" page in your Admin Options, click on the "Pending" tab, and approve the member.

If you decide you want to invite more teachers to your group, click on the "Invite More People" link at the top right of your group page.

Getting Started with Your Group

While you wait for teachers to accept their invitations, add some content to your group page.

Text Box: Use this space to add an overview of your group's purpose, summarize what you will be doing as a group, or other content appropriate to your group.

Discussion Forum: Start your first discussion. Since this is your first communication with the teachers in your group, you may wish to make your first discussion a welcome and introductions discussion. (See "Using Discussions" below for more information about discussion topics and instructions for teachers to use the Discussion Forum feature.) This is your main communication tool for your online community!

Comment Wall: The Comment Wall is a handy place to add an announcement about an upcoming training session, provide a permanent link back to the www.geoteach.org web site, or insert a comment encouraging teachers in your group to add comments themselves.

Managing Your Online Community/Group Site

Because you set up your group, you are the Administrator of your group's page. You will see a box titled "Admin Options" at the top of the 2nd column on your group page.

Edit Group: Clicking on "Edit Group" opens the page you first completed when you created your group. You can make changes to your group here. Make sure to "Save" any changes – or "Cancel" if you don't want to make changes at this time.

Manage Group Members: Clicking on this link brings up a list of all your group members. On this page you can see who's in your group, check their email addresses, and see their group roles. You can add another administrator to your group by changing a member's role to Administrator, if you wish. You can also remove someone from the group by clicking in the box next to the person's name and then on the "Suspend from Group" tab.

Send Message to Group: Clicking on this link brings up an email/message box. Enter your message Subject and the Body of your message. Click on Send and your message will go to every member of your group.

Using Discussions

The Discussion Forum feature of your group page will be your main means of communicating with your group members. You will use Discussions to:

- Give assignments
- Request feedback
- Notify members of upcoming events
- Keep communication flowing

Give Assignments: To give an assignment to your group members, start a discussion topic by clicking on "Start Discussion" in the Discussion Forum box. Give your topic a title that indicates it is an assignment. Write a brief summary of the assignment in the Post box. Include instructions to respond to questions in the lesson by replying to your discussion topic post. Teachers could enter their responses directly into their response, or you may instead want to have them save their responses in a Word document and upload that document with their reply.

Then upload a copy of the lesson document to your discussion post, using the "Attach File(s)" feature. Also upload any readings that are part of the lesson.

Adding links in discussion posts: You can add hyperlinks to a web site by typing the name of the web site, highlighting the name, and then clicking on the ∞ icon, and entering the web address into the box in the popup window.

Request feedback/Notify of upcoming events: Begin a new discussion topic for each new communication with your group. Be sure to include requests for them to reply to your post (rather than starting a new discussion topic.)

Keep communication flowing: The Discussion Forum is a good way to maintain regular communication with your group members. Between assignments, post new discussions on topics of interest to the group—perhaps suggesting relevant readings, providing links to resources you've discovered, or just asking them how things are going. Encourage teachers in your group to initiate their own discussions as well.

NOTE: Make sure teachers know that they should initiate new discussions by starting a new discussion topic, rather than starting on a new topic in a reply to a different discussion topic thread. This will keep the discussion forum better organized and it will be easier to follow new discussions.

Conducting On-Line Workshops

Each on-line workshop covers one thematic unit and consists of four or five lessons for participants to complete. These lessons can be scheduled at intervals over several days, weeks, or months to meet the needs of the facilitator and participants.

The professional development materials needed by participants for this workshop—worksheets and videos—are provided on the project web site. To conduct a successful learning event, please consider the important issues listed below.

Preparation—Please view all of the video programs, explore the web site, create an on-line group (see below), read all materials, and complete all activities yourself before leading the workshop.

Videos—Each session includes three or four videos, varying in length from six to twelve minutes can be accessed from the project web site at www.geoteach.org

On-line Learning Community—You will need to establish an on-line learning community (a group) for use with each workshop. Complete directions for creating on-line communities (GeoLearning Communities) appear in the next section of this guide. You will need to invite all participants in your workshop to join the group, via e-mail. *So having their contact information, before the workshop begins, is essential.*

Creating On-line Groups

When you receive your invitation from the project manager to join the ***Geography: Teaching with the Stars*** online learning communities (GeoLearning Communities) at http://geoteachersgroup.ning.com, accept the invitation. You will be taken to the "Main" page of the group web site.

Create Your Group

Follow these steps to create a Group (Community) for your teachers:

1. Click on "Groups"—the tab is located in the top bar on the community site.
2. You will see a list of the groups that have been created so far. To add your group, click on "+Add a Group" (upper right corner, next to your account box.)
3. Fill in the name of your group. Select a name that represents your school, school district, geographic area, or some other distinctive identifier.
4. Add a short description.
5. Make sure you are OK with the Group Address. This address is automatically generated when you enter a group name. If you prefer a different Group Address (URL) you can change it at this point.
6. You can leave the Website box blank at this time.
7. Identify your Location.

Confirm your Features, Privacy, and Messages Settings

Features: Make sure the boxes are checked for Comments, Discussion Forum, and Text Box. You may wish to select the RSS Reader as well if you want your group members to be able to get an RSS feed of activity on your Group site.

Privacy: Click on the radio button "Moderated Membership." (This selection will enable the teachers you invite to join the group, but will not let others join uninvited. Clicking on "Anyone" will let anyone from the public who happens to find your group join without your permission.)

> When you select "Moderated Membership" you will have another choice to make. We suggest that you check both the "Members can invite other people to join" and the "Allow people to request membership."

Messages: Make sure the box is checked, allowing members to send messages to the entire group.

Click on "Add Group"

Invite Members to Your Group

Next, you will want to invite the teachers in your group to join.

1. *Ignore the "Import from Web Address Book" option at the top of the next screen.*
2. Click on the "Enter Email Addresses Manually" arrow, which will expand to present you with "Send To" and "Your Message" boxes.
3. Enter the email addresses of the teachers you wish to invite. (Separate the addresses with commas.)
4. Add a brief message inviting them to join.
5. Click "Send Invitations."
6. Each teacher you invite will get an email message with your invitation and a link to the group page. When the teacher accesses the page s/he will be asked to create a password and complete a profile with name and birth date. When the teacher submits his/her profile s/he will be taken to a page with a message at the top to ". . . click here to request access from the Group Creator." Teachers must click as directed.
7. You will get an email message that the teacher has joined the GeoTeachers online community. You will get another message that the teacher is requesting to join your group. You will need to approve the membership before the teacher shows up in your group list.
8. To do this, go to the "Manage Group Members" page in your Admin Options, click on the "Pending" tab, and approve the member.

If you decide you want to invite more teachers to your group, click on the "Invite More People" link at the top right of your group page.

Getting Started with Your Group

While you wait for teachers to accept their invitations, add some content to your group page.

Text Box: Use this space to add an overview of your group's purpose, summarize what you will be doing as a group, or other content appropriate to your group.

Discussion Forum: Start your first discussion. Since this is your first communication with the teachers in your group, you may wish to make your first discussion a welcome and introductions discussion. (See "Using Discussions" below for more information about discussion topics and instructions for teachers to use the Discussion Forum feature.) This is your main communication tool for your online community!

Comment Wall: The Comment Wall is a handy place to add an announcement about an upcoming training session, provide a permanent link back to the www.geoteach.org web site, or insert a comment encouraging teachers in your group to add comments themselves.

Managing Your Online Community/Group Site

Because you set up your group, you are the Administrator of your group's page. You will see a box titled "Admin Options" at the top of the 2nd column on your group page.

Edit Group: Clicking on "Edit Group" opens the page you first completed when you created your group. You can make changes to your group here. Make sure to "Save" any changes – or "Cancel" if you don't want to make changes at this time.

Manage Group Members: Clicking on this link brings up a list of all your group members. On this page you can see who's in your group, check their email address, and see their group role. You can add another administrator to your group by changing a member's role to Administrator, if you wish. You can also remove someone from the group by clicking in the box next to the person's name and then on the "Suspend from Group" tab.

Send Message to Group: Clicking on this link brings up an email/message box. Enter your message Subject and the Body of your message. Click on Send and your message will go to every member of your group.

Using Discussions

The Discussion Forum feature of your group page will be your main means of communicating with your group members. You will use Discussions to:

- Give assignments
- Request feedback
- Notify members of upcoming events
- Keep communication flowing

Give Assignments: To give an assignment to your group members, start a discussion topic by clicking on "Start Discussion" in the Discussion Forum box. Give your topic a title that indicates it is an assignment. Write a brief summary of the assignment in the Post box. Include instructions to respond to questions in the lesson by replying to your discussion topic post.

Teachers could enter their responses directly into their response, or you may instead want to have them save their responses in a Word document and upload that document with their reply.

Then upload a copy of the lesson document to your discussion post, using the "Attach File(s)" feature. Also upload any readings that are part of the lesson.

Adding links in discussion posts: You can add hyperlinks to a web site by typing the name of the web site, highlighting the name, and then clicking on the ∞ icon, and entering the web address into the box in the popup window.

Request feedback/Notify of upcoming events: Begin a new discussion topic for each new communication with your group. Be sure to include requests for them to reply to your post (rather than starting a new discussion topic.)

Keep communication flowing: The Discussion Forum is a good way to maintain regular communication with your group members. Between assignments, post new discussions on topics of interest to the group—perhaps suggesting relevant readings, providing links to resources you've discovered, or just asking them how things are going. Encourage teachers in your group to initiate their own discussions as well.

NOTE: Make sure teachers know that they should initiate new discussions by starting a new discussion topic, rather than starting on a new topic in a reply to a different discussion topic thread. This will keep the discussion forum better organized and it will be easier to follow new discussions.

Face-to-Face Workshop: Watersheds

Statement of Purpose

The purpose of this session is to introduce educators to content, instructional strategies, and resources that can be used in teaching about watersheds. Special attention is given to strategies for actively engaging students in geographic learning.

Learning Objectives

After viewing the videos and participating in the activities for the workshop, participants will be able to:

- Define watersheds.
- Identify instructional strategies and resources for teaching about watersheds.
- Use strategies and materials for teaching about watersheds.

Video Overview

Four video programs are used in the workshop. Two are in-class video demonstrations, featuring actual teachers in real classrooms. One of these programs focuses on a high school classroom, the other on a middle school classroom. You can choose to use either or both of these videos depending on the audience for the workshop. Both focus on content and instructional strategies related to watersheds.

Another video examines in detail the instructional strategies used in the in-class demonstrations. The pedagogy enhancement video features strategies from both the middle school and high school in-class demonstrations. Again you can choose to use either or both sets of strategies in your workshop, depending on the audience. If you choose to use a particular strategy, make sure that you also use the in-class demonstration in which it is taught, to provide context. (Both in-class demonstrations and pedagogy segments are labeled by grade level.).

The fourth explores the geographic content dealt with in the in-class demonstration, watersheds, in a real world situation—in this case, the Guadalupe River in Texas.

Materials

- Four Videos
  1. Headwaters to Tidewaters
  2. Connecting Classrooms and Communities through Watersheds (High School)
  3. Power of Water (Middle School)
  4. Strategies for Teaching about Watersheds
- Transparency Masters
  - Concept web

- Handout Masters
  - KWL chart
  - Article: "Getting to Know Your Local Watershed: A Guide for Watershed Partnerships." (NOTE: You can link to this article from the project web site. The link appears on the Teacher Resources page/Content Enhancements/Readings on Watersheds.
  - Profiles of JD Stumpf (high school teacher) and Stef Paramoure (middle school teacher)
  - PMI Chart
- Flip charts, chalkboards, or whiteboards with appropriate writing materials

Activities

Welcome and Opening

1. Welcome participants to the workshop and introduce yourself and anyone else serving as a workshop host, co-leader, or organizer.
2. Gather names, e-mail addresses, and other contact information from participants. Indicate that this information will be used for networking following the face-to-face workshop.
3. Indicate that this session will focus on watersheds and on interactive teaching strategies that can be used to enhance student learning about watersheds.
4. If participants do not know one another well, conduct a "get to know you" activity. Ask participants to form pairs and interview each other for about five minutes. Then ask the pairs to introduce each other to the group, stating the person's name, something interesting or different about the person, and what the person hopes to gain from the workshop. (If there are more than 20 people in the group, have each pair join another pair and only make introductions within each group of four.)

What is a Watershed?

1. Distribute a copy of the KWL Chart to each participant. Indicate that a KWL chart helps the user identify prior knowledge and experience as a bridge to a new concept, lesson, or unit. Ask participants to work in pairs to list what they already know about watersheds in the K (Know) column. Then ask the pairs to list what they would like to learn about watersheds in the W(Want to learn) column.
2. Next distribute a copy of the "**Getting to Know Your Local Watershed: A Guide for Watershed Partnerships.**" article to each participant. Ask the pairs to read the article and record what they learned in the L (learned) column.
3. Ask for volunteers to share the information contained in their completed KWL charts with the group.
4. Encourage participants to keep notes on information generated during the workshop that they might find useful when they teach lessons on globalization.

Watersheds

1. Indicate to participants that they are about to see video about watersheds focusing on the Guadalupe River in Texas.

2. Next, play the video.

3. After showing the video, give participants an opportunity to comment on what they have just seen. "Tell me what you heard and saw" is a good starting point for the discussion. Then continue, using the following questions as a guide. Participants may ask you to repeat portions of the video.
    1. What are some of the ways in which the headlands portions of watersheds are used?
    2. Why do you think it is important to carefully manage watersheds?
    3. What are some ways in which homeowners can manage local watersheds?
    4. Why are healthy estuaries so important?
    5. Why is the management of headwaters so important to the health of tidewaters?

Watersheds: Putting the Pieces Together

1. Project the **Concept Web** on the overhead. Indicate to participants that they are going to use the web to summarize some of the characteristics of watersheds. In the center of the web, write the word watersheds. Instruct participants to think of all the terms and phrases from the KWL activity, the reading, the video, and their own experience which they could use to describe watersheds. Record the words and phrases the participants supply on the "legs" of the web. Display the final product in the workshop room either on an overhead or on the board.

2. Indicate to participants that the project maintains a web site. Quickly go through the various links related to the subject of watersheds that appear on the web site. These links appear under Teacher Resources/Content Enhancements.

Connecting Classrooms and Communities through Watersheds (High School)

Indicate to participants that in this section of the workshop they will get a chance to view a high school teacher in Kyle, Texas, JD Stumpf, as he teaches five lessons about watersheds. State that the strategies he uses can be used in any context. Distribute a copy of the JD Stumpf Profile to each participant. Ask them to examine the profile to learn some background information about JD.

Overview

Begin by showing the video **Connecting Classrooms and Communities through Watersheds** all the way through. After showing the video, give participants an opportunity to comment on what they have just seen. Then work through the video, section by section.

Day One/Lesson One: What is a Watershed?

1. Indicate to participants that they are going to view JD's first lesson, in which he introduces watersheds to the students. Ask participants to watch for the strategies he uses to introduce watersheds, as they view the segment.

2. Show the first segment of **Connecting Classrooms and Communities through Watersheds.** It begins with the title sequence and ends when the words "Day Two: How Do Humans Affect the Watershed?" appears on the screen.

3. After they have viewed the segment, ask participants: Did you see any strategies that you currently use in your own classrooms? Which ones? Were there any strategies used that you

would like to use in your classrooms? Which ones? What other strategies could you use to introduce the concept of watersheds? Record their responses on the board or flip chart

NOTE: Indicate that they will be exploring specific strategies that JD used in the next section of the workshop.

Day Two/Lesson Two: How do Humans Affect the Watershed?

1. Indicate to participants that they are going to view JD's second lesson, in which students focus on how humans affect the watershed. Ask participants to watch for the strategies he uses, as they view the segment.

2. Show the second segment of **Connecting Classrooms and Communities through Watersheds.** It begins when the words "Day Two: How Do Humans Affect the Watershed?" appear on the screen and ends when the words "Day Three: Watershed Model and Demonstration" appear on the screen.

3. After they have viewed the segment, ask participants: Do you think of the use of cooperative learning (jig saw) was effective in this lesson? Why or why not? What is the advantage of using playing cards to establish cooperative learning groups? How would you judge the overall effectiveness of this lesson? Why? Did you see any strategies that you currently use in your own classrooms? Which ones? Were there any strategies used that you would like to use in your classrooms? Which ones? Record their responses on the board or flip chart

Day Three/Lesson Three: Watershed Model and Demonstration

1. Indicate to participants that they are going to view JD's third lesson, featuring a guest speaker who will use a lab model to consider the impact of humans on the watershed.. Ask participants to watch for the strategies JD uses, as they view the segment.

2. Show the third segment of **Connecting Classrooms and Communities through Watersheds.** It begins when the words "Day Three: Watershed Model and Demonstration?" appear on the screen and ends when the words "Day Four: Watershed Cleanup Service Project" appear on the screen.

3. After they have watched the segment, ask participants: What do you see as the instructional advantages of using a guest speaker in the classroom? Was JD actively engaged in the lesson, while the guest speaker was present? What makes you say so? What strategies did JD and the guest speaker use to keep the students actively engaged with the lab model? Ask participants to brainstorm other ideas that could be used to keep students actively engaged with the lab model. Did the lesson achieve its goal of demonstrating to students the impact of humans on a watershed? Why or why not? Record their responses on the board or flip chart.

Day Four/Lesson Four: Watershed Cleanup Service Project

1. Indicate to participants that they are going to view JD's fourth lesson, in which JD and his students participate in a watershed clean up.

2. Show the fourth segment of **Connecting Classrooms and Communities through Watersheds.** It begins when the words ""Watershed Cleanup Service Project" appear on the screen and ends when the words "Day Five: Discussion and Reflection" appear on the screen.

3. After they have viewed the segment, ask participants: Why was it important for JD to get involved in the clean up? What instructional goal do you think was addressed by JD taking pictures of the students, while they were involved in the field experience? What did you find interesting about how the service learning activity developed? Record their responses on the board or flip chart

Day Five/Lesson Five: Discussion and Reflection

1. Indicate to participants that they are going to view JD's fifth lesson, in which students shared their experiences from the clean-up. Ask participants to watch for the strategies he uses, as they view the segment.

2. Show the fifth segment of **Connecting Classrooms and Communities through Watersheds.** It begins when the words "Day Five: Discussion and Reflection" appear on the screen and end when the credits appear.

3. After they have viewed the segment, ask participants: Would you handle the debriefing segment of a service learning activity like JD did? Why or why not? What did you like or dislike about what he did in this class? Why? Record their responses on the board or flip chart

4. Indicate to participants that there are resources on the project web site related specifically to this in-class demonstration. Quickly show the links to the demonstration teacher profile and also to the complete teacher guide used for the lessons shown in the in-class demonstration. They appear under Teacher Resources, In-Class Demonstrations for Watersheds.

Power of Water (Middle School)

Indicate to participants that in this section of the workshop they will get a chance to view a middle school teacher in New Braunfels, Texas, Stef Paramoure, as she teaches four lessons about watersheds. State that the strategies she uses can be used in any context. Distribute a copy of the Stef Paramoure Profile to each participant. Ask them to examine the profile to learn some background information about Stef.

Overview

Begin by showing the video **Power of Water** all the way through. After showing the video, give participants an opportunity to comment on what they have just seen. Then work through the video, section by section.

Day One: What is a Watershed?

1. Indicate to participants that they are going to view Stef's first lesson, in which she introduces watersheds. Ask participants to watch for the strategies she uses to introduce watersheds, as they view the segment.

2. Show the first segment of **Power of Water.** It begins with the title sequence and ends when the words "Day Two: Watershed Model and Demonstration" appear on the screen.

3. After they have viewed the segment, ask participants: What did you like most and least about the lesson? Why? Did you see any strategies that you currently use in your own classrooms? Which ones? Were there any strategies used that you would like to use in your classrooms? Which ones? What other strategies could be used to introduce students to watersheds? Record their responses on the board or flip chart.

NOTE: Indicate that they will be exploring specific strategies that Stef used in the next section of the workshop.

Day Two: Watershed Model and Demonstration

1. Indicate to participants that they are going to view Stef's second lesson, featuring a guest speaker who will use a lab model to consider the impact of humans on the watershed.

2. Show the second segment of **Power of Water.** It begins when the words "Day Two: Watershed Model and Demonstration" appear on the screen and ends when the words "Topography and Watersheds" appear on the screen. Ask participants to watch for the strategies that Stef uses, as they view the segment.

3. After they have watched the segment, ask participants: What do you see as the instructional advantages of using a guest speaker in the classroom? Was Stef actively engaged in the lesson, while the guest speaker was present? What makes you say so? What strategies did Stef and the guest speaker use to keep the students actively engaged with the lab model? Ask participants to brainstorm other ideas that could be used to keep students actively engaged with the lab model. Did the lesson achieve its goal of demonstrating to students the impact of humans on a watershed? Why or why not? Record their responses on the board or flip chart.

Day Three: Topography and Watersheds

1. Indicate to participants that they are going to view Stef's third lesson, in which students test predictions about how topographic features affect water flow in a watershed and then apply what they have learned to make decisions about environmental issues.

2. Show the third segment of **Power of Water.** It begins when the words "Topography and Watersheds" appear on the screen and ends when the words "Day Four: Follow-Up Activity" appear on the screen.

3. After they have watched the segment, ask participants: How did the use of the Wallwisher activity contribute to student learning? How could you use the approach of having students make and test predictions in your classroom? What did you find interesting about how Stef had the students apply what they had learned in the previous classes to environmental issues? Ask for volunteers to suggest other ways that Stef could have had students apply what they learned in the previous lessons to environmental issues. Record their responses on the board or flip chart.

Day Four: Follow-Up Activity

1. Indicate to participants that they are going to view Stef's fourth lesson, in which students create public service announcements reflecting what they learned about watersheds.

2. Show the fourth segment of **Power of Water.** It begins when the words "Day Four: Follow-Up Activity" appear on the screen and ends when the credits appear.

3. After they have watched the segment, ask participants: What instructional purpose does having students create public service announcements serve? What do you see as the instructional advantages and disadvantages of using the PSA approach? How else might you serve the some purpose in the classroom?

4. Indicate to participants that there are resources on the project web site related specifically to this in-class demonstration. Quickly show the links to the demonstration teacher profile and also to the complete teacher guide used for the lessons shown in the in-class demonstration. They appear under Teacher Resources, In-Class Demonstrations for Watersheds.

Strategies for Teaching about Watersheds

Indicate to participants that the next section of the workshop will focus in more detail on three of the instructional strategies used in Stef Paramoure's middle school classroom: journaling, using lab models, and Wallwisher. It also focuses on three of the instructional activities uses in JD Stumpf's high school classroom: Google Earth, service learning, and authentic assessment.

NOTE: You can choose which strategies you wish to explore with workshop participants.

Distribute a copy of PMI chart to each participant. Indicate that a PMI Chart can be used to help them evaluate each of the strategies explored in this section of the workshop.

Journaling

1. Begin by asking participants to answer the following questions:

   A. In your opinion, what function does journaling play in instruction?

   B. How would you use journaling in your classroom?

   C. How would you prepare to use journaling in your classroom?

   Record their responses on the board or flip chart.

2. Play the journaling segment of the **Strategies for Teaching about Watersheds** video. After they have viewed the segment, ask participants the following questions. Ask for volunteers to share their answers with the class.

   A. How did your descriptions of the instructional function served by journaling compare to those offered in the video?

   B. What does Stef mean when she says that journaling is a "two-way " tool"?

   C. What did Stef say about learning to use journaling in the classroom?

   D. What have you learned about journaling, from watching Stef?

3. Show the links to journaling on the project web. They can be found under Teaching Resources/Pedagogy Enhancement on the web site.

Using Lab Models

1. Begin by asking participants to answer the following questions:

   A. How do you use lab models in your own classroom?

   B. What are the instructional advantages of using lab models?

   C. What role does the teacher play in when students are using lab models?

   Record their responses on the board or flip chart.

2. Play the lab models segment of the **Strategies for Teaching about Watersheds** video. Ask participants to look for additional answers to questions B and C , as they watch the video. After they have viewed the segment, ask participants to respond to the following question. Ask for volunteers to share their answers with the class.

   What did you learn from the segment that adds to your understanding of the use of lab models in the classroom and the teacher's role in making it work?

3. Show the links to using lab models on the project web. They can be found under Teaching Resources/Pedagogy Enhancement on the web site.

Wallwasher

1. Play the Wallwisher segment of the **Strategies for Teaching about Watersheds** video.

   After they have viewed the segment, ask participants to respond to the following questions. Ask for volunteers to share their answers with the class.

   A. Why does Stef have students use the Wallwisher?

   B. What are some other strategies that teachers could use with students that serve the same purpose?

   C. What are the advantages and disadvantages of having students post their thoughts in a public forum, like Wallwisher?

   D. How could you use the Wallwisher in your classsroom?

2. Show the links to using Wallwisher on the project web. They can be found under Teaching Resources/Pedagogy Enhancement on the web site.

Google Earth

1. Begin by asking participants to respond to the following questions:

   A. What are some advantages of using Google Earth in the classroom?

   B. In what instructional situations would you use Google Earth?

2. Play the Google Earth segment of the **Strategies for Teaching about Watersheds** video. After they have viewed the segment, ask participants to respond to the following questions. Ask for volunteers to share their answers with the class.

   A. JD states that he used the Google Earth activity to draw students into the lesson about watersheds. In your opinion, is he successful in doing this? Why or why not?

   B. What are some other strategies that could be used to draw students into a lesson about watersheds?

   C. What recommendations does JD give for using technology in the classroom?

3. Show the links to using Google Earth in the classroom on the project web. They can be found under Teaching Resources/Pedagogy Enhancement on the web site.

Service Learning

1. Begin by asking participants to respond to the following questions:

   A. How would you use service learning in your classroom?

   B. What instructional elements would you include in a service learning activity?

   C. What role does the teacher play in a service learning activity?

   Record their responses on the board or flip chart.

2. Play the service learning segment of the **Strategies for Teaching about Watersheds** video. Ask participants to look for additional answers to questions B and C, as they watch the video. After they have viewed the segment, ask participants to respond to the following questions. Ask for volunteers to share their answers with the class.

   A. What did you learn from the segment that adds to your understanding of service learning and the teacher's role in making it work?

   B. Why is the debriefing element critical to the success of a service learning activity?

3. Show the links to using Service Learning on the project web. They can be found under Teaching Resources/Pedagogy Enhancement on the web site.

Authentic Assessment

1. Play the Authentic Assessment segment of the **Strategies for Teaching about Watersheds** video. After they have viewed the segment, ask participants to respond to the following questions. Ask for volunteers to share their answers with the class.

   A. What are the strengths and weaknesses of authentic assessment, in your opinion?

   B. How would/do you use authentic assessment in the classroom?

2. Show the links to using authentic assessment on the project web. They can be found under Teaching Resources/Pedagogy Enhancement on the web site.

Follow-up

1. Tell participants that they are expected to teach at least one lesson on watersheds in their own classrooms, as part of the requirements for this unit.

   - They can work with another workshop member or on their own.
   - They must use or adapt all or part of the lesson plan for the in-class demonstration they saw in this unit. It can be downloaded from the project web site.

2. Alert participants that you are going to invite them to join an on-line learning community for members of this workshop. (Give them a specific date on which invitations will be sent.)They will need to accept the invitation to complete the unit requirements.

3. Ask participants to use the on-line community (group) to share their experiences and get feedback from you and other workshop participants, as they prepare, teach, and reflect on teaching their lessons on watersheds.

4. Tell them that they should also use the on-line group to share all materials generated as part of this exercise, for example: customized lesson plans, readings on watersheds, interesting teaching strategies, assessment strategies, and so on.

5. Finally, encourage participants to use the two general forums (no invitation required) on the project web site: ***GeoForum*** allows teachers to share ideas, questions, and concerns about teaching geography and to identify and exchange ideas, findings, and promising resources with others and the ***Ask Primo Meridian Forum*** to ask questions of project personnel and content/pedagogical area experts.

Note: You should repeat the above directions in your first communication with the participants when they join your group. Use the Discussion Forum and begin a new discussion topic for this post. Here is a sample post:

> *Instructions:*
> *Your facilitator has initiated a group discussion post on our group page about the lesson you are going to teach. In this discussion you will respond in writing to questions or comments from me or other participants. Write your responses in Word documents and submit them by attaching the documents with a reply to this post.*
>
> *You are expected to teach at least one lesson on watersheds in your own classroom as part of the requirements for this unit.*

- *You can work with another workshop member or on your own.*
- *You must use or adapt all or part of the lesson plan for the in-class demonstration you saw in this unit. It can be downloaded from the project web site.*

Share your experiences and get feedback from your facilitator and other workshop participants, as you prepare, teach, and reflect on teaching your lessons on watersheds.

Also share all materials generated as part of this exercise, for example: customized lesson plans, readings on watersheds, interesting teaching strategies, assessment strategies, and so on.

Finally, you are encouraged to use the two general forums (no invitation required) on the project web site: GeoForum allows teachers to share ideas, questions, and concerns about teaching geography and to identify and exchange ideas, findings, and promising resources with others and the Ask Primo Meridian Forum to ask questions of project personnel and content/pedagogical area experts. Both forums can be found at http://geoteach.org/forums/index.php.

Closing

1. Ask participants to develop a series of short statements about watersheds and teaching about watersheds, based on their own experiences, on all that they have seen in the videos, and on information they have learned in their discussions. Ask for volunteers to share their statements with the group.
2. Thank participants for engaging in the session. Remind them of the time, date, location, and focus of the next workshop.

On-Line Workshop: Watersheds

Statement of Purpose

The purpose of this session is to introduce educators to content, instructional strategies, and resources that can be used in teaching about watersheds. Special attention is given to strategies for actively engaging students in geographic learning.

Learning Objectives

After viewing the videos and participating in the activities for the workshop, participants will be able to:

- Define watersheds.
- Identify instructional strategies and resources for teaching about watersheds.
- Use strategies and materials for teaching about watersheds.

Video Overview

Four video programs are used in the workshop. Two are in-class video demonstrations, featuring actual teachers in real classrooms. One of these programs focuses on a high school classroom, the other on a middle school classroom. You can choose to use either or both of these videos depending on the audience for the workshop. Both focus on content and instructional strategies related to watersheds.

Another video examines in detail the instructional strategies used in the in-class demonstrations. The pedagogy enhancement video features strategies from both the middle school and high school in-class demonstrations. Again you can choose to use either or both sets of strategies in your workshop, depending on the audience. If you choose to use a particular strategy, make sure that you also use the in-class demonstration in which it is taught, to provide context. (Both in-class demonstrations and pedagogy segments are labeled by grade level.)

The fourth explores the geographic content dealt with in the in-class demonstration, watersheds, in a real world situation—in this case, the Guadalupe River in Texas.

Activities

Each of the following lessons is available as a PDF file, with all links included, on the Facilitator's Guide opening page for this unit, on this web site. Upload a copy of each of the lessons to your discussion post, using the "Attach File(s)" feature, following the schedule you developed for the workshop.

Lesson One:
What is a Watershed?

Instructions:
Your facilitator has initiated this lesson through a discussion topic (post) on the group page. In this lesson you will respond in writing to several prompts (questions.)Write your responses in a Word document and submit this document by attaching it with a reply to the facilitator's post.

Introduction

- Begin by clicking on KWL. A KWL chart helps the user identify prior knowledge and experience as a bridge to a new concept, lesson, or unit. List what you already know about watersheds in the K (Knowledge) column. Then list what you would like to learn about watersheds in the W(Want to know) column.
- Next, read "Getting to Know Your Local Watershed: A Guide for Watershed Partnerships", a good introduction to the topic. A link to this article can be found on the project web site on the Teacher Resources page/Content Enhancements/Readings on Watersheds. Record what you learned about watersheds from the article in the L (learned) column of the chart.
- Share the information contained in your completed KWL chart with the group by replying to your facilitator discussion topic about this lesson. Also, provide each group member with some feedback on his or her KWL charts.

Watersheds

You are about to see a video about watersheds focusing on the Guadalupe River in Texas.

- Click on Headwaters to Tidewaters to start the video.
- When you have seen the video, submit your responses to the prompts below to the group.

1. What are some of the ways in which the headlands portions of watersheds are used?
2. Why do you think it is important to carefully manage watersheds?
3. What are some ways in which homeowners can manage local watersheds?
4. Why are healthy estuaries so important?
5. Why is the management of headwaters so important to the health of tidewaters?

Watersheds: Putting the Pieces Together

- Click on the Concept Web. You can use the web to summarize the characteristics of watersheds. In the center of web, write the word "watersheds". Then think of all the terms and phrases from the KWL activity, the reading, the video, and your own experience that can be used to describe and define watersheds. Record these words and phrases on the "legs" of the web.

- Share the information contained in your completed concept web with the group. Also, provide each of your group members with some feedback on their KWL charts.

Additional Resources on Watersheds

You can learn more about resources watersheds by visiting the project web site at www.geoteach.org. Go through the various links related to subject of watersheds that appear on the web site. These links can be found under Teacher Resources, Content Enhancements.

Lesson Two (High School):

Connecting Classrooms and Communities through Watersheds

Instructions:
Your facilitator has initiated this lesson through a discussion topic (post) on the group page. In this lesson you will respond in writing to several prompts (questions).Write your responses in a Word document and submit the document by attaching it with a reply to the facilitator's post.

In this activity, you will get a chance to view a high school teacher in Kyle, Texas, JD Stumpf, as he teaches five lessons about watersheds. The strategies he uses can be used in any context. Click on the JD Stumpf Profile to learn more about JD.

Day One/Lesson One: What is a Watershed?

- Next, work your way through the Connecting Classrooms and Communities through Watersheds video, section by section. First watch JD's first lesson, in which he introduces watersheds to the students. It begins with the title sequence and ends when the words "Day Two: How Do Humans Affect the Watershed?" appears on the screen. As you view the segment, watch for the strategies that he uses to introduce the concept of watersheds.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

  1. Did you see any strategies that you currently use in your own classrooms? Which ones?
  2. Were there any strategies used that you would like to use in your classrooms? Which ones?
  3. What other strategies could you use to introduce the concept of watersheds?

Day Two/Lesson Two: How do Humans Affect the Watershed?

- Now watch the second segment of the Connecting Classrooms and Communities through Watersheds video, in which students focus on how humans affect the watershed. . It begins when the words "Day Two: How Do Humans Affect the Watershed?" appear on the screen and ends when the words "Day Three: Watershed Model and Demonstration" appear on the screen. As you view the segment, watch for the strategies that JD uses.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

  1. Do you think of the use of cooperative learning (jig saw) was effective in this lesson? Why or why not?
  2. What is the advantage of using playing cards to establish cooperative learning groups? How would you judge the overall effectiveness of this lesson? Why?

3. Did you see any strategies that you currently use in your own classrooms? Which ones?
4. Were there any strategies used that you would like to use in your classrooms? Which ones?

Day Three/Lesson Three: Watershed Model and Demonstration

- Now watch the third segment of the Connecting Classrooms and Communities through Watersheds video, featuring a guest speaker who will use a lab model to consider the impact of humans on the watershed. It begins when the words "Day Three: Watershed Model and Demonstration?" appear on the screen and ends when the words "Day Four: Watershed Cleanup Service Project" appear on the screen. As you view the segment, watch for the strategies that JD uses.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

1. What do you see as the instructional advantages of using a guest speaker in the classroom?
2. Was JD actively engaged in the lesson, while the guest speaker was present? What makes you say so?
3. What strategies did JD and the guest speaker use to keep the students actively engaged with the lab model?
4. What other ideas could be used to keep students actively engaged with the lab model.
5. Did the lesson achieve its goal of demonstrating to students the impact of humans on a watershed? Why or why not?

Day Four/Lesson Four: Watershed Cleanup Service Project

- Now watch the fourth segment of the Connecting Classrooms and Communities through Watersheds video, in which JD and his students participate in a watershed clean up. It begins when the words ""Watershed Cleanup Service Project" appear on the screen and ends when the words "Day Five: Discussion and Reflection" appear on the screen. As you view the segment, watch for the strategies that JD uses.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

1. Why was it important for JD to get involved in the clean up?
2. What instructional goal do you think was addressed by JD taking pictures of the students, while they were involved in the field experience?
3. What did you find interesting about how the service learning activity developed?

Day Five/Lesson Five: Discussion and Reflection

- Now watch the fifth segment of the Connecting Classrooms and Communities through Watersheds video, in which students shared their experiences from the clean-up. . It begins

when the words "Day Five: Discussion and Reflection" appear on the screen and end when the credits appear. As you view the segment, watch for the strategies that JD uses.

- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

    1. Would you handle the debriefing segment of a service learning activity like JD did? Why or why not?

    2. What did you like or dislike about what he did in this class? Why?

You can learn more about teaching about watersheds by visiting the project web site at http://geoteach.org/teacher_resources/index.php.

The complete teacher guide for JD's lessons appears on the project web site at http://geoteach.org/teacher_resources/index.php.

Lesson Two (Middle School):
Power of Water

Instructions:
Your facilitator has initiated this lesson through a discussion topic (post) on the group page. In this lesson you will respond in writing to several prompts (questions).Write your responses in a Word document and submit the document by attaching it with a reply to the facilitator's post.

In this activity, you will get a chance to view a middle school teacher in New Braunfels, Texas, Stef Paramoure, as she teaches four lessons about watersheds. The strategies she uses can be used in any context. Click on the Stef Paramoure Profile to learn more about Stef.

Day One: What is a Watershed?

- Next, work your way through the Power of Water video, section by section. First watch the segment from Stef's first lesson, in which she introduces the concept of watersheds to her students. It begins with the title sequence and ends when the words "Day Two: Watershed Models and Demonstration" appears on the screen. As you view the segment, watch for the strategies that she uses to introduce the concept of watersheds.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

  1. What did you like most and least about the lesson? Why?
  2. Did you see any strategies that you currently use in your own classrooms? Which ones?
  3. Were there any strategies used that you would like to use in your classrooms? Which ones?
  4. What other strategies could be used to introduce students to watersheds?

Day Two: Watershed Model and Demonstration

- Now watch the second segment of Power of Water, which focuses Stef's second lesson, featuring a guest speaker who will use a lab model to consider the impact of humans on the watershed. It begins when the words "Day Two: Watershed Model and Demonstration" appear on the screen and ends when the words "Topography and Watersheds" appear on the screen. As you view the segment, watch for the strategies that Stef uses.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

  1. What do you see as the instructional advantages of using a guest speaker in the classroom?
  2. Was Stef actively engaged in the lesson, while the guest speaker was present? What makes you say so?

3. What strategies did Stef and the guest speaker use to keep the students actively engaged in the lesson using the lab model?
4. What are some other ideas that could be used to keep students actively engaged with the lab model?
5. Did the lesson achieve its goal of demonstrating to students the impact of humans on a watershed? Why or why not?

Day Three: Topography and Watersheds

- Now watch the third segment of Power of Water, in which students test predictions about how topographic features affect water flow in a watershed and then apply what they have learned to make decisions about environmental issues. It begins when the words "Topography and Watersheds" appear on the screen and ends when the words "Day Four: Follow-Up Activity" appear on the screen. As you view the segment, watch for the strategies that Stef uses.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

1. How did the use of the Wallwisher activity contribute to student learning?
2. How could you use the approach of having students make and test predictions in your classroom?
3. What did you find interesting about how Stef had the students apply what they had learned in the previous classes to environmental issues?
4. Suggest other ways that Stef could have had students apply what they learned in the previous lessons to environmental issues.

Day Four: Follow-Up Activity

- Now watch the fourth segment of Power of Water, in which students create public service announcements reflecting what they learned about watersheds. It begins when the words "Day Four: Follow-Up Activity" appear on the screen and ends when the credits appear.As you view the segment, watch for the strategies that Stef uses.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.

1. What instructional purpose does having students create public service announcements serve?
2. How else might you serve the some purpose in the classroom?
3. What do you see as the instructional advantages and disadvantages of using the PSA approach?

You can learn more about teaching about watersheds by visiting the project web site at http://geoteach.org/teacher_resources/index.php.

The complete teacher guide for Stef's lessons appears on the project web site at http://geoteach.org/teacher_resources/index.php.

Lesson Three:
Strategies for Teaching about Watersheds

Instructions:
Your facilitator has initiated this lesson through a discussion topic (post) on the group page. In this lesson you will respond in writing to several prompts (questions.)Write your responses in a Word document and submit this document by attaching it with a reply to the facilitator's post.

This activity focuses in more detail on three of the instructional strategies used in Stef Paramoure's middle school classroom: journaling, using lab models, and Wallwisher. It also focuses on three of the instructional activities uses in JD Stumpf's high school classroom: Google Earth, service learning, and authentic assessment. You can choose which strategies you wish to explore. Click on the PMI Chart. Use the chart to help you evaluate each of the strategies that you explore in this section.

Journaling

- Submit your responses to the following prompts to your facilitator.
    1. In your opinion, what function does journaling play in instruction?
    2. How would you use journaling in your classroom?
    3. How would you prepare to use journaling in your classroom?
- Click on the Strategies for Teaching about Watersheds video. Play the Journaling segment of this video.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.
    1. How did your descriptions of the instructional function served by journaling compare to those offered in the video?
    2. What does Stef mean when she says that journaling is a "two-way " tool"?
    3. What did Stef say about learning to use journaling in the classroom?
    4. What have you learned about journaling, from watching Stef?

You can learn more about journaling by visiting the project web site at
http://geoteach.org/teacher_resources/index.php

Using Lab Models

- Begin this section by submitting your responses to the following prompts to your facilitator.
    1. How do you use lab models in your own classroom?
    2. What are the instructional advantages of using lab models?
    3. What role does the teacher play in when students are using lab models?

- Play the Lab Models segment of the Strategies for Teaching about Watersheds video. Look for additional answers to the questions just posed, as you watch the video.
- After you have viewed the segment, submit your responses to the following prompt to your facilitator. What did you learn from the segment that adds to your understanding of the use of lab models in the classroom and the teacher's role in making it work?

You can learn more about using lab models by visiting the project web site at http://geoteach.org/teacher_resources/index.php.

Wallwasher

- Play the Wallwisher segment of the Strategies for Teaching about Watersheds video.
- Submit your responses to the following prompts to your facilitator.
    1. Why does Stef have students use the Wallwisher?
    2. What are some other strategies that teachers could use with students that serve the same purpose?
    3. What are the advantages and disadvantages of having students post their thoughts in a public forum, like Wallwisher?

You can learn more about Wallwisher by visiting the project web site at http://geoteach.org/teacher_resources/index.php.

Google Earth

- Submit your responses to the following prompts to your facilitator.
    1. What are some advantages of using Google Earth in the classroom?
    2. In what instructional situations would you use Google Earth?
- Click on the Google Earth segment of the Strategies for Teaching about Watersheds video.
- After you have viewed the segment, submit your responses to the following prompts to your facilitator.
    1. JD states that he used the Google Earth activity to draw students into the lesson about watersheds. In your opinion, is he successful in doing this? Why or why not?
    2. What are some other strategies that could be used to draw students into a lesson about watersheds?
    3. What recommendations does JD give for using technology in the classroom?

You can learn more about using Google Earth in the classroom by visiting the project web site at http://geoteach.org/teacher_resources/index.php

Service Learning

- Begin this section by submitting your responses to the following prompts to your facilitator.
    1. How would you use service learning in your classroom?

2. What instructional elements would you include in a service learning activity?

3. What role does the teacher play in a service learning activity?

- Play the Service Learning segment of the Strategies for Teaching about Watersheds video. Look for additional answers to the questions just posed, as you watch the video.
- After you have viewed the segment, submit your responses to the following prompt to your facilitator.

1. What did you learn from the segment that adds to your understanding of service learning and the teacher's role in making it work?

2. Why is the debriefing element critical to the success of a service learning activity?

You can learn more about service learning by visiting the project web site at http://geoteach.org/teacher_resources/index.php.

Authentic Assessment

- Play the Authentic Assessment segment of the Strategies for Teaching about Watersheds video.
- Submit your responses to the following prompts to your facilitator.

1. What are the strengths and weaknesses of authentic assessment, in your opinion?

2. How would/do you use authentic assessment in the classroom?

You can learn more about authentic assessment by visiting the project web site at http://geoteach.org/teacher_resources/index.php.

Lesson Four:
Follow-Up

Instructions:
Your facilitator has initiated this lesson through a discussion topic (post) on the group page. In this lesson you will respond in writing to several prompts (questions.)Write your responses in Word documents and submit them by attaching the documents with a reply to the facilitator's post.

You are expected to teach at least one lesson on watersheds in you own classroom, as part of the requirements for this unit.

- You can work with another workshop member or on your own.
- You must use or adapt all or part of the lesson plan for the in-class demonstration you saw in this unit. It can be downloaded from the project web site.

Share your experiences and get feedback from your facilitator and other workshop participants, as you prepare, teach, and reflect on teaching your lessons on watersheds.

Also share all materials generated as part of this exercise, for example: customized lesson plans, readings on watersheds, interesting teaching strategies, assessment strategies, and so on.

Finally, you are encouraged to use the two general forums (no invitation required) on the project web site: GeoForum allows teachers to share ideas, questions, and concerns about teaching geography and to identify and exchange ideas, findings, and promising resources with others and the Ask Primo Meridian Forum to ask questions of project personnel and content/pedagogical area experts. Both forums can be found at http://geoteach.org/forums/index.php

KWL Chart

K What I Know	W What I Want to Know	L What I Learned

Concept Web: Watersheds

Profile—JD Stumpf

JD Stumpf

JD Stumpf teaches freshman and sophomore biology and environmental systems for seniors, at Lehman High School, in Kyle, Texas. He came to teaching by an indirect route. JD began his professional career at the Dallas Zoo, where he was a volunteer coordinator. He got called for jury duty and one of the other jurors, a teacher herself, suggested that he would make a good teacher. He continues, "That's how I got interested. I had a series of strange steps from there but the result of it was I basically walked into one of the middle schools in town and the secretary looked at me and said you must be here for the science teacher job and I said yes, I am. I started teaching three days later. I went a year of eighth grade, four years of seventh grade and then three more of eighth. I have been teaching at the high school level for the last three years."

What does he like most about teaching? "I would say number one, it's interacting with the kids as a teacher but also as an adult, as a role model. I would say second to that would be designing the activities, the lesson plans but also all of the materials that support it. Lately with the environmental systems course it is reaching out into the community and making the contacts with the local people that work on the same issues that I'm trying to teach."

He describes his approach to designing and preparing lessons and units as follows. "The first thing I think is what would I want to get out of this topic that we're learning, what would I want to know as a learner. The next thing I think of is what activities could I use to accomplish that. And as I'm looking for ideas, suggestions, maybe what other teachers have done, I'm also keeping an eye on the state standards to make sure that we're really focusing on the issue in a way that reflects the state standards."

In terms of sources for preparing teaching materials for his environmental systems courses, he uses the Internet to get started. "That tells me some of the things that work and some that don't. It just kind of gets my mind going. But I'm also looking for contacts in the community and trying to figure out what's really important to them that citizens need to know because my kids are going to be citizens on their own very soon. So I want to make sure they're ready to be good citizens. For example, I am involved in the Texas Stream Team Organization, which is the Texas State University organization that monitors stream quality all over Texas. I just recently got trained in the water monitoring procedures so now I can go out and I've chosen to be the representative to monitor Plum Creek right at the Steeple Chase Park location. I want to share those experiences with my students. I'm also in contact with the teacher at the other high school who also teaches environmental systems so we work together on some of these plans too."

JD works on constantly improving what he does in the classroom. "Even when the lesson goes really well, obviously there's always going to be things that, as they're going on, I think I've got to make a note and so I always keep post-its on my desk. I'll just make my note and roll along with the lesson and then I'll take those post-its and use them to make changes for the next time. To me there are few lessons that I'm one hundred percent satisfied with. If there's any one that you feel just a little bit questionable then that's the one that you've got to work on and so the next in-service day or the next workshop or the next time you've got fifteen minutes and you're just surfing or whatever, seek that stuff out and talk to people and just see if there are ways you can polish things. The post-it notes, I mean I've got one in probably every folder I have on every topic that we teach. There's just something I want to try next time and sometimes it is hard to

keep up with those ideas. I tend to just write them down, put them in there, and then the next time I go to look at those plans I say, oh, yeah, right, I wanted to change that."

JD closes with some advice to new teachers. "Ours is the only profession I can think of where you just have to be basically perfect from day one. That's the expectation. But you're not. Just don't beat yourself up too much while you're learning. Honestly, as a new teacher you are in the same boat as some of your kids. So if you think about that way you're really all on the same side and nobody's an expert at this so acknowledge your mistakes and be aware of them. Write a little post-it and stick it in the file. After a while you'll remember all of those things and those little post-its won't appear as much and you'll really have a sense of the flow, the rhythm, how much time things take. But it is all going to take time. You just have to give it that time."

JD is a member of Buzzfuel, a 1990s rock cover band out of Austin Texas. Buzzfuel can be found on MySpace, Facebook, and YouTube.

Profile—Stephanie (Stef) Paramoure

Stephanie (Stef) Paramoure

After serving in the US Navy, Stef , while in her thirties, earned an undergraduate degree and later a masters degree. She became a science teacher. Stef teaches an 8th-grade integrated science curriculum at OakRun Middle School, in New Braunfels, Texas. The course includes chemistry, physics, earth science, ecology, astronomy, and genetics.

Stef's motto is "Knowledge is power—give some, get some." With this in mind, she argues that for a teacher, networking is critical. "We can learn from each other. And you know what, if I mess up or I make a mistake, it's just a learning opportunity, I know that really didn't work. And then to be able to talk to another colleague and say how did you approach that, that's the power. And that's where if we head in that type of direction we're going to improve our education system."

She applies this approach to her student teachers. "I have student teachers, and I think that's the first thing I'll tell them, that when you come and do your student teaching with me, I am not the all-knowing oracle, it's a cooperative collaboration between us. So I say to my student teachers, this is what I'm thinking about doing, if you see something that we can improve on, talk to me, let's work through it because as people it's too much pressure to try to be right all the time. I'd much rather build those networks where I say, gosh, this is what I was thinking, did it work, how would you come about it because there's always more than one way to eat an Oreo. And as colleagues, if we talk to each other and work through those, that's where the real growth comes in. And I expect my kids to reflect on what they've learned and what they do. I expect the same as myself because I want to do unto others as I would have them do unto me, and I want to talk the talk, walk the walk."

Her "knowledge is power" approach extends beyond the classroom. She considers being part of the Texas Regional Collaborative for Excellence in Math and Science critical to her development as a teacher. "Here I was, this first year teacher, not really sure of the content because of my own personal background, and then I go every year, I get hours of science content, staff development, and it has made me just the teacher I am today. It's amazing, we go and we dig into the content, and talk science. And when you go and talk to other people who care and want to keep the standards up high, it's amazing what you can do. So the TRC has been an invaluable organization that's really influenced me to be the best."

What does she like most about teaching? "I think I'm empowering students to be lifelong learners and to know that they can change their brain, with hard work they can accomplish anything. I had a young girl tell me that both of her older sisters got pregnant and didn't graduate high school. But she said, Ms. Paramoure, you've taught me I can change, I can do anything I put my mind to, and she goes I'm going to graduate without having a baby. And that's pretty amazing."

In describing how she prepares her lessons, Stef indicated that she always ties them to the state standards. "My job is to prepare students to pass that test. So I have to make sure that my lessons align with what they need to know. Next, I work really hard to try to bring in a real world connection, and to bring it to life, and to make it really hands-on and minds-on." She is always looking for new ideas. "I look on the Internet. I go to trainings, to conferences. I'm always looking

for that next thing. So, kind of my litmus test is if I learn something and go, oh, cool, I get it, hey, I know it's perfect for my classroom."

Recently, Stef was recognized for her teaching. She received the American Association of Petroleum Geologists Teacher of the Year, for 2010. She also won the Presidential Award for Excellence in Science and Math Teaching—Secondary Science Teacher for the State of Texas.

You can learn more about Stef by visiting her web site at:

http://web.mac.com/sparamoure/Stef_Paramoure/Welcome.html

PMI Chart

	Pluses (Benefits)	**M**inuses (Drawbacks)	**I**nteresting Questions/Implications
Journaling			
Using Lab Models			
Wallwisher			
Google Earth			
Service Learning			
Authentic Assessment			