

***Title:***

Lewis and Clark Thematic Summer Institute

***Authors:***

Kandy Raup, MBA  
Doug Beed, Ph.D.

***Affiliation:***

The Earth Observing System Education Project (EOSEP)  
of The University of Montana – Missoula

***Address:***

EOS Education Project  
James Todd Building  
32 Campus Drive  
Missoula, MT 59812

***E-mail Addresses:***

[kraup@eoscenter.com](mailto:kraup@eoscenter.com)  
[dbeed@eoscenter.com](mailto:dbeed@eoscenter.com)

## *Abstract*

### Introduction

The Earth Observing System Education Project (EOSEP) at The University of Montana is a NASA funded entity whose mission is to integrate and use satellite and other remotely sensed imagery in the classroom setting. The bicentennial of the expedition of Lewis and Clark has produced numerous learning opportunities and EOSEP's mission has been integrated into the bicentennial celebration through the creation of the Lewis and Clark Information System (LCIS). The LCIS is a web-based education oriented site designed to engage teachers and students in learning activities related to the Lewis and Clark trail. Through comparison of past and present landscapes utilizing satellite and remote sensing imagery, teachers are able to engage students in active learning while helping them understand the variety of factors that affect Earth's complex systems on a local, regional, and continental level.

Four dimensions of change are the focus of the LCIS, geology, hydrology, ecology, and climate. The trail is broken into 18 eco-regions and the four observational categories are available in each of the 18 regions (please see LCIS web site at [www.lewisandclarkeducationcenter.com](http://www.lewisandclarkeducationcenter.com) and Appendix A).

### Professional Development

We in EOSEP believe that professional development programs for practicing teachers need to have a set of three common goals in order to increase teacher knowledge and skill

while contributing to improved student learning. The professional development program needs to:

- 1) be curriculum-centered, standards-oriented, and pedagogically sound;
- 2) provide opportunities for teachers to become immersed and engaged in the subject matter; and
- 3) be continuous, sustained, updated and long term.

The EOSEP integrates each of these goals in its weeklong professional development program entitled the *Lewis and Clark Institute* (LCI). The LCI combines high technology applications with hands-on field trips to help teachers create engaging curriculum for their students. This paper discusses the operations and processes involved in offering the Lewis and Clark Institute while meeting the three goals of effective professional development.

### The Institute

EOSEP staff conducted a summer institute for teachers in the tri-cities (Pasco, Richland, and Kennewick) area of Washington State during the summer of 2002. Please see Appendix B for marketing information on the Institute. This area is rich in Lewis & Clark history. It is also a place that has changed greatly since the observations recorded by the “corps of discovery.”

Utilizing the LCIS as the learning backdrop for the week, the Institute engaged teachers with presentations, field trips, and hands-on computer classroom time to help with

curriculum building for all grade levels regarding the Lewis and Clark Corps of Discovery. The weeklong components of presentations, field trips and hands-on computer classroom time meet goal number two mentioned earlier of having teachers become immersed in the subject matter.

The teachers first spent time in the computer lab learning the LCIS web-based system to better understand the information they could gather and collect during the field trips and presentations. During the field trips, teachers collected data that related to the four dimensions of the LCIS – ecology, geology, hydrology, and climate.

After collecting information, teachers employed the data entry/edit system on LCIS that permits them to enter their observations and findings. Comparing their findings with those of Lewis and Clark over 200 years ago is made easy as Lewis and Clark journals can also be found online with LCIS system. These comparisons of landscape change over time help meet goal number one, stated previously, of creating curriculum-centered, standards-oriented and pedagogically sound courses.

EOSEP is committed to providing sustained, continuous and updated professional development (goal #3) by frequently adding new information to the LCIS so that teachers have a complete learning environment on the subject of Lewis and Clark. The LCIS houses a resource page where teachers and students can find additional information on Lewis and Clark. Lesson plans created for use in conjunction with the system will be stored on a resource page and teachers will be able to select from plans by subject area

and grade level. The resource page will also house links to electronic field guides, online mapping systems, and other Lewis and Clark websites. In addition, EOSEP is offering two Institutes in the summer of 2003 to continue along the trail – one again in Washington and another in Montana.

### Summary

Pedagogically, EOSEP staff are committed to helping educators explore and solve real-world problems. Research indicates that meaningful learning is more likely when real-world contexts are used for instruction. Consequently, outdoor and problem solving themes were incorporated in the institute while participants were guided in the use of the LCIS and related technologies. Teachers learned how to acquire data sets and then record them using the edit entry system incorporated in LCIS. Technologies like Global Positioning Systems (GPS) and Geographic Information Systems (GIS) were demonstrated and taught during the institute.

A major goal of the EOSEP is to have educators use available technology and imagery when constructing lessons and developing curriculum. The Institute accomplished both of these goals by showing teachers how to use the LCIS and requiring each participant to develop a lesson plan based upon their observations and training during the institute.

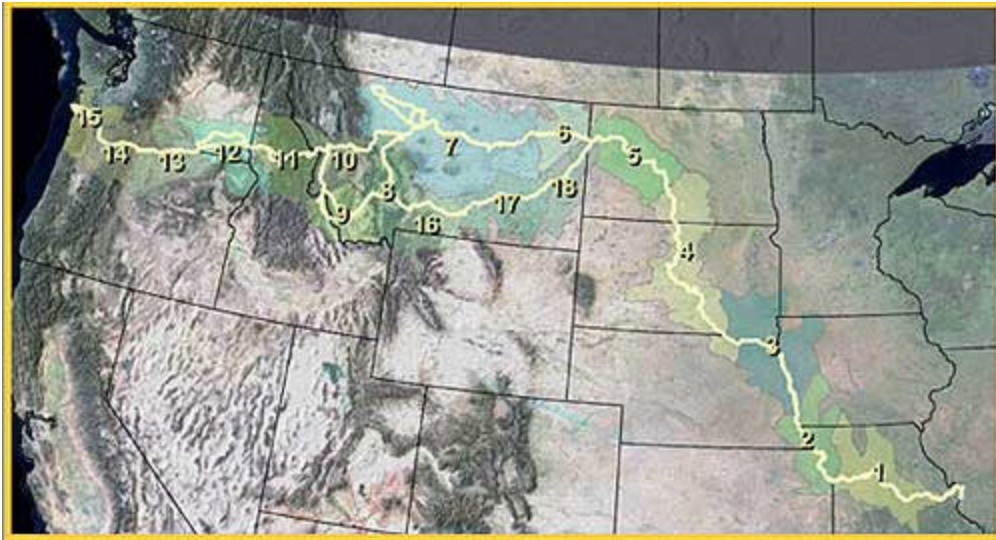
EOSEP conducts a thorough evaluation process of all its programs. Please see Appendix C for the Institute evaluation summary. The project will take these comments and improve the Institute with suggested changes and additions.

Continuous improvement is the key to success in any profession. EOSEP is working to help teachers bring new ideas, higher standards, ongoing training and pedagogically sound activities to the classroom.

## Ecological Regional Data Overview

*Navigate Eco-Regions*

Or click on map to go directly to an Ecological Region



### Ecological Regions

- |                                |                           |                                   |
|--------------------------------|---------------------------|-----------------------------------|
| 1 Eastern Broad-Leafed Forest  | 7 Ice Age River Pathway   | 13 Columbia River Country         |
| 2 Tall Grass Prairie           | 8 Upper Missouri River    | 14 Cascades Temperate Rain Forest |
| 3 Loess Hills                  | 9 Big Hole Country        | 15 Columbia River Estuary         |
| 4 Buffalo Country              | 10 Upper Clark Fork Basin | 16 Absaroka / Beartooth Plateau   |
| 5 Into the Short Grass Prairie | 11 Bitterroot Mountains   | 17 Eastern Montana Badlands       |
| 6 Big Sky Country              | 12 Snake River System     | 18 Lower Yellowstone River        |



## Lewis and Clark Summer Institute August 4-9, 2002

The Earth Observing System Education Project, a NASA funded education project housed at The University of Montana, is proud to announce plans for the Lewis and Clark Summer Institute August 4th-9th, 2002, from the Tri-Cities, Washington area to Lewiston, Idaho.

The Lewis and Clark Summer Institute is designed for K-12 teachers interested in discussing the interdisciplinary significance of The Lewis and Clark expedition, probing the historical and contemporary landscape characteristics of the trail itself, and developing new educational and interpretive concepts for the upcoming Lewis and Clark Bicentennial (2003-2006). Join us in the Tri-Cities area, Washington and travel the trail to Lewiston, Idaho.

Participants will examine Lewis and Clark educational curricula, explore the use of technology to interpret characteristics of the trail, experience advanced data visualization, remote sensing, GPS, GIS programs for trail analysis, and participate in interpretive field tours of the trail in Idaho and Washington.

A registration form can be found on this web site. Cost for the week-long event is FREE to educators. Your only costs incurred will be travel to and from Tri-Cities, Washington, lodging, and some meals during the Institute. Teachers have the option to receive 3 credits from The University of Montana (undergraduate or graduate) for participating in the institute (cost of \$115.00).

Earth Observing System Education Project will be responsible for:

- ?? Reception on Sunday, August 4<sup>th</sup>
- ?? Lunches Monday through Friday
- ?? Dinner on Monday and Thursday
- ?? Transportation to and from all museums, field trips and other points of interest
- ?? Any museum or field trip entrance fees

Participants will be responsible for:

- ?? Any meals not mentioned above
- ?? Travel to Tri-Cities, WA on Sunday and travel home from Tri-Cities, WA on Friday
- ?? Lodging for five nights
- ?? Academic credit (if wanted)

Arrival and Departure

Please plan to be at the Westcoast Hotel in Kennewick, WA by 4:30 p.m. on Sunday, August 4<sup>th</sup> for the reception and opening keynote speaker for the week. Dinner on that night is on your own, but we will have hors d'oeuvres and soft drinks at the reception.

The airport in the Tri-Cities area is located in Pasco, Washington. Please contact the Westcoast Hotel for transportation to and from the airport and hotel.

We will return to the Tri-Cities, WA area by 6:00 p.m. on Friday, August 9<sup>th</sup>.

Liability Form

Since we will be transporting participants and you will be partaking in field trips, The University of Montana requires each participant to sign a liability waiver form. We will have that form available for you to sign at the Institute.

### Cancellations

While there is no registration fee, we are limiting the Institute to 20 participants; thus, we ask that you cancel by July 26, 2002. If you cancel after that date, we will require a \$50.00 administrative cancellation fee.

### Registration

You can print out the registration form found on this web site and fax or send to us at the information below, or call Kandy Raup at (406) 243-6685 to register. The Institute is limited to the first 20 educators, but we will create a waiting list in case of cancellations.

### Contact Information:

Kandy Raup  
E O S E ducation Project  
T he U niversity of Montana  
32 Campus Drive  
Missoula, MT 59812  
(406) 243-6685 phone  
(406) 243-2047 fax  
kraup@eoscenter.com



## Itinerary

### Sunday, August 4<sup>th</sup> (Kennewick, WA)

5 pm – 7 pm Reception Speaker David Nicandri  
West Coast Hotel, 1101 North Columbia Center Boulevard  
Mr. Nicandri has been the director of the Washington State Historical Society since July 1987 and is currently also serving as the Washington State Lewis & Clark Bicentennial Coordinator.

### Monday, August 5<sup>th</sup> (Tri-Cities, WA)

9 am – 12 pm Washington State University computer lab – Richland, WA  
We will have hands-on demonstration and instruction of the Lewis & Clark Information System. This web-based system was developed by The EOS Education Project team to house and disseminate information on the Lewis and Clark trail in the areas of hydrology, geology, climate and ecology.

12 pm – 1 pm Lunch provided by EOS

1 pm – 5 pm Tour and data collection at McNary Dam  
McNary Dam is located in Umatilla, Oregon and is located on the Columbia River along the Lewis and Clark westward expedition.

6 pm – 8 pm Dinner provided by EOS

Tuesday, August 6th (Tri-Cities, WA)

- 9:00 am – 10:30 am WSU computer lab – Richland, WA  
Continuing the training on the Lewis & Clark Information System by inputting data collect at McNary Dam.
- 11 am – 12 pm Lunch provided by EOS
- 12 pm – 5 pm Tour of Tamastlikt Cultural Center - Pendleton, Oregon  
Tamastlikt Cultural Institute is the interpretive center for the Cayuse, Umatilla and Walla Walla Tribes. Learn the history and cultures of the tribes that Lewis and Clark encountered through the museum and interactive world-class exhibits.
- 5 pm- 6:30 pm Dinner on your own
- 7 pm – 9 pm Gary Lentz presentation, Sacajawea State Park, Pasco, WA  
Mr. Lentz portrays Sgt. Patrick Gass and will speak on the weapons, tools, journals, medicine and other aspects of the Corps of Volunteers. This presentation is also open to the public.

Wednesday, August 7<sup>th</sup> (Lewiston, ID)

- 9 am – 1 pm Travel to Lewiston, ID – stopping at points of interest
- 1 pm – 2 pm Lunch provided by EOS
- 2 pm – 4 pm Data Collection & Craig Rockwell presentation  
Chief Timothy State Park, Clarkston, WA  
Once the site of the Alpowai encampment of the Nez Perce Indian Tribe and named after Chief Timothy, Chief Timothy State Park is now an island in the Snake River. Craig Rockwell is a Corps of Engineer employee who is working with the Lewis & Clark Bicentennial Caucus and does a wonderful and accurate reenactment of Captain Clark.
- 5 pm Dinner on your own

Thursday, August 8<sup>th</sup> (Lewiston, ID)

10 am – 2 pm Data Collection & Allen Pinkham presentation, Nez Perce Historical Museum, Spalding, ID  
The Nez Perce Historical Park protects and interprets 38 sites that have exceptional value to the Nez Perce people and the nation as a whole, including early Nez Perce culture and the Lewis and Clark expedition. The Museum houses Tribal artifacts, Lewis and Clark items, and historic photographs. Mr. Pinkham is a Nez Perce Elder, historian and author. He served five years as Chairman of the Nez Perce Tribal executive Committee. He will speak from the Nez Perce's view of the Lewis and Clark expedition.

2 pm – 5 pm Lewis and Clark State College computer lab – Lewiston, ID  
Continuing training on web-based system and other technologies.

6 pm – 8 pm Dinner provided by EOS

Friday, August 9<sup>th</sup> (Lewiston, ID)

9 am – 10 am EOS wrap-up

10 am – 2 pm Wolf Education and Research Center Visit, Winchester, ID  
The Wolf Education and Research Center is a unique educational facility on the Nez Perce Reservation. Observe and learn the ways of the wolf with the resident ten-member pack of wolves and learn about the wolf in its natural habitat.

2 pm – 6 pm Return to Tri-Cities



## Registration Form

Welcome to the Lewis and Clark Summer Institute! This years Institute will be taking place August 4<sup>th</sup>-9<sup>th</sup> from the Tri-Cities, Washington area to Lewiston, Idaho. The Institute is FREE for educators. Your only costs will be travel to and from the Tri-Cities, Washington area, lodging, and some meals. Please fill out the form and fax back to Kandy Raup at (406) 243-2047 to register. We are limiting the number of participants to twenty (20) based on a first-come, first-serve basis. Contact Kandy Raup at (406) 243-6685 or [kraup@eoscenter.com](mailto:kraup@eoscenter.com) if you have any questions.

Hotels: We have reserved a block of rooms for participants. If you need lodging, please contact the hotels yourself and request a room reserved under the "Lewis and Clark Summer Institute" . You are responsible for any lodging you may need during the Institute.

Tri-Cities, WA: August 4<sup>th</sup>-5<sup>th</sup>-6<sup>th</sup> - Westcoast Hotel - Kennewick, 1101 N. Columbia Center Blvd. Kennewick, WA 99336; Phone: 509-783-0611 (800-325-4000); Website: [www.westcoasthotels.com/kennewick](http://www.westcoasthotels.com/kennewick); Rates: \$55.00 single/\$65.00 double (tax not included)

Lewiston, ID: August 7<sup>th</sup>-8<sup>th</sup> - Red Lion Inn Hotel - 621 21<sup>st</sup> St., Lewiston, ID; Phone: 800-232-6730 or (208) 799-1000; Website: [www.redlion.com](http://www.redlion.com); Rates: \$72 single/\$82.00 double (tax not included)

Transportation: EOS will be providing all transportation for participants for the duration of the Institute. Participants are responsible for travel to and from the Tri-Cities, WA area before and after the event is complete. You will be required to fill out a liability waiver form for transport prior to or at the Institute.

Cancellation Policy: Please cancel by July 26<sup>th</sup>, 2002. We will require a \$50.00 administrative cancellation fee if you must cancel after July 26<sup>th</sup>, 2002.



## Registration Form

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Organization/School: \_\_\_\_\_

E-Mail Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Emergency Contact Name/Relationship: \_\_\_\_\_

Phone: \_\_\_\_\_

Are you interested in receiving three (3) credits (undergrad/graduate — C&I 455.1) from The University of Montana (\$115.00 cost) for participating?

Circle: Yes No

(Please do not send money now, we will have the registration form and collect payment at the Institute.)

*Cancellation Policy:* Please cancel by July 26<sup>th</sup>, 2002. We will require a \$50.00 administrative cancellation fee if you must cancel after July 26<sup>th</sup>, 2002.

*Lewis and Clark Institute*  
August 4-9, 2002  
Tri-Cities, Washington  
*Evaluation Summary*  
14 evaluations returned

1. What is your overall evaluation of the week?
  - a. Excellent – 100%
  - b. Good – 0%
  - c. Average – 0%
  - d. Fair – 0%
  - e. Poor – 0%
  
2. How effective was the EOS staff in presenting the Lewis and Clark Web-Based Information System (LCIS) information during the hands-on computer lab time?
  - a. Excellent – 85%
  - b. Good – 15%
  - c. Average – 0%
  - d. Fair – 0%
  - e. Poor – 0%
  
3. Overall, how would you rate the guest speakers/experts during the week?
  - a. Excellent – 93%
  - b. Good – 7%
  - c. Average – 0%
  - d. Fair – 0%
  - e. Poor – 0%
  
4. Overall, how would you rate the field trips/museums/exhibits during the week?
  - a. Excellent – 93%
  - b. Good – 7%
  - c. Average – 0%
  - d. Fair – 0%
  - e. Poor – 0%
  
5. Was the format/schedule of the week conducive to learning?  
Yes 100%            No 0%

6. What aspects of the week were most beneficial for you? Why?
  - a. Being able to pick up resource material and things to create learning centers for my students.
  - b. GPS opportunities, Sergeant Gass and Captain Clark; folklore told in traditional Indian fashion; wolves – personal gratification; hands-on in the computer lab (I learn by doing!)
  - c. The speakers/impersonators/presenters; getting the different point of views; the bonding/friendships that developed among the teachers from various parts of the U.S.
  - d. Interactive learning; getting ideas from other teachers
  - e. GPS training; authentic speakers; great state
  - f. Field trips and guest speakers
  - g. Learning about the web site was useful for me, but the speakers and places we went will never be forgotten
  - h. It was so great to go to all these different places with all the different perspectives being presented so creatively
  - i. The GPS information was great. I loved the two re-enactors. The museums were helpful – I'm glad we got the Indian point of view but we probably didn't need two.
  - j. Introduction to the GIS material/information. We have homeschoolers in our family who will make such use of this. The Lewis and Clark information being ahead of the curve of 2003 observances will be great in the classroom. I'm also sharing with all my teacher friends.
  - k. I enjoyed most the talk with Allan Pinkham and his views of the expedition. That's a hard call though, since the whole experience was rewarding.
  - l. The talks with the Native Americans – their viewpoints and insights were invaluable.
  - m. Having history come alive. Having just read the journals – traveling along was great!
  - n. The field trips to Umatilla and Nez Perce highly interesting – wolf trip also
  
7. What aspects of the week were least beneficial for you? Why?
  - a. Lab session at Lewis and Clark College – content was fine, but I was brain dead at this point.
  - b. For me being overweight, getting in shape before the trip.
  - c. Needed to know before week started of evening schedule
  - d. Downtime in early am and late pm
  - e. None really – all the people in our group added to the experience
  - f. I was worried starting on Sunday evening and thinking that the week was going to be so long but it flew by! Wow!
  - g. The visit to the dam. We drove by several L&C sites that we didn't stop at – maybe if we were hooked up with a local historian near Waitsburg etc., we could have learned more.

- h. The lab time was the most difficult for me since I don't use computers on a consistent basis. But, I learned a lot and am challenged to proceed, learn and use it more.
  - i. Taking GPS readings at the dam. Fine, but not so relevant to my work
  - j. Unfortunately, the GPS focus (labs) seemed to be divergent at times
  - k. There were not any that were not beneficial but the GPS I will probably never use, but then you never know.
  - l. I'm sorry – I cannot identify anything that I can identify as “least beneficial”
  - m. Hard to say – I think it was all great
8. Do you have any suggestions/changes we could make to the Summer Institute?
- a. I loved it! Your team and the dynamics that were always evident were greatly appreciated. You 3 are unique and I hope UM recognizes that fact. I have experienced and run many training seminars and know that a team's “conflicting” dynamics can sink the entire experience. Kudos to you 3 (Jeff, Kandy and Bryn) and make sure your boss sees this!
  - b. Free was great; appreciate the concern you 3 had for participants (step stools, water); went of your way to make class a success; patience in computer lab was awesome; enjoyed the diversity of speakers and points of view
  - c. We need to get on one of the rivers – optional fee if desire; put a GPS in each of our hands
  - d. Wow! Beyond my expectations! Thank you for everything – the accommodations, lunches, dinners and snacks. I hope to see you next year or perhaps the following year. My entire family – Mom, Dad, sisters and brothers – along with their families are coming out in 2—3=4. I will share my knowledge of L&C, GPS, Idaho, Oregon and Washington with them. I also look forward to bringing this new knowledge to my students. I am grateful!
  - e. Technology at first was overwhelming. Lots of us were confused how to sue GPS and computer stuff until we became comfortable with it. I know you wanted to show us everything available, but because computers were not all in sync at same time, it was easy to get lost and lose parts. Perhaps grouping people into those with previous experience and those hopelessly lost and then have people work with the 2 groups – or have the more experienced work with those who need more help – we could have felt more confidence. However, Jeff was very helpful to everyone and very personable. The whole week was great. Great organization, staff, facilities – thanks!
  - f. Different locations like Montana or Oregon to expand the experience for next year. What great people you have work on this project. See if you could get clock hours for Washington teachers. Well done.

- g. Lodging – excellent; food- excellent; driving – excellent; overall concern and care for our comfort – excellent; classes – excellent; training – excellent
- h. We should have visited the canoe camp – we were so close it was a shame not to go. The hotel box lunches were pretty bad and I’m sure they were expensive, too.
- i. A debriefing time together following the spears would have been enjoyable and helpful, I think to hear others interpretation of what was said.
- j. A bit more down time to absorb the day’s activities and talks would benefit my sensibilities, but I understand the need to do much in so little time. Overall, I had a blast!
- k. Perhaps more time can be allocated to the various sites (witho ut the constraints of appointed schedules).
- l. Education Service District clock hours as an option
- m. More time to “read” the items displayed at the museum – but then Kandy already knows this!