Virtual Field Trips: The Good, The Bad, and The Virtual

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Student Perceptions of a Virtual Field Trip to Replace a Real Field Trip

- Participants: College-level, second year undergraduate zoology students
- Replaced required field work with *Tidepools* module, which was completed over the same time period (one semester)
  - Students worked for 2-3 hours per session (few times per week over one semester)
- Collected data at two points:
  - Immediately after completion: module viewed favorably (Likert scale)
  - 6 months later: module viewed favorably, though would have rather completed actual field work
- Application to elementary school setting:
  - In some settings a real-life field trip is better for educational purposes: a real-life field trip to an aquarium allows students to touch the sea creatures→ a virtual field trip does not
  - However, a virtual field trip to Jamestown may be just as effective as a real life trip as long as the virtual field trip is effectively incorporated into the curriculum
Integrating Student Learning with Practitioner Experiences via Virtual Field Trips

- Participants: First-year undergraduates in two public speaking courses at Central Missouri State University
- Class one went on a virtual field trip related to course objectives and outcomes; class two completed the class as usual
- At the end of the semester, both classes were asked to list as many course objectives and outcomes as possible from memory
  - Lists from each class were compared: which class produced more course objectives and outcomes from memory?
  - Class one recorded the most course objectives and outcomes
- Application to elementary school setting:
  - This data could be applied to the SOLs: create a virtual field trip around a specific SOL, and ensuring that students know which SOL is being studied, may lead to a better, more thorough understanding of the task at hand, and better scores on the SOLs
Electronic Field Trips as Interactive Learning Events

- Participants: 2200 students ranging from elementary to high school in 22 states, majority Caucasian
- Students were broken into three groups to experience a virtual field trip entitled *Into the Canyon*
  - No Exposure: students in this group did not experience the virtual field trip at all
  - Preparation Materials Only: students in this group were exposed to the materials used to set up the virtual field trip
  - Full Access: students in this group experienced the whole virtual field trip and all of its components
- Students answered a slew of questions via an Internet response system
  - Results were calculated using an item-specific, group comparison, and overall response approach
  - Students in the Full Access group correctly answered more questions than the other two groups
- Applications to elementary school setting:
  - When creating a virtual field trip, students will learn best if the experience is integrated into the curriculum and treated as a real field trip
Learning Desert Geomorphology Virtually vs. In the Field

• Participants- 420 Introductory Physical Geography undergraduate students at Arizona State University.

• Implementation- Students were placed into six lab sections, which were divided into three teaching-method styles: virtual only; field only; and learning by both virtual and field.

• Data Collection- Students were given a multiple-choice pre-test during their lecture class. The same 10 questions about desert geomorphology administered in the pre-tests were given in a post-test. The post-test was administered on the Monday after spring break—six weeks after the pre-test and one month following instruction.

• Findings- Students who learned only virtually, only in the field, or by both virtually and in the field maintained statistically indistinguishable scores in post-test results in both years, as revealed by t-tests and ANOVA.

• Implications- Virtual learning for introductory or elementary concepts proves to be an efficient and cost effective alternative to field trips in providing students with rich learning experiences.

Using a web-based resource to prepare students for fieldwork: Evaluating the dark peak virtual tour

- Participants- 17 tutors, and 195 first-year single and joint honours geography students at the University of Manchester, UK.
- Implementation- A paper-based exercise was given that was designed to assess student learning from the virtual tour (VT). Students completed the exercise in one-hour supervised lab classes, one to two days prior to their field course in April 2002.
- Data Collection- Questions were mainly multiple choice. Short answers and questions requiring annotation of drawings were also used. An anonymous questionnaire, with revisions suggested by tutors, was used to obtain student feedback on the VT and the pre-fieldwork assessment exercise.
- Results- All those who submitted the exercise passed, and questionnaire responses indicated that students had a positive experience with the VT and that it proved helpful to them in constructing their understandings.
- Implications- The evidence is not definitive in suggesting that virtual tours are more or less beneficial, but they are an effective, engaging way to teach basic concepts; however, virtual trips should not replace actual field trip experiences.
Teacher philosophy, technology, and field experience: Factors affecting learning gains for students in a social studies class.

Participants- 67 Students in a public Midwestern elementary school with a population of approximately 50% Caucasian and 50% African American, and predominantly of low SES.

Implementation- Students in the four different classes would learn the curriculum for the Lewis & Clark unit in a different fashion.
- The control class learned through conventional classroom teaching only.
- Class two learned in the classroom and also went on a traditional field trip.
- Class three learned in the classroom and also watched a virtual field trip.
- Class four learned in the classroom, went on a traditional field trip, and created a virtual field trip from their experiences.

Data Collection- A pre/post test that consisted of multiple choice questions was administered to each class of students. Upon reviewing post-test scores, 97% of students achieved learning gains on the Lewis and Clark unit.

Results- Results from the post-test determined that class one and class four scored statistically significantly higher on the post test than class 3.

Implications- The fact that class four scored higher than class three implies that students experienced greater learning gains as a result of doing something – in this case creating the virtual field trip. Student use of technology to create virtual field trips in order to enhance their comprehensive experience is an effective constructivist activity that enhances student learning and, in fact, is a necessary part of instruction.

Virtual Quests As Learning Environments for K-12 Students

- Participants: 6 classrooms ranging from grades 3-5
- Implementation: Using MayaQuest, an interactive virtual quest, over the course of the year
- Data Collection: Interviews of teachers at the end of the year to assess the level of use of MayaQuest
- Findings: The students made strong connections between the quest and the newly introduced content, and previously reluctant learners now participated.
- Educational Implications: Allowing time to be flexible and explore virtual quests engages students and encourages active participation

From Volcanoes to Virtual Tours: Bringing Museums to Students through Videoconferencing Technology

- **Participants:** Fifth grade classroom, four students and one teacher act as key informants.
- **Implementation:** Audio-visual link through 2WAVIL between the museum and the school. Virtual field trip was conducted 3 days prior to a museum visit.
- **Data Collection:** Data was collected based on the interviews of the students and the teacher
- **Findings:** The virtual fieldtrip to the museum before the actual field trip allowed the students to see and understand more of the exhibits before actually going to the museum.
- **Educational Implications:** Students may have been more interested in the “TV that talked back” but they still learned about the museum and its exhibits before going 3 days later, which improved their knowledge going into the actual museum.

Field Trips and Their Effect on Student Achievement in and Attitudes Toward Science: A Comparison of a Physical Versus a Virtual Field Trip to the Indian River Lagoon

- **Participants:** 67 Students, 48 of which are US Citizens and 19 of which are international students at Florida Institute of Technology.

- **Implementation:** The two field trips took place on the campus of Florida Institute of Technology. The virtual field trip and the physical field trip took place on different days with separate treatment groups.

- **Data Collection:** Data was collected through a series of tests for attitude and achievement scores and through an exam after the field trips were finished.

- **Findings:** There was no statistical difference between the scores generated by the physical field trip group and the virtual field trip group.

- **Educational Implications:** Though this was done with college students this experiment shows that there is a definite benefit to having virtual field trips since tests show no difference in material learned between the two field trips.

Electronic Field Trips: Using Technology to Enhance Classroom Instruction

- Participants: 33 schools from the Organization of Rural Oklahoma Schools (OROS)
- Students at each site participated in field trips which were presentations given by phone with opportunities for each school to ask questions:
  - The Governor of Oklahoma, the Speaker of the House, an astronaut, a children’s author, a warden of a state prison, a tv sportscaster
  - Foreign presenters included ambassadors from Great Britain, Spain, Norway, Israel, and Switzerland
- An evaluation instrument was mailed to each school district:
  - Students’ knowledge was expanded
  - Listening and speaking skills improved
  - Speakers represented valuable role models for students
- Educational implications:
  - Broadens the world of rural students
  - Cost effective way for rural schools to address academic and personal isolation
Virtual Field Trips: Using Information Technology to Create an Integrated Science Learning Environment

- Participants: Teachers from 59 elementary and secondary classes in Texas who taught a total of 1,079 students
- Teachers participated in a training program that utilized the Integrated Science Learning Environment (ISLE) to increase use of constructivist teaching methods
  - Addressed 3 basic forms of learning: acquisition of knowledge, change in emotions or feelings, and gain in physical or motor actions or performance
  - ISLE is a multi-level virtual field trip that models pre-trip lessons, field trip experiences, and post-trip presentations
- Data showed:
  - Improved teachers’ perceptions of classroom environment, attitudes to technology, and conceptual development
- Educational implications:
  - Improves classroom learning environment
  - Increases the implementation of constructivist teaching approaches
North Carolina’s Sixth Graders Go to Russia: A Global Education/Curriculum Integration Project that Redefines the Virtual Field Trip and Makes Social Studies Education in a Technology Enabled Environment Meaningful and Exciting

- Participants: 40 sixth grade classes, their teachers, a university research team
- Students communicated with a team of teachers in Russia who sent them online postcards, pictures, reports, and interviews with Russian school children
  - Students generated questions for the team in Russia to investigate during their stay
  - Students completed a research project that coincided with what they wanted to learn about Russia
- Preliminary data showed:
  - Students were excited to hear from the researchers and to do their own research
  - Students felt empowered to in charge of their own learning
- Educational implications:
  - Provides students with an authentic experience that would not be possible without the use of technology
  - Generates high interest because the students developed their own questions and got them answered by primary sources through the research team in Russia