Making the Ocean of Dreams a Reality: Leading a Study Abroad

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Session S029
Science Immersion
IDS 206 Special Topics in International Education

- 9 day trip to Costa Rica
- One credit hour, graded (A – F) course
- Home stays in Atenas, near San Jose
- Day trips in Atenas area
  - Former gold mine
  - Organic and non-organic coffee farms
  - Volcano Poas
- Three days/two nights to Estacion Las Tortugas
  - Turtle preservation
  - Wildlife excursion
- Day trip to Pacific coast
  - Playa Hermosa
  - Rio Tarcoles
  - Zip line
Trip Planning

- On-site trip to organize and plan itinerary
  - Turkey trip compared to Costa Rica
- Hire a local for daily arrangements and in-country travel
- Finalize details approximately 6 months before applications accepted
- Begin marketing a year in advance with approximate costs and schedule of payments
Costa Rica – Student Selection

- Applications and interviews at start of Fall semester
- Require a refundable deposit with application
- Interview students, tentative acceptance, drug and background check results for final approval
- Schedule of obligations for the Spring term
  - Travel schedule
  - Class meetings
  - Assignments
Pre-trip activities

- Regular communications and follow-up on details
  - Securing deposits
  - Completing insurance paperwork
  - Obtaining passports
- Class meetings during the semester of travel
  - 3 pre-travel
  - 1 post-travel
First class meeting

- Introductions and icebreaker activity
- Course syllabus
  - Tentative trip schedule
  - Due date reminders
- Develop list of questions and make assignments for next meeting
- Create groups (pairs work well) for pre-travel research of major activities during travel
Second class meeting

- Answers to questions posed at first group meeting
- Group presentations
  - Rainforests/surfing
  - Sea turtles
  - Tilapia farming
  - Volcanos and geography
- Itinerary updates
Third class meeting

- Final pre-travel meeting
- Tie up loose ends from last meeting
- Distribute final itinerary
- Check all communication details
- Host family gifts
- Packing details
- Security
- Discuss in-country behavior, wardrobe, drugs & consequences
During the trip

- Encourage bonding with host families
- Daily schedule updates before end-of-day dismissal
- Use travel time
  - Language lessons
  - Feedback and concerns
- Regular discussions on pros and cons to date
- Be flexible; take advantage of last-minute opportunities
  - International Music & Arts Festival in San Jose
Lessons learned/warnings

- Two faculty/adults minimum
- Book flights early
- Don’t overbook daily activities; allow free time
- Be prepared for the unexpected – overbooked flight, lost luggage, landslide and road closure, closed zipline
- Reconsider extremely remote sites
- Be prepared for medical emergencies
- Trust students, but be prepared to send problem students home
Post travel meeting

- Publicize during the term
- Invite campus community
- 10-15 minute group presentations
- Evaluations
Abandoned Gold Mine

- Relaxing activity after long travel day
- Hike and exploration of old gold mine
- Swimming in natural waterfall pool
- Naps on the bus to catch up on sleep
- Learning opportunities:
  - Bus ride and hike: Introduction to geography and flora of central Costa Rica
  - Gold mine: History of Atenas area; introduction to fauna of central Costa Rica (BATS!)
  - Waterfall pool: Discussion of possible influence of mining on environment
Coffee Farms

- Visit to organic and traditional coffee farms
- Tree species identification
- Soil sampling
- Coffee tasting
- Learning opportunities:
  - Comparison of organic vs. traditional coffee-growing methods and impact on landscape and environment
  - Comparison of quantity and species of trees at the two farms
  - Comparison of soil pH levels at the two farms
Enrichment Idea:

Step 1
• Before visiting the farms, discuss:
  • Which farm will average a larger number of tree species per sector?
  • Which farm’s soil will average a higher pH level per sector?

Step 2
• Divide organic farm into sampling sectors
• Randomly assign one group of students to each sampling sector
• Within each sector
  • Take soil sample
  • Count and record number of tree species
Step 3

- Divide traditional farm into sampling sectors
- Randomly assign one group of students to each sampling sector
- Within each sector
  - Take soil sample
  - Count and record number of tree species

Step 4

- Measure and record pH level for each organic farm sector

Step 5

- Measure and record pH level for each traditional farm sector
Step 6

- Summarize Data

<table>
<thead>
<tr>
<th>Number of Species</th>
<th>pH Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Sector 1 #</td>
<td>Organic Sector 1 pH</td>
</tr>
<tr>
<td>Sector 2 #</td>
<td>Sector 2 pH</td>
</tr>
<tr>
<td>Sector 3 #</td>
<td>Sector 3 pH</td>
</tr>
<tr>
<td>Sector 4 #</td>
<td>Sector 4 pH</td>
</tr>
<tr>
<td>Traditional Sector 1 #</td>
<td>Traditional Sector 1 pH</td>
</tr>
<tr>
<td>Sector 2 #</td>
<td>Sector 2 pH</td>
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<tr>
<td>Sector 3 #</td>
<td>Sector 3 pH</td>
</tr>
<tr>
<td>Sector 4 #</td>
<td>Sector 4 pH</td>
</tr>
</tbody>
</table>

Step 7

- Use hypothesis made in Step 1 to perform 2-sample $t$ test to compare mean number of tree species, organic vs. traditional.
- Use hypothesis made in Step 1 to perform 2-sample $t$ test to compare mean pH level, organic vs. traditional.
- Discuss results
Volcano Poas

- Visit to Volcano Poas National Park
- Unobstructed early-morning view of one of the world’s largest active volcano craters
- Hike into caldera with San Jose University volcanologist
- Hike to inactive lake-filled crater
- Learning opportunities:
  - History of eruptions, resulting landscape, recovering forest
  - Effect of acid rain on local flora
  - History of eruptions as seen in soil layers
  - Comparison of rocks in caldera and their origins
  - Explanation of equipment and instruments used in study of crater’s deadly lake
  - Exposure to career of volcanologist in “Ring of Fire”
Estacion Las Tortugas

- Hands-on conservation experience at leatherback sea turtle rescue station
- Late night beach patrol
- Rain forest wildlife excursion
- Learning opportunities:
  - Lecture covering causes of leatherback sea turtles’ near extinction and preservation efforts
  - Participating in harvesting of eggs
  - Observation of rain forest wildlife: howler monkeys, caimans, crocodiles, waterfowl, etc.
- Planned enrichment activity:
  - Access data on leatherback sea turtle egg clutches; create timeline to study cyclic and annual trends
  - Problems: data are closely held; some data are available online, but are incomplete and summarized
Playa Hermosa & Rio Tarcolas

- Fun-filled last day
- Beach time
- Rio Tarcoles “Crocodile Bridge”
- Zip line
- Learning opportunities:
  - Comparison of Pacific coast to Caribbean coast
  - Wildlife viewing: scarlet macaw, crocodiles
Enrichment ideas:
Zipline Mathematics:

- The Heavenly Ski Resort at Lake Tahoe is one of the longest in North America. It has a vertical drop of 525 feet. The zip line is connected to trees that are 3,258 feet apart.
• Assuming that the zip line is taut, what is the length of the zip line? (3,300 feet; Pythagorean Theorem)

• What is the angle of decent on the zip line? (9.15 °; Right angle Trigonometry)

• In reality zip lines are not taut, but sag in the middle, forming a catenary curve. Study the equation of a catenary curve, assuming that both ends of the zip line are connected to the two trees at the same height. Questions: What is the equation that represents this zip line? What is the lowest point along the zip line?

• Physics, including Newton’s Laws of Motion can also be studied using zip line mathematics.
Pura Vida!