

## **Exploring Life Lehigh 2000 Workshop Report**

September 8, 2000

18 participants attended the Exploring Life Lehigh 2000 workshop on August 15 and 16, 2000. Participants were introduced to Exploring Life and spent three hours reviewing Web-based and text materials. Participants were told to ignore the graphics on the Web site and text materials and to focus on the biology content. Participants were instructed to make comments on printed copies of the chapter text and were told to print out Web pages and write comments on these print outs. Participants engaged in one laboratory activity and recorded comments on printed copies of the activity. Participants were placed into groups of two and were instructed to prepare an 8 minute presentation on how they would incorporate Exploring Life into their existing classroom.

Participants completed two data collection survey. One survey was designed to obtain demographic information and participant's notions of inquiry teaching and learning. The second survey administered was the AAAS criteria for evaluating the quality of instructional support instrument.

Each participant attended two separate focus groups. Focus group questions focused on the following areas:

- (a) Do the materials address the important goals of biological science teaching and learning?
- (b) Are inquiry and activity the basis of the learning experiences?

### **Preliminary findings:**

- Many participants stated they expected more inquiry-based activities in the curricular materials. Some participants did state that there were some inquiry-based activities. Many activities could become inquiry-based by incorporating guiding questions. More structured guidance is needed to promote inquiry with the materials.
- Many participants wished Exploring Life had a hypertext glossary of terms.

- Many participants had difficulty navigating within the CalorieQuest activity. Participants experienced high frustration levels. Participants had difficulty moving back and forth between two browser windows. In some cases, participants could not locate their second browser window. A few participants lost data by inadvertently closing Netscape browser windows. It is recommended that the Exploring Life development team create a series of tutorials or training workshops for users on topics pertaining to basic computer skills for both Macintosh and PC platforms and tutorials that describe how to use different Web browsers to navigate the Exploring Life Web site.
- Additional validation should be noted for content that is linked out from WebQuest activities. One participant noted that the ABC.news site linked from the CalorieQuest contained incorrect information.
- Many participants stated that Exploring Life was interactive. Participants' students would enjoy the interactivities.
- Participants were concerned that there were no evaluation tools for the activities.
- Participants stated that the text was well written. Some stated that there were no distractions such as sidebars in the text.
- Many aspects of the Web site appealed to the participants. These included: "the ability to have the content constantly updated", "encourages learning by doing", and "a less heavy textbook."
- Participants stated that the lab activity encouraged scientific reasoning.
- Many participants had difficulty navigating within the Web site. Our novice computer user participant had extreme difficulty navigating throughout the Web site. This participant experienced high levels of frustration.
- Many participants stated that the materials need well written teacher instructions and documentation.
- Some participants stated that they would not use the respirometer activity with low level ninth grade students.

- Participants liked the integration of the text materials with the Web-based instructional system.
- Some participants stated that they want a Web-based curriculum. They need biology content that can stay current. Participants also noted that this type of curricular material can be used as a resource for project-based learning activities.
- Many participants were concerned about getting equipment for the respirometer lab. Participants recommend making a kit available for purchase.
- Participants described a variety of ways they would use Exploring Life in their classrooms and media resource centers using a variety of instructional strategies to accommodate their availability of computer equipment.
- Each participant stated they would not use the contents of the entire textbook.
- Participants stated that the Table of Contents reflects a traditional textbook sequence and reflects current textbooks on the market.
- Some participants stated that Exploring Life met the objectives required by their states and school districts. However, participants stated that Exploring Life needs to account for end of the course state-mandated tests.
- Many participants commented that Exploring Life is a flexible curriculum. It was recommended that Exploring Life contain a recommended structure for beginning teachers.
- Participants stated that their teaching would change by using the curriculum. Some participants stated they would use the computer as a learning tool more often. Some stated they would use the computer for shorter sessions. All participants in one focus group stated that Exploring Life would make teaching biology easier.
- Some participants wanted to see good nutrition modeled in the CalorieQuest.

Table 1 provides the means and standard deviations for the participant responses to the AAAS criteria for evaluating the quality of instructional support evaluation instrument.

Preliminary analysis reveals that the main strengths of the Exploring Life curriculum include:

- providing a variety of phenomena,
- providing vivid experiences, and
- introducing terms meaningfully.

The main weaknesses of Exploring Life include:

- attending to prerequisite knowledge and skills,
- alerting teachers to commonly held students,
- assisting teachers in identifying students' ideas,
- addressing commonly held ideas,
- demonstrating use of knowledge,
- encouraging students to explain their ideas, and
- encouraging students to think about what they've learned.

**Table 1.** AAAS criteria for evaluating the quality of instructional support results.  
Scoring scheme: Excellent (3), Satisfactory (2), Poor (1), None (0)

<b>Evaluation Item</b>	<b>Mean</b>	<b>St. Dev</b>
<b>I.1 Conveying unit purpose</b>	2.19	0.96
<b>I.2 Conveying lesson purpose</b>	2.22	1.05
<b>I.3 Justifying activity sequence</b>	2.61	0.50
<b>II.1 Attending to prerequisite knowledge and skills</b>	0.88	1.05
<b>II.2 Alerting teacher to commonly held student ideas</b>	1.00	1.24
<b>II.3 Assisting teacher in identifying own students' ideas</b>	1.65	0.93
<b>II.4 Addressing commonly held ideas</b>	1.78	0.88
<b>III.1 Providing variety of phenomena</b>	2.76	0.44
<b>III.2 Providing vivid experiences</b>	2.76	0.44
<b>IV.1 Introducing terms meaningfully</b>	2.76	0.44
<b>IV.2 Representing ideas effectively</b>	2.84	0.35
<b>IV.3 Demonstrating use of knowledge</b>	1.30	1.31
<b>IV.4 Providing practice</b>	2.75	0.45
<b>V.1 Encouraging students to explain their ideas</b>	2.00	0.89
<b>V.2 Guiding student interpretation and reasoning</b>	2.43	0.59
<b>V.3 Encouraging students to think about what they've learned</b>	1.57	1.16
<b>VI.1 Aligning assessment to goals</b>	1.86	1.17
<b>VI.2 Testing for Understanding</b>	2.29	0.99
<b>VI.3 Using Assessment to inform instruction</b>	1.31	0.95

## **Main Concern with Exploring Life:**

The Exploring Life Web site requires a new instructional user interface.

Preliminary instructional designs recommendations:

- Provide site navigation on the left-hand side.
- Use layers of navigation to let users know where they are located within the Exploring Life Web site. This will provide users with a sense of location.
- Provide a string that displays the user's task on the top of the screen. This will provide task orientation. The string could be sequenced with a goal, a terminal objective, and an enabling objective. For example,

"**While** you are investigating calories, you are **attempting** to find out Tom's weight, and now you are finding out calories in particular foods."

This string would employ a prescribed syntax to make it easily recognizable and familiar to users as they work through different tasks in different lessons. In the preceding example, each sentence could start with "while," contain a terminal objective with "ing," followed by an enabling objective. The task string is built one part at a time, as the user moves from screen to screen, from task component (subtask) to task component (subtask).

Such a task string would show where the user has been and where the user is heading within the task. This should result in a more efficient use of the Web site and reduce the use of the "Back" button on the browser. Furthermore, this should increase the user's sense of control.

- The activity map requires instructions.
- The Exploring Life development team may wish to consider a frames-interface or a Java-coded equivalent.