

Summary of AAAS Criteria for Evaluating the Quality of Instructional Support Responses

**Exploring Life Evaluation Report
February 1, 2001**

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The rating scale used in the Project 2061 Instructional Analysis of Biology Textbooks was also used in this analysis:

Excellent: 3
Good: 2.5-2.9
Satisfactory: 2.0-2.4
Fair: 1.5-1.9
Poor: 0-1.4

The ratings in this report are the average responses from the Lehigh Summer Workshop and NABT 2000 workshop participants.

Notes

1. The response scores of the NABT participants were high in comparison to the Lehigh 2000 workshop participants.
2. Some of the Lehigh were unclear about some of the science pedagogical terminology used.
3. No formal training was provided to the participants who used the instrument to rate the chapter 4 materials. The reviewers from the AAAS survey study did have training on terminology, pedagogy, and the survey.
4. All participants were informed that the Chapter 4 materials contained some incomplete areas and were currently in its initial stage of developmental.

Category I. Providing a Sense of Purpose

I.1 Conveying unit purpose. Current rating: Good (2.45)

General comments

The material does a good job in conveying an overall sense of purpose and direction that is understandable and motivating to students.

The design of the materials does not meet each specific aspect of Criterion 4: "Students are given an opportunity to think about and discuss the problem, question, representation (or otherwise identified purpose)." The Web-based materials provide the learners scaffolds in many areas to think about the materials. However, learners are not encouraged to discuss ideas with other learners before submitting responses.

Recommendations

The Web-based materials should be designed for pairs of learners engaging in social discourse while working together on one computer.

The instructional design of the materials is geared towards one learner learning in isolation on one computer when we suspect that most classrooms will not have one computer per student. For example, the material on ch4_con1_p3.html states:

"Answer the questions below and then check your answers by clicking the 'Check Your Answers' button."

The above statement can be reworded to provide students the opportunity to think about and discuss the material that is presented:

"Discuss the following questions with your learning partner. Then check your answers by clicking the 'Check Your Answers' button."

Specific participant responses to note

1. Students are offered several ways to consider the main objectives with animations that mostly complement the readings.
2. If the materials are used properly, there is a great deal of reinforcement of the purpose of the unit and how it applies to the student's life.

I.2 Conveying lesson purpose
Current rating: Satisfactory (2.43)

General comments

The material conveys the purpose of each lesson.

Recommendations

No recommendations for change.

Specific participant responses to note

1. The objectives for each section are clearly stated.
2. Objectives are stated in the overview and I would revisit those as needed.
Additionally the text headings and web activities support this.
3. The two last sections of the unit are explained much better than I have ever seen them explained, but I don't think that average and/or below average students will comprehend them or should be expected to comprehend them at the 9th grade level.
Many college students don't comprehend them!

I.3 Justifying activity sequence.
Current rating: Good (2.71)

General comments

The material involves students in a logical or strategic sequence of activities.

Recommendations

No recommendations for change.

Specific participant responses to note

1. Very logically and sequentially arranged.
2. Chapter builds nicely to a point where the whole of cellular respiration makes sense.
3. I do feel the flow of presented material follows a logical sequence regarding the interdependence of PSN and respiration. The activities on respiration are in a logical sequence and should provide students with a sound understanding of the concepts.
4. The sequence builds the student's knowledge and augments his/her understanding.

Category II: Taking Account of Student Ideas

II.1 Attending to prerequisite knowledge and skills

Current rating: Poor (1.41)

General comments

Currently, the Exploring Life chapter materials do not specify prerequisite knowledge (prior knowledge or understanding that learners need to be able to learn new content or concepts) or skills that are necessary to meet the benchmark(s) for learning.

Recommendations

Future materials should develop and give special attention to prerequisite knowledge and ideas that are presented in earlier chapters. The developers should take advantage of the ability to provide hypertext links to prerequisite knowledge on the Website.

Notes

The program evaluators noted that many indicators of this criterion are difficult to score due to the nature of the early developmental stage of the Exploring Life materials. This score should become higher as prerequisite knowledge and ideas are built into the materials.

Specific participant responses to note

1. This score is not a true representation of the material being evaluated. The material is still in its early conception stage, thus it is impossible to score "prerequisites." As of this moment they do not provide clear indications of prerequisites, however this may be added in the future.
2. Other concepts (such as enzymes) are only mentioned in passing. It is not clear what needs to be understood before the unit is attempted.
3. We have been shown only one unit. Within that unit there is no evidence of previous knowledge the student has or needs.
4. The future availability of this support was discussed but materials have not yet been developed.

II.2 Alerting teacher to commonly held student ideas

Current rating: Poor (1.29)

General comments

The Exploring Life chapter materials do not alert teachers to commonly held student ideas (both troublesome and helpful). For example, students believe that plants obtain their energy from the soil.

Note: An extensive annotated list of research articles on biology misconceptions compiled by the Ontario Institute for Studies in Education at the University of Toronto is available online at: <http://www.oise.utoronto.ca/~science/miscon.htm>

Recommendations

The Tips for Teachers area of each chapter (or perhaps each section) address commonly held student ideas or misconceptions.

This area could include recommendations to have students brainstorm "What They Know" about a specific topic.

The materials could also provide a pretest for the teachers to use that includes specific questions that may help them understand the misconceptions their students may have on the chapter topic.

The Tips for Teachers area could alert the teachers regarding common student misconceptions or conceptual hurdles.

Inconsistencies

The materials in Chapter 4 do clarify and explain commonly held ideas involving respiration in plants and animals and explain differences between respiration and breathing. However, this and other commonly held student ideas are not explicitly described in the teacher's guide.

Specific participant responses to note

1. As of yet there does not appear to be any reference to "commonly held ideas" or ideas that students have more difficulty with. This does not mean that it will not be provided in the future.
2. Within the questioning of students, it asks why certain concepts are false. I found the reference to photosynthesis being done by plants and respiration by animals. The students are asked why this is false.
3. This criterion would be an important one, and was not met in the chapter that I have reviewed. To customize this information to an individual class with a pretest would be the ideal situation. A sample pretest would both meet this criterion and customize the information to a specific classroom.
4. No misconceptions were explicitly cited. Under teacher tips, one citation was linked to an article dealing with misconceptions.

II.3 Assisting teacher in identifying own students' ideas

Current rating: Satisfactory (2.04)

General comments

The materials contain specific questions or tasks that can be used by teachers to identify students' ideas.

Some questions were identified as serving the purpose of identifying students' ideas. For example, ch4_con4_p2.html states:

"How can a smart snowboarder get down a steep slope in a more controlled manner? In other words, how can the snowboarder's potential energy be released in smaller packets?"

Examples were found in the material that includes questions/tasks that ask students to make predictions and/or give explanations of phenomena. This is clearly evident in Part II of the Investigating Cellular Respiration with Wisconsin FastPlant® Seeds lab.

Recommendations

This criterion should be discussed with regard to the level of importance to the curriculum. Current research in science education places emphasis on teaching for conceptual change. In teaching for conceptual change, it is necessary for the range of ideas related to a topic held by different learners be made explicit. This is significantly different from common teaching practice. Identifying students' ideas recognizes that existing knowledge plays an important part in learning. In common instructional practice, students' ideas are not explicitly considered.

The Tips for Teachers area of each chapter could suggest that teachers find out what their students think about familiar phenomena related to national science education standards and frameworks before scientific ideas are introduced. Providing a preinstructional quiz is a technique that can be used in the classroom to identify students' ideas.

Specific participant responses to note

1. For example, the marshmallow questions as well as the calorie activity the teacher could use as a form of teachers identifying student ideas. Most of the questions are clearly, directly and simple stated.
2. There are lots of questions/tasks that enable students to parrot what has just been presented without real understanding. I think it is possible for students to answer the questions correctly without integrating the concepts into their learning schemes. I don't think key questions that would expose primitive conceptions adequately are being posed.
3. Since the teacher section hasn't been developed, I can only base answer on what the unit questions ask the student. These are good. Suggestions for further probing need to be provided in the teacher tips section.
4. Assessment activities will be of great help in identifying student understanding.

II.4 Addressing commonly held ideas

Current rating: Satisfactory (2.11)

General comments

The Exploring Life chapter materials do not alert teachers to commonly held student ideas. As children develop, there is a need to construct meaning regarding how and why things behave as they do. In addition, long before children begin the process of formal education, they attempt to make sense of the natural world. Thus, children begin to construct sets of ideas, expectations, and explanations about natural phenomena to make meaning of their everyday experiences. The ideas and explanations that children generate form a complex framework for thinking about the world in a way that is frequently different from the views of scientists. These differing frameworks are referred to on the literature as misconceptions, alternative conceptions, or alternative frameworks.

The material contains interactivities and provides laboratories that are likely to assist learners to progress from their initial ideas.

Recommendations

In the Tips for Teachers area of each chapter there could be a list of commonly held ideas of students. For example, plants get energy from the soil.

The Web-based interactivities should provide additional questioning strategies to prompt students to contrast commonly held ideas and the scientifically correct ideas in order to resolve differences between them. These questions should be presented to the students prior to displaying an animation that presents a concept. For example, ch4_con1_p1.html could begin with addressing the idea of the misleading statement presented in the Concept Check 4.1 in the text: "Plants do photosynthesis, but animals do cellular respiration."

Specific participant responses to note

1. I don't truly believe that the material "explicitly" addresses commonly held ideas however it does provide opportunities for students to reconstruct their conceptions (e.g. the skiing activity)
2. Cannot evaluate the third indicator until the materials are developed
3. The snowboarding activity helps students to understand regulation of chemical activity is more than an enzyme speeding up a reaction.

Category III: Engaging Students with Relevant Phenomena

III.1 Providing variety of phenomena

Current rating: Good (2.85)

General comments

Most respondents (n=22) believe the material provides a sufficient number and variety of phenomena, observable events in nature that can make a scientific idea real to students. It is recommended that the teacher support materials contain an area that specifically state how each Web-based interactivity and laboratory aligns with the content ideas presented in the National Science Education Standards and related frameworks.

Recommendations

No recommendations for change.

Specific participant responses include:

1. I think this is a major strong point of the materials I've seen so far.
2. Well represented with the varied activities.
3. I thought this criterion was met very well with the use of examples, analogies and activities.
4. The strength of the materials is the combination of reading doing, either Web, lab, or simulation.
5. Teacher's material may increase this score.

III.2 Providing vivid experiences

Current rating: Good (2.81)

General comments

Most respondents (n=22) believe the Exploring Life materials include activities that provide firsthand experiences with phenomena when practical and a vicarious sense of the phenomena when not practical. The experiences that are not firsthand (e.g., text, pictures, animations, interactivities) provide students with a vicarious sense of the phenomena.

Recommendations

No recommendations for change.

Specific participant responses to note

1. One of the strengths of these materials is the interaction required by the student. The direct reflection of topics and activities of students of this age is very attractive to the student.
2. Yes, I would say the experience would be vivid, since today's students are computer savvy and into interactive games, etc.
3. The animations of phenomena are excellent.

4. I think the use of activities, and analogies are excellent and they support the concepts that are being presented.

Category IV: Developing and Using Scientific Ideas

IV.1 Introducing terms meaningfully.

Current rating: Good (2.81)

General comments

Most respondents (n=22) believe the Exploring Life materials introduce technical terms in conjunction with an experience with the idea or with a process. Terms are introduced as needed to facilitate thinking and promote effective communication. The material is effective in linking technical terms to relevant experiences rather than just having students learn definitions of terms.

Recommendations

No recommendations for change.

Specific participant responses to note

1. One of the qualities I liked most about this particular text, was the minimal use of technical terminology. Phenomena are described in everyday terms, which allows the focus to be on the phenomena, not the vocabulary. I will add terms as I feel it is appropriate or necessary.
2. The text and terms were easy to read and understand. The terms, although complex, did not seem to be hard to understand when placed in the context that they were in.
3. This is one of the most positive features I noticed.
4. The explanation of ADP+ATP comes to mind as an excellent example of this.

IV.2 Representing ideas effectively

Current rating: Good (2.83)

General comments

Most respondents (n=21) believe the Exploring Life materials include accurate and comprehensible representations of scientific ideas. The interactivities provide a sufficient number and variety of representations that are explicitly linked to the presented concept and comprehensible to the students.

Recommendations

The pinball activity needs to be revisited. It should be noted that 2 participants commented that the pinball machine interactivity was not likely to be comprehensible to their students. These comments were consistent with what was found in the discussion groups.

Specific participant responses to note

1. Allows students to see scientific ideas that are relevant to them as much as possible. So far, this pattern seems to exist and I want to underscore the importance.

2. The explanations of scientific ideas that I saw in this text are among the best I have ever seen. In spite of my years of training and teaching, there were things I learned from the explanations in this text. (i.e. Why the third phosphate of the ATP is connected with a high energy bond – what makes that bond higher in energy)
3. The materials are very complete and will provide the student with a framework that will survive future biology studies.
4. The pinball machine is confusing. Concepts need to be made 1st. Then the student should be able to manipulate the machine. " Electrons fall from food to oxygen " is excellent. The sky slope activity is great!

IV.3 Demonstrating use of knowledge.

Current rating: Fair (1.62)

General comments

Exploring Life chapter materials does not demonstrate/model or includes suggestions for teachers on how to demonstrate/model skills or how to use the knowledge that is presented in the chapter.

Recommendations

It is recommended that the Teacher's Guide (Tips for Teachers for each chapter or section) include material that instructs the teacher how to model the use of knowledge. For example, the Teacher's Guide might provide suggestions for implementing a classroom discussion that introduces diseases of the mitochondria and how it affects the human body.

The material should include more specific examples for students to demonstrate the use of knowledge and be able to apply what they have learned to an everyday experience. An example of such a question would be "What happens to carbon dioxide levels when you burn the rainforest?"

Notes

The respondents had difficulty evaluating this criterion since a fully developed Teacher's Guide was not available for review. As the teachers' guides are included, this section should receive a higher rating.

Specific participant responses to note

1. Because we have not really seen a teacher's guide at this point I believe this is not answerable.
2. This score is not representative, because as a reviewer we were only provided with the student manual as opposed to the teacher guide which has not been developed as of yet.
3. Did not get to evaluate a teacher text and the teacher notes online were underdeveloped except in the lab situations.

4. The questions at the end of each section are an assessment of knowledge. The performance of knowledge is suggested with student mini-poster sessions or PowerPoint presentations.

IV.4 Providing practice.

Current rating: Good (2.77)

General comments

Most respondents (n=20) believe the Exploring Life material provides a sufficient number of tasks in a variety of contexts, including everyday contexts. Furthermore, participants perceive that the materials include novel tasks.

In the recommended sequence (chapter map), students are first provided with guided practice and they receive feedback. The amount of support is gradually decreased in activities such as "Developing and Implementing Your Research Plan" in the Investigating Cellular Respiration with Wisconsin Fastplants Seeds laboratory.

Recommendations

No recommendations for change.

Specific participant responses to note

1. Including those things termed "enrichment" there are definitely a good variety of tasks that meet these criteria.
2. Fun and exciting guided practices that I know my students will actually do for themselves!

Category V: Promoting Student Thinking about Phenomena, Experiences, and Knowledge

V.1 Encouraging students to explain their ideas

Current rating: Satisfactory (2.27)

General comments

Many of the online concept areas encourage students not only to express but also to clarify, justify, and represent their ideas. The Web-based materials include text that directly provides students with immediate feedback regarding their ideas.

The material does not include specific suggestions to help teachers provide explicit feedback or include suggestions on how to diagnose student errors, give explanations about how these errors may be corrected, and how to further develop students' ideas.

Recommendations

No recommendations for change.

Specific participant responses to note

1. Opportunities definitely exist for students to refine their thinking. I did not see any material that meets #5.
2. There is a steady request for student opinion, explanation and guessing, with general feedback on most of the student responses. The number of students expressing ideas is dependent on access to computers.
3. Indicators 1, 2 and 3 are all met in the form of the concept checks and the online questions.

V.2 Guiding student interpretation and reasoning

Current rating: Satisfactory (2.42)

General comments

The participants perceive that the Exploring Life material includes specific and relevant tasks and/or questions for the experience or reading.

There are examples throughout the material that use questions or tasks that have helpful characteristics. Examples include: framing important issues, helping students to relate their experiences with phenomena to presented scientific ideas, helping students to make connections between their own ideas and the phenomena observed, and helping students to make connections between their own ideas and the presented scientific ideas.

It appears that participants were unsure about how the materials anticipated common misconceptions and focussed on contrasts between student misconceptions and scientific alternatives.

Recommendations

Misconceptions could be specifically pointed out in the Exploring Life Teacher's Guide.

Specific participant responses to note

1. The unit appears to have appropriate tasks and sequences. I feel as a teacher it should be satisfactory with making connections between theory and applications.
2. The web simulations, explanations, and activities give students a common base of knowledge and experience to support the information they need to understand
3. No help in anticipating students misconceptions. There were only a few places where I saw scaffolding.
4. Student ideas and misconceptions are really absent at this point and cannot be evaluated.

V.3 Encouraging students to think about what they've learned

Current rating: Satisfactory (2.00)

General comments

This criterion focuses on the incorporation of metacognitive strategies. Metacognition is concerned with knowledge of one's own cognitive processes and products.

Responses to this criterion varied considerably. The material does not appear to provide students a way of expressing initial ideas about the content and concepts presented in the material. Furthermore, the material does not engage (or provide specific suggestions for teachers to engage) students in monitoring how their ideas have changed periodically in the unit.

Recommendations

Incorporate strategies for encouraging students to monitor how their ideas change throughout the unit.

Suggested ideas include:

3. Ask students to consider their own-recorded responses to some form of pretest.
4. Engage students in discussing whether two situations are analogous to one another.
5. Use direct questioning strategies that involve students in reflecting on their learning experiences.
6. Have students create and revise concept maps during the unit.
7. Use journaling throughout the unit.

Specific participant responses to note

1. I feel there is more need for activities that allow students to think about how they are thinking

2. Could you incorporate a sort of journal for the students to have them to reflect upon each lesson and in some way express what they learned? Perhaps they can reflect upon the material on how it relates to themselves.
3. After just about every activity there is a questions which monitors student progress and understanding.
4. Progress cannot be addressed if there is no starting point recognized.

Category VI: Assessing Progress

VI.1 Aligning assessment to goals

Current rating: Satisfactory (2.21)

General comments

Responses to this criterion varied considerably. Some participants were not familiar with the ideas in the National Science Education Standards or related frameworks. These participants had difficulty responding to this question. The participants were informed that the assessment items were not complete and they should evaluate what was presented to them.

Recommendations

Additional types of assessment should be included in the development of the materials. These could include open-ended questions, essays, and lab practicals. Rubrics could be developed to score these assessment items.

Specific participant responses to note

1. All I had the opportunity to review was the end of the chapter 4 quiz. In my opinion, there were not enough questions, but the questions that were there were aligned to the goals.
2. Some of the Concept questions could be used as assessment. However, all of the quiz questions were not at the level of the standards.
3. I would include some sort of written assessment for the lab work too. Also on the exams at the end of the unit...some place to express ideas instead of just multiple choice. My students always do much better when they can explain in their own words.
4. I don't have the standards memorized and cannot answer this question.

VI.2 Testing for understanding

Current rating: Good (2.46)

General comments

The current Exploring Life material includes assessment items that require application of ideas and avoids allowing students a trivial way out, such as using a formula or repeating a memorized term without understanding. Some assessment items that appear in the "applying the concepts" section of the text include both familiar and novel tasks.

Recommendations

No recommendations for change.

Specific participant responses to note

1. Learning/Teaching for understanding is paramount and I am pleased to see this issue addressed so highly.
2. I liked the fact that students could not check their answers without having filled in the required field boxes.
3. If inquiry is a focus, then your assessment needs to include inquiry evaluation.

VI.3 Using assessment to inform instruction

Current rating: Fair (1.91)

General comments

The Exploring Life material uses embedded assessment as a routine strategy throughout many of the Web-based interactivities.

The material does not provide specific suggestions to teachers about how to use the information from the embedded assessments to make instructional decisions about what ideas need to be addressed by further activities.

The material currently does not suggest how to probe beyond students' initial responses to clarify and further understand student answers.

Recommendations

This criterion should be discussed with regard to the level of importance to the curriculum.

Specific participant responses to note

1. I don't remember 3 being addressed. Perhaps in the student grade summary.
2. Score will undoubtedly improve when teacher guide materials are available.

Category VII: Enhancing the Science Learning Environment

Notes: The results of this section should be taken with caution. The majority of the Lehigh participants were unable to complete this section due to time restrictions. The responses were mainly from the NABT participants. However, they also had difficulty completing this section.

At the time of the participant reviews, the only teacher support materials (Tips for Teachers) developed were for the CalorieQuest activity, Explore It! Aerobic Exercise, the Effect of Dietary Supplements, and Wisconsin Fastplants lab.

In order to assure comments from the NABT participants, the Tips for Teachers sections were pointed out during the workshop and were highlighted in the Walk Through Guide. Participants were instructed to evaluate what was currently available in the Exploring Life curricular materials. Even with that, there were participants in both groups that could not locate the teacher support materials.

VII.1 Providing teacher content support

General comments

Overall, there is a sense from the participants that ideas in the materials have been simplified so that students will be able to comprehend the content and concepts. However, the material currently does not contain a more sophisticated version for the teacher. Providing this in the curriculum would be a valuable asset for new teachers.

Nine participants commented that the existing Tips for Teachers sections provided answers to the questions in the student activities that were sufficiently detailed and allowed teachers to understand and interpret various student responses.

Recommendations

The Exploring Life content resources for teachers can be further developed in future sections to provide content and pedagogical support for the teachers. For example, because the inquiry investigations will allow students to question and explore, the teachers will need advanced information or suggestions for resources.

Section 1

Criteria: Alerts teachers to how ideas have been simplified for students to comprehend and what the more sophisticated versions are (even though students are not required to understand the more sophisticated versions). (Note: Ten participants did not respond to this item. Four participants commented that these materials were not available to review).

Specific participant responses to note

1. This would be helpful-especially with new teachers.

2. The teacher materials are included in the web portion of these materials. The content is simplified but is based on a framework that will survive more detailed study. Not recalling any direct references to simplification, I would say there are none.
3. This curriculum would be a dream come true for a new science teacher...especially one that is weak in the content area. The reading is understandable and the activities are very good reinforcers of the content.
4. Looking at Calorie Quest only, terms are put into simplified versions.
5. This chapter did not dumb down the concepts, but did stay away from technical terms. I think the terms should be included for reference, as in a margin note or teacher notes somewhere.

Section 2

Criteria: Provides **sufficiently detailed answers** to questions in the student book for teachers to understand and interpret various student responses. (Note: Nine participants did not respond to this item. Six participants commented that these materials were not available to review).

Specific participant responses to note

1. Yes, there are very detailed answers in the teacher version.
2. I thought the responses in the tip for teacher section were very detailed.

Section 3

Criteria: Recommends **resources** for improving teacher's understanding of benchmark ideas. (Note: Ten participants did not respond to this item. Nine participants commented that these materials were not available to review).

Specific participant responses to note

1. The teacher notes contain web sites, books etc. for further in depth study of the concepts.
2. This inclusion is especially important where teachers want to bolster their own background. Some have been away from their own academic efforts to learn about biology for some time and I see this inclusion as important for those who are willing to use it.
3. This appears to be quite good with respect to benchmark ideas and the Internet resources are great!

VII.2 Encouraging curiosity and questioning

General comments

Exploring Life does contain materials that will help teachers to create a classroom environment that welcomes student curiosity, rewards creativity, encourages a spirit of healthy questioning, and avoids dogmatism. These materials include the CalorieQuest, the Wisconsin Fastplants lab, and the Explore It! activity.

Recommendations

The methods in which we are asking teachers to teach are new. It would be helpful for the curricular materials to provide examples of classroom interactions--e.g. dialogue boxes, vignettes, or video clips--that illustrate appropriate ways to respond to student questions or ideas, etc. This idea for curricular materials to provide classroom teachers with science pedagogical strategies is a novel idea.

Section 1

Criteria: Includes **suggestions** for how to encourage student questions and guide their search for answers or for how to avoid dogmatism, etc. (Note: Ten participants did not respond to this item. Nine participants commented that these materials were not available to review).

Specific participant responses to note

1. I don't remember seeing such suggestions but the material itself practically shouts out ways that will cause this to happen
2. I did not see any specific suggestions for teachers, but certainly the activities give opportunities for teachers to do this.
3. Student guided to inquiry process, especially in labs.
4. Yes, the suggestions are quite good and I intend to follow up on some of these next year. Hopefully, they will give students and I ideas of our own to pursue.
5. I believe questioning strategies should be a part of every teacher resource.
6. This is a very engaging curriculum and opens up the venue for classroom discussion in many ways. I can see discussion on the activities coming up after they were assigned in the classroom. I have used a similar approach...but with laser discs..before Internet was big...and kids were open and excited about being in the classroom.

Section 2

Criteria: Provides **examples** of classroom interactions--e.g. dialogue boxes, vignettes, or video clips--that illustrate appropriate ways to respond to student questions or ideas, etc.

(Note: Ten participants did not respond to this item. Four participants commented that these materials were not available to review).

Specific participant responses to note

1. This is a neat idea. How practical???
2. I am not aware of modeling provided by the text for these classroom teaching techniques. I question the ability of a text to establish a classroom environment.

VII.3 Supporting all students.

General comments

The material avoids stereotypes or language that might be offensive to a particular group.

Participants stated there was not much emphasis in the reviewed chapter pertaining to the contribution of women and minorities to science. Hans Krebs is the only scientist mentioned in the chapter for a contribution to science.

The material does suggest alternative formats for students to express their ideas during instruction and assessment. This was evident where students report their laboratory results in the form of a mini-poster, suggestions to give a report or create a PowerPoint presentation. Additional formats such as open-ended journal response could also be provided.

Recommendations

Authors may want to include specific suggestions about how teachers can modify activities for students with special needs.

Section 1

Criteria: The material **avoids** stereotypes or language that might be offensive to a particular group. (Note: 10 participants did not respond to this item.)

Specific participant responses to note

1. Material seems to be gender-neutral and culture-neutral. Use of Asian students as examples may be unsettling to some.
2. Yes, it seems to meet needs of a diverse population of students.
3. The material I reviewed represented multiple cultures. I did not see any evidence of stereotyping or language offensive to a particular group.
4. The book introduces characters that are both of color and sex in nonstereotypic roles. The language appears to be nonoffensive.

Section 2

Criteria: The material **illustrates** the contribution of women and minorities to science and brings in role models. (Note: 10 participants did not respond to this item.)

Specific participant responses to note

1. Very little history is included. This is an area I feel needs improvement.
2. Not in evidence here, but those efforts are often tokenism. Give credit where due, don't ignore anybody, and make an effort to highlight women or minorities when possible, but kids will spot gratuitous efforts a mile away.
3. I did not see evidence of women or minorities in science

Section 3

Criteria: The material suggests **alternative formats** for students to express their ideas during instruction and assessment. (Note: 12 participants did not respond to this item.)

Specific participant responses to note

1. Yes--students have opportunity to go in various directions.
2. This was evident in the variety of activities.
3. Yes, there are varied opportunities for student expression.
4. Student could make a poster, give a report, or present a power point show.

Section 4

Criteria: The material includes specific suggestions about how teachers can modify activities for students with special needs. (Note: 12 participants did not respond to this item.)

Specific participant responses to note

1. I do not remember seeing any modifications for students with special needs. I have a student who has trouble seeing and she might need an enlarged screen; that issue was not discussed.
2. I did not have any of these types of resources available for review.
3. I did not see materials like this at this time