Rubric Revised May 15, 2002

# VISIT Rubric For Evaluating Lessons[i]

### *Who uses this rubric?*

- Use this rubric when you are writing your evaluation of a lesson that might be used by teachers for their own professional development in VISIT, or that might be used by VISIT teachers in their classrooms with their students.

***What is a "lesson"?***

- A lesson typically will be something you can do in one to two hours' work at the computer (or with your students in one or two class periods). It may include one or more exercises.
- If there are several lessons within a larger Investigation or curriculum, please fill out this form for each lesson you review.
- These lessons might be ones that the VISIT project is developing, that you are developing, are already offered in VISIT Collaboratory, or have been developed elsewhere (e.g. Northwestern LATE Environment curriculum; ESRI lessons).

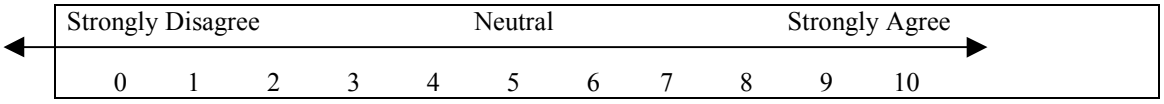
***Who will read the evaluation you are writing?***

- Other teachers in VISIT. Teachers will use your evaluations to learn how another teacher thinks about the lesson. Teachers might decide whether to use a certain lesson based on your critique.
- The authors of the lessons you are reviewing. Authors will use your evaluation to revise and improve the lesson.
- VISIT staff will use your evaluation to help decide whether to include the lesson in the VISIT professional development program for teachers.

I hope you will enjoy reviewing and evaluating lessons through using this rubric. Please suggest improvements to this rubric to bev@piedmontresearch.org.

**Instructions:**

- Please use this form to describe and evaluate an individual lesson. If there are several lessons within a larger Investigation or curriculum, please fill out this form for each lesson you review.
- It is not expected that every lesson will be strong on every item. For instance, a lesson might be useful for a teacher's own learning, but not necessarily usable for that teacher's classroom or curriculum.
- Use the drop down menu in column 2 to rate each criterion. This should be on a continuum from 0 (Strongly Disagree) to 10 (Strongly Agree)
- Please reserve a rating of 10 for unusually strong cases.




- **Explain your rating for each item.** Use the right-most column of the table. Just click in the box and begin typing your comments. Be as specific as possible, to aid in improving the lesson.
- Add any additional comments or items that you think should be included in the rubric at the end of this document.
- Please save this file under a new name when you fill it in. Include your last name in the file name. E.g. "hunterLATElsn2.doc"
- Unless you have received other instructions, please attach your completed evaluation document to an email and send it to both bev@piedmontresearch.org and to anneeschtruth@netscape.net.

You may suggest additional reviewers for this lesson. Include that information in your email.

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| 1. Reviewer Name: | Ankie Meuwissen |
| 2. Date Reviewed: | December 27, 2002 |

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| 3. Please identify the resource you are evaluating (name of overall package or project, specific lesson title, author, source, how obtained, URL, etc). | ”Making earthshaking discoveries”, a lesson from the list offered in the VISIT class.<br>Submitted by:<br>Martin Schmidt from McDonogh School<br><br>Filename: ACF208.ZIP<br>Filesize: 22820 bytes<br>Date Submitted: May 24, 2000 | |
| 4. Did you try out this lesson with students? If yes, please tell something about the class and students with whom you tried this. | No | |
| 5. Synopsis. Briefly, what is this lesson about? | Topic: Physical/Earth Sciences<br>GIS Level: Beginning<br>Geographic Scale: Global<br>Software Used/Needed: ArcVoyager | |
| 6. How long did it take you to download, print, and complete this lesson? | downloading and printing was a matter of minutes, completing about an hour. | |
| 7. Overall recommendation to VISIT program. Taking into account all factors below, I recommend that this lesson be included in the VISIT program as a resource for teachers. | 8<br>With the following kinds of modifications or improvements:<br>I would add an option to take into account the fact that plates don't subduct at a constant angle. also i would take into account the fact that subduction zones are not always straight lines. | |
| Quality of Lessons | | |
| ➢ Pedagogically effective (i.e. person using the lesson is likely to learn what the lesson is intending to teach). | 9 | **Please explain rating. The lesson teaches a lot about the use of GIS and Arcvoyager. It also brings the idea across that earthquakes and subduction zones are often related and identifies and clarifies this relationship.** |
| ➢ Purpose and learning objectives are clear. | 6 | **Please explain rating. there is not a detailed description of the objectives (none that I saw at least). What is says is true, but it could be a bit more detailed.** |
| ➢ Lesson states what materials are needed to do the lesson (e.g. what data files, software, documents, URLs). | 6 | **Please explain rating. No list is provided at the beginning of the section/lesson, but all you need is the arcvoyager edition really. So it wasn’t really that important to mention either.** |

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| ➢ Provides scientific value and content accuracy | 5 | **Please explain rating. depending on the age group.. if teaching the simple concept that earthquakes and subduction zones often go hand-in-hand while teaching the students about arcvoyager and gis, its fine. But for students in HS, I think one could stick more to a truthful picture of subduction zones than the one pictured and described in this lesson.** |
| ➢ Language, grammar and spelling are accurate. | 10 | **Please explain rating. I didn't notice any mistakes or errors.** |
| ➢ Instructions and procedures are complete, understandable and accurate. | 10 | **Please explain rating. I had no problems understanding the lesson at all.** |
| ➢ High quality of visual representations (e.g. layout sensible; screen shots readable; appropriate graph) | 10 | **Please explain rating. I had no problems at all.** |
| ➢ Appropriate to curriculum, grade level of your interest. | 8 | **Please explain rating. it would be a good introduction-to-gis lesson for my 8th grade students. I would want to explain a bit more about why this is a very simple model and challenge students to find ways to find a more accurate picture of this subduction zone.** |
| ➢ Technical soundness (i.e., the technology works as stated). | 10 | **Please explain rating. I didn't encounter any problems.** |
| ➢ Cartographic soundness (e.g. the maps include basic requirements and accuracy). | 10 | **Please explain rating. Again, I had no problems here.** |

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| The **Investigation or lesson(s)** is effective for a **teacher's** professional development. |

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| ➢ Uses and expands teacher's scientific knowledge | 4 | **Please explain rating.** I would hope a science teacher already knows this much about subduction zones. |
| ➢ Expands teacher's use of technology professionally and in the classroom | 10 | **Please explain rating.** I found it a very useful lesson to learn about the software, especially since it was a topic I was familiar with, so I didn't have to worry about the science side and could focus on the software. |
| ➢ Expands teacher's understanding and skills in spatial reasoning | 8 | **Please explain rating.** |
| ➢ Encourages collaboration with other teachers, scientists and technologists | 2 | **Please explain rating.** All information is already provided, you can just run through the lesson from behind your own computer without any type of interaction. |
| ➢ Appropriate for a teacher's own learning (convenience, efficient use of time, technically accessible, etc) | 10 | **Please explain rating.** I learned a lot about the software tool used. |

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| The **Investigation or lesson(s)** is effective for the **students** who use or might use the lesson. | | |
| ➢ Lesson addresses standards<br>Identify which standards: | 5 | **Please explain rating.** It does fit in the general standards of earth science, such as plate tectonics, but there are no specific standards about the relationship between earth quakes and subduction zones and how to describe a subduction zone using earthquake data. |
| ➢ Student participates in and learns about inquiry processes and methods | 6 | **Please explain rating.** The lesson could use some more challenges for advanced students here. The lesson describes in great detail exactly what needs to be done, leaving little room for students own ideas and critical thinking. |
| ➢ Student develops or applies spatial reasoning in analysis of data | 8 | **Please explain rating.** Students do have to link geometrical knowledge to a real-life situation, and transfer math into a cross section of the earth. |

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| ➢ Student learns about science applications relevant to community issues | 3 | **Please explain rating.** plate tectonics happen on a very slow scale, not affecting any human during the course of his or her life. Earthquakes are more relevant, although not necessarily in the Northeast, and the location used is in South America. |
| ➢ Student becomes familiar with technology applications that are pedagogically and scientifically appropriate to the content or skill objectives | 10 | **Please explain rating.** The lesson teaches students step-by-step usage of Arcvoyager. |

**The Investigation Themes.** Describe the **theme** or topic on which the investigation will be developed.

(Example of **themes**: water quality in rivers or lakes; hazardous materials in living environments; ozone or radon in urban areas; distribution of flora or fauna; ecological modeling)

Theme:

Relationship between earthquakes and subduction zones

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| ➢ Theme is interesting to the teacher who develops and implements the lessons. | 10 | **Please explain rating.** plate tectonics is part of our curriculum. |
| ➢ Theme is interesting to the student who uses the lessons and becomes actively involved. | 7 | **Please explain rating.** It would have been even more appropriate if it was an area closer to home. For example the San Andreas Fault. |

**The Investigation Scenario.** The investigation **scenario** is the particular real world environment under study. It defines the geographical footprint for the **Investigation**. Local **scenarios** are usually more desirable because they are more relevant to the teachers, students and people in the surrounding community.

Example of **scenarios**:

water quality in the local watershed; power shortage across a state; a city wide environmental problem; water resources across a state or region – location, adequacy, preservation

What is the Scenario?

Earthquakes and plate movement in South America

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| **Data: sources, availability, understandability** | | |
| ➢ Lesson defines the data for an investigation. | 10 | **Please explain rating.** |
| ➢ Lesson provides the data | 10 | **Please explain rating.** |
| ➢ Lesson teaches how to get the data. | 10 | **Please explain rating.** each step you need to take is explained in great detail, and very clearly. |
| ➢ Lesson explains how to download and manage the data files on your computer. | N/A | **Please explain rating.** Didn't need to do this. |
| ➢ Data are at the appropriate scale and coverage for the problem being investigated. | 10 | **Please explain rating.** The lesson explains how to get to the best scale. |

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| ➢ Lesson provides metadata for the data in the lesson(s). Includes definitions of terms, sources of data, dates, etc. in a form students can access and understand. | 10 | **Please explain rating.** Everything is provided. |

Please identify the types of data provided with the lesson:

A list of earthquake data from ’73 till ’90 is used.

The map with the plate boundaries is used.

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| **The Scientific and Technological Knowledge** | | |
| ➢ Lesson identifies the specific scientific, geographic or social knowledge base needed. | 4 | Not initially, but it takes you through the theory step by step. |
| ➢ Lesson identifies resource scientists and specialists. | 3 | I didn’t notice any. It did however give the website for a site on recent earthquakes. |
| ➢ Lesson provides links to needed resources and a URL is provided for a glossary | 8 | It doesn’t but you also don’t need any. |
| ➢ The lesson or investigation resources help to formulate, understand, and/or use a Driving Question for inquiry. | 8 | It doesn’t so much in the investigation itself, but it would be easy enough for a teacher to do. |
| ➢ It is clear what the driving question(s) are. | 10 | If the question below is NOT the driving question, I was obviously wrong… |

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| Driving Question:<br><br>How can the shape of a subduction zone be explained by using earthquake data? |

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| Tools and Methods | | |
| ➢ The analysis methods are appropriate to the purpose of the investigation and worth learning and doing | 10 | . |
| ➢ Suggested tools are highly appropriate and useful for the analysis and interpretation tasks | 10 | Useful tools, and I would encourage students to think more critically and find how the same method can give a more accurate result. |
| Please identify tools used:<br><br>Arcvoyager, basic math | | |
| Tools for analysis: Teachers are provided with instruction in their use. | 10 | |
| Tools are accessible to teacher | 1 Strongly Disagree | arcvoyager is not available on any of our school computers at this point. |
| Tools are accessible to the students | 1 Strongly Disagree | arcvoyager is not available on any of our school computers at this point. |
| Expected outcomes from the analysis are defined clearly and completely. | 10 | The questions asked leave little to your imagination. |

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| Assessment and Classroom Management | | |
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| ➢ Provides useful advice on classroom management. | 1 Strongly Disagree | I didn't see any |
| ➢ Provides rubrics or other instruments for assessing learning. | 1 Strongly Disagree | I didn't see any |

Classroom and curriculum feasibility:

Time 2 or 3 classes of 45 minutes. Which is hard, since you can't save anything…

Materials none needed.

Logistics 6 → for me personally it would be hard to take the first step of getting the software and getting it installed. After that, it should be fine though.

Management 8 → if class sizes are 22 or less, or if a librarian is able to help, is should be very manageable for the teacher.

Demands on teacher 8 → need some prep, but it is very self-explanatory in all.

Teacher/Student skill prerequisites 7 → students need some prior knowledge of arcvoyager.

What are some other feasibility issues for this resource or lesson(s)? none

| Completing, Testing, Reporting and Continuing | | |
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| The lesson (or an extension of this lesson) results in a product | 10 | Students answer questions leading to a written report on the topic. |
| The outcome of the lesson or investigation is useful to a real audience. | 10 | It provides students with some real problems earth scientists deal with. |
| Results can be disseminated through science fairs, poster presentations, or publications such as the Community Atlas. | 8 | This could happen, although I would also encourage students to look beyond this particular subduction zone and look elsewhere. |
| Project can be sustained through Grant Sources and Partnership opportunities at the Local, Regional and National Level | 1 Strongly Disagree | I am not familiar enough with that. |

Additional Comments Not Covered:

THANK YOU!

[i] This rubric was developed by Beverly Hunter with support of the VISIT project under a grant from the National Science Foundation Teacher Enhancement program. It was tested and revised with the help of VISIT teachers.