World Links for Development: Student Assessment
Uganda Field Test
2000

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Introduction

In 1997, the World Bank's Economic Development Institution launched the World Links for Development, or WorLD. The WorLD Program aims to establish global, educational on line communities for secondary school students and teachers around the world in order to expand distance learning opportunities, enhance cultural understanding across nations, build broad support for economic and social development, and train teachers to integrate information technology into the classroom. The WorLD Program consists of five components:

- Internet connectivity for secondary schools in developing countries.
- Training and educational content to promote economic and social development.
- Regional and global partnerships with public, private, and non-governmental organizations.
- Telecommunications policy advice for the education sector.
- Monitoring and evaluation support.

To gather information about program implementation and impacts, the World Bank contracted with the Center for Technology in Learning at SRI International to provide monitoring and evaluation support. The goal of the WorLD Monitoring and Evaluation activity is to provide the World Bank and the educational ministries of participating developing countries with information they need to improve the Program and assess the return on the investment made by the Bank and its contributors.

The Monitoring and Evaluation methods include teacher and student surveys, case studies, and student assessments. This report summarizes the results of a field test conducted in Uganda in 2000 of one set of student assessment forms. The report opens with a description of the student assessment field test in the context of the WorLD Program implementation and the Monitoring and Evaluation activity. We then describe: (1) the goals of the Uganda field test, (2) the outcomes tested by the student assessment instruments, (3) the design of the field test in Uganda, (4) the student sample, (5) the student assessment instruments, background questionnaires, administration procedures, and scoring rubrics, (6) the field test administration, (7) scoring and analysis, (8) results, and (9) summary and recommendations.

Status of the WorLD Program

The WorLD Program is currently active in 13 countries in Africa, Latin America, Eastern Europe, and the Middle East. Over 130 schools in these countries are participating in the program. These schools serve an estimated 100,000 students and 600 teachers.

Teacher Training. Participating nations send teachers to a series of four training workshops. The first three phases of training include initiating telecollaborative projects, integrating technology with the curriculum, using educational Web sites as pedagogical tools, and using technology in the classroom for different approaches to learning activities.[1]

Prior to the administration of the Uganda field test of the student assessment, the first of three WorLD training workshops had been conducted in Uganda. The third training workshop was held in Uganda from April 10-14, 2000, approximately 2 months before the field test.

In the first three phases of training, the traners focused on the outcomes of initiating telecollaborative projects, integrating technology with the curriculum, using educational Web sites as pedagogical tools, and using technology in the classroom for different approaches to learning activities.[2] The trainers' attention to these outcomes was consistent with the WorLD commitment to the principle, expressed by the International Society for Technology and Education (ISTE) (2000), that technology can help students become:

- Capable information technology users.
- Information seekers, analyzers, and evaluators.
- Problem solvers and decision-makers.
- Creative and effective users of productivity tools.
- Communicators, collaborators, publishers, and producers.
- Informed, responsible, and contributing citizens.

The Monitoring and Evaluation Activity. In Phases I (1998-99) and II (1999-2000) of the Monitoring and Evaluation activity, data on implementation and outcomes were collected through case studies and surveys. In Phase I, student and teacher surveys were

[1] See WorLD Professional Development Phases — Scope and Sequence. June 1, 2000 version.
[2] See WorLD Professional Development Phases — Scope and Sequence. June 1, 2000 version.

conducted in Chile, Paraguay, Peru, Senegal, and Uganda. Student assessment forms were pilot tested in Paraguay and Uganda. In the 1998-1999 school year, case study field site visits were also conducted by World Bank evaluators in Chile, Peru, Senegal, and Uganda. In Phase II, conducted in 1999-2000, teacher surveys were administered in Brazil, Chile, Columbia, Ghana, Mauritania, Mozambique, Paraguay, Peru, Senegal, South Africa, Uganda, and Zimbabwe. Results of the teacher surveys and case studies appear in two SRI *reports—World Links for Development: Accomplishments and Challenges: Monitoring and Evaluation Annual Report, 1998-1999*; *and World Links for Development: Accomplishments and Challenges: Monitoring and Evaluation Annual Report, 1999-2000.* A second set of student assessment forms was pilot tested in the U.S. (Quellmalz and Zalles, 1999). This report summarizes the results of a field test of those revised student assessment forms administered in Uganda in June 2000.

The Uganda Student Assessment Field Test

Field Test Goals. The Uganda field test addressed three goals: (1) refine the student assessment instruments for use in program evaluations in other WorLD countries, and (2) pilot procedures for administration, rater training and scoring, analysis, and reporting, and (3) provide the WorLD Links program with a preliminary comparison of the program impact on students in WorLD and non-WorLD schools.

Student Learning Outcomes. The student assessments field tested in Uganda were designed to test three broad outcome areas: 1) technology knowledge and use, (2) reasoning with information, and (3) communication skills. In this report, student attainment of the outcomes is considered in relation to the extensiveness of implementation of the WorLD training by teachers in Uganda. Technology skills that were assessed included accessing Web sites, searching for relevant Web sites, formulating a search query, composing an article using word-processing tools, and inserting graphics from the Web into an article. Reasoning with information skills included finding and categorizing relevant information, making comparisons and predictions, and gathering evidence to support a prediction. Communication skills included formulating an article that presents a clear prediction, has supporting evidence and explanation, clear, logical organization, and correct mechanics.

Information about WorLD program implementation was gathered in the teacher surveys administered by the Monitoring and Evaluation project. As part of the field test of the student assessments, additional information was gathered about students' opportunities to learn through background questionnaires administered to the students who participated in the field test. For the early years of the WorLD program implementation, the student assessments were designed to provide baseline data about how students can use computers for Web-based research and project-based work. The assessments were also designed to allow comparisons with students in schools not participating in the WorLD program.

Field Test Design. To examine the impacts of the WorLD program, the assessments were administered to samples of approximately 20 students from six WorLD schools and four non-WorLD schools. In consonance with the WorLD training on collaborative projects, students were expected to work in pairs. WorLD program students should have been in the program for at least one school term and participated in 2-4 projects. Non-WorLD schools included two schools with computers, but where WorLD training had not been offered, and two schools without computers.

To field test the administration and scoring procedures, a World Bank staff person coordinated assessment administration with an administrator from the local schools.

Sampling. In Uganda, six schools that participated in the WorLD program and four that did not were chosen for the assessment. Of the six WorLD schools, three schools had been involved in the program since its inception in Uganda in July 1996. Two joined in December 1997 when the program was expanded to include a set of ten schools. By January 2000, the sixth school had begun participating.

Student Assessment Instruments. The WorLD student performance assessment task design had been pilot tested with students from Uganda, Paraguay, and the U.S. (Quellmalz and Zalles, 1999; Kozma, et al, 1998). In keeping with the WorLD program's emphasis on project-based learning, the WorLD student assessments are designed as performance assessments that ask students to demonstrate that they can use technology, reason, and communicate within authentic academic and practical tasks. Students can use technology to gather information about a problem, organize and relate relevant information, display information, and communicate findings. To allow comparisons of WorLD schools with non-WorLD schools and to collect baseline data

within WorLD schools just beginning to implement the WorLD training, the current sets of assessment tasks are designed to be accomplished with or without technology. The tasks are also designed to be modular, so that questions and tasks can be tailored to the WorLD program implementation stage of schools, i.e., the state of the schools' technology infrastructure or the extent of the schools' integration of WorLD teacher training into classroom activities involving project-based learning. Therefore, the WorLD student assessment design is flexible, allowing the Monitoring and Evaluation (M&E) to vary the structure and content of the student assessment by country and/or by year. The M&E can determine the particular questions or tasks in the assessment to be inserted or eliminated to fit WorLD schools' readiness for assessment of particular WorLD student outcomes. For example, Internet access, speed, and reliability of Internet connectivity may influence the decision of the M&E to have students gather relevant information to address the problem posed by searching for information on the Internet, or, instead, by reading printed versions of Web pages or electronic forms cached on the computers' hard drives or local area networks. The decision to ask students to find and insert graphics into their presentation will depend on the availability of graphics software on school computers and students' experience with it. The M&E design can determine the appropriateness of assessing students' word processing skills in light of the software available on the schools' computers and the extent of student instruction on word processing. Use of word processing can be optional in assessment tasks asking students to compose summaries of their findings in written form.

The modular approach to the design of WorLD student assessment tasks will allow further flexibility and tailoring to WorLD country contexts and implementations in the future. Optional task modules tapping a range of productivity and presentation tools such as spreadsheets, databases, tables, and presentation software could be made available. As WorLD schools integrate WorLD training more widely, basic and more advanced tasks for use of technology tools could also be developed and made available to the M&E.

The instruments field tested in the Uganda student assessment had three parts. Part 1 was a background questionnaire that asked students to report how frequently over the prior year they engaged in classroom activities that were related to the three outcome areas. Part 2 of the student surveys presented students with questions and tasks requiring use of technology in brief, project-based learning activities. Two assessment forms were developed and pilot tested for Part 2. The forms were intended to represent a range of

open-ended performance tasks and related selected response test items. In the forms, the approach was to have students work in pairs to use information from a Web site to develop their responses to a brief, engaging, collaborative task. Part 3 of the student assessment presented students with follow-up questions about their reactions to the forms.

The Part 1 student background questionnaire was an abbreviated version of the student survey used in Phases I and II of the WorLD Monitoring and Evaluation. Students were asked to describe the settings in which they used computers and the Internet and the types and frequencies of technology use. Students were also asked to rate the extent to which they liked using technology for various proposes and how autonomously they could use computers for a variety of purposes.

Information about students' exposure to Internet research projects and technologies had also been collected from teachers from the five early-entry schools. These teachers were administered the Phase II Monitoring and Evaluation teacher survey. Among the items, the survey asked teachers to report on how much they engaged their students in the sort of reasoning, technology, and communication tasks measured by the student assessment. The sixth school was not included in the teacher survey, but the Uganda country coordinator reported that it has received intensive attention by the Uganda WorLD Links program and is considered a model school.

In 1998, assessment forms using social studies-related content had been developed and piloted in Paraguay, Uganda, and the U.S. (Kozma et. al., 1999). The first versions of the forms administered in the spring 2000 Uganda field-test used science-related content. The first drafts of forms on these science topics had been pilot tested in spring 1999 with 60 U.S. students in an urban high school with a diverse student population (Quellmalz and Zalles, 1999). Forms were also developed for students in comparison schools who received printed versions of the same Web pages, answered questions on the printed assessment forms, and wrote the news article by hand.

Two parallel assessment forms were designed for Part 2. In both forms, students were asked to write a newsletter for other students about the plight of two endangered species. Form 1 contained a series of constructed response questions. Students gathered information from Web pages about two endangered species, specified a line of inquiry for

further research and a Web search query phrase, then prepared a news article making evidence-based predictions about the likelihood that the two species would survive. Students were also asked to insert and annotate a relevant graphic. Form 2 prompted students to demonstrate the same skills. However, with some exceptions, including the news article task, most of the Form 2 questions were multiple choice.

Exhibit 1 summarizes the WorLD outcomes tested by the questions on Forms 1 and 2. Column 1 identifies the tasks and questions. Columns 2-4 identify the specific questions on each form that test the target WorLD student learning outcomes (i.e., technology use, reasoning with information, and communication). Exhibit 2 shows the alignments between the tasks and questions and the ISTE standards.

Exhibit 1
Outcomes Tested by Test Forms (F) 1 and 2

WorLD Outcomes	**Technology Use**	**Reasoning with Information**	**Communication**
Question/Task			
access information on Web sites *	F1 (Q1) F2 (Q1)		
categorize cause and effect information		1 (Q2) 2 (Q6, 7)	
explain similarities and differences		1 (Q3, 4) 2 (Q2, 3, 4, 5)	
make predictions supported by reasons and evidence		1 (Q5) 2 (Q8, 9, 10)	
formulate research question		F1 (Q6) F2 (Q11)	
formulate Web search query	F1 (Q7) F2 (12)		
find appropriate Web page	F1 (Q8) F2 (Q13)		
compose news article making supported predictions	F1 (Q9) F2 (Q14)	F1 (Q9) F2 (Q14)	F1 (Q9) F2 (Q14)

** results for these items were not counted in final tabulations for the Uganda field test because computer problems prevented an indeterminate number of students from accessing the Web articles on line*

Exhibit 2
Alignments of Assessment Outcomes to ISTE-Endorsed Outcomes

Question/Task	ISTE Outcomes
access information on Web sites	Capable information technology users; Information seekers, analyzers, and evaluators
categorize cause and effect information	Information seekers, analyzers, and evaluators
explain similarities and differences	Information seekers, analyzers, and evaluators
make predictions supported by reasons and evidence	Information seekers, analyzers, and evaluators; Problem solvers and decision-makers
formulate research question	Information seekers, analyzers, and evaluators; Problem solvers and decision-makers
formulate Web search query	Capable information technology users
find appropriate Web page	Capable information technology users
compose news article making supported predictions	Problem solvers and decision-makers; Creative and effective users of productivity tools; Communicators, collaborators, publishers, and producers; Information seekers, analyzers, and evaluators

Topic Selection. The outcomes tested by the WorLD student assessment did not include subject matter knowledge. Academic testing of content knowledge and skills is conducted in each participating country. Therefore, topics of problems presented in the WorLD student assessment forms were selected according to the following criteria:

- The content should be familiar to most students.
- The Web-based research material should present sufficient information to support the reasoning strategies assessed. For these forms, the Web sites needed to have sufficiently rich information to support making comparisons and predictions, or drawing conclusions about a problem.
- The topic should be addressed in multiple Web sites. In addition, these Web sites should be posted by reputable organizations.
- Information on the Web sites should be written at a reading level acceptable for high school students throughout the English-speaking WorLD nations.

The science topic chosen was endangered species. Web articles meeting the criteria were found about the whale, the tiger, the golden lion tamarin, the kakapo, and the salmon.

Pilot Test. Following the test development process employed to develop previous WorLD student assessment forms on a social science topic, the forms on endangered species were pilot tested in an urban high school in Spring 1999 (Quellmalz and Zalles, 1999). The revised forms were prepared for the Uganda field test.

Administration Procedures. Instructions were prepared for the administration of the assessment. Procedures were developed for test administrators and for students participating in the assessment. Administrators received directions for checking computer hardware, software, and Internet access; assigning identification numbers for schools and students; and observing collaborative activities and recording incidents during the assessment. Student materials included an overview of the assessment purpose and directions for completing the assessment. Instructions differed for WorLD students and non-WorLD students who were not using computers. All students were asked to complete the background and follow-up questionnaires. Teacher keys for the assessments presented answers or scoring rubrics. Exhibit 3 lists the materials contained in the packets for the groups of participants:

Exhibit 3
Materials in the Uganda Assessment Administrative Packet

Materials	**Audience**
directions for administrators to prepare for the assessment	administrators
forms for assigning and tracking school and student identification numbers	administrators
forms for observing students at work and noting technical disruptions	administrators
background letter for students overviewing the purpose and structure of the assessment	students
assessment Forms 1 and 2	students
printed copies of Web articles about the topic (endangered species) that the students could read in the course of the assessment	students
student instructional history and follow-up questionnaires	students
assessment de-briefing questions	administrators and students
teachers' versions of the assessments with correct answers (for the multiple choice questions), scoring criteria, and scoring rubrics	teachers or other raters

The assessment was piloted in Uganda from June 5-9, 2000. Students were randomly assigned to complete Form 1 or Form 2. Students worked alone, in pairs, or in groups of three. Students from WorLD schools used computers and the Internet to search for relevant information on the Web, compose the news article, and, in a few cases, to insert graphics. Students responded to background and follow-up questions on the print forms. They also answered the short answer questions (Form 1) and the multiple-choice questions (Form 2) on the printed forms. Students from non-WorLD schools were either from schools without computers or from schools with some computers but no WorLD training on use of computers and Web-based collaborative projects. Non-WorLD students, therefore, received print copies of Web sites containing information about the endangered species, entered their responses to questions on Forms 1 and 2 on the printed forms, and composed the news article by hand. Comparisons between WorLD and non-WorLD schools, therefore, were based on the reasoning with information and communication outcomes. Exhibit 4 summarizes the different formats and procedures used by the WorLD and non-WorLD groups.

Exhibit 4
Formats and Procedures for the Two Groups of Schools

Directions	WorLD	Non-WorLD
use paper and pencil to answer Part I background questions and Part II short answer questions	√	√
read articles on the Web	√	
read print copies of articles		√
do a Web-based search for additional information	√	
use the computer to write the news article at the end of the assessment	√	
use paper and pencil to write the news article at the end of the assessment		√
put graphics into the composition	√	

Field Test Administration. The assessment forms were designed to require approximately two hours to complete - a time frame sufficient for the 60 U.S. students who participated in the pilot in 1999. The assessments were also designed to be administered in students' local schools where students could work on the computers and with the browsers, word processors, and software with which they were familiar. In the Uganda field test, eight out of 10 schools sent their students to take the assessment at one particular school's computer lab, in order to provide stable Internet connections. Even so, the World Bank test coordinator reported some technical difficulties with speed of access and differently configured computer systems. In some cases, WorLD students began searching for information on the Internet, then, due to slow connections, turned to printed Web pages to complete the assessment. Table 1 summarizes the administration conditions.

Table 1
Uganda Assessment Administration Data

School	WorLD Links school?	Number of students	Student groupings	Number of students per form	Average completion time
1	yes	21	in pairs: (20)	Form 1: (5) Form 2: (5)	2 hours and 30 minutes
2	yes	22	alone: (1) in pairs: (14) in three's: (3)	Form 1: (4) Form 2: (4)	1 hour and 30 minutes
3	yes	20	in pairs: (8) in three's: (12)	Form 1: (4) Form 2: (4)	3 hours
4	yes	20	in pairs: (4) in three's: (18)	Form 1: (4) Form 2: (4)	2 hours
5	yes	18	in pairs: (14) in three's: (6)	Form 1: (5) Form 2: (4)	2 hours
6	yes	20	in pairs: (12) in three's: (9)	Form 1: (4) Form 2: (5)	2 hours
7	no	20	in pairs: (20)	Form 1: (5) Form 2: (5)	1 hour and 10 minutes
8	no	19	in pairs: (20)	Form 1: (5) Form 2: (5)	1 hour and 20 minutes
9	no	20	in pairs: (20)	Form 1: (4) Form 2: (5)	1 hour and 20 minutes
10	no	20	alone: (1) in pairs: (18)	Form 1: (5) Form 2: (5)	1 hour and 50 minutes
Summary	6 WorLD schools; 4 non-WorLD schools	200	total alone: (2) total in pairs: (150) total in three's: (48)	Form 1: (45) Form 2: (46)	average across schools: 2 hours

If the computer on which students were working did not have a graphics program, students wrote a note in their news article indicating where the graphic should be placed, described the content of the graphic, and wrote a caption to accompany the graphic.

Scoring and Analysis of Student Responses

The WorLD student assessment component integrates information from three sources: (1) Forms 1 and 2 of the student assessment, (2) student background and follow-up about the impact of the WorLD program, and (3) summaries of survey responses from WorLD teachers in Uganda about their implementation and judgements of program impact on their students. These information sources were combined to address the WorLD Program's impact on the three student outcomes: (1) technology knowledge and use, (2) reasoning skills, and (3) communication.

In Form 1, students produced constructed responses that required use of scoring criteria from the WorLD scoring rubric along with training of raters to apply the criteria to student work consistently. One of the purposes of the Uganda field test was to pilot the procedures for training raters and scoring the constructed responses. Form 2 responses were mostly to multiple choice questions that were scored according to an answer key. The news articles composed by students taking Form 2 were scored according to the same scoring rubric used to score the news articles in Form 1. Responses to the student background and follow-up questionnaires were tallied as frequencies and calculated as percentages. The teacher survey results reported in the 1999-2000 Monitoring and Evaluation Annual Report are also referenced to interpret student data. Below we describe the training and scoring procedures for the student constructed responses.

Rater Training. Students' constructed responses were rated according to a scoring rubric that specified criteria for responses to questions eliciting evidence for each of the outcome areas: technology use, reasoning with information, and communication. Exhibit 5 displays the generic rubric.

Exhibit 5
Scoring Rubric
Outcome
Technology Use: Internet

Score	Criteria	Description
4	Fully Developed	Much evidence that Internet-based tasks were accomplished.
3	Adequately Developed	Evidence that most Internet-based tasks were accomplished.
2	Partially Developed	Evidence that some Internet tasks were accomplished.
1	Undeveloped/ Confusing	Little or no evidence that Internet used appropriately to accomplish necessary tasks.

Outcome
Technology Use: Productivity Tools

Score	Criteria	Quality Levels
4	Fully Developed	Much evidence that the available technology is applied in an appropriate manner (e.g., options that should be consistent, such as margins and spacing, are applied that way; graphics are inserted in places that enhance the ideas being expressed and the composition's visual appeal; graphics are properly cropped, captions exist and appear appropriately next to the graphics). No assistance required.
3	Adequately Developed	The available technology is usually applied in an appropriate manner (e.g., options that should be consistent, such as margins and spacing, are usually applied that way; graphics are usually inserted in places that enhance the ideas being expressed and the composition's visual appeal; graphics are usually cropped properly; captions usually exist and usually appear appropriately next to the graphics).
2	Partially Developed	Some of available technology is applied in an appropriate manner (e.g., options that should be consistent, such as margins and spacing, are occasionally applied that way; graphics are occasionally inserted in places that enhance the ideas being expressed and the composition's visual appeal; graphics are occasionally cropped properly, captions occasionally exist, and when they do, they occasionally appear appropriately next to the graphics). May require some help.
1	Undeveloped/ Confusing	The components of the available technology are rarely if ever applied appropriately (e.g., options that should be consistent, such as margins and spacing, are rarely or never applied that way; graphics are rarely or never inserted in places that enhance the ideas being expressed or the composition's visual appeal; graphics are rarely or never cropped properly, captions

		rarely or never exist, and if they do, they rarely or never appear appropriately next to the graphics).

Outcome
Reasoning with Information

Score	Criteria	Description
4	Fully Developed	Required reasoning is appropriate and developed by thorough explanations and detailed supporting evidence (e.g., comparison/contrast, prediction, evaluation).
3	Adequately Developed	Required reasoning is appropriate and developed with mostly specific supporting evidence and explanations (e.g., comparison/contrast, prediction, evaluation).
2	Partially Developed	Reasoning needs to be inferred (e.g., comparison/contrast, prediction, evaluation). Attempted development relies on insufficient evidence and explanation. May have some major inaccuracies.
1	Undeveloped/ Confusing	Conclusion is incorrect, unclear (e.g., comparison/contrast, prediction). Support is absent or mostly inappropriate/incorrect.

Outcome
Communication: Conclusion, Main Point, Support, Organization

Score	Criteria	Description
4	Fully Developed	The text and supporting graphics make a clear, appropriate point. Thorough support and explanation. Logical organization.
3	Adequately Developed	The text and supporting graphics make a clear appropriate point. Sufficient support and explanation. Clear organization.
2	Partially Developed	The point is general or somewhat unclear, and must be inferred. Support is uneven, vague, with some errors. Organization may have some problems.
1	Undeveloped/ Confusing	Main point is unclear or incorrect. Little specific, appropriate support. Organization unclear.

Outcome
Communication: Conventions - Grammar, Spelling, Mechanics

Score	Criteria	Description
4	Fully Developed	Grammar, spelling, and punctuation are consistently correct.
3	Adequately Developed	Grammar, spelling, and punctuation are mostly correct.
2	Partially Developed	Grammar, spelling, and punctuation are somewhat correct.
1	Undeveloped/ Confusing	Grammar, spelling, and punctuation frequently incorrect, causing confusion.

Outcome
Cross-Cultural Awareness

Score	Criteria	Quality Levels
4	Fully Developed	Much evidence that accurate, appropriate information about another culture is used.
3	Adequately Developed	Evidence that accurate, appropriate information about another culture is used to accomplish required task.
2	Partially Developed	Only some of the available evidence about another culture is used. Information may be uneven, vague or have some inaccuracies.
1	Undeveloped / Confusing	Little or no evidence that information about another culture is used appropriately or accurately.

The criteria in the general WorLD scoring rubric in the Administrator Packet were further detailed to provide question-specific criteria for the two endangered species forms. In the training sessions, four CTL assessment staff began by discussing the scoring criteria for each outcome area and applying the criteria to examples of student work representing each score point. The four raters practiced scoring samples of student work together until score agreement was reached. The raters then scored samples of work independently. Scoring criteria were further refined. Student test forms were then randomly assigned to one of the two pairs of raters.

Scoring. The raters scored the student booklets independently. Half of each pair's booklets were scored by both raters, resulting in 25% of the student work receiving scores from two raters. All scores were then reviewed by the project coordinator. Discrepancies between scores on individual items were identified and resolved one by one by both the project coordinator and an additional scorer. For each question, score levels were determined that constituted performance that was judged adequate or well developed. Items that were not answered were not tallied in the results. Exhibit 6 in the Appendix contains scoring information on each item, including the scoring criteria, scales, illustrative examples of student work, and explanations relating scores to features of the student work samples.

Items on the background questionnaire were aggregated by the same three outcome areas used in the assessment:

Reasoning with information classroom activities

- Gathering information from books, videos, or other sources besides the Internet for a research project
- Organizing and analyzing information from the Internet
- Making comparisons or predictions using information from the Internet
- Gathering evidence to argue a position about an issue

Communication classroom activities

- Writing project reports
- Using graphics (pictures, charts, or graphs) in a report

Technology use activities

- Gathering information from the Internet for a research project
- Organizing and analyzing information from the Internet
- Making comparisons or predictions using information from the Internet
- Using a computer word processing program (e.g., Microsoft Word, ClarisWorks,
- Word Perfect, etc.)
- Creating graphics (pictures, charts, or graphs) on the computer
- Copying and pasting graphics (pictures, charts, or graphs) on the computer

For each of the activities, students indicated one of the following descriptions for frequency during the school year:

- Not at all
- 1-5 times during the year
- More than 5 times during the year but less than once a month
- Average of 1-3 times a month
- Average of once a week or more
- Don't know or not sure

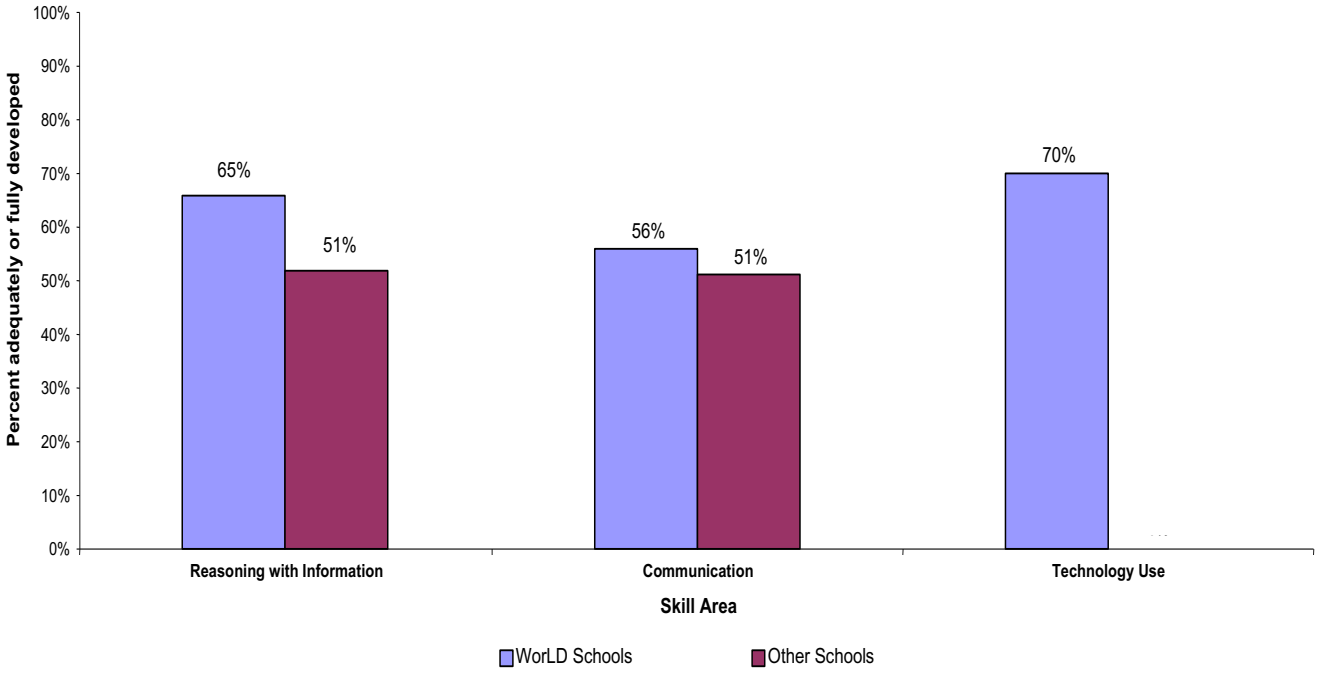
For the analyses, an average of 1-3 times a month or once a week or more were classified as frequent use and the results were aggregated as such.

Upon completion of the scoring, individual student records were created. Each record contained student responses to each background question and their scores on the assessment items. Since the assessments were almost always done in pairs or groups of three, the scores on a particular form were assigned to all the students who worked together on the form. Results were aggregated by outcome area and component. For the assessment items, new variables were created from the raw scores that classified the score as below, at, or above adequate performance. For the background questions, new variables were created from the raw responses that showed whether the response indicated frequent experience with the activity in the question.

Results

Figure 1 compares the assessment results for WorLD and non-WorLD schools.

Figure 1
Percent of Student Responses Rated as Fully or Adequately Developed



WorLD schools out-performed non-WorLD schools on tasks requiring reasoning with information (65% vs. 51%) and communication (56% vs. 51%). Furthermore, 70% of WorLD students' responses to assessment tasks testing technology use were rated as adequate or above.

Table 2 compares WorLD and non-WorLD students' performance on components within each outcome area. The third and fifth columns show how many adequate or above performances there were on questions that measured the various components. Numbers in parentheses indicate the total number of responses to the questions. The fourth and sixth columns display the percentages of students who performed adequately or above on the components. The TOTALS rows are aggregations of the adequate or above performances for each outcome area across the skill components.

Table 2
Summary by Skill and Outcome Area of Adequate Performances on the Student Assessment

		WorLD Schools		Non-WorLD Schools	
Outcome Area	**Component**	**N Adequate or Above**	**% Adequate or Above**	**N Adequate or Above**	**% Adequate or Above**
Reasoning with Information	Finding and categorizing relevant information	142 (167)	85%	67 (114)	59%
	Comparisons	178 (282)	63%	89 (193)	46%
	Predictions	135 (217)	62%	76 (153)	50%
	Formulating or identifying a research question	83 (107)	78%	51 (71)	72%
	Supporting a prediction	43 (115)	37%	28 (77)	36%
	TOTALS	581 (888)	65%	311 (608)	51%
Communication	Organization	85 (115)	74%	50 (77)	65%
	Argument	43 (115)	37%	28 (77)	36%
	TOTALS	128 (230)	56%	78 (154)	51%
Technology Use	Searching for information on the Web	147 (198)	74%	*	*
	Formulating or identifying a search query	64 (102)	63%	*	*
	TOTALS	211 (300)	70%	*	*

* Technology use outcome data was not gathered from non-WorLD schools

The WorLD schools out-performed the non-WorLD schools on all components of reasoning with information and communication that were measured by the assessment. The differences were greatest in the components of reasoning with information that involved finding and categorizing relevant information (85% for WorLD, 59% for non-

WorLD), making comparisons (63% for WorLD, 46% for non-WorLD), and using information to make supported predictions (62% for WorLD, 50% for non-WorLD). The differences were most pronounced for finding and categorizing relevant information - a component of information literacy that is especially critical when using Web sources. The percentage of adequate or above responses by students in WorLD schools on reasoning with information was 14% higher than the ratings of student responses from non-WorLD schools and 5% higher on communication.

The lowest scores for both WorLD and non-WorLD schools were for ratings of news articles presenting supported predictions. In addition, the differences between WorLD and non-
WorLD schools were least pronounced for this outcome area as well. While slightly higher than the non-WorLD group, only 37% of the WorLD students' news articles were rated as presenting an adequate or above prediction. WorLD school students out-performed non-WorLD students on ratings of the logical development of their news articles. Seventy-four percent of the news articles written by WorLD students were adequately or well organized, in comparison to 65% of the news articles written by students in the non-WorLD schools. This is despite the fact that of the ten schools participating in the assessment, only the majority (60%) of students from one school (School 6, a WorLD school) reported frequent school experience writing project reports (See Table 9 in the Appendix).

On most of the technology outcomes, students in WorLD schools did quite well. Seventy-four percent received ratings of adequate or above on tasks requiring searching for information on the Web. Sixty-three percent received adequate or above ratings on either formulating or identifying an appropriate phrase for a Web search query on a specific topic.

The WorLD students' capabilities with computer productivity tools were demonstrated by the fact that 115 out of 121 wrote their newsletter articles on the computer. Of the six that did not, three reported computer problems as the reason. Two reported that they were especially daunted by the task of typing on the computer and decided to write their article in paper and pencil. One was handwriting the article in error,

then told by the assessment administrator to write it on the computer instead. These six students did not submit an article, either in a computer file or on paper.

For the nine student teams that attempted to place graphics in their news articles, six received the highest score, indicating that the graphics were inserted in places that enhanced the news article's message and visual appeal, were properly cropped, and were accompanied by captions that were appropriately worded and placed. Three other teams received adequate ratings, indicating that their use of graphics met some of the criteria. Since, for technical and other reasons, only nine student teams attempted to use graphics, graphics scores were not included in the results displayed in the various tables.

Table 3 compares the student assessment results with students' reports of the frequency of related classroom activities over the prior 12 months.

Table 3
Comparison of WorLD and Non-WorLD Students Assessment Performance Levels and Self-Reports of Frequency of Related Classroom Activities

	WorLD				**Non-WorLD**			
	Classroom Activities		**Assessment Performance Level**		**Classroom Activities**		**Assessment Performance Level**	
	N Frequent	**% Frequent**	**N Adequate**	**% Adequate**	**N Frequent**	**% Frequent**	**N Adequate**	**% Adequate**
Reasoning with Information	165 (336)	49%	581 (888)	65%	51 (219)	23%	311 (608)	51%
Communication	67 (229)	29%	128 (230)	56%	25 (145)	17%	78 (154)	51%
Technology Use	307 (680)	45%	211 (300)	70%	138 (450)	31%	n/a	n/a

More students at WorLD schools reported a higher frequency of classroom activities related to the WorLD outcomes than did students in the non-WorLD schools. WorLD students reported engaging in considerably more instructional activities that required reasoning with information (49% for WorLD, 23% for non-WorLD) and using technology (45% for WorLD, 31% for non-WorLD). Both WorLD and non-WorLD students reported fewer instructional experiences addressing communication skills (29%

for WorLD, 17% for non-WorLD). These lower frequencies of writing assignments may partially explain the lower scores of all students on composing a well-supported prediction in their news articles.

Tables 8-10 in the Appendix present school-level information on the frequency of classroom opportunities to learn skills related to the WorLD outcome areas**.** An inspection of the classroom activities tables reveals that students at two of the non-WorLD schools (School 9 and School 10) reported some experience using the Internet in school. Some students in non-WorLD schools also reported other computer-related school activities such as word processing or clipping graphics.

A case for modularity can be made from examining the sizeable minorities of students who felt that the assessment was only partially effective as a measure (41% on reading, writing, and communication skills; 41% on reasoning with information ability; 43% on technology ability; and 43% on appropriateness for other students). Modularity would allow the assessments to be more responsive to differences between WorLD schools in what skills they emphasize and what tasks they most frequently engage their students in.

Table 4 shows the results follow-up questionnaire, in which students were asked to rate the quality of the assessment as a measure of their abilities in the targeted outcome areas and to rate its appropriateness as a measure of other students' abilities who use computers to do school projects. The results affirm the value of the assessment to the majority of students. Fifty-seven percent of the students from all the schools felt that the assessment was a very good measure of their skills in reading, writing, and communication, as well as their ability to reason with information. In addition, 57% of the students who took the computer-based version (e.g., the WorLD students) felt that it was a very good measure of their ability to use technology, and 67% felt it would be very appropriate for other students who use computers to do school projects.

Table 4
Student Responses to Follow-Up Questionnaire About the Assessment

Items		Selection Choices	N	%
How well the assessment provided the students with the opportunity to demonstrate their...	reading, writing, and communication skills	Very well	111 (195)	57%
		Somewhat	56 (195)	29%
		Not very well	24 (195)	12%
		Not at all	4 (195)	2%
	ability to reason with information	Very well	111 (194)	57%
		Somewhat	59 (194)	30%
		Not very well	21 (194)	11%
		Not at all	3 (194)	3%
	ability to use technology *	Very well	66 (116)	57%
		Somewhat	44 (116)	38%
		Not very well	6 (116)	5%
		Not at all	0 (116)	0%
	appropriateness of the assessment for students around the world using computer technology in school projects *	Very appropriate	78 (117)	67%
		Somewhat appropriate	33 (117)	28%
		Not very appropriate	5 (117)	4%
		Completely inappropriate	1 (117)	1%

* reported solely for WorLD students because only they were administered technology tasks in the assessment

Summary and Recommendations

In this section, we summarize findings about the impact of the WorLD Program in Uganda on student outcomes and make recommendations for further development and

implementation of the WorLD student assessment component within the WorLD Monitoring and Evaluation.

Impact of the WorLD Program in Uganda on Student Outcomes. The WorLD student assessment forms field-tested in Uganda provide strong evidence of the impacts of the WorLD Program on three student outcomes: (1) technology use, (2) reasoning with information, and (3) communication. Assessment data indicate that students in WorLD schools are becoming proficient in fundamental uses of technology promoted by the WorLD Program. The WorLD student assessment data also provide evidence that students in WorLD schools out-perform students in non-WorLD schools on tasks calling for reasoning with information and communication. Furthermore, data from the WorLD student assessment examined in relation to student and teacher reports of frequency of classroom activities relevant to the targeted outcomes support interpretations that the WorLD teacher training is having an impact on student performance. Future administrations of WorLD student assessments as part of the Monitoring and Evaluation effort can compare the WorLD program to technology programs in non-WorLD schools by having both WorLD and non-WorLD students use computers and the Internet to complete the WorLD student assessment tasks.

Design of the WorLD Student Assessment Tasks. The Uganda field test of the WorLD student assessment was intended, in part, to examine the contribution of the WorLD student assessment component to the Monitoring and Evaluation (M&E) effort. The Uganda field test provides additional information on the value of information gathered by the WorLD student assessments for informing M&E questions about program impacts on students' knowledge and skills related to WorLD student outcomes. During the field test administration, technical problems with reliability and speed of connectivity resulted in the need for some of the students to move from searching for information on the Internet to reading print versions of Web sites to extract information about the endangered species. In fact, evidence of students' abilities to use URLs and search Internet navigational menus can be gathered more efficiently, if less authentically, by requiring responses based on only one or two Web sites, with additional Web pages made available as caches on local school servers or as printed copies of Web pages. It should be noted, however, that as the variety and amount of information needed to

research a topic increases, the organization and volume of print material to read becomes very cumbersome and inefficient.

A similar issue arises with the design of the assessment tasks for use of a range of productivity and communication tools. In this field test, technology use assessment tasks related to the problem set, but not essential to completion of the assessment problem, included finding, clipping, and annotating graphics and inserting them into the news article. Students could also demonstrate command of word processing by composing the newsletter using a word processing program and printing it or saving it on a diskette. Use of these technologies varied with students' familiarity with the tool and the availability of the tools on the computers being used by WorLD students. Therefore, the modular design of the WorLD student assessment tasks allows the use of particular technology tools to be optional.

Rater Training and Scoring. An important feature of the WorLD student assessment is the elicitation of students' explanations and conclusions through constructed responses. These student open-ended responses require scoring of the quality of student technology use, reasoning, and communication. Materials and procedures for training teachers to rate the quality of student constructed responses are critical components of the WorLD student assessment. Following the methods used in other national and international student assessments, the WorLD student assessment design includes general scoring rubrics for judging students' technology use, reasoning, and communication. For each specific test form, the WorLD student assessment should provide rater training packets made up of question-specific criteria and samples of student work produced for each form. Student examples should be annotated with explanations of scores assigned. Rater materials for the forms field-tested in Uganda appear in the Appendix. Further field testing of these procedures and materials is required for training teachers in participating WorLD countries to score their students' assessment and curricular work related to technology use, reasoning, and communication. Such training will also strengthen the alignment of WorLD classroom activities with the WorLD student assessments designed to test the WorLD student outcomes.

Test Administration. The administration of the Uganda field test forms encountered a number of logistical and technical challenges with implications for future administration of WorLD student assessments. The Uganda field test attempted to minimize problems of access and connectivity by bringing students to a laboratory in one school. Nonetheless, slow Internet connections, varying configurations of software of lab

computers, and limited printer access affected students' abilities to demonstrate some of their technology skills. Moreover, some students were working with unfamiliar browsers and software, which may have affected their ability to demonstrate some of their technology prowess. If students are asked to participate in assessments using hardware and software different from those in their schools, brief practice exercises could be designed to allow students to become familiar with the different equipment and programs.

Logistics, too, were something of an issue. Some administration sessions involved WorLD computer-using students taking the assessments in the same room with non-WorLD students working with print-only. Further consideration will need to be given to the number of students that can be monitored during an assessment administration.

Ideally, WorLD student assessments would be implemented in students' schools, where they could work with the software and hardware on which they had learned to use technology. As the technology infrastructure in WorLD schools improves, in-school assessments will become more feasible. Furthermore, some forms of the WorLD student assessments may then be administered online or on a local area network.

Revisions of Assessment Materials and Procedures. Following the Uganda assessment, and based on a summary report of the assessment's administration, SRI and the World Bank agreed on a set of revisions to the assessment forms and administrative guidelines. In general, the revisions related to simplifying the assessment tasks and streamlining the administration and scoring procedures. Exhibit 7 in the Appendix summarizes the revisions based on the Uganda field test.

Conclusions

The WorLD student assessment forms field tested in Uganda did provide evidence of the impact of the WorLD program implementation in Uganda on students' technology use, reasoning, and communication. The particular tasks field tested in Uganda consisted of two test forms made of components that could be reconfigured and adapted for new assessment forms. The WorLD M&E design will need to incorporate pilot testing of new forms each year to replace the forms being used (and thus exposed) in a program evaluation within a country. In time, pools of assessment forms and components can be developed for use as assessment resources in WorLD schools and for re-use in new test administrations. Students in WorLD schools could be allowed to

practice on released forms of the student assessments (e.g., the forms from 1998 on the topic of China) so that students and teachers are familiar with the design and formats.

The Uganda field test underscores the need to pilot test the assessment administration with a few students in each country prior to the actual administration. These "dry runs" will allow potential technical and logistical problems to be identified and solved prior to full-scale administrations. In this field test, all students from non-WorLD schools completed the assessment in paper/pencil format. In future administrations, students may be drawn from non-WorLD schools that do have computers, so those students could be given the assessment to complete using computers and the Internet, thus permitting a comparison of WorLD schools and non-WorLD computer-using schools on the outcome of technology use.

Online or face-to-face training for test administrators should be considered for supporting standardized assessment administration conditions—a particularly important issue for assessments administered at individual schools.

Online rater training could also be developed to augment face-to-face sessions with teachers in the WorLD schools. To support the alignment of WorLD student outcomes, classroom activities, embedded assessments, and the external assessment component of the M&E, all teachers of WorLD students should at least have experience with systematic scoring of their students' work displaying technology use, reasoning, and communication. To ensure reliable and valid scoring, the WorLD M&E would still collect and re-score all or a sample of the student assessment responses centrally.

Further development and implementation of the WorLD student assessments would involve administrations in more WorLD countries and translations of tasks for non-Anglophone countries. Standard sets of Web pages could be translated into multiple languages and stored on local or regional servers. After field testing in several countries with reasonable implementation baselines, cross-country administrations and comparisons would be possible, if they are desired.

It is clear that the WorLD program is having a significant impact on the information, communication and technology skills of students in WorLD countries. The WorLD student assessment component of the M&E can provide compelling evidence of the program impacts.

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APPENDIX

Exhibit 6
Detailed Rubrics Used to Score the Uganda Student Assessment Data
(with Illustrative Examples of Student Work, and Explanations of Why They Received the Scores They Did)
(explanations are in italics)

ITEM 1 ON FORM 1
Question:
Write at least one thing you learned from the Web sites about each endangered species.

(1) Kakapo
(2) Whale
(3) Salmon
(4) Tiger
(5) Golden Lion Tamarin

Rubric:
Outcome Area: Technology Use
Skill: Accessing Information
Scoring Criterion: Quantity of accurate information from Web site
Scale:

5. at least 1 accurate piece of information provided about each of the 5 animals
4. at least 1 accurate piece of information provided about each of 4 animals
3, at least 1 accurate piece of information provided about each of 2-3 animals
2. at least 1 accurate piece of information provided about 1 animal
1. answer contains no accurate piece of information for any animal
M. answer is missing

Adequate performance: 3 and above
(Exemplars not provided for this item)

ITEM 2 ON FORM 1

Question:

To plan your article, list three of the five endangered species in the table below. Write the name of each species in Column A. Then, in columns B and C, answer these questions:

- What has been happening to the species that has caused them to be endangered?
- Why have people caused these things to happen to the species?

In terms of the problems these species are having, and the reasons why people have caused those problems, your first two species should be SIMILAR in at least one way, and the third should be DIFFERENT from the first two in some way.

Example

COLUMN A	COLUMN B	COLUMN C
Name of species	**What has been happening to the species?**	**Why have people caused these things to happen to the species?**
dolphins	getting caught in nets	tuna fishermen catch more fish this way

COLUMN A	COLUMN B	COLUMN C
Name of species	**What has been happening to the species?**	**Why have people caused these things to happen to the species?**
species 1:		
species 2:		
species 3:		

Rubric:

Outcome Area: Reasoning with Information

Skill: : Finding and categorizing relevant information

Scoring Criteria: Quantity of good answers, where goodness means that the answer is a) accurate, b) specific, and c) appropriate for the column it is in

Scale:

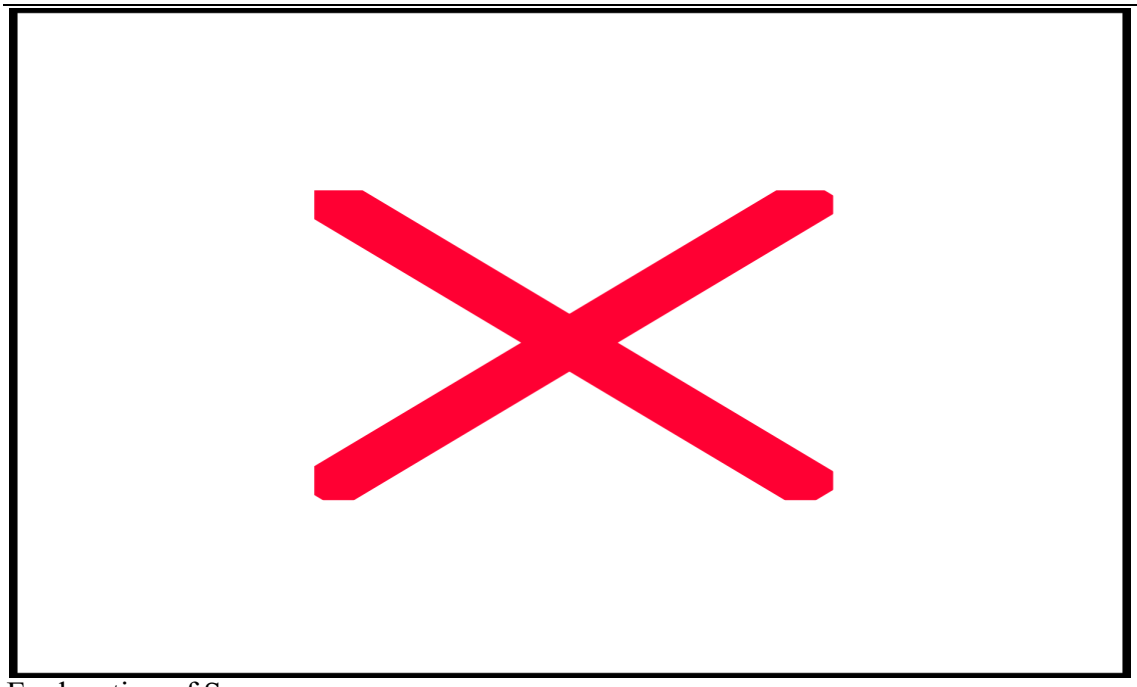
5. 6 accurate, relevant entries
4. 5 accurate, relevant entries
3. 3-4 accurate, relevant entries
2. 1-2 accurate, relevant entries
1. none of the answers are accurate and relevant

M. answer is missing

Adequate performance: 4 and above

Illustrative Examples of Student Work:

Score of 4:



Explanation of Score:

All six answers demonstrate the student's ability to differentiate between information that has to do with effect—what has been happening to the species, and cause—information about why people have caused those things to happen). All answers provide accurate and specific information about the species.

Score of 3:

COLUMN A	COLUMN B	COLUMN C
Name of species	**What has been happening to the species?**	**Why have people caused these things to happen to the species?**
species 1: KAKAPO	The Kakapo nes became so low and so they have been put on predator free-islands.	They are the only birds which hard strange feathers which could be used for making pillows matresses and cloaks.
species 2: WHALES	Their population has severely depleted,	People need products from whales, which are used in everything from machine oil to women cosmetics.
species 3: TIGER.	They have been poached by human beings.	Because tigers have been feeding on human being's livestock and crops.

Explanation of Score:
The explanation of what has happened to the whale brings the score down from a 4 to a 3. The fact that its population has been severely depleted is true, but is not specific enough about how or why the whale is endangered.

Score of 2:

COLUMN A	COLUMN B	COLUMN C
Name of species	**What has been happening to the species?**	**Why have people caused these things to happen to the species?**
species 1: Snake river SALMON- ~~TIGER~~	the decline in number	dams, overharvest & natural destruction.
species 2: Blue Whale	They were being hunted for oil and leather.	American homes were lighted with whale oil.
species 3: TIGER	dip disappearing in the wild	poaching, population fragmentation.

Explanation of Score:
Two of the three explanations in column B (about the salmon and the tiger) lack specificity about how or why they became endangered. In addition, part of the answer in column C about the tiger ("population fragmentation") really belongs in column B, showing an inappropriate classification of that information.

Score of 1:

COLUMN A	COLUMN B	COLUMN C
Name of species	**What has been happening to the species?**	**Why have people caused these things to happen to the species?**
species 1 Blue whales (lungers)	The population is reducing.	The ~~cutter~~ hunt them for oil and thus reduce on their population.
species 2 Bengal Tigers	These are also reducing in population	When the human settlers move into the forests, for settlement, they cause fragmentation - and thus kill the tigers.
species 3 Kakapo Parrots	Their ~~popula~~ - They have been dieing.	It would be preyed and got for "petting" (to as a pet) and feel poorly thus killed.

Explanation of Score:
Only two out of six answers (the cells for the whale and the tiger) demonstrate the student's ability to find and classify relevant information. None of the three answers in column B explain how the various species became endangered. The explanation about why people have caused the kakapo to become endangered lacks accuracy and coherence.

ITEM 3 ON FORM 1

Question:

How are the first and second species that you listed similar in terms of the information you provided in Column B and/or Column C?

Rubric:

Outcome Area: Reasoning with Information
Skill: Making comparisons
Scoring Criterion: similarity is accurate and specific

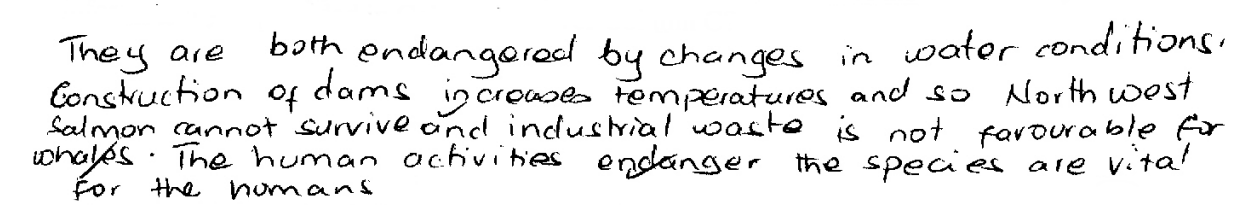
Scale:

2. a similarity is cited, and the support for the comparison is derived from accurate, specific information from the student's table (i.e.,differentiates this particular animal's plight from any other animals plights)
1. the answer is not a similarity or is not drawn from accurate, specific information from the table
M. answer is missing

Adequate performance: 2

Illustrative Examples of Student Work:

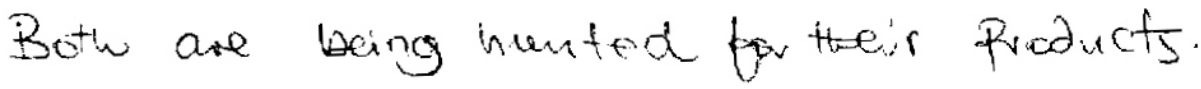
Score of 2:



Explanation of Score:

The answer provides an accurate comparison, "water conditions" and goes on to describe accurate, specific conditions causing damage.

Score of 1:



Explanation of Score:

The information used in the comparison (between the kakapo and the whale) is inaccurate. The kakapo is no longer being hunted.

Item 4 on Form 1

Question:

How is the third species that you listed different from the first two in terms of the information you provided in Column B and/or Column C?

Rubric:

Outcome Area: Reasoning with Information
Skill: Making comparisons
Scoring Criterion: Difference cited is accurate, specific
Scale:

2. a difference is cited, and the support for the difference is derived from accurate, specific information from the student's table (i.e., differentiates this particular animal's plight from any other animals plights)
1. answer is either not a difference or is innaccurate or is general or vague
M. answer is missing

Adequate performance: 2

Illustrative Examples of Student Work:

Score of 2:

The kakapo is attacked by various mammalian predators while the whale and tiger are attacked and hunted by people.

Explanation of Score:
The two animals are accurately contrasted.

Score of 1:

The Salmon is different in that it is highly demanded unlike the Whale and Tiger.

Explanation of Score:
The contrast made between the salmon and the other two animals is too vague.

ITEM 5 ON FORM 1

Question:
Predict which of the three endangered species you have listed are likely to survive and which are likely to disappear. Write your predictions in the table below. Use what you've read about them from the Web sites listed at the top of this form to make inferences about their chances for survival. Their chances of survival might increase for example, if preserves of their native habitats have been created.

Example

Species	**Will its numbers increase or decrease?**	**Reasons for your prediction**
dolphin	increase	laws have been passed to prevent the sort of fishing methods that entrap dolphins in nets

Species	**Will its numbers increase or decrease?**	**Reasons for your prediction**

Rubric:
Outcome Area: Reasoning with Information
Skill: Predictions
Scoring Criteria: Quantity acceptable answers (1 row per answer), where goodness means all of the following:
- there is a prediction and a reason for the prediction
- the reason supports the prediction
- the reason is accurate

Scale:
4. 3 acceptable answers
3. 2 acceptable answers
2. 1 acceptable answer
1. none of the answers are acceptable
M. answer is missing

Adequate performance: 3 and above

Illustrative Examples of Student Work:

Score of 4:

Species	Will its numbers increase or decrease?	Reasons for your prediction
Whale	Survive/Increase	It is now illegal to import products which are made from whale materials.
Salmon	Survive/Increase	Bypasses are being created to allow migration
Kakapo	Surviving Decrease	~~Any they find is taken to a preservation camp~~ They have a poor defence mechanism

Explanation of Score:

All three predictions are reasonably supported by the accurate information provided.

Score of 3:

Species	Will its numbers increase or decrease?	Reasons for your prediction
TIGERS	Decrease	Because it is believed that at least one tiger is killed in India every day
WHALE	Decrease	Water is being polluted
SALMON	Decrease	They are being over exploited

Explanation of Score:

One answer (that the salmon will decrease because of overexploitation) is too general. The other two answers, however, meet the criteria.

Score of 2:

Species	Will its numbers increase or decrease?	Reasons for your prediction
Tiger	Increase	There are a number of people who can protect them.
Kakapo	decrease	It cannot defend itself.
Golden Lion Tamarin	It will decrease	Poor Conservation acts.

Explanation of Score:

The support for the first prediction (that the tiger's numbers will increase because "there are a number of people who can protect them") is too general. The student has not explained which people he has in mind or what these people have done so far for the tiger that suggests they will be able to save it. The support for the second prediction (that the kakapo's numbers will decrease because it cannot defend itself) is adequate because it is clear and factual. The third prediction (that the population of golden lion tamarins will decrease because of "poor conservation acts") is too vague.

Score of 1:

Species	Will its numbers increase or decrease?	Reasons for your prediction
Tigers	increase	laws are in place to work
?	?	out to the settlement
?	?	pattern of the people

Explanation of Score:

Only one prediction is attempted. The reason offered for the prediction hints at some understanding of the tiger's plight, but is not clear enough to constitute evidence of skill.

ITEM 6 ON FORM 1

Question: Now that you have read the Web sites about the endangered species, think of something else you might like to know about at least one of them. State what you want to know in the form of a question.

Rubric:

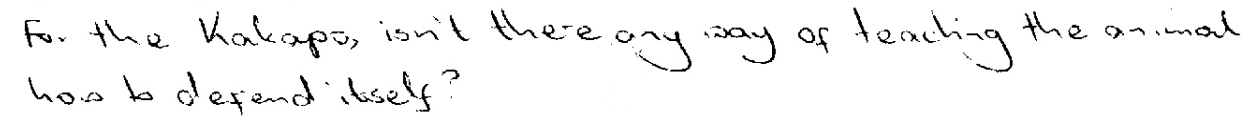
Outcome Area: Reasoning with Information
Skill: Formulating a question
Scoring Criteria: a) content is appropriate -- i.e., on topic and presumptive of facts b) clear c) stated as a question
Scale:

4. answer contains all 3 expected attributes
3. answer contains 2 out of 3 expected attributes
2. answer contains 1 out of 3 expected attributes
1. answer contains none of the expected attributes
M. answer is missing

Adequate performance: 3 and above

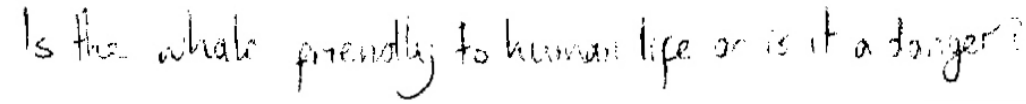
Illustrative Examples of Student Work:

Score of 4:



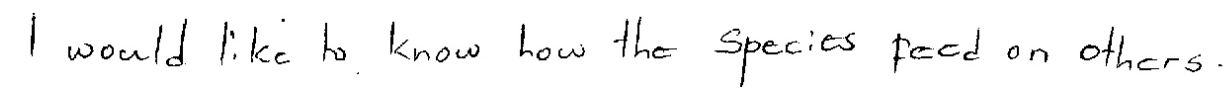
Explanation of Score:
This is a clearly stated research question about the kakapo.

Score of 3:



Explanation of Score:
The response is on topic (i.e., about the endangered species) and stated as a question, but is not stated clearly enough to serve as evidence of an ability to understand or reason with the information in the whale article.

Score of 2:



Explanation of Score:
The response is only marginally on topic, is not stated as a question, and is too vague to provide evidence that the student can reason with the information provided in the articles.

Score of 1:

I would like to know more about dogs and mice?

Explanation of Score:
The response goes off topic. Dogs and mice were mentioned in the article about the kakapo but they are not on the list of endangered species that the students are supposed to be thinking about. Another flaw can be found in the fact that the information being sought lacks focus.

ITEM 7 ON FORM 1
Question: If you were going to do a Web search to answer your question, what topic would you search on? Write your topic in the space below using the same words you would type into the search engine you would be using.

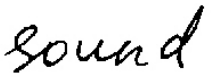
Rubric:
Outcome Area: Technology Use
Skill: Formulating a search query
Scoring Criterion: likely effectiveness of query—on topic and specific enough to be likely to result in a managable number of sites
Scale:
3. on topic and focused, but not too general and not too specific
2. on topic, but too general or too specific
1. answer is off topic or not a search query at all (a URL for example)
M. answer is missing
Adequate performance: 3

Illustrative Examples of Student Work:
Score of 3:

Defence Mechanisms of Diffeent Birds

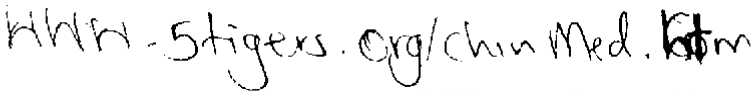
Explanation of Score:
This response is by the students who posed the research question "For the kakapo, isn't there any way to teach the animal how to defend itself?" (see the exemplar for a score of 4 on item 6 above). The response suggests that the students know how to conduct a focused, effective search for information on the World Wide Web.

Score of 2:



Explanation of Score:
The response does not demonstrate an understanding of how to conduct an effective Web search. The search phrase is too general and will yield far too many results.

Score of 1:



Explanation of Score:
The response suggests a lack of basic knowledge about conducting Web searches. A URL from one of the articles has been mistakenly identified as an appropriate search phrase.

ITEM 8 ON FORM 1 AND ITEM 13 ON FORM 2
Question: Find another Web site that has information about a particular endangered species or endangered species in general. Write the Web address (URL) here.
http://_____

Rubric:
Outcome Area: Technology Use
Skill: Accessing Information
Scoring Criterion: Citing URL
Scale:

3. URL goes to a page with appropriate content
2. URL is legitimate (i.e., it works), but it does not go to a page with appropriate content
1. URL doesn't work or URL is a copy of one presented in the assessment form
M. answer is missing

Adequate performance: 3
(Exemplars not provided for these items)

Item 9 on Form 1 and Item 14 on Form 2

Question: Imagine that you want to have other students join a group to save two of the endangered species. Select two of the species you have been describing. Use information from your research to write an informative article for a newsletter to other students in your school. In the article, explain what has been happening to these species and what is likely to happen in the future.

Make sure that your article has the following:

- a clear introduction stating your main idea
- your predictions about each animal and the reasons for your predictions
- (if technically possible) two pictures or other graphics that represent your species and either how they are in trouble or what people are doing to try to save them (if available to you, select the graphics from existing sources or create your own)
- a caption for each graphic
- supporting details
- a conclusion
- a clear logical organization

Rubric:

Outcome Areas: Reasoning with information; Communication

Skill: Composing a supported prediction

Scoring Criterion:

a. two animals selected

b. evidence from the articles provided about what has happened to make them each of the two animals endangered

c. either 1 prediction in common for both animals, or two separate predictions per animal

d. reasons provided to support prediction

Scale:

4. (full) contains a-d

3. (full-minor flaws) contains a-d with minor flaws (e.g.,occasional inaccuracies, some evidence or reasons too general or plagiarized)

2. (partial-minor flaws) a, b, c, or d are only partially done, and in addition there might be flaws

1. all of the following--major inaccuracies, vague, no specifics

M. answer is missing

Adequate performance: 3 and above

Illustrative Examples of Student Work:

Score of 4:

Endangered Species

THE PLIGHT OF ENDANGERED WATER CREATURES.

The Whale and Salmon.

From the wide range of water creatures our area of interest will be the Salmon and the Whale. These two creatures are on the list of endangered species hence our aim being to discuss a few ideas which we think would be of considerable value in helping them survive.

- *A Northwest Salmon leaping with glee.*

It is good to eat but if nothing is done, its supply may dwindle to zero.....

Background

Though they both live in water, the salmon and the whale actually belong to different families. The salmon being a fish while the whale belongs to the group of mammals.

- *A Bowhead Whale enjoying a swim*

Its scientific name is *Balaena mysticelus*.

However the fact that they both live in water subjects them to a range of similar problems which have led to the reduction in the number of either species. A few of these problems are listed below:

- Failure of the salmons to reach breeding grounds due to structures built on the rivers for example dams, due to the need for hydro electric power as well as reservoirs for storage of water.

- Whales getting caught in fishing equipment for example nets due to the feverish desire for the fisherman to maximise catches and thus profits.

- Destruction of habitat due to such activities as construction of resorts, ports and the like which cause the shy animals to retreat from the interfering human presence.

(and many others).

Predictions

We predict that at the present rate of fish consumption by humans as well as growth of industries that the Whale species will continue to steadily decrease. Its disadvantage over the salmon being its size and therefore difficulty to create a 'reserve'. The numbers of the salmon, on the other hand, will probably increase since, already, a number of programs are underway to ensure their safety, these include restrictions in the size of the nets, setup of 'reserves' due to their size advantage, restrictions in fishing seasons to allow time for breeding and strict laws and monitoring of the above measures with serious penalties for those who contravene these set restrictions.

What can we do as individuals?

- We can support wild life and endangered species activists.

- We can, given the chance, tell the public about the need to preserve wild life.

- We can, if in position follow the restrictions above.

- We can report law breakers and poachers as well as dealers in illegally got products.

Conclusion

No matter how small and insignificant we think we may be, we can do somthing.

AND SINCE WE CAN,THEN WE WILL!

It is our humble wish that these few lines will help better the situation of the whale and salmon in whatever way they can.

Explanation of Score: All requirements of the assignment are met, and met well. The plights of two animals -- the salmon and the whale -- are described. Predictions are made about whether each will survive (the whale will decrease and the salmon will increase, they say), and accurate information from the Web articles is cited to support the predictions.

Score of 3:

ENDANGERED SPECIES

The Tiger and the Kakapo

The Tiger and the Kakapo are two of the world's most endangered species. They are so, mainly due to the activities of man. These range from poaching to overrunning of the animals' natural habitats and settling down clearing the bush and forest for the growing of their crops and rearing of their livestock.

Their numbers had greatly diminished in the latter years but due to the increased awareness campaigns spreading out all over the worlds, encouraging people to protect animal species especially those, which are endangered. Due to these efforts, various Animal Acts have been passed to assist in this conservation. Whereas there is hope for the tiger, it is sad to note that the light at the end of the tunnel for the Kakapo is very dim. This is because it can not defend itself from attacks by predators.

Mainly setting up Game reserves is catering for the safety of the animals. Laws have been passed prosecuting poachers and punishing them heavily. Governments have put further restrictions on activities of some organisations limiting their expansion. They have also tried to conserve the natural habitats of the animals.

In conclusion, these and every other endangered animal specie can be saved but only with the help of every individual.

Explanation of Score:
An attempt is made to meet all the requirements of the assignment. Two animals -- the tiger and the kakapo -- are selected. Predictions are made about whether each will survive ("there is hope for the tiger," but the fate of the kakapo is "dim') and accurate information from the Web articles is cited to support the predictions. However, the first and third paragraphs provide flawed support because they do not clarify the conditions affecting a particular animal. This brings the score down from a 4 to a 3.

Score of 2:

PRESERVATION OF THE WILD

Can you imagine a world without the beauty of the wild? There is a major need for us humans to do all we can to preserve the endangered species ,with specific reference to the tiger and Kakapo.

Tigers have been steadily disappearing from as many as 100,000 to less than 8,000 and we predict that more will be lost if no effective measures are being taken. With the increasing population,their natural habitats are being invaded and this is not a good indication.

The Kakapo is the world's rarest and strangest parrot and yet it is endangered. It is was indeed a bleak time for the kakapo but luckily ,something is being done to preserve them.In New Zealand ,conservation efforts have began. The remaining birds are being given a supplemental diet to encourage them to breed. Researchers elsewhere are now collecting the specie to keep them in reserves. Thus , we predict that there will be an increase in the specie in the years to come.

Explanation of Score:
Though the work has only minor flaws, the requirements of the assignment have only been partially met. No information is provided about how the kakapo became endangered, and support for the prediction about the tiger (that the "natural habitats are being invaded") is not very specific.

Score of 1:

ST. MARY'S 8

SAVE THE WHALE AND THE KAKAPO?

The Kakapo and the Whale are one of the most endangered species in the world. The kakapo is on great demand due to it's tasty meat. On the other hand the whale is also being hunted for it's oil that is largely used for fuel, cosmetics and as a lubricant for machines.

Despite all this demand, we need to conserve our wildlife for the future generation to see.

The Kakapo has to be taught defence mechanisms so that it is able to defend itself otherwise it will become extinct.

The whale on the other hand, should be conserved so that people can always see how beautiful it is when it comes out of the water during breaching.

Without the conservation of the beautiful Kakapo and the Whale ,believed to be the largest animal in the world, then the earth would be such a boring and lonelier place to live in.

Explanation of Score:

No prediction is offered for the whale. The information that is provided is minimal and contains inaccuracies (the kakapo is not being hunted for food anymore, and whale oil is no longer used for fuel, cosmetics, and lubricants).

ITEM 9 ON FORM 1 AND ITEM 14 ON FORM 2
(Scoring the news artlce on a second feature)
Skill: Organization
Scoring criteria:
clear introduction of the predictions
evidence and explanations are logically related to the prediction
the sequence of prediction, evidence, and reasons progresses in a logical order
Scale:

4. prediction clearly introduces evidence, and the reasons relate logically to the prediction and to each other; sequence of prediction, evidence, and reasons are in logical order
3. prediction, evidence, and reasons are logically related; some minor problems in the order
2. major flaws in logical relationship or order
1. very confusing in logical relationship or order
M. answer is missing

Adequate performance: 3 points or above

Rubric:
Outcome Area: Communication
Skill: Organization
Scoring Criterion: clear meaning and logical order
Scale:

4. fully met with perhaps one or two minor flaws
3. a few flaws
2. numerous flaws
1. flawed so much as to be incomprehensible
M. answer is missing

Adequate performance: 3 and above

Illustrative Examples of Student Work:
Score of 4:

PROJECT TO SAVE THE KAKAPO AND SALMON FROM EXTINCTION.

This project is concerned with the current rate at which the kakapo and salmon numbers are being reduced.

The kakapo is a small flightless parrot with a minimal defense mechanism. It initially lived in New Zealand, but has been moved to predator free grounds increasing their chances of survival. It is being preyed on by man and other mammals like rats and cats which were introduced to New Zealand by man himself. Unfortunately, they have not developed a defense mechanism to protect themselves against their predators.

The salmon is a fish living in ocean waters that migrates to fresh waters to reproduce. Their migration is being hindered by dams built along their paths, that is in the rivers. They are being eaten by predators and also fished out by fishermen. Due to logging and overgrazing, the rising temperatures of the water have made their habitat less favorable.

Their spawning grounds are being destroyed by sediments from mining, road building, etc.

Join this force to save these animals from extinction , and with your help, some of the following activities will be carried out:
- Informative workshops on the preservation of these species.
- Building protective fences around fishing grounds .
- Collection of funds for sustenance of these species in their natural habitat.

If nothing is done, the world will miss out on the beauty and many fascinating aspects of the kakapo and salmon.

Explanation of Score:
The organization is clear and logical. The sentences are clear and arranged in a logical order. The word "unfortunately," in the fifth sentence, is used appropriately to transition to the next point about the kakapo's lack of defense mechanisms. Mechanics are not a feature considered in the organization score.

Score of 3:

SAVE THE ENDANGERED SPECIES

There are five types of however the two of these include the Tamarian lions and the whales .

The tamarian lion is found in the brazilian tropical rain forest regions.It has been greatly endangered by the clearance of the forest regions by the population for settlement ,agriculture and runching because of the increase in population and the mere fact that the soils are fertile.They are also aeten by some people and also for pet trade, in addition,some mistook them to having caused yellow fever and malaria and therefore had to do away with them.

However there is hope that the tamarins could increase in number if some measures are carried out for instance;captive breeding and reintroduction into there natural habitats and also habitat protection should be done,community education is also required toinform people about the importance of preserving these species.

A Tamarin lion.

Another yet endangered specie is the kakapo.It is found in New Zealand and it has been endangered due to its inability to fly because of the heavy weight and also it has not been able to defend itself against mammalian prdators and reptiles .

Further more the coming of the polynesians who endangered the specie through hunting,chopping and burning of the forests, they also introduced rats ‘kiore’ and other animals and Europeans who mainly hunted for them and their high demand for feathers used for pillows andmatresses,while the skins were income generating..

The kakapo specie is not likely to increase as other species however some measures have been taken such as the New Zealand Department of conservation has set fundraisings, research and actual field work.


Afeeding kakapo parrot.

Explanation of Score:
The overall structure is fairly coherent. There is an attempt at an introductory sentence, followed by discrete sections on the animals. The transition word "however" is used appropriately to open the second paragraph about the golden lion tamarin. Most of the sentences are clear, despite some problems with mechanics. The score is brought down by the presence of a few flawed sentences (the introductory one, the one that ends the first paragraph about the tamarin, and second from last one, which starts with "Further more") that are difficult, yet not impossible, to understand.

Score of 2:

THE ENDANGERED ANIMAL SPICES.

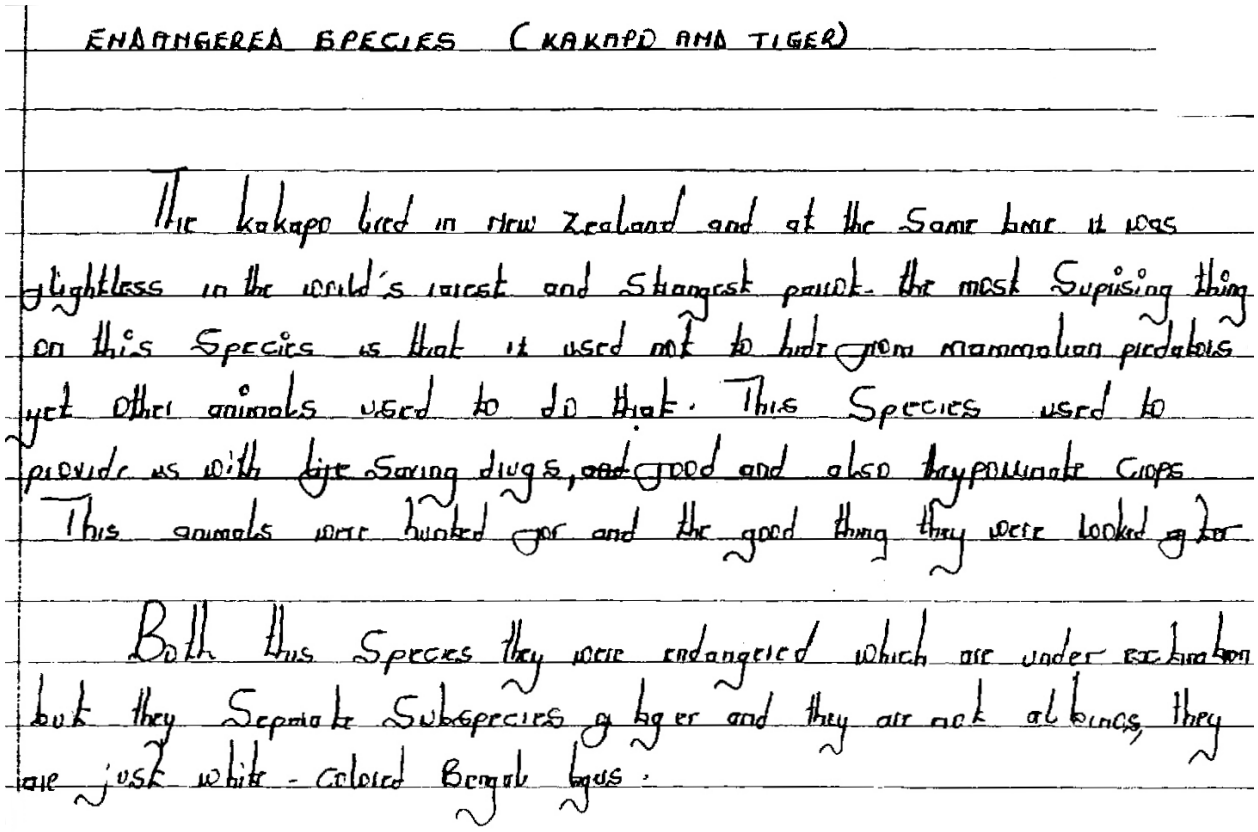
The endangered animal spices include the , Kakapo ,Whales, the Golden lion tamarin .
The Kakapo are the World's rarest parrot that weighs 3.5kg.They live in new zealand .
It did not learn defence mechanisims that`s why it was so much endangered.
It was so much done so by the pets and the livestock which came along with the Polynesian people in the 1800s`.They are approximately 62 Kakapo currently left in a safe place for multiplication.
For the salmon ,they are the very heart of the northwest native American culture.They mark the turning of the seasons and form the religious focus .The salmon too are the economic mainstay of several communities and they are one of the last living example of the wild character so cherished by the people of Oregon, Washington and Idaho.
For the Whales, they are fascinating because of their activities which seem to be too playful to people
They are mammals like humans and cetaceans. So for that case they poses characteristics of mammals.
They became endangered because they were being hunted so severly that they reduced in number.

The predictions that can be seen for the Kakapo is that, since they where kept in a place free from predators then , they will increase in number as time goes on.
It too seemed that they take long to multiply so it may take them quite some time before they attain
the number they hard originally.
One the issue of the Whales ,since they are protected in the waters it will give them a chance to multiply
and it won`t be long that they will attain a big number of them. They too restricted their hunting so that
too give a more advantage for their lives. The grey Whale seem to multiplying more than the right Whale
and this will cause over population of the grey ,yet the right it will take them along time to get back the original number they had. I still predict that more right Whales will keep on dying because they will be
knocked by ship because of their slow speed unless they do something to them .

The Salmon will keep on decreasing being the economic mainstay of some communities.so in some years to come you will find that the old salmon will get finished and the young ones will stay that can not be hunted

Explanation of Score:
The composition shows numerous flaws in vocabulary and sentence structure that make it very difficult to read. A number of the sentences are almost completely incoherent, and some contain plagiarized passages that have been awkwardly inserted. Yet, the composition is appropriately broken up into discrete sections about each animal, and most of the sentences can be understood, as long as the reader expends a lot of effort.

Score of 1:



ENDANGERED SPECIES (KAKAPO AND TIGER)

The kakapo bird in New Zealand and at the Same time it was flightless in the world's rarest and Strangest parrot. the most Supising thing on this Species is that it used not to hide from mammalian predators yet other animals used to do that. This Species used to provide us with life Saving drugs, and good and also they pollinate Crops. This animals were hunted for and the good thing they were looked for

Both this Species they were endangered which are under extinction but they Seprate Subspecies of tiger and they are not albinos, they are just white - colored Bengal tigers.

Explanation of Score:
Most of the composition is incoherent. Some sentences do not finish. The tiger is abruptly introduced in the last sentence, and the point made about it is impossible to comprehend.

ITEM 9 ON FORM 1 AND ITEM 14 ON FORM 2
(Scoring of news article on a third feature)
Rubric:
Outcome Area: Technology
Skill: Use of graphics[3]
Scoring Criteria: graphical pictures or photos are...

- inserted in places that enhance the ideas being expressed and the composition's visual appeal
- properly cropped
- accompanied by captions that are appropriate for the content of the essay and appear properly next to the graphics

Scale:

3. criteria met in all cases
2. criteria met in some cases
1. criteria rarely if ever met
M. answer is missing

Adequate performance: 2 and above

Illustrative Examples of Student Work:
Score of 3:

THE THREAT POSED TO WHALES AND THE KAKAPO

Stop and look !!There are so many birds flying in the clear sky .One out three people owns a pet. The world seems so diverse with many of God's creatures. But surprisingly ,because of human ignorance we are losing this unique and diverse gift .The Kakapo, a flightless unique and beautiful parrot has declined in number to a record figure of 62.Another animal the whale is also listed in the endangered species list.

The Kakapo has been brought to the world's attention to the level that research programs in it's breeding and feeding habits have been setup and have received commendable credit .

The first Kakapo egg to have been incubated artificially for its full term was hatched at Burwood Bush during the 1999 season. This advance has future

[3] Only done by a small group of students in the Uganda pilot.

management implications, and has led to confirmation of the incubation period as 30 days;

Due to the world's awareness many like this lucky one are being bred

This innocent creature is defenseless because in history it did not have any natural predators so it develop an defensive mechanism like flight or ability to run from it's enemies .People used meat for food and their feathers for stuffing of pillows not to mention the fact that these people can to it's habitat with cats and dogs. These proved potential predators and hence they decreased tremendously in number.

Whales have also become threatened because of many factors. Collisions with vessels, oil spills and other changes in water quality, coastal development, increasing noise created from the use of oceanic resources and in the years before whales were hunted for there oil which was used for lighting. Before the invention of electricity virtually all homes used oil for lighting.

Fisheries also and usually affect whales in two ways. First, whales may become entangled in fishing gear.

As an example, each year several humpback whales are entangled in fishing gear along the East Coast of the United States and Canada. Second, fisheries may complete with whales for food, such as herring.

Increased noise or boat traffic may cause whales to alter their behavior. There is evidence that humpback whales in Hawaii may have changed their use of near-shore waters where their mothers because of increasing human

activity raise calves. Migrating bowhead whales may move further offshore to avoid human-caused noise.

The beauty incarnated in this creature is being lost to the unforgiving hands of extinction

Although there isn't a full understanding of the possible impacts, pollution could also affect whales. Many contaminants are stored in a whale's blubber for long periods of time. Pollutant loads are usually lower in baleen whales than in dolphins and porpoises. Deterioration of the environment could possibly affect the whales in another way: if pollution and other factors reduce the number of fish and crustaceans, the food available to the whales could also be reduced.

Explanation of Score:
The graphics have meaningful captions, are cropped properly, and are positioned to enhance the adjacent text.

Score of 2:

SAVING THE TIGER

AND KAKAPO SPECIES

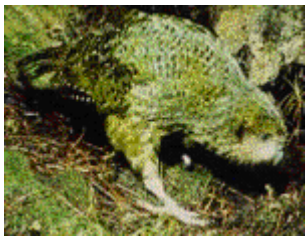
The tiger and the kakapo are some of the most endangered species on earth. The kakapo and the tiger ought to be protected for rareness and beauty respectively.

The tiger faces a danger of poaching and encroachment on it's habitat,due to the population fragmentation process . poaching is mainly due to the high demand of it's skin which is used for making coats and many other valuable things. Measures have been taken to conserve the lives of the tigers; they have been moved to protected parks and bigger zoos where direct care is given especially to the younger species.

The kakapo on the other hand was invaded by mammalian predators as well as other pets, for which it had prepared no defence mechanism. To prevent them from further extinction, they were transfered to predator free islands.

In future we expect a rather big population increase for both species owing it to the conservation mechanisms that have been implemented.

Explanation of Score:



The graphics are appropriate to the topic and enhance the composition's visual appeal, but they lack captions.

(No students received a score of 1)

Table 5
Adequate Performances by School on Reasoning with Information Skills

WorLD Schools				Non-WorLD Schools		
Component	**School**	**N Adequate or Above**	**% Adequate or Above**	**School**	**N Adequate or Above**	**% Adequate or Above**
Finding and categorizing relevant information	1	22 (28)	79%	7	12 (28)	43%
	2	27 (29)	93%	8	12 (28)	43%
	3	28 (30)	93%	9	24 (30)	80%
	4	22 (33)	67%	10	19 (28)	68%
	5	23 (27)	85%			
	6	20 (20)	100%			
Comparisons	1	36 (46)	78%	7	26 (50)	52%
	2	36 (47)	77%	8	12 (50)	24%
	3	24 (48)	50%	9	28 (48)	58%
	4	33 (55)	60%	10	23 (45)	51%
	5	19 (46)	41%			
	6	30 (40)	75%			
Predictions	1	26 (28)	68%	7	16 (40)	40%
	2	34 (40)	85%	8	20 (38)	53%
	3	19 (40)	48%	9	16 (38)	42%
	4	16 (44)	36%	10	24 (37)	65%
	5	20 (35)	57%			
	6	20 (20)	100%			

Formulating or identifying a research question	1	14 (18)	78%	7	16 (18)	89%
	2	16 (18)	89%	8	12 (14)	86%
	3	13 (18)	72%	9	10 (20)	50%
	4	13 (22)	59%	10	13 (19)	68%
	5	15 (19)	79%			
	6	12 (12)	100%			
Supporting a prediction	1	10 (20)	50%	7	4 (20)	20%
	2	0 (17)	0%	8	4 (18)	22%
	3	6 (18)	33%	9	8 (20)	40%
	4	13 (19)	68%	10	12 (19)	63%
	5	7 (21)	33%			
	6	7 (20)	35%			
Reasoning with Information TOTALS	1	108 (150)	72%	7	74 (156)	47%
	2	113 (151)	75%	8	60 (148)	41%
	3	90 (154)	58%	9	86 (156)	55%
	4	97 (173)	56%	10	91 (148)	61%

	5	84 (148)	57%			
	6	89 (112)	79%			

Table 6
Adequate Performances by School on Communication Skills

WorLD Schools				Non-WorLD Schools		
Component	**School**	**N Adequate or Above**	**% Adequate or Above**	**School**	**N Adequate or Above**	**% Adequate or Above**
Argument	1	10 (20)	50%	7	4 (20)	20%
	2	0 (17)	0%	8	4 (18)	22%
	3	6 (18)	33%	9	8 (20)	40%
	4	13 (19)	68%	10	12 (19)	63%
	5	7 (21)	33%			
	6	7 (20)	35%			
Organization	1	14 (20)	70%	7	11 (20)	55%
	2	14 (17)	82%	8	8 (18)	44%
	3	10 (18)	56%	9	14 (20)	70%
	4	11 (19)	58%	10	17 (19)	89%
	5	16 (21)	76%			
	6	20 (20)	100%			
Communication-TOTALS	1	24 (40)	60%	7	15 (40)	38%
	2	14 (34)	41%	8	12 (36)	33%
	3	16 (36)	44%	9	22 (40)	55%
	4	24 (38)	63%	10	29 (38)	76%
	5	23 (42)	55%			
	6	27 (40)	68%			

Table 7
Adequate Performances by School on Technology Use Skills (WorLD Schools only)

Component	School	N Adequate or Above	% Adequate or Above
Searching for information on the Web	1	26 (30)	87%
	2	24 (28)	86%
	3	25 (38)	66%
	4	33 (41)	80%
	5	23 (35)	66%
	6	16 (26)	62%
Formulating or identifying a search query	1	10 (14)	71%
	2	15 (17)	88%
	3	10 (18)	56%
	4	11 (22)	50%
	5	9 (19)	47%
	6	9 (12)	75%
Technology Use TOTALS	1	36 (44)	82%
	2	39 (45)	87%
	3	35 (56)	63%
	4	44 (63)	70%
	5	32 (54)	59%
	6	25 (38)	66%

Table 8
Student Report of Frequent Experience with Classroom Activities Over the Prior Year that Build Reasoning with Information Skills

WorLD Schools				Non-WorLD Schools		
Component	**School**	**N Frequent Experience**	**% Frequent Experience**	**School**	**N Frequent Experience**	**% Frequent Experience**
Gather information from books, videos, or other sources besides the Internet for a research project	1	13 (15)	87%	7	13 (19)	68%
	2	11 (15)	73%	8	2 (12)	17%
	3	9 (15)	60%	9	10 (14)	71%
	4	7 (17)	41%	10	0 (12)	0%
	5	9 (14)	64%			
	6	13 (16)	81%			
Organize and analyze information from the Internet	1	6 (20)	30%	7	3 (19)	16%
	2	5 (17)	29%	8	3 (18)	17%
	3	9 (20)	45%	9	0 (20)	0%
	4	10 (22)	45%	10	0 (12)	0%
	5	9 (18)	50%			
	6	2 (17)	12%			
Make comparisons or predictions using information from the Internet	1	3 (19)	16%	7	5 (19)	26%
	2	2 (17)	12%	8	1 (16)	6%
	3	3 (18)	17%	9	0 (20)	0%
	4	11 (20)	55%	10	0 (18)	0%
	5	6 (19)	32%			
	6	2 (20)	10%			

Gather evidence to argue a position about an issue	1	5 (17)	29%	7	3 (18)	17%
	2	1 (17)	6%	8	2 (15)	13%
	3	3 (18)	17%	9	6 (20)	30%
	4	10 (22)	45%	10	3 (19)	16%
	5	7 (20)	35%			
	6	7 (18)	39%			
Reasoning with Information classroom activity TOTALS	1	27 (71)	38%	7	24 (75)	32%
	2	19 (66)	29%	8	8 (61)	13%
	3	26 (68)	38%	9	16 (74)	22%
	4	38 (81)	47%	10	3 (66)	5%
	5	31 (71)	44%			
	6	24 (71)	34%			

Table 9
Student Report of Frequent Experience Over the Prior Year with Classroom Activities that Build Communication Skills

	WorLD Schools			Non-WorLD Schools		
Component	**School**	**N Frequent Experience**	**% Frequent Experience**	**School**	**N Frequent Experience**	**% Frequent Experience**
Write project reports	1	4 (20)	20%	7	2 (17)	12%
	2	4 (17)	24%	8	0 (15)	0%
	3	4 (19)	21%	9	6 (20)	30%
	4	2 (21)	10%	10	1 (19)	5%
	5	7 (20)	35%			
	6	12 (20)	60%			
Use graphics (pictures, charts, or graphs) in a report	1	10 (20)	50%	7	8 (20)	40%
	2	4 (16)	25%	8	2 (16)	13%
	3	0 (17)	0%	9	2 (20)	10%
	4	7 (21)	33%	10	4 (18)	22%
	5	7 (19)	37%			
	6	6 (19)	32%			

Communi-cation classroom activity TOTALS	1	14 (40)	35%	7	10 (37)	27%
	2	8 (33)	24%	8	2 (31)	6%
	3	4 (36)	11%	9	8 (40)	20%
	4	9 (42)	21%	10	5 (37)	14%
	5	14 (39)	36%			
	6	18 (39)	46%			

Table 10
Student Report of Frequent Experience Over the Prior Year with Classroom Activities that Build Technology Use Skills

	WorLD Schools			Non-WorLD Schools		
Component	**School**	**N Frequent Experience**	**% Frequent Experience**	**School**	**N Frequent Experience**	**% Frequent Experience**
Gather information from the Internet for a research project	1	5 (20)	25%	7	1 (16)	6%
	2	4 (16)	25%	8	3 (17)	18%
	3	7 (19)	37%	9	0 (20)	0%
	4	15 (21)	71%	10	0 (19)	0%
	5	9 (19)	47%			
	6	2 (17)	12 %			
Organize and analyze information from the Internet	1	6 (20)	30%	7	3 (19)	16%
	2	5 (17)	29%	8	3 (18)	17%
	3	9 (20)	45%	9	0 (20)	0%
	4	10 (22)	45%	10	0 (17)	0%
	5	9 (18)	50%			
	6	2 (17)	12%			
Make comparisons or predictions using information from the Internet	1	3 (19)	16%	7	5 (19)	26%
	2	2 (17)	12%	8	1 (16)	6%
	3	3 (18)	17%	9	0 (20)	0%
	4	11 (20)	55%	10	0 (18)	0%
	5	6 (19)	32%			
	6	2 (20)	10%			

Use a computer word processing program (e.g., Microsoft Word, ClarisWorks, Word Perfect, etc.)	1	15 (19)	79%	7	16 (20)	80%
	2	14 (17)	82%	8	6 (18)	33%
	3	9 (19)	47%	9	18 (20)	90%
	4	19 (22)	86%	10	12 (19)	63%
	5	17 (19)	89%			
	6	19 (20)	95%			
Create graphics (pictures, charts, or graphs) on the computer	1	12 (20)	60%	7	14 (20)	70%
	2	7 (17)	41%	8	6 (17)	35%
	3	1 (19)	5%	9	12 (20)	60%
	4	6 (20)	30%	10	8 (18)	44%
	5	15 (19)	79%			
	6	11 (20)	55%			

Copy and paste graphics (pictures, charts, or graphs) on the computer	1	14 (20)	60%	7	11 (20)	55%
	2	4 (17)	24%	8	5 (18)	28%
	3	1 (17)	6%	9	7 (20)	35%
	4	13 (21)	62%	10	7 (19)	37%
	5	14 (18)	78%			
	6	6 (17)	35%			
Technology Use classroom activity TOTALS	1	55 (118)	47%	7	50 (116)	43%
	2	36 (101)	36%	8	24 (104)	23%
	3	30 (112)	27%	9	37 (120)	31%
	4	74 (126)	59%	10	27 (110)	25%
	5	70 (112)	63%			
	6	42 (111)	38%			

Table 11
Number and Percent of Students Reporting Frequent Experience with Classroom Activities that Build Skills in Reasoning with Information, Communication, and Technology Use

		WorLD Schools		Non-WorLD Schools	
Skill Area	**Classroom Activity**	**N Reporting Frequent Experience**	**% Reporting Frequent Experience**	**N Reporting Frequent Experience**	**% Reporting Frequent Experience**
Reasoning with Information	Gather information from books, videos, or other sources besides the Internet for a research project	62 (92)	67%	25 (57)	44%
	Organize and analyze information from the Internet	41 (114)	36%	6 (74)	8%
	Make comparisons or predictions using information from the Internet	27 (113)	24%	6 (73)	8%
	Gather evidence to argue a position about an issue	35 (109)	32%	14 (72)	19%
	Reasoning with Information classroom activity TOTALS	165 (336)	49%	51 (219)	23%

Communi-cation	Write project reports	33 (117)	28%	9 (71)	13%
	Use graphics (pictures, charts, or graphs) in a report	34 (112)	30%	16 (74)	22%
	Communication classroom activity TOTALS	67 (229)	29%	25 (145)	17%
Technology Use	Use a computer word process-ing program (e.g., Microsoft Word, ClarisWorks, Word Perfect, etc.)	93 (116)	80%	52 (77)	68%
	Create graphics (pictures, charts, or graphs) on the computer	52 (115)	45%	40 (75)	53%
	Copy and paste graphics (pictures, charts, or graphs) on the computer	52 (110)	47%	30 (77)	39%
	Technology Use classroom activity TOTALS	307 (680)	45%	138 (450)	31%

Exhibit 7
Summary of Revisions

Need	Resolution
restructure administration procedures to minimize negative impact of Internet connectivity problems on the delivery of the assessment	recommend that the articles get cached/stored off the Internet, and provide directions on how and when to do that; time on the Internet would then be reduced to a small set of Web search items
more focus on assessing technology use and less focus on reasoning with information	• reduced reading load in the assessment • from 5 to 2 animals • eliminated some reasoning with information questions • added more questions assessing students' abilities to search for and access information on the Web
more specifics on scoring	added specific scoring information on each question on the forms, plus a scoring guide and set of templates for scoring each individual student work
simplify the administration	• no longer require student use of graphics in their news articles if the computers they are using in the assessment do not support clipping of graphics • provide a more thorough description of how to assign IDs • split the administration packet up into two packets—one for the largely computer-based administration to the WorLD students, and one for the all-paper and pencil administration to the non-WorLD students • make optional the distribution to students of an overview and a task checklist