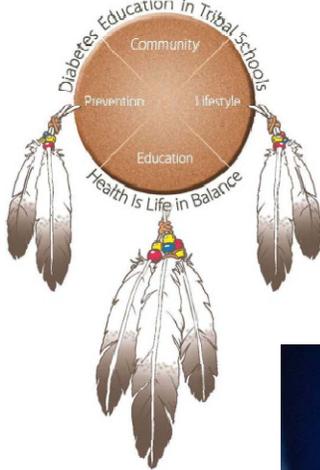


Implementation Test Evaluation Report July 2008

Diabetes-Based Science Education Program For Tribal Schools

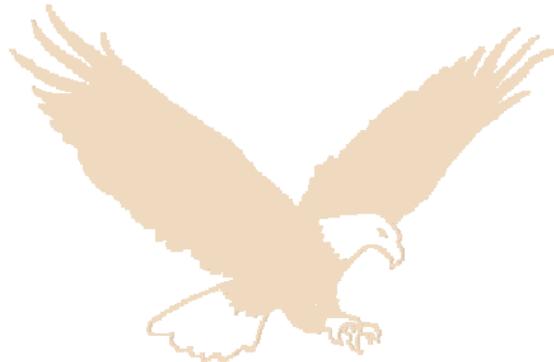


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Implementation Test Evaluation of a K-12 Diabetes-Based Science Education Program for Tribal Schools

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INTRODUCTION

The Diabetes-Based Science Education in Tribal Schools (DETS) program is a cooperative effort among the NIH's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and Office of Science Education (OSE) with the Centers for Disease Control and Prevention (CDC), the Indian Health Service (IHS), eight Tribal Colleges and Universities (TCUs) and seven sister sites. The partners in this collaboration are developing a K-12 diabetes-based education program for use in tribal schools as well as schools with a high percentage of Native American students throughout the United States. Program development includes collaboration among multiple TCUs; integration of tribal cultures and science education within the context of diabetes; involvement of family and community; incorporation of the daily experience of American Indian and Alaska Native children with diabetes in their communities; inclusion of Tribal Elders and other significant community groups in program development within the schools; and dissemination of the program to schools throughout Indian Country.

The current operational goals of the project are to:

1. Increase the understanding of health, diabetes, and maintaining life in balance among American Indian/Alaska Native students (Teach about diabetes);
2. Increase American Indian/Alaska Native students' understanding and application of scientific and community knowledge (Value and use scientific and traditional knowledge); and
3. Increase interest in science and health professions among American Indian/Alaska Native youth (Encourage science and health careers).

This evaluation study was designed to examine the implementation of the national DETS K-12 curriculum relative to these three goals as well as academic impact, attitude, ease-of-use, format, relation to national science standards, relation to other similar curriculum and Native American content. This study focuses on a national implementation of the curriculum and in this regard is referred to as the Implementation Test Evaluation of the DETS curriculum.



BACKGROUND

This implementation study is the fourth research report on the DETS project. The earlier reports dealt with:

- Phase I (February 2004): feasibility study of DETS curriculum goals;
- Phase II (May 2005): pilot study of DETS curriculum lesson development; and
- Phase III (June 2007): rolling beta test study of DETS curriculum materials.

This phase IV evaluation studied the impact of the near-publication-quality DETS curriculum on student achievement and attitude. The earlier reports (i.e., phase I, II and III studies) are summarized next.

The phase I report (February 2004) examined the feasibility of the three DETS curriculum goals first in the broad sense of *practicality, and political viability*, secondly in terms of group consensus about goal performance and thirdly from a resource and cost perspective. The four key questions addressed in the phase I study were:

1. Are the stated goals of the DETS program achievable and measurable, and if not, what goals would be more practical?
2. For each goal, what would be a reasonable standard of performance by a given year?
3. What are the limitations in human and material resources, classroom curricular and instructional constraints, budget, and other system capabilities that should be considered when designing the K-12 DETS curriculum?
4. What is the most cost-effective format (e.g., website, brochure, video, kit, handout, tip sheet, meal planner) for a DETS K-12 curriculum supplement or other tangible product aimed at achieving project goals?

Analyses in the phase I report were based on the four program evaluation standards presented by the Joint Committee on Standards for Educational Evaluation (i.e., practicality, utility, propriety, accuracy). The focus was on the standards of utility and feasibility. In addition, analysis of estimated costs were compared to available dollars to add to the feasibility of the current DETS effort. That is, the question was asked: "how feasible is the DETS curriculum development program when the allocated dollars (i.e., grant budgets) are compared to the cost estimates in this paper?"

The conclusions of the phase I report were: 1) goals two and three (understanding science; health education and careers) are more practical and feasible than goal one (reducing morbidity - which might be considered as part of the mission of DETS); 2) subsequent discussion and revisions of DETS goals resulted in three goals that are *practical* and meet



sufficient *performance standards*; 3) the cost-utility ratio is more favorable for classroom-based instruction than web-based instruction; 4) cost estimation methodology cross-validated within a reasonable ranges (i.e., 5% and 1%); 5) the empirically derived cost-utility ratios for the science strand and the health education strand were nearly identical; 6) future steering committee meetings might provide opportunities for separate stakeholder estimates of probabilities and utilities in order to generate comparative cost-utility ratios; 7) future steering committee meetings might provide opportunities to review **actual** curriculum content versus **desired** curriculum content as well as review the relative balance of curriculum priorities related to *enduring understandings, important to know or do, and worth being familiar with*.

By addressing all four key questions in the phase I report a foundation for phase II pilot-beta-field testing evaluation work was established. Practical goals lead directly to measurable objectives and assignable tasks. In turn, objectives and tasks provided a clear basis for planning and timeline development. In addition, the establishment of content specifications and the 5E template provided standards against which an evaluation team would be able to measure the curriculum development process. Furthermore with an agreed upon set of curriculum priorities (i.e., *enduring understandings, important to know or do, and worth being familiar with*) the groundwork for development of assessments has been completed. From these priorities it is possible to balance assessment choices among traditional multiple choice tests and quizzes, open-ended constructivistic essays, and class projects and presentations (i.e., authentic assessment).

The phase II report provided process analysis of DETS lessons relative to: three program goals; use of 5E template; development of schedules and timelines for pilot, beta and field testing; implementation of changes based on pilot test data; assessment strategy; and overall impact of the curriculum. The six key questions addressed in the phase II study were:

1. Are lesson development efforts adequately aligned with the three program goals?
2. Are lesson development efforts following the 5E template for each of the three curriculum development subcommittees (K-4, 5-8, 9-12)?
3. Has a systematic Field Test Plan with timeline been developed and agreed upon?
4. Have pilot tests been conducted for each lesson, and have the changes called for by the pilot tests been made to the lessons?
5. Has an integrated, authentic assessment strategy been planned and implemented to measure the effectiveness of lessons?
6. What has been the overall impact of the pilot test of the curriculum on student achievement and attitude toward diabetes within the context of science and health education?



In the earlier stages of lesson development writers tended to focus on content independent of the three DETS goals. Subsequently, the direction of lesson development shifted after the December 2004 EAC review toward building a comprehensive K-12 scope-and-sequence document (i.e., "*DETS - Diabetes Education in Tribal Schools: Mission, Purpose, Goals, Concepts, and Objectives*"). As a consequence of this shift, the lesson content reviewed in the phase II report was based on curriculum CDs distributed at the September 2004 and January 2005 quarterly meetings. For K-4, it was appropriate that there would be less coverage of goal two, which focuses on the science of diabetes. The low percentages for K-4 for goals one and three may be due simply to the lack of explicit reference to a particular goal. For example, there were lessons within K-4 on the prevention of disease through traditional diet. While many of these lessons may have referred implicitly to diabetes, the lack of explicit reference to diabetes resulted in a check mark that indicated not present. The 9-12 low percentage (i.e., 43%) for goal two was unexpected, especially since the 9-12 curriculum plans to have a strong emphasis on the science of diabetes. However, because the reviewed lesson documents were in their early stages of development (i.e., September 2004 or before), it is also likely that KBOCC (i.e., health strand) had developed more of its lessons than NWIC (i.e., science strand).

From the data in the phase II report, the use of the 5E model appeared to be successful. This finding contrasted somewhat with the finding of the AIM (Analyzing Instructional Materials) which found that the application of the 5E model was inconsistent and insufficient. However, the AIM process was only applied to *three* lessons (i.e., one for K-4; one for 5-8 and one for 9-12) during the December 2004 EAC review. On the other hand, by scanning all the lessons available on CDs, it seemed that most developers made full use of the 5E model. The possible exception would be the 5-8 lessons. It must be noted, however, that the 5-8 lessons which were available for review tended to be "older" (e.g., late 2003 and early 2004) and thereby developed before the DETS Project put a strong emphasis on using the 5E model as a lesson template.

During phase II a systematic field test plan was discussed and reviewed by the Evaluation Subcommittee during its monthly DETS conference calls. In addition the field test plan as well as the beta test plan was presented and accepted at the May 2005 Steering Committee quarterly meeting at Leech Lake.

In phase II some evidence of authentic assessment was found among evaluate activities. Clearly the curriculum writers were striving to create evaluate activities that were authentic (i.e., hands-on, active, participatory, cooperative, inquiry-based). However, lesson assessments (i.e., evaluate activities) still seemed nascent. Finally in some cases pilot testing preceded the availability of materials which caused some frustration among the teachers that were attempting to teach the lesson.



From the available phase II pre-post data it is clear that DETS was having an impact. All but one of the pre-post lesson-level gains was statistically significant. Furthermore, the gains were stronger when the lesson was improved and taught a second time (to a different class).

Overall, the phase II evidence showed that the development of the DETS curriculum during the pilot phase of this project has resulted in an improving set of curriculum lessons and associated supporting materials. During phase II (through May 2005) 38 K-4 lessons and 68 5-8 lessons were pilot tested.

It appears that in the earlier stages (i.e., before September 2004) of lesson development attention to goals was less critical than developing grade-level appropriate diabetes science and health content. Consequently the curriculum "spread-out" across content areas too much. The EAC review recommended that coherence be increased by focusing on a narrower content field driven by *enduring understandings*. For the most part this happened since the three curriculum teams refocused their 2005 writing efforts not on lessons per se but on the *DETS - Diabetes Education in Tribal Schools: Mission, Purpose, Goals, Concepts, and Objectives* document. During phase II DETS followed a process development strategy characterized by coherence, focus and rigor (three known characteristics of effective science programs). The coherence and focus derive from mapping *enduring understandings* as they are derived from the three DETS project goals. Process rigor derives from the external review process and the content rigor derives from the DETS Scientific Review Committee, which reviewed all the content accuracy of lessons before they were tested in the classroom. The success of this refocus on the conceptual framework of DETS is the subject of the phase III evaluation work during the beta test and field test phases of the evaluation process.

The phase III study focus tightened a sprawling set of content materials, making it easier for prospective teachers and schools to navigate and select lessons to replace parts of their existing curriculum. Furthermore, during phase III attention was given to length of lesson (i.e., not too long), vocabulary level (i.e., not too difficult), cultural relevance (i.e., very appropriate), and consistent pedagogical formatting (i.e., the 5E model). The phase III findings are summarized next.

The purpose of the phase III evaluation report was to provide process analysis of the DETS Curriculum Project relative to these three key questions, where the first two questions were process evaluation questions and the third question was an outcome evaluation question. The three key questions addressed in the phase III study were:

1. Is the DETS program being developed as planned?
2. Are DETS program critical processes being implemented?
3. Has the DETS curriculum been developed into the expected output (i.e., a replacement modularized curriculum) that meets its three general goals? That is, is



there evidence that the three goals and central metaphor are present and have had an impact (e.g., on achievement; on attitude) within specific modules?

There were five data sources used to analyze these three key questions: 1) lesson specific DETS Pilot Test Evaluation forms; 2) web-based DETS Pilot and Beta Test form generalized across several lessons; 3) discussions at quarterly DETS face-to-face meetings; 4) External Advisory Committee (EAC) meetings (December 2005 and September 2006); 5) site visits to 6 classrooms across three TCUs.

Lesson specific DETS Pilot Test Evaluation forms were distributed to Principal Investigators (PIs) via email and at quarterly meetings. This form was developed by the external evaluator in collaboration with the DETS Evaluation Subcommittee, consisting of representatives from the Federal agencies and the TCUs. The form covered the *clarity* of lesson goals, objectives, vocabulary, material lists, and local, state and national standards. There were overall questions about student participation, content, ease-of-use and lesson difficulty

The web-based generalized DETS Pilot Test Teacher Web Survey asked for overall ratings about difficulty of content, ease-of-use, level of engagement as well as written responses regarding strengths and weaknesses of lessons used. This survey focused on *all* the pilot lessons that a teacher tested rather than a particular lesson.

Phase III of this project spanned the end of lesson-specific pilot testing into beta testing of several lessons at a time. In this regard a web-based generalized DETS Beta Test Web Survey asked a series of questions. The background questions related to the extent of participation in the beta test, the questions about the DETS lessons probe lesson difficulty, ease-of-use, level of engagement, role of standards, level of implementation, cultural content as well as written responses about strengths and weaknesses of lessons used.

Overall, Phase III showed that the DETS program was developed as planned. Critical processes were attended to via quarterly steering committee meetings, monthly conference calls as well as the December 2005 and September 2006 external advisory committee meetings in Denver. The curriculum output has closely followed the central DETS program metaphor of *health is life in balance*. While this planning process has taken longer than anticipated, overall the three DETS curriculum subcommittees (i.e., K-4; 5-8; 9-12) have aligned lesson development with the three program goals, focused on aligning curriculum content to enduring understandings, and applied the 5E pedagogical model.

Since only some of the DETS lessons and units were complete, the design of the beta testing was revised and presented at the January 2006 steering committee meeting at Northwest Indian College in Bellingham, Washington. The Phase III revised beta test strategy incorporated the notion of “rolling mini-beta tests”. The word “rolling” indicated different starting times, and the word “mini” indicated that each TCU would conduct a smaller scale test of a DETS unit that was ready for beta testing. This strategy permitted TCUs to begin implementing a beta unit or series of DETS lessons in the classroom when they became ready. Ideally, to rule out time



related variables, one would implement the beta units at the same time. However, the rolling mini-beta test approach accommodated the differential development of the DETS units across the three curriculum subcommittees (i.e., K-4; 5-8; 9-12). Furthermore this revised design strategy did not hold up beta testing for schools that had classes in place to implement the lessons.

In order to maintain a rolling, smaller scale beta test responsive to TCU readiness, instrumentation was developed at the local level. Specifically, writing teams were responsible for developing pre and post content oriented achievement tests while the evaluator provided instrumentation templates for attitude surveys. This approach obviated the need for the evaluator to write content tests without knowing the content ahead of time (i.e., materials not available), and thereby slowing down the rolling mini-beta tests. Furthermore it insured that the content of the achievement tests was closely aligned with the lessons being taught. In contrast the main feature of the attitude surveys was the scaling of the items, which could be standardized through the use of a template. Thus the DETS coordinators would be able to create attitude surveys simply by plugging in lesson names and activity names in the appropriate places. Finally in order to reduce test anxiety, the achievement tests were referred to as “knowledge surveys”. This not only reduced test anxiety, it helped when asking students to take a “pre test” before being introduced to the material: “*It is not a test, but a survey*”. Beta test instrumentation developed in the spring of 2006 was incorporated into a revised and expanded *September 2006 Instrumentation Binder*.

Phase III data show that the DETS program attended to a general focus (i.e., mission) and its three main goals. Beta test data, conference calls and documents distributed at quarterly steering committee meetings insured that the general focus of *health is life in balance* and the three DETS goals relating to community health, the science of diabetes and science careers remained explicit parts of the curriculum. The *key concepts document* jointly produced by the three curriculum subcommittees (i.e., K-4; 5-8 and 9-12) was derived from the three goals. The key concepts, or enduring understandings, led directly to the development of evaluate activities and the associated lessons. Furthermore by standardizing lesson pedagogy on the 5E model it ensured that a “backwards design” approach was used based on the enduring understandings. The data record during phase III is very strong that the 5E model constituted the guiding foundation for developing the curriculum as planned relative to overall mission (i.e., *health is life in balance*) and three overarching goals (i.e., community health, science of diabetes, careers in science).

Classroom site visits and teacher interviews provided data on whether the DETS program critical processes were being implemented. Specifically, site visit classroom observational data and teacher web surveys resulted in eleven separate pilot test reports and five separate beta test reports to the PIs at the TCUs. This data showed that the curriculum material was aligned with the National Science Standards, followed the 5E format and for the most part was engaging to the students. Four curriculum reviews (June 2006 and September 2006) showed that the materials are in fact following closely the 5E pedagogical model, and linking lesson activities to the key concepts of enduring understandings. The data record provided clear evidence that the



processes (e.g., National Science Standards, use of the 5Es) that were critical to implementing DETS had been followed.

Additional phase III analyses showed that the curriculum was still text heavy in places and would benefit from increased use of graphics. The Eagle Books (i.e., an elementary supplement with lessons learned from a wise eagle that befriends children) were successfully integrated into the curriculum and were well received by students. Although there were still a few comments about activities being too long, for the most part this was not a common comment. Students liked the group activities as well as most of the stories. In a few places the stories still were not well aligned to the curriculum. Several of the student narrative records indicated that the impact of the curriculum was not just cognitive, but emotional as well (students were impressed and saddened by the impact of diabetes). This emotional impact did not show up in the pre/post attitude surveys. It is likely that there was not enough time (i.e., about two weeks) for an attitudinal shift to be observed. However, in the latter part of the phase III study there were several pre/post achievement comparisons that were statistically significant. Overall, 12 of 16 (75%) of the pre-post comparisons showed improvement.

As phase III beta testing progressed, lesson time estimates got more accurate and realistic. This permitted potential users the opportunity to plan the fit of the DETS materials into their existing curriculum. Format improvements have better aligned the central metaphor (i.e., *health is life in balance*) with specific content. Throughout the curriculum reviews, the role of this central metaphor and the presence of the three DETS goals has been evident. Indeed this has been both the most difficult aspect and the most rewarding aspect of the DETS curriculum development program.

The original development effort in 2004 contained more than 100 unit/lessons that were un-unified relative to the central theme and three goals. Furthermore these numerous unit/lessons represented the individual intellectual efforts of eight Tribal Colleges and Universities (TCUs) not accustomed to working collaboratively. The fundamental success documented in the phase III research is that since 2004, through careful and sometimes painstaking collaborations, the eight TCUs have managed to focus all the disparate unit/lessons into 15 or so unit/lessons. These efforts have resulted in a curriculum that is not only focused but coherent relative to central theme, three goals and the enduring understandings (i.e., key concepts).

Finally the DETS Scientific Review Committee (SRC) reviewed all the material for accuracy. Consequently from where the DETS curriculum development started in late 2003 and early 2004 it has come a tremendous distance toward its expected output, generating a curriculum that is focused, coherent and rigorous. The broad range of diverse phase III data indicate tremendous maturity of the curriculum product which is having both a cognitive and emotional impact. The fall '07 Implementation Test replicated, extended and focused the variables of the phase III study in order to examine attitude and achievement outcomes in more detail. The phase IV results of the Implementation Test are presented next.



2007 – 2008 IMPLEMENTATION TEST INTRODUCTION

This phase IV evaluation study examines the impact of a K-12 diabetes-based science education program for Tribal schools. The Diabetes-Based Science Education in Tribal Schools (DETS) focused on three primary goals:

1. Increase the understanding of health, diabetes, and maintaining life in balance among American Indian/Alaska Native students (Teach about diabetes);
2. Increase American Indian/Alaska Native students' understanding and application of scientific and community knowledge (Value and use scientific and traditional knowledge);
3. Increase interest in science and health professions among American Indian/Alaska Native youth (Encourage science and health careers).

As mentioned in the Introduction, the DETS program is a cooperative effort among the NIH's National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and Office of Science Education (OSE) with the Centers for Disease Control and Prevention (CDC), the Indian Health Service (IHS), eight Tribal Colleges and Universities (TCUs) and seven sister sites. The partners in this collaboration developed a K-12 diabetes-based education program for use in tribal schools throughout the United States. Program development includes:

- collaboration among multiple TCUs;
- integration of tribal cultures and science education within the context of diabetes;
- involvement of family and community; incorporation of the daily experience of American Indian and Alaska Native children with diabetes in their communities;
- inclusion of Tribal Elders and other significant community groups in program development within the schools; and
- dissemination of the program to schools throughout Indian Country.

During the fall 2007 and winter 2008 school semesters phase IV data was collected from the implementation of the DETS curriculum by the TCUs and the sister sites across 14 states: Alaska, Washington, Oregon, California, Montana, Wyoming, New Mexico, Kansas, North Dakota, South Dakota, Minnesota, Michigan, New York and Florida.

The evaluation study was designed to examine the success of a national implementation of the DETS K-12 curriculum relative to the three primary goals and including academic impact, attitude, ease-of-use, and Native American content.



DESIGN

This phase IV study incorporated several important design features. First, a national sample was developed based on the participating TCUs and sister sites. Second, specific grade level units were tested rather than all of the K-12 grades. Third, to measure knowledge and attitude gains, pre-post standardized assessments were used throughout all participating classrooms. Finally, teachers received contracts with specific data administration requirements relative to curriculum implementation and assessment. These four design features maximized the standardization of implementation, assessment and data collection.

The national sample guidelines set specific goals for the participating TCUs and sister sites that evenly distributed grades and levels (i.e., elementary, middle, high school) across the participating groups. Each group recruited classrooms at each participating grade level. Furthermore, only certain grades participated in this national study. Not all grades were selected to participate so that the research design remained practical and focused. The grades that participated were: grades 3 and 4; grades 7 and 8; grades 10 and 11. This provided data at three school levels: elementary schools; middle schools; high schools. Finally, because of the amount of curriculum material written for grades 3 and 4, this grade level was divided into two content levels: Units 1 and 2; Units 3 and 4. For the two higher grade levels, the DETS curriculum was divided into science and social studies (middle school) or health (high school). The number of classes (estimated at 15 students each) to be recruited was based on achieving 80% power for detecting a medium effect. Table 1 summarizes the national sampling plan. A list of participating schools and teachers may be found in Appendix A. Unit descriptions, including lessons and titles, may be found in Appendix B.

Table 1
DETS Sampling Plan

TCUs	K-4 <i>Grades 3-4 Units 1 & 2</i>	K-4 <i>Grades 3-4 Units 3 & 4</i>	5-8 <i>Grades 7-8 Science</i>	5-8 <i>Grades 7-8 Social Studies</i>	9-12 <i>Grades 10- 11 Science</i>	9-12 <i>Grades 10- 11 Health</i>
Haskell	1 class	1 class	1 class		1 class	2 classes
KBOCC	1 class	1 class	1 class	1 class	1 class	1 class
Leech Lake	1 class		2 classes	2 classes		1 class
CCCC		1 class	1 class		2 classes	2 classes
FPCC	1 class	1 class		2 classes	2 classes	
Stone Child		1 class	2 classes	2 classes	1 class	
SIPI	1 class		2 classes	2 classes		1 class
NWIC		1 class	1 class		2 class	2 classes
TOTALS	5 classes	6 classes	10 classes	9 classes	9 classes	9 classes
Sister Sites	At least 1 class	At least 1 class	At least 1 class	At least 1 class	At least 1 class	At least 1 class



Standardized assessments were developed for all six (see Table 1) curriculum content areas being tested. Assessments focused on three areas: academic achievement, attitude and teacher experiences with the curriculum. In order to stay within practical limitations of class schedules, the tests (i.e., achievement and attitude) were designed to take 50 minutes or less (about one, short class period). It was estimated that about 12 multiple choice items and one or two short answer items for achievement and ten attitude items would meet this criterion. For both achievement and attitude a pre-post test strategy was implemented, whereas data on teacher experiences with the curriculum was collected after the DETS units were taught. The knowledge, attitude and web standardized assessments may be found in Appendix C.

For achievement, a pool of preliminary items was developed by the curriculum writing teams associated with each of the six content areas listed in Table 1. These items were submitted to members of the evaluation team that consisted of content experts, an assessment person and individuals of Native American heritage. These individuals finalized a standardized achievement test consisting of about 14 items (i.e., 12 multiple choice and two short answer questions) for each of the six content areas.

For attitude, ten items from the 50 item long Test of Science-Related Attitude (TOSRA) were selected. The reading level of the TOSRA items was simplified for the third and fourth graders. Also, the full Likert scale used in the two upper grade bands was scaled down to “agree”; “not sure”; “disagree” for the 3-4 grade level. The third and fourth graders also responded to eight yes/no questions on the Eagle Books, which constituted a supplement book for the DETS curriculum at the lower grades (i.e., below 7th grade level). Four of the eight Eagle Book questions were adapted from the “Me and My Reading” scale used by the International Reading Association. The Eagle Books were a curriculum supplement used to enhance the lessons relating to diabetes and community through an illustrated story about an eagle and a Native American boy and his friends. The Eagle Books survey is also contained in Appendix C.

For teachers, a web survey was designed that tapped their ratings on: ease-of-use; level-of-difficulty (for their students); comparability to similar curriculum; Native American content; and national science standards.

The combined application of the national sampling plan with these three assessment areas (i.e., student achievement, student attitude and teacher experience) provided a detailed look at the impact of the DETS curriculum relative to the three goals of the DETS program. The assessment packet including teacher instructions may be found in Appendix D.



RESULTS

First, the descriptive statistics relative to number of classes, teachers and students participating in the study are given below. The remainder of the results section presents the findings relative to student achievement, student attitude, student career data and teacher experience with the DETS curriculum. These three areas will be looked at across the three grade levels in this study: elementary school (ES) grades 3 and 4; middle school (MS) grades 7 and 8; high school (HS) grades 10 and 11. A comprehensive set of qualitative comments may be found in two separately bound appendices: Appendix E contains teacher comments, and Appendix F contains student comments.

Throughout the results and discussion sections, the findings are examined in terms of the six content areas within the three grade levels. The results are related to the three DETS goals in the discussion section. Table 2 summarizes these six (A through F) content areas (see Appendix B for unit descriptions), which will be referred to by their letter name. For example, content area E refers to high school science.

Table 2
Six Content Areas of DETS Curriculum

Content Area	Letter Designation
ES: Grades 3-4, Units 1 and 2	Area A
ES: Grades 3-4, Units 3 and 4	Area B
MS: Grades 7-8, Science	Area C
MS: Grades 7-8, Social Studies	Area D
HS: Grades 10-11, Science	Area E
HS: Grades 10-11, Health	Area F

Overall, twice as many classes participated than were identified in the original sampling plan, resulting in a sample size of 1,519 students (original projection was 810 students), 63 teachers and 102 classes (original goal was 54 classes). Students were evenly distributed across the 8 TCUs and 7 Sister Sites. Table 3 below summarizes the number of students and classes that participated in this evaluation of the DETS curriculum.

Table 3
Number of Students and Classes per Six Content Areas of DETS Curriculum

Content Area	Students	Classes
ES: Grades 3-4, Units 1 and 2 (Area A)	233	15
ES: Grades 3-4, Units 3 and 4 (Area B)	153	10
MS: Grades 7-8, Science (Area C)	468	29
MS: Grades 7-8, Social Studies (Area D)	425	29
HS: Grades 10-11, Science (Area E)	94	7
HS: Grades 10-11, Health (Area F)	146	12



1. Results: Elementary School Grades

Four student areas of the elementary school results are examined in this study: 1) achievement; 2) overall attitude; 3) overall attitude toward Eagle Books; 4) student career data. Teacher attitude relative to ease-of-use, similarity to other curricula, Eagle Books and strength of Native American content is also examined. With the exception of the Eagle Books (only available at elementary school level), these student and teacher variables will also be examined for the middle school grades and the high school grades.

For content Area A (grades 3 and 4; DETS units 1 and 2) data was received from 233 students across 15 teachers from 13 schools. For content Area B (grades 3 and 4; DETS units 3 and 4) data was received from 153 students across 10 teachers from 10 schools. The two Area A units covered *Health is Life in Balance* (five lessons) and *Being Smart About Being Healthy* (four lessons). The two Area B units covered *Exploring Diabetes* (six lessons) and *Harvesting Our Mother Earth* (five lessons).

For both content Areas A and B, student achievement showed strong statistically significant gain from pre-test to post test, whereas student attitude showed no change. Table 4 below provides the means and standard deviations, and Figure 1 illustrates the achievement gains for the two elementary level content areas.

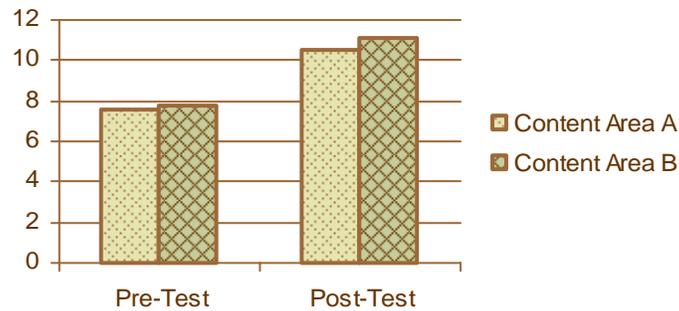
Table 4
Achievement and Attitude Pre and Post Means for Areas A and B (Elementary School)

	Achievement		Attitude	
	Pre Mean (sd) N =	Post	Pre	Post
Area A	7.6 (2.4) N = 212	10.5 (2.6) *	2.5 (.31) N = 213	2.5 (.34)
Area B	7.8 (2.5) N = 145	11.1 (2.4) *	2.5 (.31) N = 147	2.5 (.35)

* $p < .001$



**Figure 1 - Grades 3 & 4
Pre-Post Achievement Gains**



Both students and teachers rated the Eagle Books, a curriculum supplement used to enhance the lessons relating to diabetes and community through an illustrated story about an eagle and a Native American boy and his friends. From the students’ perspective the Eagle Books were fun and liked. Table 5 summarizes the responses of students. From the teachers’ perspective, the Eagle Books supported lesson content, were liked by students, and were generally relevant to the DETS curriculum (see Table 6).

**Table 5
Students’ Attitude Toward the Eagle Books**

	<i>I like the Eagle Books</i>	<i>Eagle Books were fun to read</i>	<i>I would like to own Eagle Books</i>	<i>Eagle Books make a nice gift</i>
Area A	92%	92%	82%	88%
Area B	92%	91%	76%	88%

**Table 6
Teachers’ Attitude Toward the Eagle Books**

	<i>Liked by the students</i>	<i>Supported lesson content</i>	<i>Generally relevant</i>
Area A	100%	100%	100%
Area B	90%	100%	100%



Elementary school teachers were asked to indicate if the DETS curriculum materials were age appropriate, whether the content was too easy, too difficult or just right, and their perception of student level of engagement with the materials. In addition students were asked to rate how easy or difficult the materials were. For the elementary grades these results were strongly positive. Tables 7 and 8 below summarize these findings.

Table 7
Teachers: Age Appropriate, Student Engagement, Level of Content

	<i>Age Appropriate? (percent yes)</i>	<i>Students Engaged? (percent yes)</i>	<i>Content Just Right? (percent yes)</i>
Area A	80%	100%	93%
Area B	90%	100%	90%

Table 8
Students: Level of Difficulty

	<i>Too Easy</i>	<i>Just Right</i>	<i>Too Hard</i>
Area A	17%	78%	5%
Area B	18%	77%	4%

The career data from the elementary school students was examined next. On the pre and post surveys students were asked what they would like to be or do when they grew up. Responses were rated as: 1) undecided from pre-to-post; 2) non-science career from pre-to-post; 3) science career from pre-to-post. About 12% indicated a change from pre-to-post. These responses were analyzed by asking: given a change from pre-to-post, what was the percentage that changed from a non-science career to a science career? Science was defined broadly to include medicine (doctors and nurses), lab technicians and researchers. Table 9 summarizes these four percentages for the two content areas A and B. The column four percentages are conditional values. For example, the 71% in column four indicates that 71% of 24 students who changed careers from pre-to-post, changed to science in the post survey from a non-science career choice in the pre survey.

Table 9
Pre-Post Career Percentages for Elementary School Students

	<i>1: undecided pre to post</i>	<i>2. non-science in pre and in post</i>	<i>3. science in pre and in post</i>	<i>4. given change, % into science</i>
Area A (N = 191)	5%	55%	36%	71% (N = 24)
Area B (N = 142)	4%	65%	24%	52% (N = 17)



Teacher attitude towards the DETS curriculum was further examined relative to: 1) ease-of-use; 2) relative engagement when compared to similar curricula; 3) strength of Native American content. Teachers felt that the DETS curriculum was easy-to-use and generally more engaging than similar curricula. The Native American content was generally rated as strong (i.e., strong or very strong by teachers). Table 10 summarizes these results.

Table 10
Elementary School Teachers' Attitude Toward Components of the DETS Curriculum

	<i>Ease of use</i>	<i>More engaging than similar curricula</i>	<i>Strong Native American content</i>
Area A	100%	100%	100%
Area B	90%	90%	100%

Finally, teachers felt there was an excellent alignment of the DETS curriculum with the national science education standards. Specifically, 87% of the elementary school teachers said that content Area A was well aligned with the national science education standards; 90% of the teachers said that content Area B was well aligned with the standards.

2. Results: Middle School Grades

Three student areas of the middle school results are examined in this study: 1) achievement; 2) overall attitude; 3) student career data. Teacher attitude relative to ease-of-use, similarity to other curricula, and strength of Native American content is also examined.

For content Area C (grades 7 and 8 DETS science unit), data was received from 468 students across 13 teachers from 12 schools. For content Area D (grades 7 and 8 DETS social studies unit), data was received from 425 students across 10 teachers from 10 schools. The Area C science unit covered *A Balancing Act: Preventing Diabetes* (five lessons). The Area D social studies unit covered *Life in Balance* (four lessons).

For both content Areas C and D, student achievement showed strong statistically significant gain from pre-test to post test, whereas student attitude showed no change. Table 11 provides the means and standard deviations, and Figure 2 illustrates the middle school achievement gains.

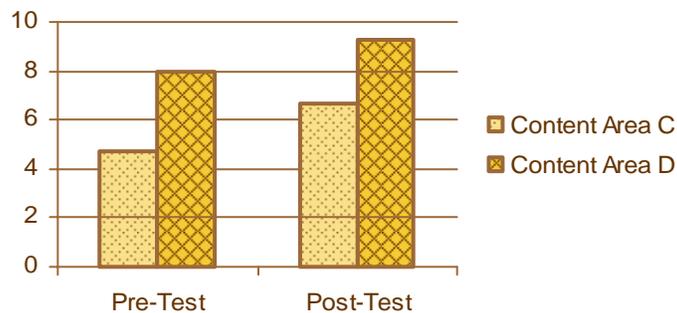


Table 11
Achievement and Attitude Pre and Post Means for Areas C and D (Middle School)

	Achievement		Attitude	
	Pre	Post	Pre	Post
	Mean (sd)			
Area C (Science)	4.7 (2.2) N = 400	6.7 (2.6) *	2.9 (.72) N = 402	2.9 (.76)
Area B (Social Studies)	8 (3.1) N = 339	9.3 (3.6) *	3 (.68) N = 358	3 (.73)

* p < .001

Figure 2 - Grades 7 & 8
Pre-Post Achievement Gains



Middle school teachers were asked to indicate if the DETS curriculum materials were age appropriate, whether the content was too easy, too difficult or just right, and their perception of student level of engagement with the materials. In addition students were asked to rate how easy or difficult the materials were. For the middle school grades these results were strongly positive. Tables 12 and 13 below summarize these findings.



Table 12
Teachers: Age Appropriate, Student Engagement, Level of Content

	<i>Age Appropriate?</i> <i>(percent yes)</i>	<i>Students Engaged?</i> <i>(percent yes)</i>	<i>Content Just Right?</i> <i>(percent yes)</i>
Area C	82%	100%	73%
Area D	89%	100%	89%

Table 13
Students: Level of Difficulty

	<i>Too Easy</i>	<i>Just Right</i>	<i>Too Hard</i>
Area C	16%	76%	7%
Area D	15%	81%	4%

As with the elementary student data, a substantial majority (i.e., 80%) of the middle school students rated the level of difficulty of the DETS curriculum as “*just right*”. For the remaining 20%, students rated the curriculum as “*too easy*” about three times as often as they rated it “*too hard*”. As seen below, this rating distribution was substantially reversed for the high school science students.

The career data from the middle school students was examined next. On the pre and post surveys, the middle school students were also asked what they would like to be or do when they grew up. Responses were rated as: 1) undecided from pre-to-post; 2) non-science career from pre-to-post; 3) science career from pre-to-post. About 12% indicated a change from pre-to-post. These responses were analyzed by asking: given a change from pre-to-post, what was the percentage that changed from a non-science career to a science career? Science was defined broadly to include medicine (doctors and nurses), lab technicians and researchers. Table 14 summarizes these four percentages for the two content areas C and D. The column four percentages are conditional values. For example, the 57% in column four of Table 14 indicates that 57% of 28 students who changed careers from pre-to-post, changed to science in the post survey from a non-science career choice in the pre survey. Table 14 summarizes these four percentages for the C and D content areas.



Table 14
Pre-Post Career Percentages for Middle School Students

	<i>1: undecided pre to post</i>	<i>2. non-science in pre and in post</i>	<i>3. science in pre and in post</i>	<i>4. given change, % into science</i>
Area C (N = 349)	11%	53%	32%	57% (N = 28)
Area D (N = 301)	14%	57%	27%	26% (N = 23)

Teacher attitude towards the DETS curriculum was further examined relative to: 1) ease-of-use; 2) relative engagement when compared to similar curricula; 3) strength of Native American content. Teachers felt that the DETS curriculum was easy-to-use and generally more engaging than similar curricula. The Native American content was generally rated as strong (i.e., strong or very strong by teachers). Table 15 summarizes these results.

Table 15
Middle School Teachers' Attitude Toward Components of the DETS Curriculum

	<i>Ease of use</i>	<i>More engaging then similar curricula</i>	<i>Strong Native American content</i>
Area C	91%	100%	100%
Area D	100%	89%	100%

Finally, teachers believe there was an excellent alignment of the DETS curriculum with the national science education standards. Specifically, 70% of the middle school teachers said that content Area C was well aligned with the national science education standards; 100% of the teachers said that content Area D was well aligned with the standards.

3. Results: High School Grades

As with the middle school results, three student areas of the high school results are examined: 1) achievement; 2) overall attitude; 3) student career data. Teacher attitude relative to ease-of-use, similarity to other curricula, and strength of Native American content is also presented.

For content Area E (grades 10 and 11 DETS science unit), data was received from 94 students across 6 teachers from 6 schools. For content Area F (grades 10 and 11 DETS health unit), data was received from 146 students across 9 teachers from 9 schools. The Area E science unit covered *Understanding Homeostasis through Diabetes* (seven lessons). The Area F health unit covered *Diabetes and American Indian/Alaska Native Health* (six lessons).



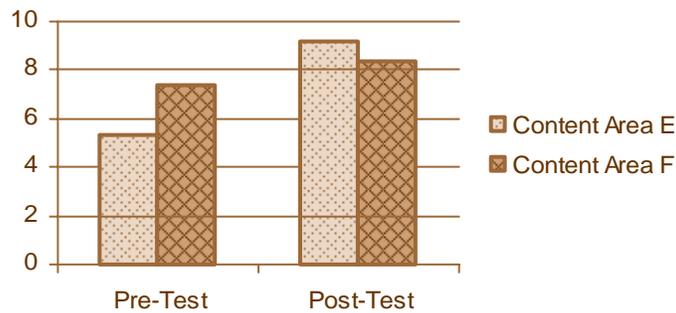
The strong knowledge gain pattern was also found for the two high school content areas. Specifically, student achievement in both content areas E and F showed strong statistically significant gain from pre-test to post test, whereas attitude showed no change. Table 16 provides the means and standard deviations, and Figure 3 illustrates the high school achievement gains.

Table 16
Achievement and Attitude Pre and Post Means for Areas E and F (High School)

	Achievement		Attitude	
	Pre Mean (sd) N	Post Mean (sd) N	Pre Mean (sd) N	Post Mean (sd) N
Area E (Science)	5.3 (2.3) N = 86	9.2 (3.2) *	2.6 (.68) N = 90	2.7 (.77)
Area F (Health)	7.4 (2.6) N = 136	8.4 (3.0) *	3 (.66) N = 136	3 (.71)

* p < .001

Figure 3 - Grades 10 & 11
Pre-Post Achievement Gains



High school teachers were asked to indicate if the DETS curriculum materials were age appropriate, whether the content was too easy, too difficult or just right, and their perception of student level of engagement with the materials. In addition students were asked to rate how easy or difficult the materials were. For the high school grades these results were strongly positive. Tables 17 and 18 below summarize these findings.



Table 17
Teachers: Age Appropriate, Student Engagement, Level of Content

	<i>Age Appropriate?</i> (percent yes)	<i>Students Engaged?</i> (percent yes)	<i>Content Just Right?</i> (percent yes)
Area E	88%	86%	50%
Area F	89%	100%	78%

Table 18
Students: Level of Difficulty

	<i>Too Easy</i>	<i>Just Right</i>	<i>Too Hard</i>
Area E	2%	77%	21%
Area F	11%	83%	6%

Even though a substantial number of high school students rated the DETS science unit (Area E) as “*just right*” (i.e., 77%), overall this science unit (Area E) was generally considered harder than any of the other five DETS units across all three grade levels. Further investigation would be needed to sort out general level of high school science preparation from DETS level of difficulty in the science content area.

The career data from the high school students was examined next. On the pre and post surveys, high school students were also asked what they would like to be or do when they grew up. Responses were rated as: 1) undecided from pre-to-post; 2) non-science career from pre-to-post; 3) science career from pre-to-post. About 16% (range 11% to 22%) indicated a change from pre-to-post. These responses were analyzed by asking: given a change from pre-to-post, what was the percentage that changed from a non-science career to a science career? Science was defined broadly to include medicine (doctors and nurses), lab technicians and researchers. Table 19 summarizes these four percentages for the two content areas E and F. The column four percentages are conditional values. For example, the 67% in column four of Table 19 indicates that 67% of 9 students who changed careers from pre-to-post, changed to science in the post survey from a non-science career choice in the pre survey. Table 19 summarizes these four percentages for the two high school content areas E and F.

Table 19
Pre-Post Career Percentages for High School Students

	<i>1. undecided pre to post</i>	<i>2. non-science in pre and in post</i>	<i>3. science in pre and in post</i>	<i>4. given change, % into science</i>
Area E (N = 82)	5%	39%	50%	67% (N = 9)
Area F (N = 119)	17%	44%	24%	35% (N = 26)



Teacher attitude towards the DETS curriculum was further examined relative to: 1) ease-of-use; 2) relative engagement when compared to similar curricula; 3) strength of Native American content. Teachers felt that the DETS curriculum was easy-to-use and generally more engaging than similar curricula. The Native American content was generally rated as strong (i.e., strong or very strong by teachers). Table 20 summarizes these results.

Table 20
High School Teachers' Attitude Toward Components of the DETS Curriculum

	<i>Ease of use</i>	<i>More engaging than similar curricula</i>	<i>Strong Native American content</i>
Area E	89%	87%	75%
Area F	89%	67%	88%

Finally from the teachers' perspective there was an excellent alignment of the DETS curriculum national science education standards. Specifically, 100% of the high school teachers said that content Area F was well aligned with the standards. Data was not available for content Area E.

4. Results: Site Visits

During the implementation test three DETS sites were visited. In early October 2007 classes in the Ahfachkee K-12 Seminole School in Florida were visited. In middle October 2007 a Pueblo elementary class at the Santo Domingo school was visited in New Mexico. In middle November 2007 Mohawk St Regis and Salmon River classes were visited.

Four DETS classrooms were observed at Ahfachkee Seminole School in Florida. The Ahfachkee School was comprised of about 190 K-12 students. The school served a community of 800-900 residents.



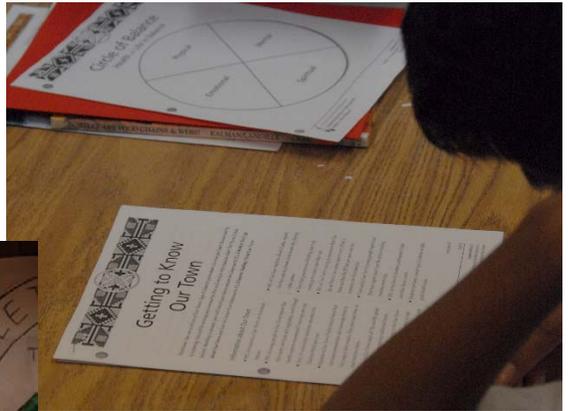
The third grade class taught by Mrs. Inglesias had 7 students (4 boys and 3 girls). Mrs. Inglesias gave an excellent and smoothly paced DETS lesson which began with the blank circle and moved into a discussion of “*health is life in balance*”. The classroom was well equipped and she used an overhead camera projector very effectively with the DETS lesson. The students were actively engaged with a balance activity involving paper plates. Later in the class Mrs. Inglesias read to the students from the Eagle Book *Knees Lifted High*. The students were very engaged by the Eagle Book reading. Mrs. Inglesias took special care to implement the DETS curriculum as written.

Ahfachkee Seminole School (FL) DETS Activities in Elementary Classroom



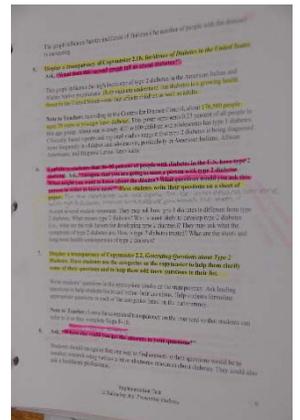
In the 7-8 social studies class (N = 5) with Ms. Klammer the circle of balance was reviewed and the main DETS activity was “getting to know our town”. Two small groups worked through lifestyle findings. These special needs students followed the material well. In the teacher interview, Ms. Klammer said that the materials were easy *and natural* to use. She commented that they were “*very well written*”.

Ahfachkee Seminole School (FL) DETS 7-8 Special Needs Classroom



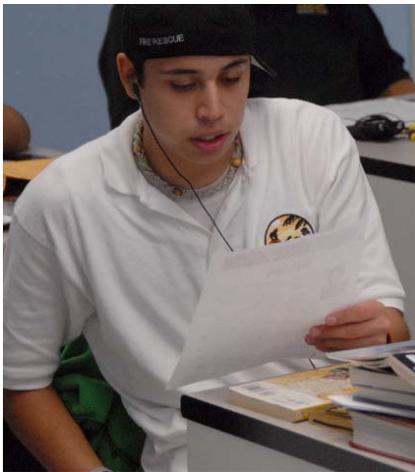
Mrs. DeHarde taught a middle school DETS lesson. While Mrs. DeHarde missed the DETS professional development given by Dr. Carolee Dodge-Francis (she was hired after the professional development occurred), Mrs. DeHarde nonetheless was well prepared to teach the DETS lesson. She made folders for each student to hold their DETS handouts. Her DETS teacher guide was hand annotated with different colors to indicate statements to say and questions to ask. Class today involved reviewing types of diabetes and then breaking up into small groups to generate interview questions concerning type II diabetes. During the small group work three students were interviewed. Students were asked if they were learning things about diabetes that they did not know beforehand. All three said “yes”. For example, they said that they had learned that there is two types of diabetes, and that a lot of people have it. Mrs. DeHarde was very reinforcing of student questions and responses. She was very organized although not as “fluid” in her presentation as other teachers that were observed at Afachkee Seminole School. The small group activity was designed to lead into the development of a poster that explains what type II diabetes is.

Ahfachkee Seminole School (FL) DETS Role Playing Activity in Middle School Classroom



The high school science class (Ms. Shawna) was 19 students (10 males; 9 females). This class is normally run as computer based instruction. Five students were interviewed during this class period. One said that DETS was more interesting than lessons via the computer. Another did not like the computer because it locked up. Generally the students felt that they were getting more information from DETS. One student in this class had a diabetes diagnosis five years ago and it was not until this class that he actually learned about the details of his own diabetes (e.g., which type it was). This student had no idea about potential complications of diabetes until he had the DETS lessons. The class was working through the Nick and Kim stories. For the most part the students were engaged, interactive and in a couple of instances helping each other with the material and associated questions.

Ahfachkee Seminole School (FL) DETS Nick and Kim Activity in a High School Classroom



The interview with Ahfachkee's principal, Mr. Terry Porter, revealed a school dedicated to improving the health of their students, and in this regard enthusiastic about the DETS curriculum. The school had taken out soda and candy machines and during the classroom observations, students were seen drinking water or orange juice. School health policy also impacted on school lunches which focused on serving more fruits and vegetables and reducing the amount of food served that was high in fat.



In New Mexico a DETS elementary classroom at the Pueblo Santo Domingo School was observed.



There were 15 students (10 boys and 5 girls) in this class, and there were no permissions to take photographs of the children’s faces, however the teacher (Ms. Lorencita) gave photographic permission for herself. Two activities occurred during the classroom observation. First the teacher read to the students from the Eagle Books. The students were totally engaged. At one point the teacher asked, “*why does the eagle not fly away?*” The teacher continued, “*Maybe we’ll finish the story tomorrow.*” At this point all the students responded together, “*One more page! Please read one more page!*” Now that the students were engaged the teacher handed out some items such as flashlights and clocks, where the active lesson involved using the notion of battery energy as an analogy to body energy. The question was “*what does the body have in common with the clocks and flashlights?*” The students were very responsive and appeared to be very engaged by this activity.

Santo Domingo (NM) DETS Elementary School Classroom



Two schools were visited in upstate New York at the Mohawk Nation. Two classes were visited at St Regis School and five classes at Salmon River School. St Regis School has 525 students and serves grades K-6; it is 98% Mohawk.

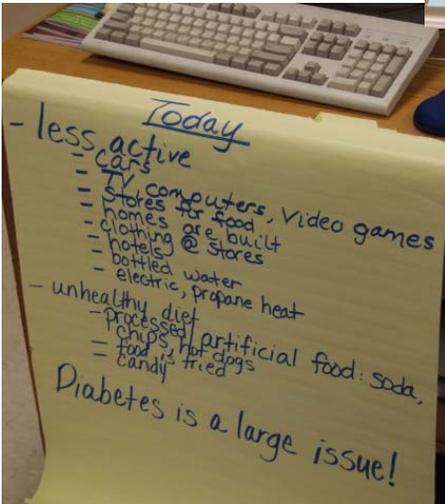
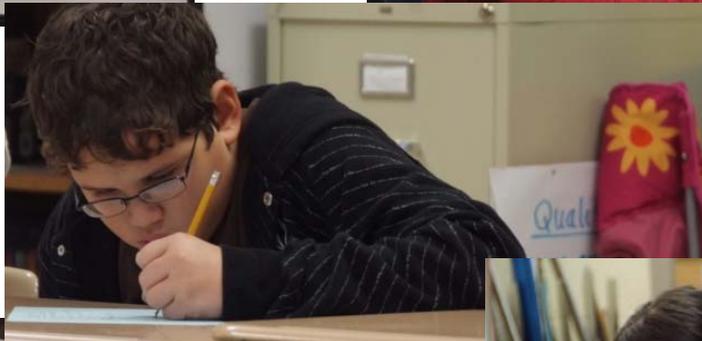


The elementary school DETS class was taught by Ms. Cook and Ms. Gray. Ms. Cook covered Units 1 and 2 for grades 3 and 4, while Ms. Gray covered units 3 and 4 for the same grade level. While the lessons had already been completed at the time of the site visit, the unsolicited first comment made by these two teachers was that the students were engaged by the DETS curriculum. These two teachers stressed the point that diabetes touches the personal lives of their students, and that especially in this regard the DETS materials were effective and engaging.

In the middle school class, Mrs. Charlesbois was doing a 5-6 DETS social studies lesson with her class of 16 students (5 boys; 11 girls). Mrs. Charlebois used the lifestyle copymaster to review lifestyle definitions and options. Class was divided into pairs to write 10 lifestyle options. Mrs. Charlesbois followed the DETS lesson plan closely. The students appeared engaged and interested in the subsequent lifestyle discussions



St Regis Middle School (NY) DETS Lifestyle Activity



Five classes were visited at the Mohawk Salmon River School in New York.



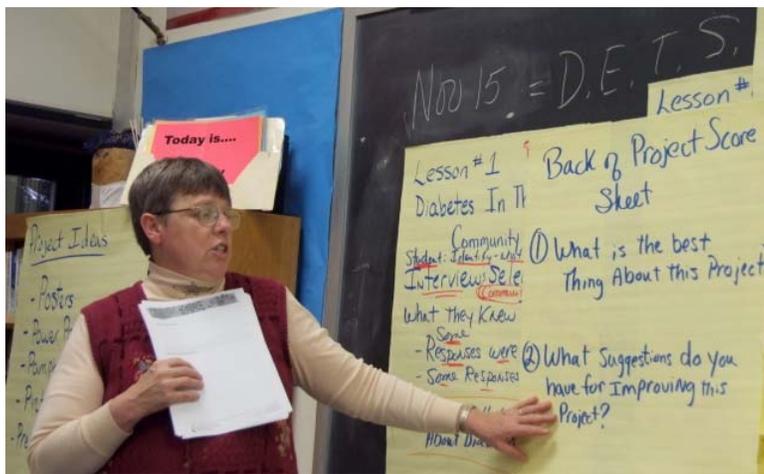
Two combined 3-4 grade level classes were observed. These two classes were reviewing “everyday foods” versus “sometimes food” as well as participating in a discussion on why the body needs food. The teachers followed the DETS activity outline and the students remained highly engaged during this activity.

Salmon River Elementary School (NY) DETS Food Activity



In one middle school class (Ms. Gerow) students were finishing their DETS posters. This DETS activity involved small student groups to design a communication poster about a “Diabetes Prevention Program”. The wrap-up part of this activity involved a classroom-wide critique of each poster, where the critique looked at: 1) what stood out as an effective communication; and 2) how to improve present communications. A second class had just completed their DETS lessons (grades 5-6). This class participated in a group interview, and although they were shy responding to questions, specific responses indicated that diabetes was prevalent in their community and that the DETS curriculum provided them with some specific facts about the disease and its prevention. A middle school science class had completed their DETS unit and were not available for interviewing because they were taking a test that day.

Salmon River Middle School (NY) DETS Poster Activity



DISCUSSION

The statistical patterns across all three grade levels (i.e., elementary; middle; high school) give a picture of a strong curriculum in overall terms as well as relative to the DETS three goals. Only the attitude measure was flat, while the other indicators were in positive directions relative to the impact of the DETS curriculum.

It is interesting to note that the attitude means were flat from pre to post across all three grade levels. There are several possible reasons for this. First, the attitude scale was based on items from the TOSRA. These items were general science attitude items, and not specific to the DETS curriculum. Second, attitude typically does not change over a short period of time. The DETS units took about two weeks to complete in the schools, not enough time for a real attitude shift, particularly attitude related to science in general, rather than attitude related to the particular content of the DETS curriculum. Further research should include diabetes related attitude items.

Relative to the first goal (cultural aspects), content areas A, B, D and F provide strong evidence of knowledge gain. Content areas A and B were at grade levels 3 and 4, and emphasized health from an individual and community perspective. These individual and community aspects of the curriculum were partly based in the role of community and culture for improving health of individuals and families within communities. As Table 4 shows, there was statistically significant improvement from pre-test to post-test on the content areas A and B. (i.e., for all pairwise t-test comparisons $p < .001$). Content area D focused on middle school social studies with a strong cultural basis for teaching about diabetes. Here there was also a strong statistical gain in knowledge means (i.e., t-test comparison $p < .001$). Content area F focused on high school health, and in particular linked the concept of health is life in balance to individual, community and cultural traditions of eating and exercise. Once again there were statistically significant knowledge gains for the DETS high school health unit (i.e., t-test comparisons $p < .001$). Concordant with significant knowledge gains in curriculum areas related to community and cultural content, teachers throughout the three grade level bands rated the Native American content as *strong* or *very strong*. Except at the high school level, teachers were unanimous about the strong Native American cultural content of the curriculum. At the high school level the percentages, although still high, dropped from 100% to 75% and 88% respectively. However, there were only 6 science and 9 health high school teachers; thus, this small but noticeable drop in percentage points only represented 3 or 4 teachers. This is not a significant number of teachers in a study that had 62 teachers across the three grade levels. Strong Native American content with ease-of-use and teacher engagement ratings (see Tables 10, 15 and 20) indicate a curriculum that in its content and format details was very successful in communicating cultural content. In all four content areas that were based on community and cultural content there were statistically significant knowledge gains.

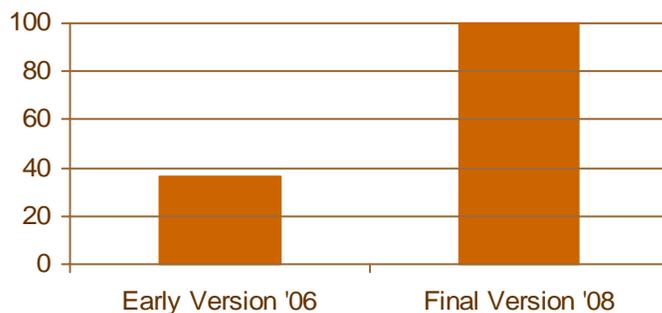
Relative to the second goal (science and traditional knowledge), the curriculum resulted in strong knowledge gains. Content areas C and E focused on science content. Content area C



focused on middle school science, while content area E focused on high school science. As can be seen in Tables 11 and 16 both pairwise t-test comparisons were statistically significant ($p < .001$). This result held up even when N was substantially lower for area E (i.e., $N = 94$) relative to the other where N ranged from a low of 153 to a high of 468.

It is worth noting that an earlier pilot study version of the DETS curriculum showed erratic knowledge gains. During the year that the curriculum was improved from its pilot phase to this implementation phase, the early erratic knowledge gains vanished. If this previous study of an early version of the curriculum is considered as a baseline, the percentage of knowledge gains rose from 36% to 100%. Figure 4 illustrates this result. Figure 4 indicates that all of the pre-to-post knowledge gains were statistically significant, whereas in the earlier version of the curriculum only 36% of the pre-to-post knowledge gains were statistically significant.

Figure 4
Percent Pre-to-Post Knowledge Gains



Relative to the third goal (interest in science careers), there is reasonable evidence that the curriculum had a positive impact. It is worth noting that overall students *were not undecided* when asked what they wanted to do or be when they grew up. As is clear from Tables 9, 14 and 19, a very low percentage of students (range: 4 to 17 percent) stated that they were undecided when asked what they wanted to be or do when they grew up. The vast majority of the students appeared to have very definite statements about future jobs. Although these future job interests ranged from actress to president, students exhibited a remarkable concreteness about jobs they might seek after school.

“I want to be a dentist like my mom.”

“I want to be like my dad and go into construction.”

There are two additional interesting statistics derived from the career statements. First, a substantial percentage of students indicated science related careers on both their pre-test and post-test answers, where science is broadly interpreted as working in medicine, dentistry,



nursing, labs and research. Specifically, between a quarter and half of the students indicated on the pre-test and post-test that they would pursue a career that was somehow related to science. Second, among those individuals that changed career choices from pre-test to post-test, there was a very high percentage where the change was into a science related career from a non-science related career. Specifically, between 26% and 71% changed to a science related career. For example, one student changed from wanting to be a singer to wanting to be a dentist. Another student wrote:

*PRE: "I would like to be unknown."
 POST: "I would like to be a Congressman."*

These student expressions represent positive career changes. In addition to positive career changes a noticeable percentage change toward a career in science (see Tables 7, 10 and 13). While there are too many factors to attribute these changes solely to the DETS curriculum, these statistics reflect positively on the third DETS goal and warrants further investigation in future studies.

Table 21 summarizes data that supports each of the three DETS goals.

Table 21
 Data and DETS Goals

DETS Goals	Supporting Data
1. Maintaining life in balance (cultural – see below)	1. Statistically significant knowledge gains in content areas A, B, D, and F 2. Teacher perception of strong Native American content
2. Understanding scientific and community knowledge (science)	1. Statistically significant knowledge gains in content areas C and E
3. Showing an interest in science and health professions (careers)	1. Pre-post shifts toward science careers 2. Anecdotal student comments



SUMMARY

Overall, the phase IV data reported in this study show clearly that the DETS curriculum had an effective impact relative to its three goals. Goal 1 taught about diabetes in the context of Native American cultural icons and activities. For example, in the elementary school DETS units students participated in the Round Dance, and learned about the importance of communication from the eagle friend in the Eagle Books. In the middle and high school units the relationship between family, elders and community and diabetes was illustrated through various role playing activities. Furthermore, teachers throughout the six content areas rated the Native American content of the DETS curriculum as *strong* or *very strong*. Across all six content areas of the three grade levels (i.e., elementary, middle, high) students consistently showed statistically significant knowledge gains. These significant content gains were equally strong for the science units (i.e., Goal 2: content areas C and E) as well as units that taught about diabetes from a more family, community and cultural perspective (i.e., Goal 1: content areas A, B, D, and F). Finally, where there was a change in career choice from pre-to-post, a substantial percentage changed from non-science to science (i.e., Goal 3). This last finding is based on small N conditional percentages and would need to be further verified with additional research. These phase IV findings show that the DETS curriculum strongly support the three goals of the DETS curriculum project.

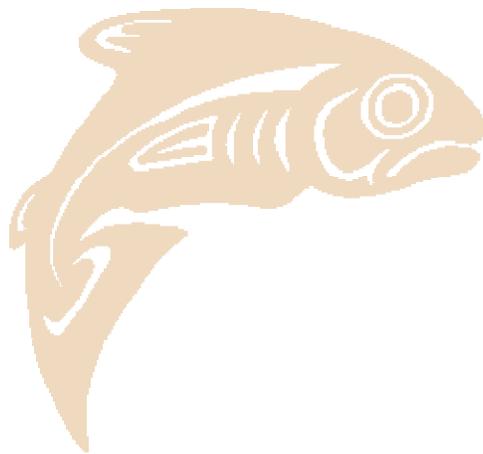
In November 2008 the DETS curriculum will be officially announced at a press conference affair in Washington DC. The curriculum will be available at no cost for implementing starting in January 2009. Once the DETS curriculum has gone public, new and innovative evaluation strategies will be developed and applied in order to capture the academic, attitudinal and social impact of the curriculum on students, their teachers and their communities.



Appendix A

Summary of Participants

- **Participating Schools**
- **Participating Teachers**
- **Index of Implementation Test Classes**



DETS Implementation Test Schools

TCU	Schl#	School Name
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1 Stone Child College

Principal Investigator: Janet Belcourt

- 1 Rocky Boy Jr. High
- 49 St Stephens Indian School
- 50 Rocky Boy High School
- 54 Rocky Boy Elementary School

2 Fort Peck Community College

Principal Investigator: Joni Ackerman

- 8 Frontier Elementary School
- 9 Poplar Elementary School
- 35 Northside Grade School
- 36 Poplar Schools
- 37 SouthSide Grade School
- 38 Poplar Middle School
- 51 Poplar High School

3 Keweenaw Bay Ojibwa Community College

Principal Investigator: Lynn Aho

- 16 C.J. Sullivan Elementary School
- 24 Pelkie School
- 40 Baraga Area Schools
- 41 Chassell Township Schools
- 42 L'Anse Area Schools
- 48 Baraga High School

4 Southwestern Indian Polytechnic Institute

Principal Investigator: Carol Maller

- 12 Santo Domingo Middle School
- 18 Santa Clara Day School
- 45 Santo Domingo Elementary School
- 46 Santa Fe Indian School

5 Haskell Indian Nations University

Principal Investigator: Shelley Bointy

- 7 Royal Valley Elementary School

TCU	Schl#	School Name
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6 Cankdeska Cikana Community College

Principal Investigator: Thalia Esser

- 13 Four Winds High School
- 23 Warwick Public School
- 43 Four Winds Community School
- 44 Warwick High School
- 52 Tate Topa Elementary Tribal School
- 55 Four Winds Elementary School

7 Northwest Indian College

Principal Investigator: William Freeman

- 14 Madras High School
- 53 Windward High School
- 56 Jefferson County Middle School
- 57 Madras Elementary School

8 Leech Lake Tribal College

Principal Investigator: Juanita Wiley

- 10 North Elementary School
- 19 Bug-O-Nay-Ge-Shig School

9 Sister Sites

Principal Investigator: Carolee Dodge Frances

- 21 Rocky Mountain School
- 26 Ahfachkee School
- 27 Circle of Nations School
- 28 Salmon River Elementary
- 29 United Auburn Indian Community
- 30 Lower Kuskokwim
- 31 St. Regis Mohawk
- 32 Red Cloud High School
- 33 Wolf Creek Elementary School
- 34 Salmon River Secondary
- 39 Salmon River Central School District

DETS Implementation Test Teacher Participants

teacher	TCU	school	Area	grade
ClassID of classes taught				
1 Teresa Olson	1	1	C	7
22				
25 Toni Truesdale	4	46	F	10-11
32				
114				
115				
116				
117				
31 Jamie Johnson	3	16	A	3
39				
38 Phyllis Jenkins	4	18	A	3
28				
106				
49 Tami Liberty	8	19		7
62				
50 Shirley Ingram	1	1		7
20				
152				
52 Joann Martin	2	8	K	K
149				
54 June Petrik	2	8	B	4
46				
55 Jeri Azure	2	9	K	K
153				
56 Sherri Carmichael	9	21		4-6
124				
62 Barbara Eversvik	6	23		7-11
34				
38				
63 Annette Roach	5	7		4
129				
64 Sandra E. Johnson	6	13	F	11
37				
69 Melissa Kohl-Granbois	2	9	B	4
45				
79 Laura Schneider	3	42	C & E	7&9
100				
102				
103				
81 Barbara Klammer	9	26	D	ESE middle/ high
11				
82 Samantha Williams	9	26	D or C	7-8

teacher	TCU	school	Area	grade
ClassID of classes taught				
83 Eileen Hager	9	26	C	7-8
84 Orlando Garcia	9	26	A	3-4
13				
85 Rhonda Iglesias	9	26	A	3
14				
86 Shawna Bauer	9	26	E & F	9-12
15				
87 Robyn Baker	2	9	A	3
43				
88 Emily Hamilton	2	35	A	4
42				
89 Mr. Moore	2		E	HS
90 Kevin Kenelty	2	38	D	8
53				
54				
55				
56				
57				
91 Mr. Rosado	2		F	HS
92 Rachel DeHarde	9	26	C	7-8
12				
93 Amanda Cook	9	31		4
68				
94 Karen Alexander	9	34		4
69				
70				
95 Mary Ann Post	9	28	A&B	4
96 Joe Binion	9	34	D	7-8
72				
73				
74				
75				
76				
77				
97 Christine Walley	9	34	C	7-8
78				
79				
80				
81				
82				
147				

teacher	TCU	school	Area	grade
ClassID of classes taught				
98 Amy Hollister	9	34	C	7-8
99 John Aldrich	9	34	E	9
83			E	
84			E	
85			E	
100 Connie Gerow	9	34	F	10
98			F	
99			F	
146			F	
148			F	
101 Ed Simons	9	27	C	7-8
102 Jason Lofberg	9	27	D	7-8
92			D	
93			D	
94			D	
95			D	
96			D	
97			D	
103 Lisa Wifall	9	27	A & B	4
65			A	
66			B	
104 Erin Gray	9	31	B	3-4
71			B	
105 Angela Andersen	2	9	B	4
44			B	
106 Luanne Azure	2	38	C	7
47			C	
48			C	
49			C	
50			C	
51			C	
107 Leslie Moran	2	38	D	7
52			D	
108 Suzanne Turnbull	2	51	F	10
59			F	
109 Rebecca Stroube	3	16	B	4
40			B	
110 Kristiina Vanhala	3	40	B	4
41			A	
111 Mary Markham	3	41	C & E	7 & 11
104			C	
105			E	
112 Lorencita Quintana	4	45	B	3
29			B	
107			B	

teacher	TCU	school	Area	grade
ClassID of classes taught				
113 Elaine Smith	4	12	C	7-8
30			C	
118			C	
119			C	
120			C	
121			C	
122			C	
123			C	
114 Ricardo Cate'	4	12	D	7-8
31			D	
108			D	
109			D	
110			D	
111			D	
112			D	
113			D	
115 Michele Serafin	3	40	D	7-8
125			D	
116 Janet Reisig	1	49	F	9 - 12
24			F	
117 Ty Watson	1	50	F	9,10,11
25			F	
118 Berg Rochelle	2	9	K	Pre-K,K
151			K	
119 Vicki Hiestand	9	29	A	3-4
140			A	
120 Jen Racine	9	29	A	3-4
121 Christina Bickley	9	29	F	HS
141			F	
122 Carolyn Rusche	2	37	K	Pre-K,K
150			K	
123 John Lohnes	6	13	E	HS
35			E	
124 Sarelle Escarcega	2	9	K	K
154			K	
125 Preuit Robert	1	49	C	7-8
23			C	
126 Smith Tobe (Jr.)	9	26	E	9-12
16			I	
127 Linda Engbretson	1	1	E	10
27			E	
128 Adera Doris	8	19	F	6-12
64			F	
129 Bish David	9	31	G	5
155			G	

teacher	TCU	school	Area	grade
ClassID of classes taught				
130 Laurie Johnston	6	52	B	3
33				
131 Rebecca Huiatt	9	28	H	6
157				
132 Louella Forkey	9	28	U	5
156				
133 Jill Iwasaki	7	53	F	9-12
139				
134 Yvonne Wilson	8	10	A	3
61				
135 Duane Peterson	6	44	E	HS
136 Ryan Jorgenson	8	19	E	9-12
126				
137 Mary Gephart	8	10	A	4
60				
138 D. Three Irons	1	54	A	4
18				
139 Lindsay Charlebois	9	31	H	6
158				
159				
140 Andrewson Vincent	9	26	D	8
17				
141 Shannon Alley	7	56	C	7
167				
168				
142 Hagman Lola	7	56	C	7-8
165				
166				
143 Nate Tyler	7	14	E	10-11
137				
144 Peggy Forbis	1	49	A	4
19				
145 Jeff Herbig	1	49	D	7-8
21				
146 Lisa Stroup	7	56	D	7
160				
161				
162				
163				
164				
147 Dawn Shupe	5	7	A	4
127				
148 Daniel R. Stroup	7	57	H	5

teacher	TCU	school	Area	grade
ClassID of classes taught				
149 Douglas Harris	7	57	B	4
150 Thomas Wheeler	7	57	B	4

DETS Implementation Test Classes

Class ID	TCU #	School #	Teacher #	Content Area	grade level	# of students in class
11	9	26	81	D	7-8	5
12	9	26	92	C	7	13
13	9	26	84	A	4	12
14	9	26	85	B	3-4	9
17	9	26	140	D	8	13
18	1	54	138	A	4	17
19	1	49	144	A	4	12
21	1	49	145	D	7-8	16
22	1	1	1	C	7-8	20
23	1	49	125	C	7-8	10
24	1	49	116	F	9-12	18
25	1	50	117	F	9-11	15
27	1	50	127	E	10-11	17
28	4	18	38	A	3	20
29	4	45	112	B	3	16
30	4	0	113	C	7-8	19
31	4	12	114	D	8	18
32	4	46	25	F	10-11	12
33	6	55	130	B	3	18
34	6	23	62	C	7	19
35	6	13	123	E	10-11	15
37	6	13	64	F	10-12	9
38	6	23	62	F	10-12	13
39	3	16	31	A	3	22
40	3	16	109	B	4	17
41	3	40	110	A	4	19
42	2	35	88	A	4	14
43	2	9	87	A	3-4	14
44	2	9	105	B	3-4	13

Class ID	TCU #	School #	Teacher #	Content Area	grade level	# of students in class
45	2	9	69	A	3-4	11
46	2	8	54	B	4	10
47	2	38	106	C	7	10
48	2	38	106	C	7	8
49	2	38	106	C	7	11
50	2	38	106	C	7	10
51	2	38	106	C	7	7
52	2	38	107	D	7-8	11
53	2	36	90	D	8	13
54	2	36	90	D	8	13
55	2	36	90	D	8	10
56	2	51	90	D	8	15
57	2	38	90	D	8	9
59	2	51	108	F	10-11	4
60	8	10	137	A	4	10
61	8	10	134	A	3	6
62	8	19	49	C	8	20
64	8	19	128	F	10-11	13
65	9	27	103	A	4	9
66	9	27	103	B	4	6
68	9	31	93	A	4	19
69	9	28	94 95	A	4	26
70	9	28	94 95	B	4	26
71	9	28	104	B	3	16
72	9	34	96	D	7	16
73	9	34	96	D	7	20
74	9	34	96	D	7	20
78	9	34	97	C	7-8	17
79	9	34	97	C	8	20
80	9	34	97	C	8	15
81	9	34	97	C	8	17

Class ID	TCU #	School #	Teacher #	Content Area	grade level	# of students in class
82	9	34	97	C	8	20
92	9	27	102	D	8	12
93	9	27	102	D	8	11
94	9	27	102	D	7	8
95	9	27	102	D	8	11
96	9	27	102	D	7	11
97	9	27	102	D	7	15
98	9	34	100	F	9-12	11
99	9	34	100	F	9-12	10
100	3	4	79	C	7	14
102	3	42	79	E	9	10
103	3	42	79	E	9	21
104	3	41	111	C	7	23
105	3	41	111	E	11	12
109	4	12	114	D	8	19
110	4	12	114	D	7	17
111	4	12	114	D	7	16
112	4	12	114	D	7	13
118	4	12	113	C	7	13
119	4	12	113	C	7	16
120	4	12	113	C	8	14
121	4	12	113	C	8	18
122	4	12	113	C	8	17
124	9	21	56	C	7-8	9
125	3	40	115	D	8	23
126	8	19	136	E	11-12	4
127	5	7	147	A		22
129	5	7	63	B		22
137	7	14	143	E	10-12	15
139	7	53	133	F	9-12	22
146	9	34	100	F	9-12	8

Class ID	TCU #	School #	Teacher #	Content Area	grade level	# of students in class
147	9	34	97	C	8	13
148	9	34	100	F	9-12	11
160	7	56	146	D	7	20
161	7	56	146	D	7	19
162	7	56	146	D	7	13
163	7	56	146	D	7	19
164	7	56	146	D	7	19
165	7	56	142	C	7	25
166	7	56	142	C	7	24
167	7	56	141	C	7	24
168	7	56	141	C	7	22

Appendix B

Unit Descriptions



Unit Title

Lesson Titles

A

Grade Level: 3-4
Unit 1

Health is Life in Balance

- Lesson 1: The Gift of Trees
- Lesson 2: Messengers
- Lesson 3: What is Diabetes? How to find out more
- Lesson 4: Let's Move -- The Round Dance
- Lesson 5: My Health Message for Others

Grade Level: 3-4
Unit 2

Being Smart about being Healthy

- Lesson 1: Recognizing Tricky Treats
- Lesson 2: Becoming a Smart Eater, Becoming a Smart Consumer
- Lesson 3: Practice Thinking Critically and Making Good Food Choices
- Lesson 4: A Celebration of Community Diversity

B

Unit Title

Lesson Titles

Grade Level: 3-4
Unit 3

Exploring Diabetes

- Lesson 1: Why Do We Eat?
- Lesson 2: How Does Our Body Use Food?
- Lesson 3: Millions of Cells -- The Body
- Lesson 4: The Pancreas
- Lesson 5: How Glucose Works in the Body
- Lesson 6: Our Bodies Use Food to Stay Healthy

Grade Level: 3-4
Unit 4

Harvesting Our Mother Earth

- Lesson 1: Balance the Food You Eat with the Activities You Do
- Lesson 2: Traditional Native American Foods and Activities
- Lesson 3: What Keeps Us Healthy?
- Lesson 4: Scientific Knowledge and Traditional Wisdom
- Lesson 5: Food Content of Traditional and Refined Foods

Unit Title

Lesson Titles

C

Grade Level: 7-8
Science Unit

A Balancing Act: Preventing Diabetes

- Lesson 1: History in the Making
- Lesson 2: Focus on Diabetes
- Lesson 3: Health is Life in Balance
- Lesson 4: The Diabetes Health Care Clinic
- Lesson 5: Taking the Message Home

D

Unit Title

Lesson Titles

Grade Level: 7-8
Social Studies Unit

Life in Balance

- Lesson 1: Civic Action and Health
- Lesson 2: Diabetes and the Circle of Balance
- Lesson 3: A Community Seeks Balance
- Lesson 4: Your Community Needs You

Unit Title

Lesson Titles

E

Understanding Homeostasis through Diabetes

Lesson 1: What is Diabetes?

Lesson 2: What is Blood Glucose?

Lesson 3: Keeping Blood Glucose in Balance

Lesson 4: How Does Insulin Work?

Lesson 5: Diabetes - Why Does It Matter?

Lesson 6: Sharing Your Knowledge of Type 2 Diabetes

Lesson 7: Using Your Knowledge of Type 2 Diabetes

Unit Title

Lesson Titles

F

Diabetes and American Indian/Alaska Native Health

Lesson 1: Diabetes and the Community

Lesson 2: The Facts of Diabetes

Lesson 3: Health Risks in Diabetes

Lesson 4: History: Changes in Environment and Diet

Lesson 5: Diabetes Prevention Program

Lesson 6: Evaluation

Appendix C

Assessment Questions and Keys

- **Teacher Web Survey**
- **Student Survey Questions With Key for Content Area A**
- **Student Survey Questions With Key for Content Area B**
- **Student Survey Questions With Key for Content Area C**
- **Student Survey Questions With Key for Content Area D**
- **Student Survey Questions With Key for Content Area E**
- **Student Survey Questions With Key for Content Area F**



DETS Implementation Test Teacher Web Survey



Introduction: This Implementation Test survey should take about 15 minutes. The purpose of the survey is to document your perception of the DETS curriculum Implementation Test lessons that you have taught in the fall of '07. Your confidential responses will help provide candid feedback on this pre-production phase of the DETS curriculum development- thanks!

1. Teacher Name:

2. Grade Level:

3. School:

4. State:

5. Which DETS Unit(s) have you taught this Fall of 2007? (check one)

- Grades 3-4; Units 1 & 2 (Health is Life in Balance; Being Smart About Being Healthy)
- Grades 3-4; Units 3 & 4 (Exploring Diabetes; Harvesting Our Mother Earth)

- Grades 7-8; Science Unit (A Balancing Act: Preventing Diabetes)
- Grades 7-8; Social Studies Unit (Life in Balance)

- Grades 10-11; Science Unit (Understanding Homeostasis through Diabetes)
- Grades 10-11; Health Unit (Diabetes and American Indian/Alaska Native Health)

- Other:

Background Questions

6. How did you get involved teaching DETS lessons?

- volunteered
- word-of-mouth
- mandate from principal/superintendent
- other:

7. What DETS-related professional development opportunities have you had since January '07?

- none
- introductory inservice on diabetes
- advanced inservice on diabetes
- teacher training on DETS curriculum
- other:

8. Approximately how many hours of DETS-related professional development opportunities have you had since January '07?

9. About how many of your students participated in you DETS class this fall of 2007?

- 1 to 10
- 11 to 20
- 21 to 30
- 31 to 40
- More than 40

10. Approximately what percentage (number only) of your DETS students were Native American?

11. Approximately how many classroom hours (number only) have you spent teaching DETS lessons since January '07?

Survey Questions

12. In general, were the DETS lessons longer
 about right
 shorter

in time, relative to the time that was indicated in the curriculum materials?

Comment:

13. How age appropriate were the DETS materials for your students?

very inappropriate inappropriate appropriate very appropriate

14. Please rate the level of engagement of your students while you were teaching these lessons.

not engaged somewhat engaged very engaged

15. Overall, how would you rate the content of these lessons for your students?

too easy just right too difficult

Please briefly explain your rating. That is, which aspects were too easy or too difficult? For example, what made a lesson "just right" (e.g., content, format, vocabulary, etc.)?

16. How well did your students like the DETS lessons?

Really disliked them Disliked them Liked them Really liked them

17. Please list which lesson components (e.g., goal statements, standards, materials list, vocabulary, cultural content, science content, assessments, etc.) were particularly effective and easy to use?

18. Please list which lesson components (e.g., goal statements, standards, materials list, vocabulary, cultural content, science content, assessments, etc.) were particularly ineffective and difficult to use?

19. From your perspective were the lessons that you taught from the DETS curriculum adequately aligned with the National Science Standards?

- not aligned somewhat aligned very aligned not sure

Please briefly elaborate.

20. If you used the Eagle Books (i.e., Grades 3-4), please respond to a. through d. below, otherwise skip to question 21.

The Eagle Books:

a. were liked by my students.

- strongly disagree disagree agree strongly agree

b. supported the content of DETS lessons.

- strongly disagree disagree agree strongly agree

c. were generally relevant.

- strongly disagree disagree agree strongly agree

d. Comment:

21. In general what have been the strengths of the DETS lessons thus far?

22. In general what areas of the DETS lessons that you taught need improvement?

23. Please take a final moment to provide us with a few more overall ratings on your experiences with the DETS curriculum thus far.

a. How successful were you in implementing the DETS lessons?

- very unsuccessful unsuccessful successful very successful

b. From a teacher's perspective how easy-to-use is the DETS curriculum?

- very difficult to use difficult to use easy to use very easy to use

c. Compared to other similar curricula that you have taught, how engaging for your students was the DETS curriculum?

- very unengaging unengaging engaging very engaging

d. Overall how strong was the Native American cultural framework (e.g. Native American examples, links to Native American culture.)?

very strong

strong

weak

very weak

Please elaborate:

24. Please describe what kind of support or assistance you would need to fully implement the DETS curriculum.

Thanks for your help!

Assessment Questions and Keys for Content Area **A**

Grades 3-4 Units 1 & 2

Health is Life in Balance

- Lesson 1: The Gift of Trees
- Lesson 2: Messengers
- Lesson 3: What is Diabetes? How to find out more
- Lesson 4: Let's Move -- The Round Dance
- Lesson 5: My Health Message for Others

Being Smart about being Healthy

- Lesson 1: Recognizing Tricky Treats
- Lesson 2: Becoming a Smart Eater, Becoming a Smart Consumer
- Lesson 3: Practice Thinking Critically and Making Good Food Choices
- Lesson 4: A Celebration of Community Diversity

Pre/Post KNOWLEDGE Questions

	Answers
K1 (Q) Humans get things they need from the world around us. 1=True 2=False 3=Don't Know	K1 (A) 1
K2 (Q) Diabetes makes the body out of balance. 1=True 2=False 3=Don't know	K2 (A) 1
K3 (Q) Glucose is 1=a kind of glue 2=the kind of sugar used in the body for energy 3=a kind of fruit that grows on trees. 4=the name of a disease 5=don't know	K3 (A) 2
K4 (Q) Exercise is important for staying healthy. 1=True 2=False 3=Don't know	K4 (A) 1
K5 (Q) Your body needs the most energy for 1=playing tag 2=sleeping 3=sitting down 4=reading a book 5=don't know	K5 (A) 1
K6 (Q) Companies try to get people to buy less healthy foods by 1=making television commercials that kids like. 2=giving a toy or prize to people who buy the food. 3=having a television or sports star in the commercial. 4=all of the above choices are correct 5=don't know	K6 (A) 4

K7 (Q) Diabetes is a disease that
 1=keeps the body from using glucose in the right way.
 2=makes the food a person eats more healthy.
 3=keeps the body from taking in normal amounts of air when breathing.
 4=slows down a person's growth so they are shorter.
 5=Don't know. K7 (A)

K8 (Q) Which food is probably a "sometimes" snack tht you would not eat every day?
 1=Apple
 2=Cheese
 3=Milk
 4=Potato chips
 5=Don't know K8 (A)

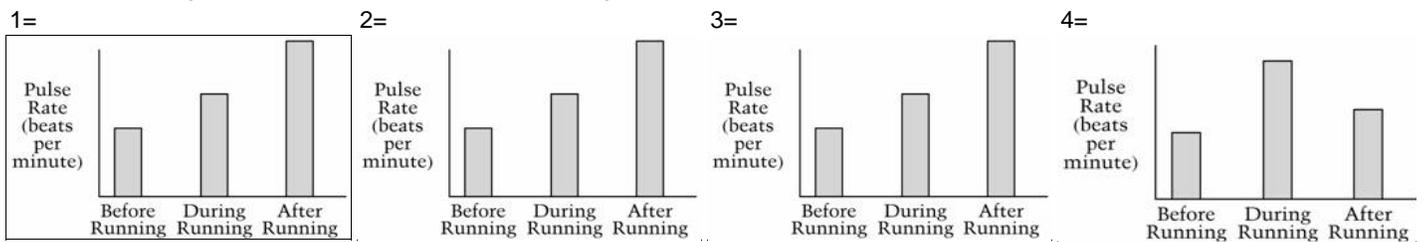
K9 (Q) Labels on food can help people make healthy choices because they
 1=give people information about how the food was shipped
 2=tell people what other foods they should eat with.
 3=give information about the amount of sugar and fat in the food
 4=tell people when the food is on sale K9(A)

K10 (Q) A consumer is someone who
 1=grows food for others.
 2=sells food in a grocery store.
 3=buys or eats food.
 4=teaches someone how to cook food.
 5=don't know. K10 (A)

K11 (Q) One foodgroup on the MyPyramid is vegetables. Name two other food groups on My Pyramid. (text answers) K11 (A)

K12 (Q) A farmer thinks that the vegetables on her farm are not getting enough water. Her son suggests that they use water from the nearby ocean to water the vegetables. Is this a good idea?
 1=Yes, because there is plenty of ocean water.
 2=Yes, because ocean water has many natural fertilizers
 3=No, because ocean water is too salty for plants grown on land.
 4=No, because ocean water is much more polluted than rainwater. K12 (A)

K13 (Q) Joe wanted to know how his pulse rate changed when he ran very fast. He measured his pulse rate before he started running, while running, and two minutes after he stopped running. Which graph shows how Joe's pulse rate changed? Please check the box next to the best answer. K13 (A)



K14 (Q) A green tree frog lives in a forest. How does the frog's green color help it to survive?
 1=By helping the frog find other frogs.
 2=By keeping the frog cool
 3=By making the frog hard to see when sitting on leaves.
 4=By allowing the frog to make its own food. K14 (A) 3

Pre/Post ATTITUDE Questions

1=Agree

2=Not Sure

3=Disagree

- A1 I like school
- A2 I am interested in health lessons
- A3 I know a lot about health
- A4 Science lessons are fun
- A5 I would like to teach science when I leave school.
- A6: It is important to take care of one's health.
- A7: I like learning new things in school.
- A8: Please tell us what you would like to be or do when you grow up:

Post Attitude Questions about Curriculum

- A9: I thought these DETS lessons were:
1=too easy
2=just right
3=too difficult
- A10: The gift of Trees
- A11: Messengers
- A12: What is Diabetes?
- A13: Let's Move - The Round Dance
- A14: My Health Message for Others
- A15: Recognizing Tricky Treats
- A16: Becoming a Smart Eater; Becoming a Smart Consumer
- A17: Practice Thinking Critically and Making Good Food Choices
- A18: A Celebration of Community Diversity
- A21: What did you like or dislike about the DETS lessons? (Text)

Please take a moment to think about the DETS lessons. These lessons are listed below. For each lesson, please check the box that tells us how much you feel you learned. If you cannot remember the lesson, please check the last box.

1=I learned nothing

2=I learned a little bit

3=I learned some things

4=I learned a lot

5=I don't remember the lesson

Post Eagle Books Questions

- EB1: I liked the Eagle Books
- EB2: The Eagle Books were fun to read.
- EB3: I would like to own an Eagle Book.
- EB4: An Eagle Book would be a nice gift.
- EB5: I wanted to go out and play after hearing the Eagle Book stories.
- EB6: The Eagle Book stories made me happy.
- EB7: I did not like the Eagle Books.
- EB8: I wanted to stay inside after hearing the Eagle Book stories.

Please think of the Eagle Books when you answer these questions.

1=yes

2=no

Assessment Questions and Keys for Content Area **B**

Grades 3-4 Units 3 & 4

Exploring Diabetes

- Lesson 1: Why Do We Eat?
- Lesson 2: How Does Our Body Use Food?
- Lesson 3: Millions of Cells -- The Body
- Lesson 4: The Pancreas
- Lesson 5: How Glucose Works in the Body
- Lesson 6: Our Bodies Use Food to Stay Healthy

Harvesting Our Mother Earth

- Lesson 1: Balance the Food You Eat with the Activities You Do
- Lesson 2: Traditional Native American Foods and Activities
- Lesson 3: What Keeps Us Healthy?
- Lesson 4: Scientific Knowledge and Traditional Wisdom
- Lesson 5: Food Content of Traditional and Refined Foods

Pre/Post KNOWLEDGE Questions

	Answers
K1 (Q) Our bodies use the food we eat to make the energy our bodies need. 1=True 2=False 3=Don't know	K1 (A) 1
K2 (Q) Glucose is 1=the kind of sugar that our bodies use. 2=the same thing as white sugar (also called table sugar). 3=a kind of glue.	K2 (A) 1
K3 (Q) Carbohydrates 1=are used mainly by muscles so they get bigger and stronger. 2=carry vitamins through our bodies 3=are the main source of energy for our bodies are one kind of fat found in food. 5=don't know	K3 (A) 3
K4 (Q) In someone who has diabetes, 1=glucose never gets into the blood 2=glucose cannot be used by the body in the normal way. 3=the body doesn't use glucose.	K4 (A) 2
K5 (Q) When a person eats a meal, the amount of glucose in the blood 1=stays the same. 2=goes down. 3=goes up. 4=don't know.	K5 (A) 3
K6 (Q) Name something a person can do that would help keep the amount of glucose in their blood low.	K6 (A)
K7 (Q) The activities we do today require more energy than the activities our ancestors did long ago. 1=True 2=False 3=Don't know.	K7 (A) 2

K8 (Q) Which is true about diabetes?
 1=Our ancestors got diabetes more often than people do now.
 2=People can make choices that will keep them from getting diabetes.
 3=Our ancestors worked harder than people do now.
 4=People cannot do anything that will keep them from getting diabetes.
 5=Don't know. **K8 (A)**

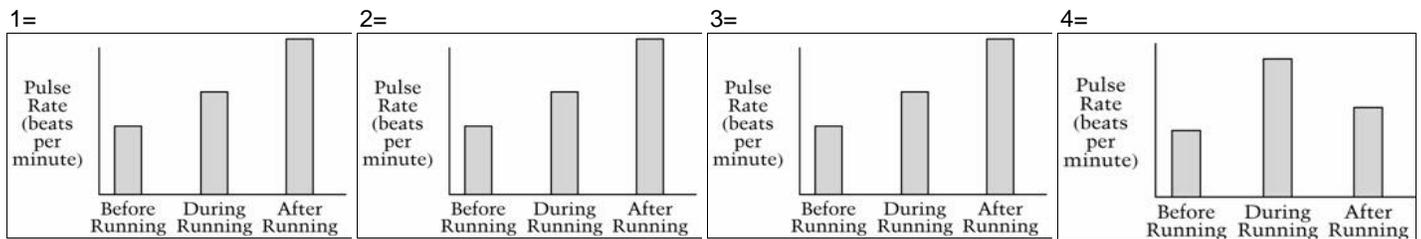
K9 (Q) Food and water are important for growing strong and staying healthy. Which of the following is true about healthy food choices? **K9 (A)**
 1=Junk food is okay to eat all the time.
 2=A good breakfast everyday makes you fat.
 3=Skipping meals makes you less hungry and is a good way to stay healthy.
 4=A balanced diet of nutritious foods and water helps prevent diseases like diabetes.
 5=Don't know.

K10 (Q) A person who eats more calories than they need will **K10 (A)**
 1=gain weight
 2=lose weight
 3=stay the same
 4=get taller
 5=don't know

K11 (Q) List 3 healthy foods that you can eat for energy. **K11 (A)**

K12 (Q) A farmer thinks that the vegetables on her farm are not getting enough water. Her son suggests that they use water from the nearby ocean to water the vegetables. Is this a good idea? **K12 (A)**
 1=Yes, because there is plenty of ocean water.
 2=Yes, because ocean water has many natural fertilizers
 3=No, because ocean water is too salty for plants grown on land.
 4=No, because ocean water is much more polluted than rainwater.

K13 (Q) Joe wanted to know how his pulse rate changed when he ran very fast. He measured his pulse rate before he started running, while running, and two minutes after he stopped running. Which graph shows how Joe's pulse rate changed? Please check the box next to the best answer. **K13 (A)**



K14 (Q) A green tree frog lives in a forest. How does the frog's green color help it to survive? **K14 (A) 3**
 1=By helping the frog find other frogs.
 2=By keeping the frog cool
 3=By making the frog hard to see when sitting on leaves.
 4=By allowing the frog to make its own food.

Pre/Post ATTITUDE Questions

1=Agree

2=Not Sure

3=Disagree

- A1: I like school
- A2: I am interested in health lessons
- A3: I know a lot about health
- A4: Science lessons are fun
- A5: I would like to teach science when I leave school.
- A6: It is important to take care of one's health.
- A7: I like learning new things in school.
- A8: Please tell us what you would like to be or do when you grow up:
-

Post Attitude Questions about Curriculum

- A9: I thought these DETS lessons were:
1=too easy
2=just right
3=too difficult

Please take a moment to think about the DETS lessons. These lessons are listed below. For each lesson, please check the box that tells us how much you feel you learned. If you cannot remember the lesson, please check the last box.

- A10: Why Do We Eat? 1=I learned nothing
- A11: How Does Our Body Use Food? 2=I learned a little bit
- A12: Millions of Cells - The Body 3=I learned some things
- A13: The Pancreas 4=I learned a lot
- A14: How Glucose Works in the Body 5=I don't remember the lesson
- A15: Our Bodies Use Food to Stay Healthy
- A16: Balance the Food You Eat with the Activities You Do
- A17: Traditional Native American Foods and Activities
- A18: What Keeps Us Healthy?
- A19: Scientific Knowledge and Traditional Wisdom
- A20: Food Content of Traditional and Refined Foods
- A21: What did you like or dislike about the DETS lessons? (Text)
-

Post Eagle Books Questions

- EB1: I liked the Eagle Books
- EB2: The Eagle Books were fun to read.
- EB3: I would like to own an Eagle Book.
- EB4: An Eagle Book would be a nice gift.
- EB5: I wanted to go out and play after hearing the Eagle Book stories.
- EB6: The Eagle Book stories made me happy.
- EB7: I did not like the Eagle Books.
- EB8: I wanted to stay inside after hearing the Eagle Book stories.

Please think of the Eagle Books when you answer these questions.

1=yes

2=no

Assessment Questions and Keys for Content Area **C**

Grades 7-8 Science Unit

A Balancing Act: Preventing Diabetes

Lesson 1: History in the Making

Lesson 2: Focus on Diabetes

Lesson 3: Health is Life in Balance

Lesson 4: The Diabetes Health Care Clinic

Lesson 5: Taking the Message Home

Pre/Post KNOWLEDGE Questions

Answers

K1 (Q)	Insulin 1=is produced by cells in the liver. 2=is important for digestion of foods. 3=is produced by the pancreas. 4=increases blood flow to the body. 5=don't know.	K1 (A)
K2 (Q)	If a person's parents have diabetes, the child will always get it too. 1=True 2=False 3=Don't know.	K2 (A)
K3 (Q)	In a person with untreated diabetes, blood sugar levels are 1=usually normal, but sometimes they are increased. 2=higher than normal. 3=lower than normal. 4=normal, but digestion of sugars is increased. 5=don't know	K3 (A)
K4 (Q)	MyPyramid is a tool 1=that tells people what they must eat for meals and snacks 2=for separating healthy from unhealthy foods. 3=Used to measure blood sugar levels in people who have type 2 diabetes. 4=that helps people make choices about eating and physical activity. 5=don't know.	K4 (A)
K5 (Q)	Which one of the following statements about diabetes is true? 1=All persons with diabetes need to take insulin injections. 2=Eating too much sugar is a major cause of diabetes. 3=Diabetes is controllable and is not a serious threat to health. 4=Diabetes can result in serious complications including heart disease, nerve damage, limb loss, kidney failure, and blindness.	K5 (A)
K6 (Q)	People can make choices that will reduce the chance that they will get type 2 diabetes 1=True 2=False 3=Don't know	K6 (A)
K7 (Q)	Which of the following is NOT a risk factor for type 2 diabetes? 1=Height. 2=Weight. 3=Age. 4=Family history. 5=All are risk factors. 6=Don't know.	K7 (A)

- K8 (Q) In type 2 diabetes,
1=no insulin is produced in the body.
2=too much insulin is produced in the body.
3=the insulin doesn't work normally.
4=insulin causes a person to grow taller than normal.
5=don't know K8 (A)
- K9 (Q) All foods and activities fit into one of the categories on MyPyramid.
1=True
2=False
3=Don't know K9 (A)
- K10 (Q) Effective treatment for type 2 diabetes might include
1=eating a healthy diet.
2=getting more rest.
3=taking vitamins daily.
4=eating only vegetables.
5=there are no effective treatments.
6=don't know K10 (A)
- K11 (Q) The statement, "Health is life in balance," as it relates to type 2 diabetes, means
1=the number of people who have type 1 diabetes is equal to the number of people who have type 2 diabetes.
2=people need to eat a balanced diet everyday to prevent type 2 diabetes.
3=people need to do physical activities that improve their sense of balance.
4=many factors, including diet and exercise, are important for staying healthy.
5=The statement doesn't relate to type 2 diabetes. K11 (A)
- K12 (Q) A human CANNOT survive the loss of which of the following?
1=The appendix
2=The liver
3=A lung
4=A kidney K12 (A)
- K13 (Q) Why does the leaf of a plant look green?
1=Because it absorbs green light
2=Because it reflects green light
3=Because it absorbs only yellow and blue light
4=Because it reflects a mixture of yellow and blue light. K13 (A)
- K14 (Q) Which of the following living things in the pond system uses the energy from sunlight to make its own food?
1=Insect
2=Frog
3=Water lily K14 (A)

Pre/Post ATTITUDE Questions

- | | | |
|-----|--|--------------------|
| A1 | I am curious about the world in which we live. | 1=Strongly Agree |
| A2 | Science lessons are fun. | 2=Agree |
| A3 | I would like to belong to a science club. | 3=Not Sure |
| A4 | I would like to teach science when I leave school. | 4=Disagree |
| A5 | A job as a scientist would be interesting. | 5=StronglyDisagree |
| A6: | I look forward to science lessons. | |
| A7: | I would like to be a scientist when I leave school. | |
| A8: | Please tell us what you would most like to be or do when you grow up: (text) | |

Post Attitude Questions about Curriculum

- A9: I thought these DETS lessons were:
1=too easy
2=just right
3=too difficult

Please take a moment to think about the DETS lessons. These lessons are listed below. For each lesson, please check the box that tells us how much you feel you learned. If you cannot remember the lesson, please check the last box.

- | | | |
|------|--|-------------------------------|
| A10: | History in the Making | 1=I learned nothing |
| A11: | Focus on Diabetes | 2=I learned a little bit |
| A12: | Health is Life in Balance | 3=I learned some things |
| A13: | The Diabetes Health Care Clinic | 4=I learned a lot |
| A14: | Taking the Message Home | 5=I don't remember the lesson |
| A21: | Overall, what did you like and/or dislike most about the DETS lessons in this unit? Why do you feel this way? (Please be as specific as you can by mentioning particular lessons that come to mind. (Text) | |

Assessment Questions and Keys for Content Area **D**

Grades 7-8 Social Studies Unit

Life in Balance

Lesson 1: Civic Action and Health

Lesson 2: Diabetes and the Circle of Balance

Lesson 3: A Community Seeks Balance

Lesson 4: Your Community Needs You

Pre/Post KNOWLEDGE Questions

Answers

K1 (Q)	Civic responsibility is defined as the responsibility of 1= communities to take care of their buildings and property. 2=individuals to take care of their family members. 3=individuals to do things for the good of the community. 4= communities to punish people who commit crimes. 5= individuals to do things that benefit themselves. 6= don't know.	K1 (A)
K2 (Q)	Which of the following is a reason why civic actions can help communities? 1=Civic actions separate people from each other. 2=Civic actions cost a lot of money to be successful. 3=Civic actions benefit a small number of community members. 4=Civic actions can provide services that help members of the community. 6=Don't know.	K2 (A)
K3 (Q)	Lifestyle is 1=the same for everyone in the community. 2=determined only by the community a person lives in. 3=the actions and choices people make about how they live. 4=a term used to describe all the things a person owns. 5=don't know.	K3 (A)
K4 (Q)	Information and education about type 2 diabetes can be helpful for a community because 1=it is always good to learn new information. 2=information can help people learn which lifestyle changes may keep them healthier. 3=people can learn how their community is different from other communities in their area. 4=Communities don't get a measurable benefit from providing information about diabetes to citizens. 5=Don't know.	K4 (A)
K5 (Q)	The circle is a symbol that reminds us of connections between parts that make up a system. 1=True 2=False 3=Don't know.	K5 (A)
K6 (Q)	People are more likely to get type 2 diabetes if they 1=get more exercise. 2=eat foods that have fat and sugar. 3=are around other people who have diabetes. 4=are at their correct body weight. 5=don't know.	K6 (A)

- K7 (Q) Type 2 diabetes
 1=rarely occurs in American Indians and Alaska Natives.
 2=occurs only in adults who are over 40 years old.
 3=occurs in American Indians and Alaska Natives more frequently than other ethnic groups.
 4=is a disease that all American Indians and Alaska Natives will get at some time in their lives.
 5=don't know. K7 (A)
- K8 (Q) Health is
 1=something to worry about when we are sick.
 2=not affected by our lifestyle or environment.
 3=having balance among the parts of your life.
 4=not having to take medications daily.
 5=don't know. K8 (A)
- K9 (Q) Type 2 diabetes is
 1=a disease in which a person has high blood sugar levels.
 2=a disease in which the person's blood doesn't carry oxygen normally.
 3=a disease that a person can catch from another person.
 4=a disease that cannot be prevented.
 5=don't know. K9 (A)
- K10 (Q) Only health professionals can help communities learn about and understand type 2 diabetes.
 1=True
 2=False
 3=Don't know. K10 (A)
- K11 (Q) List two examples of projects that communities could do to improve the health of the community members. Explain how or why a project might help the community. K11 (A)
- K12 (Q) Which activity is an example of civil society rather than an example of government?
 1=The sanitation department picks up Town X's garbage every Monday morning.
 2=The School Board of Town X decides on its yearly budget.
 3=A builder in Town X asks the planning board to approve his plans for a housing development.
 4=The places of worship in Town X join together to provide food and shelter for the homeless. K12 (A)
- Questions 13-14 refer to the situation below.*
Amanda and her friends have noticed these two problems in their neighborhood.
Problem 1: The garbage cans in the public park are overflowing.
Problem 2: Many younger children have trouble crossing the busy streets on their way home from school.
- K13 (Q) What is one thing Amanda and her friends could do on their own to help solve Problem 1? K13 (A)
- K14 (Q) What is one thing Amanda and her friends could do on their own to help solve Problem 2? K14 (A)

Pre/Post ATTITUDE Questions

- | | | |
|-----|--|--------------------|
| A1 | I am curious about the world in which we live. | 1=Strongly Agree |
| A2 | Social studies lessons are fun. | 2=Agree |
| A3 | I would like to belong to an environmental club. | 3=Not Sure |
| A4 | I would like to teach social studies when I leave school. | 4=Disagree |
| A5 | A job as a community worker would be interesting. | 5=StronglyDisagree |
| A6: | I look forward to social studies lessons. | |
| A7: | I would like to be an environmentalist when I leave school. | |
| A8: | Please tell us what you would most like to be or do when you grow up: (text) | |

Post Attitude Questions about Curriculum

- A9: I thought these DETS lessons were:
1=too easy
2=just right
3=too difficult

Please take a moment to think about the DETS lessons. These lessons are listed below. For each lesson, please check the box that tells us how much you feel you learned. If you cannot remember the lesson, please check the last box.

- | | | |
|------|------------------------------------|-------------------------------|
| A10: | Civic Action and Health | 1=I learned nothing |
| A11: | Diabetes and the Circle of Balance | 2=I learned a little bit |
| A12: | A Community Seeks Balance | 3=I learned some things |
| A13: | Your Community Needs You | 4=I learned a lot |
| | | 5=I don't remember the lesson |
- A21: Overall, what did you like and/or dislike most about the DETS lessons in this unit? Why do you feel this way? (Please be as specific as you can by mentioning particular lessons that come to mind. (Text)

Assessment Questions and Keys for Content Area **E**

Grades 10-11 Science Unit

Understanding Homeostasis through Diabetes

Lesson 1: What is Diabetes?

Lesson 2: What is Blood Glucose?

Lesson 3: Keeping Blood Glucose in Balance

Lesson 4: How Does Insulin Work?

Lesson 5: Diabetes - Why Does It Matter?

Lesson 6: Sharing Your Knowledge of Type 2 Diabetes

Lesson 7: Using Your Knowledge of Type 2 Diabetes

Pre/Post KNOWLEDGE Questions

Answers

K1 (Q)	What is the primary difference between type 1 and type 2 diabetes? 1=Type 2 diabetes occurs when a person's type 1 diabetes gets worse. 2=Type 1 diabetes is low blood sugar and type 2 is high blood sugar. 3=Type 1 and type 2 differ in the body's making and use of insulin. 4=Type 1 is the name for the disease in kids and type 2 is the name for diabetes in adults. 5=Don't know.	K1 (A)
K2 (Q)	Just after eating a meal, a person's blood glucose concentration 1=stays the same. 2=goes up. 3=goes down. 4=cannot be measured. 5=don't know.	K2 (A)
K3 (Q)	The primary kind of sugar the body cells use is 1=ATP. 2=Sucrose. 3=Glucose. 4=Insulin. 5=Don't know.	K3 (A)
K4 (Q)	Blood glucose concentration is defined as the amount of glucose per volume of blood. 1=True 2=False 3=Don't know	K4 (A)
K5 (Q)	People who have type 2 diabetes 1=have too much insulin. 2=have too much glucagon. 3=have low blood glucose levels. 4=still need glucose in their cells. 5=don't know.	K5 (A)
K6 (Q)	List two things that a person can do to manage type 2 diabetes. (Text)	K6 (A)
K7 (Q)	During a day, a person's blood glucose concentration ranges from about 2 milligrams per deciliter to about 500 milligrams per deciliter. 1=True 2=False 3=Don't know	K7 (A)

K8 (Q) After a meal, blood glucose returns to normal levels in a healthy person's body by
1=the action of insulin.
2=the process of digestion.
3=using a glucose meter.
4=eating candy.
5=don't know. K8 (A)

K9 (Q) Homeostasis
1=means that conditions in the body are unchanging and do not vary at all.
2=is maintained by the physical actions that a person takes.
3=keeps conditions in the body within normal ranges.
4=only occurs in mammals and warm-blooded animals.
5=don't know K9 (A)

K10 (Q) Glucose gets into cells by binding to insulin.
1=True
2=False
3=Don't know K10 (A)

K11 (Q) Individuals who have type 2 diabetes
1=don't need glucose in their cells.
2=don't have insulin receptors on their cells.
3=have insulin receptors blocked by glucagon.
4=need to bind more insulin to get glucose into their cells.
5=don't know. K11 (A)

K12 (Q) Which pair of systems regulate and coordinate body functions?
1=Excretory and digestive
2=Nervous and endocrine
3=Skeletal and muscular
4=Immune and respiratory K12 (A)



K13 (Q) The diagram above shows a cross section of two river valleys. In each diagram, the river is represented by the shaded region. Which river valley is in its more mature stage of development? K13 (A)

K14 (Q) The two most abundant elements in the Solar System are
1=hydrogen and helium
2=hydrogen and calcium
3=calcium and iron
4=helium and iron K14 (A)

Pre/Post ATTITUDE Questions

- | | | |
|-----|--|--------------------|
| A1 | I am curious about the world in which we live. | 1=Strongly Agree |
| A2 | Science lessons are fun. | 2=Agree |
| A3 | I would like to belong to a science club. | 3=Not Sure |
| A4 | I would like to teach science when I leave school. | 4=Disagree |
| A5 | A job as a scientist would be interesting. | 5=StronglyDisagree |
| A6: | I look forward to science lessons. | |
| A7: | I would like to be a scientist when I leave school. | |
| A8: | Please tell us what you would most like to be or do when you grow up: (text) | |

Post Attitude Questions about Curriculum

- A9: I thought these DETS lessons were:
1=too easy
2=just right
3=too difficult

Please take a moment to think about the DETS lessons. These lessons are listed below. For each lesson, please check the box that tells us how much you feel you learned. If you cannot remember the lesson, please check the last box.

- | | | |
|------|--|-------------------------------|
| A10: | What is Diabetes | 1=I learned nothing |
| A11: | What is Blood Glucose? | 2=I learned a little bit |
| A12: | Keeping Blood Glucose in Balance | 3=I learned some things |
| A13: | How Does Insulin Work? | 4=I learned a lot |
| A14: | Diabetes - Why Does It Matter? | 5=I don't remember the lesson |
| A15: | Sharing Your Knowledge of Type 2 Diabetes | |
| A16: | Using Your Knowledge of Type 2 Diabetes | |
| A21: | Overall, what did you like and/or dislike most about the DETS lessons in this unit? Why do you feel this way? (Please be as specific as you can by mentioning particular lessons that come to mind. (Text) | |

Assessment Questions and Keys for Content Area **F**

Grades 10-11 Health Unit

Diabetes and American Indian/Alaska Native Health

Lesson 1: Diabetes and the Community

Lesson 2: The Facts of Diabetes

Lesson 3: Health Risks in Diabetes

Lesson 4: History: Changes in Environment and Diet

Lesson 5: Diabetes Prevention Program

Lesson 6: Evaluation

Pre/Post KNOWLEDGE Questions

Answers

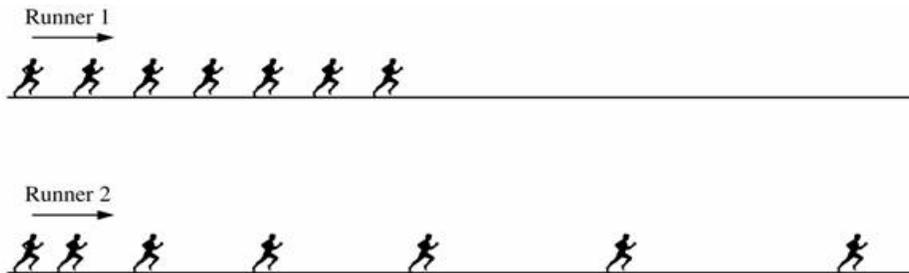
- | | |
|---|--|
| <p>K1 (Q) Health professionals are a good resource for
1=teaching individuals, families and communities about type 2 diabetes.
2=assisting people in developing personal food, nutrition and activity plans.
3=diagnosing diabetes and prescribing treatments such as medicines.
4=all of the above.</p> <p>K2 (Q) Risk factors for getting type 2 diabetes are
1=the same for everyone.
2=partly changeable and partly unchangeable
3=always unchangeable.
4=controlled by behavior.</p> <p>K3 (Q) A person who has a risk factor for type 2 diabetes will develop diabetes.
1=True
2=False
3=Don't Know</p> <p>K4 (Q) Which factor may be important in explaining why type 2 diabetes has become more common among Native Americans and Alaska Natives in the past 60 years?
1=People are catching it from each other.
2=People are watching more television
3=People getting less physical activity
4=Random chance, no specific cause</p> <p>K5 (Q) If people improve their diet and increase exercise, they would
1=increase their chance of developing type 2 diabetes.
2=decrease their chance of developing type 2 diabetes.
3=not change their chance of developing type 2 diabetes.
4=all of the above.</p> <p>K6 (Q) People who have type 2 diabetes should
1=monitor their blood glucose levels regularly with a digital meter.
2=assume that their blood glucose levels are normal if they feel ok.
3=reduce the level of their physical activity to help the body heal.
4=continue living their lives as they did before getting diabetes.</p> <p>K7 (Q) Which of the following may be a symptom of type 2 diabetes?
1=Weight gain
2=Dry, flaky skin
3=Loss of hair
4=Excessive thirst</p> | <p>K1 (A)</p> <p>K2 (A)</p> <p>K3 (A)</p> <p>K4 (A)</p> <p>K5 (A)</p> <p>K6 (A)</p> <p>K7 (A)</p> |
|---|--|

K8 (Q) A person must have two or more high risk factors before he or she will develop type 2 diabetes. K8 (A)
 1=True
 2=False
 3=Don't know

K9 (Q) The Diabetes Prevention Program (DPP) was a scientific study that showed which of the K9 (A)
 following could reduce someone's risk (or chance) of getting type 2 diabetes (check ALL that are correct).
 1=Seeing the doctor once a year for a checkup
 2=Getting more exercise
 3=Eating only vegetables
 4=Eliminating sugar from the diet
 5=Eating a healthy diet
 6=Losing weight
 7=Nothing reduces the risk

K10 (Q) The rates of death due to diabetes K10 (A)
 1=have increased over the last 60 years for the entire US population.
 2=have increased more for Native Americans since 1980.
 3=were lower for Native Americans before 1950 than for the US population.
 4=all of the above.

K11 (Q) Write 1-2 sentences giving reasons why Native Americans and Alaska Natives should know the K11 (A)
 facts about type 2 diabetes. (Text)



K12 (Q) The picture above shows the positions of two runners at one-second intervals as they move from K12 (A)
 left to right. For each runner, indicate whether the runner's speed seems to be constant,
 increasing, or decreasing.
 Explain how you can tell this from the pictures.

K13 (Q) Which pair of systems regulate and coordinate body functions? K13 (A)
 1=Excretory and digestive
 2=Nervous and endocrine
 3=Skeletal and muscular
 4=Immune and respiratory

K14 (Q) Animals that reproduce sexually differ from animals that reproduce asexually in that sexually K14 (A)
 reproducing animals have
 1=a larger number of offspring
 2=more genetic variation among their offspring
 3=offspring that are nearly identical to their parents
 4=offspring that are perfectly adapted to their parents' habitat

Pre/Post ATTITUDE Questions

- | | | |
|-----|--|--------------------|
| A1 | I am curious about the world in which we live. | 1=Strongly Agree |
| A2 | Health lessons are fun. | 2=Agree |
| A3 | I would like to belong to a health club. | 3=Not Sure |
| A4 | I would like to teach health when I leave school. | 4=Disagree |
| A5 | A job as a health specialist would be interesting. | 5=StronglyDisagree |
| A6: | I look forward to health lessons. | |
| A7: | I would like to be a health specialist when I leave school. | |
| A8: | Please tell us what you would most like to be or do when you grow up: (Text) | |

Post Attitude Questions about Curriculum

- A9: I thought these DETS lessons were:
1=too easy
2=just right
3=too difficult

Please take a moment to think about the DETS lessons. These lessons are listed below. For each lesson, please check the box that tells us how much you feel you learned. If you cannot remember the lesson, please check the last box.

- | | | |
|------|--|-------------------------------|
| A10: | Diabetes and the Community | 1=I learned nothing |
| A11: | The Facts of Diabetes | 2=I learned a little bit |
| A12: | Health Risks in Diabetes | 3=I learned some things |
| A13: | History: Changes in Environment and Diet | 4=I learned a lot |
| A14: | Diabetes Prevention Program | 5=I don't remember the lesson |
| A15: | Evaluation | |
| A21: | Overall, what did you like and/or dislike most about the DETS lessons in this unit? Why do you feel this way? (Please be as specific as you can by mentioning particular lessons that come to mind. (Text) | |

Appendix D

Example Assessment Packet (Content Area A)

- **Assessment Packet Overview for Teachers**
- **Daily Check-Off List for Teachers**
- **PRE Attitude and Knowledge Survey for Students**
- **POST Attitude and Knowledge Survey for Students**



DETS Assessment Packet Overview and Checklist

Contents

- Implementation Test Checklist
- 25 Blank *DETS Daily Activity Check-Off Sheets*
- 15 Student Assessment Packets with PRE and POST surveys

Your Responsibilities

- Each day complete the 30 second (!) *DETS Daily Activity Check-Off Sheet*
- Administer the Yellow PRE Surveys *before* you teach DETS lessons
- Immediately upon finishing the DETS lessons, administer the Blue POST Surveys to your students
- Manage the Student Assessment Packets
- Rate the general engagement level of each student after teaching all the DETS lessons. The 1-to-3 ratings (i.e., **3=engaged; 2=neutral; 1=unengaged**) would be written under the student label on the Student Assessment Packets
- Complete Teacher Online Web Survey at:

www.pscounts.com/detswebsurvey

Managing Student Assessment Packets

- Ensure that each student clearly fills out the label on their Student Assessment Packet
- Ensure that the Yellow PRE Survey is done first
- And that the Blue POST Survey is done immediately after the DETS lessons are taught
- Ensure that surveys are returned to proper envelope packets
- At all times the teacher keeps the Student Assessment Packets, except when administering the PRE and POST surveys
- Return *Student Assessment Packets* (be sure to write your rating of each student of their level of engagement in the DETS lessons, where: **3 = engaged; 2 = neutral; 1 = unengaged**). This quick subjective rating should be written under the student label **after** the POST test is completed.
- Return *DETS Assessment Packet* (containing the completed *DETS Daily Activity Check-Off Sheets* and the 15 *Student Assessment Packets*)

DETS Teacher IMPLEMENTATION TEST Checklist

This brief list provides you with an easy reference reminder outline of data responsibilities during the IMPLEMENTATION TEST of the DETS curriculum.

Thanks for helping us out. Questions? Call or email your DETS coordinator or Dr. Doug Coulson at 800 950-9103, or Doug@pscounts.com.

Before Teaching the DETS Units

- Get the DETS Assessment Packet from your DETS coordinator. This Assessment Packet contains: **15 Student Assessment Packets** (one packet for each student) and **1 Teacher Assessment Packet Folder**. Each student packet contains a PRE (Yellow) Survey and a POST (Blue) Survey. The teacher folder contains 25 copies of the **Daily Activity Check-off Sheet**, to be used daily while doing the DETS classes.
- Set up a system so that the PRE and POST surveys in each Student Assessment Packet stay together during the duration of the Implementation Test. The 15 Student Assessment Packets stay with teacher at all times, except during the pre and post assessment periods.
- Review all DETS material thoroughly - you are responsible for implementing the DETS curriculum *as written*.
- Administer the Yellow PRE Survey assessment instrument (i.e., before teaching the DETS material - allow 45 minutes for this attitude and knowledge survey)

While Teaching the DETS Units

- Each day complete the 30 second (!) **Daily Activity Check-off Sheet**.
- Immediately upon completing teaching the DETS unit administer the Blue POST assessment instrument (allow 45 minutes for this attitude and knowledge survey)
- Ensure that each student has their PRE (Yellow) and POST (Blue) surveys in their individual assessment packet with the label clearly filled out by the student

After Teaching the DETS Units

- On each *Student Assessment Packet* (under the student label) provide your rating of each student's level of engagement in your class during the DETS lessons, where:

3 = Engaged

2 = Neutral

1 = Unengaged

Please put the 3 point rating just underneath the student label.

- Return *all Student Assessment Packets* and your *Daily Activity Check-off Sheets* to your DETS coordinator **no later than December 21st, 2007**

- Complete the online Teacher Web Survey at:

www.pscounts.com/detswebsurvey

DETS Daily Activity Check-Off Sheet

This sheet is designed to literally take 30 seconds to complete, and it must be completed daily.

Each DETS teaching day please put completed sheet into folder provided.

1. Today's Date: _____

2. Today the engagement level of my students was:
 - very high
 - high
 - average
 - low
 - very low

3. Today I mostly did:
 - lecture
 - discussion
 - hands-on activities
 - _____

4. Today it was
 - very easy** to follow the DETS lesson plan
 - easy** to follow the DETS lesson plan
 - difficult** to follow the DETS lesson plan
 - very difficult** to follow the DETS lesson plan

5. Today's comment or class anecdote (optional)

Thanks for doing this today!

Yellow PRE Survey

DETS: Grades 3-4, Units 1 & 2

Instructions: This is not a test. Please do your best. You will have about 45 minutes to complete the two parts of this survey.

When the teacher gives the signal, please turn the page and begin with Part I. Go on to Part II after completing Part I.

When you are done, please put your Yellow PRE Survey back in the envelope.

Please make sure your name is on the envelope.

Thanks again.

Please wait for your teacher to give the signal to BEGIN

PART I

Instructions: Please read each statement and circle the face which best describes your feeling about the statement. For example, if you like school you should circle the smiling face (☺), whereas if you don't like school, then you should circle the frowning face (☹). If you are not sure then circle the middle face (☹). There are no right or wrong answers - thanks.

For each statement, tell us whether you agree [☺], not sure [☹] or disagree [☹].

Agree

Not
Sure

Disagree

- | | | | |
|---|---|---|---|
| 1. I like school. | ☺ | ☹ | ☹ |
| 2. I am interested in health lessons. | ☺ | ☹ | ☹ |
| 3. I know a lot about health | ☺ | ☹ | ☹ |
| 4. Science lessons are fun. | ☺ | ☹ | ☹ |
| 5. I would like to teach science when I leave school. | ☺ | ☹ | ☹ |
| 6. It is important to take care of one's health. | ☺ | ☹ | ☹ |
| 7. I like learning new things in school. | ☺ | ☹ | ☹ |
| 8. Please tell us what you would most like to be or do when you grow up: | | | |

Please go on to Part II

PART II

Instructions: The questions below are not a test, and you will not be graded on your answers. Please try hard, but if you don't know the answer, simply choose the "don't know" box.

For each question find the *best* answer. Please put a check mark (✓) in the box by your answer or, when asked, write out your answer – thanks.

1. Humans get things they need from the world around us.

- True
- False
- Don't know

2. Diabetes makes the body out of balance.

- True
- False
- Don't know

3. Glucose is

- a kind of glue
- the kind of sugar used in the body for energy
- a kind of fruit that grows on trees.
- the name of a disease.
- don't know

4. Exercise is important for staying healthy.

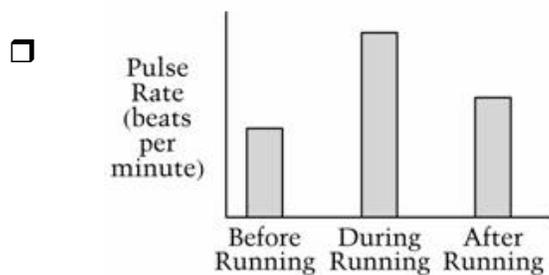
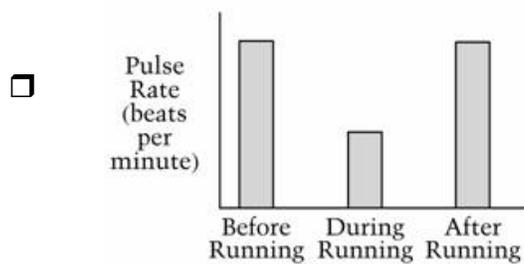
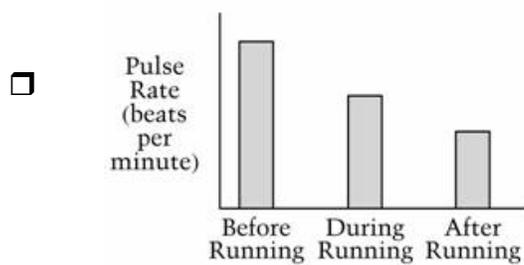
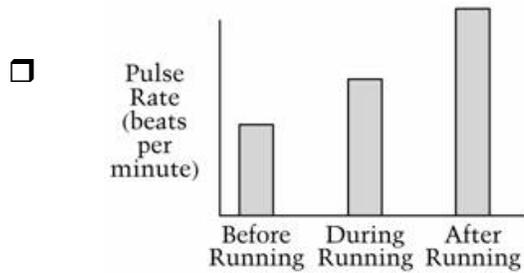
- True
- False
- Don't know

5. Your body needs the most energy for

- playing tag
- sleeping
- sitting down
- reading a book
- don't know

6. Companies try to get people to buy less healthy foods by
- making television commercials that kids like.
 - giving a toy or prize to people who buy the food.
 - having a television or sports star in the commercial.
 - all of the above choices are correct.
 - don't know.
7. Diabetes is a disease that
- keeps the body from using glucose in the right way.
 - makes the food a person eats more healthy.
 - keeps the body from taking in normal amounts of air when breathing.
 - slows down a person's growth so they are shorter.
 - don't know.
8. Which food is probably a "sometimes" snack that you would not eat every day?
- Apple
 - Cheese
 - Milk
 - Potato chips
 - Don't know
9. Labels on food can help people make healthy choices because they
- give people information about how the food was shipped.
 - tell people what other foods they should eat with it.
 - give information about the amount of sugar and fat in the food.
 - tell people when the food is on sale.
10. A consumer is someone who
- grows food for others.
 - sells food in a grocery store.
 - buys or eats food.
 - teaches someone how to cook food.
 - don't know.
11. One food group on the MyPyramid is vegetables. Name two other food groups on MyPyramid.
- _____
- _____
12. A farmer thinks that the vegetables on her farm are not getting enough water. Her son suggests that they use water from the nearby ocean to water the vegetables. Is this a good idea?
- Yes, because there is plenty of ocean water.
 - Yes, because ocean water has many natural fertilizers.
 - No, because ocean water is too salty for plants grown on land.
 - No, because ocean water is much more polluted than rainwater.

13. Joe wanted to know how his pulse rate changed when he ran very fast. He measured his pulse rate before he started running, while he was running, and two minutes after he stopped running. Which graph best shows how Joe's pulse rate changed? Please check the box next to the best answer.



14. A green tree frog lives in a forest. How does the frog's green color help it to survive?

- By helping the frog find other frogs
- By keeping the frog cool
- By making the frog hard to see when sitting on leaves
- By allowing the frog to make its own food

When you are done, please check your work carefully and then put your survey into the envelope provided - THANKS!

Blue POST Survey

DETS: Grades 3-4, Units 1 & 2

Instructions: This is not a test. Please do your best. You will have about 45 minutes to complete the three parts of this survey.

When the teacher gives the signal, please turn the page and begin with Part I. Go on to Parts II and III after completing Part I.

When you are done, please put your Blue POST Survey back in the envelope.

Please make sure your name is on the envelope.

Thanks again.

Please wait for your teacher to give the signal to BEGIN

PART I

Instructions: Please read each statement and circle the face which best describes your feeling about the statement. For example, if you like school you should circle the smiling face (☺), whereas if you don't like school, then you should circle the frowning face (☹). If you are not sure then circle the middle face (☹). There are no right or wrong answers - thanks.

For each statement, tell us whether you agree [☺], not sure [☹] or disagree [☹].

Agree

Not
Sure

Disagree

- | | | | |
|---|---|---|---|
| 1. I like school. | ☺ | ☹ | ☹ |
| 2. I am interested in health lessons. | ☺ | ☹ | ☹ |
| 3. I know a lot about health | ☺ | ☹ | ☹ |
| 4. Science lessons are fun. | ☺ | ☹ | ☹ |
| 5. I would like to teach science when I leave school. | ☺ | ☹ | ☹ |
| 6. It is important to take care of one's health. | ☺ | ☹ | ☹ |
| 7. I like learning new things in school. | ☺ | ☹ | ☹ |

8. Please tell us what **you** would most like to be or do when you grow up:

Please go on to the next page

The next three questions are about the DETS lessons that you have done in your classroom.

1. I thought that these DETS lessons were:

- too easy just right too difficult

2. Please take a moment to think about the nine DETS lessons. These lessons are listed below. For each lesson, please check the box that tells us how much you feel **you learned**. If you cannot remember the lesson, please check the last box “*I don’t remember the lesson*”.

	I learned nothing 1	I learned a little bit 2	I learned some things 3	I learned a lot 4	I don’t remember the lesson 5
Lessons from Health is Life in Balance Unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The Gift of Trees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Messengers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
What is Diabetes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Let’s Move – The Round Dance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My Health Message for Others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lessons from Being Smart About Being Healthy Unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Recognizing Tricky Treats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Becoming a Smart Eater Becoming a Smart Consumer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practice Thinking Critically and Making Good Food Choices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A Celebration of Community Diversity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. What did you like or dislike about the DETS lessons?

Please turn the page and do Part II

PART II

Instructions: The questions below are not a test, and you will not be graded on your answers. Please try hard, but if you don't know the answer, simply choose the "don't know" box.

For each question find the *best* answer. Please put a check mark (✓) in the box by your answer or, when asked, write out your answer – thanks.

1. Humans get things they need from the world around us.

- True
- False
- Don't know

2. Diabetes makes the body out of balance.

- True
- False
- Don't know

3. Glucose is

- a kind of glue
- the kind of sugar used in the body for energy
- a kind of fruit that grows on trees.
- the name of a disease.
- don't know

4. Exercise is important for staying healthy.

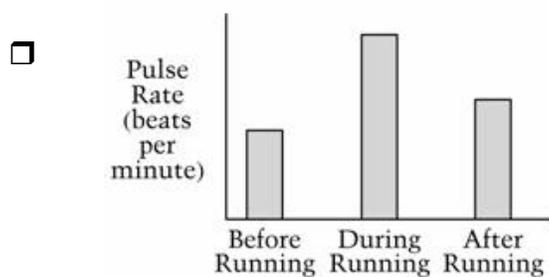
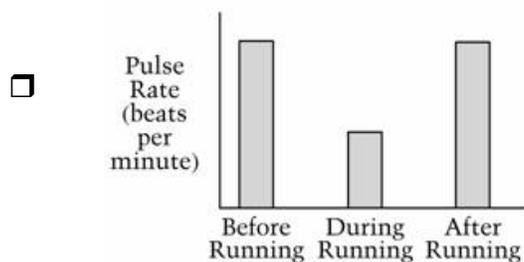
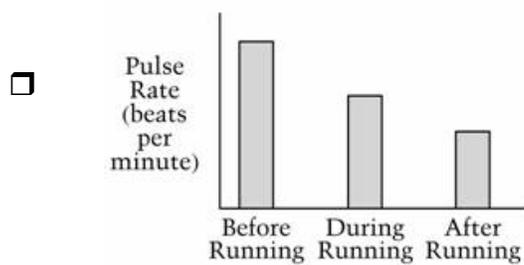
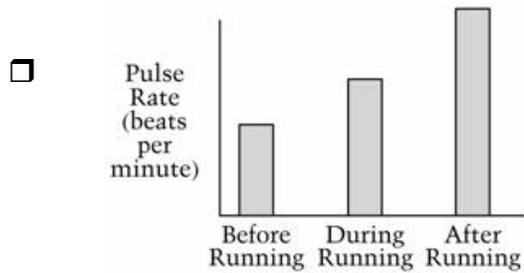
- True
- False
- Don't know

5. Your body needs the most energy for

- playing tag
- sleeping
- sitting down
- reading a book
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- _____
- _____
12. A farmer thinks that the vegetables on her farm are not getting enough water. Her son suggests that they use water from the nearby ocean to water the vegetables. Is this a good idea?
- Yes, because there is plenty of ocean water.
 - Yes, because ocean water has many natural fertilizers.
 - No, because ocean water is too salty for plants grown on land.
 - No, because ocean water is much more polluted than rainwater.

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- By helping the frog find other frogs
- By keeping the frog cool
- By making the frog hard to see when sitting on leaves
- By allowing the frog to make its own food

Please turn the page and do Part III

PART III - Eagle Book Questions

Instructions: These questions should be answered only if you have read one or more of the Eagle Books during the DETS lessons. If you have not read the Eagle Books, please skip these questions. If you are not sure, please ask your teacher.

Please think of the Eagle Books when you answer these questions. The Eagle Books you read were called: "Tricky Treats", "Plate Full of Cover" ... [Ask your teacher to hold up a copy of one or more of the Eagle Books that the class read]. Here are the questions. Please answer by checking the "yes" box or the "no" box. There are no right or wrong answers."

PART III Questions

- | | | |
|--|------------------------------|-----------------------------|
| 1. I liked the Eagle Books. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 2. The Eagle Books were fun to read. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 3. I would like to own an Eagle Book. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 4. An Eagle Book would be a nice gift for a friend. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5. I wanted to go out and play after hearing the Eagle Book stories. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 6. The Eagle Book stories made me happy. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 7. I did not like the Eagle Books. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| 8. I wanted to stay inside after hearing the Eagle Book stories. | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

**When you are done, please check your work carefully and then put your survey into the envelope provided -
THANKS!**