

Introduction

This book is an attempt to help teachers provide the culturally relevant curriculum that has long been the dream of Indian educators. The relevant curriculum that we have envisioned takes place in the regular classroom, includes content related to the lives of Indian children, makes them proud, expands to other experiences and enhances learning.

It used to be that there was some funding available to develop culturally relevant curricula, and some materials were developed. Few of those materials are still available, and the funding has all but disappeared. There is a renewed interest in the dream, however, and now Indian literature is a resource that can provide the basis for a comprehensive culturally relevant curriculum. There are many more Indian authors writing books for children and more good Indian literature is being published. Although there are not many of literature resources directly related to integration of Native culture into mathematics, there are a lot of informational readings that are the basis for these mathematics units.

This document provides teachers with background, materials and example activities for mathematics units for students in grades pre-Kindergarten-12. They are aligned with the national Council of Teachers of Mathematics content standards so that teachers are teaching what is expected of them and, at the same time, are making instruction more meaningful to the students. The units are to be taught in a multidisciplinary approach. This approach promotes close coordination and cooperation of regular teachers with each other and with cultural instruction teachers and their work. This is not a canned curriculum; it contains the ingredients necessary for a school to develop its own culturally-based curriculum for the high school level.

There four sections, one for each of the grade levels Pre-K-2, 3-5, 6-8, and 9-12 as in the current NCTM Standards. There complete units for each section, corresponding to the Bureau of Indian Affairs advanced cultural requirement that each teacher present 8 units per year.

Each unit :

- Has a literature introduction-biography, story, or other writing,
- Has one or more activities that can be done over a period of 1-2 weeks, related to the story, many using manipulatives or computer activities;
- Has problems that go with the activities;
- Is related to one or more of the new National Council of Teachers of Mathematics Content Standards- Number and Operations, Algebra, Geometry, Measurement, and Data Analysis and Probability. See www.nctm.org

Also see the American Indian Curriculum Standards at <http://www.ldoe.org/cetia/subject.htm>

- Contains all of the Process Standards-Problem Solving, Reasoning and Proof, Communication, Connections, and Representation, with the connection piece always being cultural. See www.nctm.org

The units are related to one of the following topics:

- Indian Contributions to Mathematics
- Mathematical Concepts in Traditional Culture
- Mathematical Concepts in Present Day Cultural Activities
- Mathematics as the Language of (Indian) Science
- Mathematics in the Study of Indian People
- Indian Mathematicians/Scientists-Past and Present

This document also pays tribute to many: Indian and other authors who write books for and about Indians, Indian and other organizations that distribute books by and about Indians, Indian and other organizations that have made the improvement of teaching Indian children their aim, and teachers who have developed and implemented culturally-based curricula in their classrooms.

All of these units have been developed by teachers and others who work with Indian students. These activities have been used in classrooms in BIA schools or other schools with Indian education programs. Credit is given to those who developed the units and we welcome any feedback as the units are used in other schools.

I have not read every book listed in this document, and if I did, I would not be able to guarantee their being free of cultural bias or inaccuracies. I did utilize the publication *Through Indian Eyes: The Native Experience in Books for Children* by Beverly Slapin and Doris Seale to avoid books that may be offensive. I tried to promote books written by Indian authors. I recommend that sometimes books should be reviewed by local Indian people to be sure they are appropriate, especially if they are about their tribe(s). If it is found that a book is not acceptable to Indian people or to a tribe, especially, the book should definitely not be used. There is guidance for reviewing books and curriculum materials in *Through Indian Eyes* and in a document developed by the Indian Community School of Milwaukee listed in the last section of this book. If the use of the approach outlined in this document works, it should promote a resurgence of local storytelling and/or the writing of more young people's books by Indian people.

The development of this document is part of an effort of the National Indian School Board Association to provide an Indian model of school reform that includes the Effective Schools framework with several enhancements: tribal values and organizational culture; wellness, healing and prevention strategies; leadership based on vision, wisdom and courage; The Learning Record performance-based assessment system; and the integration of Indian culture in the curriculum.

It is hoped that this document will be useful to parents, tutors, teachers, aides, administrators and school board members at schools where there are Indian students. I hope that Title VII Indian Education and Johnson O'Malley programs can utilize it. I hope that parents who are homeschooling their children will find it helpful. I hope that teachers of non-Indian students will use it.

Most of all, I hope this document will help students somewhere. I greatly enjoyed developing it. I hope others will find it useful as they strive to create sacred places for Indian young people.

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Creating Sacred Places

Creating Sacred Places means responding appropriately to students' academic, social, emotional, physical and spiritual needs. This document addresses improving the teaching of Indian students and empowering them to learn by addressing these needs. The research is quite clear on the matter. If Indian students are to be empowered to learn, their school programs must include four characteristics (Cummins, *The Empowerment of Indian Students*):

1. Language and culture must be incorporated into the school program
Considerable research suggests that for minority groups experiencing school failure, the extent to which students' language and culture are incorporated into the school program constitutes a significant predictor of academic success. Educators who see their role as encouraging their students to add a second language and culture to supplement rather than supplant their native language and culture are more likely to create conditions in which students can develop a sense of empowerment. Educators who see their role as getting their students to replace their home language and culture with English and white values in order to assimilate them into the dominant culture are more likely to create the conditions for student failure. Students who develop skills in two languages have been found to have learning advantages over students who have only one language.
2. There must be an unbreakable bond between school and community.
When educators involve parents as partners in their children's education, parents communicate to their children a positive attitude toward education that leads to improvement in the students' academic achievement. Teachers operate along a continuum from collaborative to exclusionary. Teachers with a collaborative orientation work closely with teachers or aides fluent in the student's first language and/or knowledgeable of the community in order to learn from them how to communicate effectively with parents. Teachers with an exclusionary orientation tend to regard teaching as their job and are likely to view collaboration with parents as either irrelevant or actually detrimental to children's progress. Students can become empowered only when education becomes a true community enterprise involving an equal partnership between educators at school and educators in the home, the children's families. In addition, the collective experience of the community must be used as the context for all learning in the school.
3. Appropriate instruction must be provided.
Research indicates that the learning difficulties of minority students are often caused by the way we teach them. These students frequently receive intensive

instruction that confines them to a passive role and induces a form of “learned helplessness.” This kind of instruction follows the transmission model in which it is the task of the teachers to impart knowledge of skills they possess to their students who do not yet have these skills. The teachers initiate and control the interaction, constantly orienting it toward the achievement of instructional objectives. In contrast, the experiential-interactive model of instruction focuses on giving students hands-on classroom experiences that provide students with a basis for understanding more abstract academic curricula. The interactive model also incorporates what we know about the relation between language and learning and promotes language-rich classrooms. The transmission model entails the suppression of students’ experiences. The experiential-interactive model entails an additive orientation toward students’ cultures and languages, an openness to collaborate with community resource persons, and active use of written and oral language skills. Learning styles of students must also be taken into account.

4. Appropriate assessment must be provided.

Classroom and psychological testing have disempowered and disabled minority students. Minority students are over represented in special education because of improper testing. To challenge the disabling of minority students, assessments must focus on the extent to which children’s language and culture are incorporated within the school program, the extent to which educators collaborate with parents as partners in a shared enterprise, and the extent to which children are encouraged to use language (both tribal and English) actively within the classroom. In other words, the primary focus should be on remediating the educational interactions that Indian children experience. Further, it is being recognized that, while formal testing has a role to play, its impact is considerably greater when combined with classroom assessment. The longitudinal observation and monitoring of student progress throughout the school year by classroom teachers yields valuable data and is much more accurate and fair than formal testing, thus the present emphasis on performance-based assessment.

These four characteristics that address needs of Indian students must be considered carefully by every school seeking to educate Indian learners. Consider this quote from Ron Edmonds of the Effective Schools movement:

We can, whenever and wherever we choose, successfully teach all children whose schooling is of interest to us. We already know more than we need to do that. Whether or not we do it must finally depend on how we feel about the fact that we haven’t so far.

We are at a time when it is being demanded that schools produce higher achievement. Students must learn to read and write at higher levels, they must be able to solve more difficult math and science problems, they must be adequately prepared to meet the world and function successfully in the 21st Century. We must change the way we do things in order to produce these results. Schools have been failing students. Part of the problem is that we don’t do what we know should be done, as Ron Edmonds states. We don’t listen to what the research says. Schools are involved in various school reform activities at this time. Teachers are being asked to do many things including:

- align curriculum with the new content standards and new assessments,
- do a better job of teaching reading, writing and math,

utilize an integrated approach to teaching the various content areas,
teach for understanding and application and focus on depth,
promote positive student behavior through a schoolwide approach, and
provide meaningful parental involvement in the instructional process.

In addition, teachers of American Indian students are asked to:

incorporate American Indian content standards,
provide instruction for Indian students that is based upon research,
provide culturally relevant instruction within the regular classroom, and
promote the use of native languages to strengthen the student's language ability.

This is only a partial list of the many things that teachers have to do. This document will provide assistance to teachers who really want to create sacred places for students and will help coordinate all that they have to do.

Essentially, the approach presented here promotes coordinating the teaching of various subject areas and reinforces classroom instruction with language and cultural activities by utilizing American Indian literature as a basis for instruction. The materials and activities are aligned with the new, more challenging history, civics/government and language arts content standards for each area.

To use the approach recommended by this book, teachers must:

1. Work closely with the cultural instructors at the school or in the community. The regular teacher and the cultural instructor could team teach these units. If not, the cultural instructor must provide input to the regular teacher to help integrate culture into the regular classroom. A less effective approach would be that both the regular teacher and the cultural instructor teach the same topic, but separately.
2. Decide what units to teach and what order to teach them in. If all the elementary teachers and secondary mathematics teachers are using this book, they may want to determine which units or parts of the units each one will use. If you are the only teacher in those grades using this book, you may want to use all of the units in your teaching area(s) or only some of them. You should align them with what you are already teaching
3. Decide what literature and activities to use. Of course, literature that deals with the local tribe(s) is best. You will want a variety of levels of literature to reach various students in your classroom. The example activities included can be adapted to your own tribe(s) and to the grade level you teach. Include your own ideas for additional materials and activities. Work closely with your librarian.
4. Align the NCTM standards with your own content standards. You will want to cross check them with the content standards your school has chosen to follow. Review the standards provided in this book and on the nctm.org webside to give you ideas for further activities and more cultural information.
5. Plan a parental involvement strategy. Let the parents know what their children are studying. They will be interested in these topics and will then be more supportive of their students' learning. Provide activities that involve parents and grandparents such as gathering data or use of mathematics in careers or hobbies.

6. Utilize good teaching strategies. Continue to utilize cooperative learning. Many of the suggested activities are based on constructivism or project-based learning. Use a form of performance-based assessment to track student progress. Go to www.crede.ucsc for information on strategies that work well with Indian students, Standards for Pedagogy.

