The American Indian Higher Education Consortium (AIHEC), composed of 37 American Indian tribally-chartered colleges and universities in the United States and Canada, is pleased to submit this final report on the AIHEC Indigenous STEM Evaluation Framework Initiative, NSF Grant No. 0438720. This report summarizes the participants, activities, findings, products, and contributions of this initiative over the past five years, 2005 to 2009.

As noted in last year’s report, AIHEC is grateful to the National Science Foundation for its support of this important initiative and for the guidance, insight, and commitment provided to program staff by NSF Program Officer, Dr. Elmima Johnson. Dr. Johnson’s commitment to methodical, reliable, and culturally competent evaluation is unparalleled. Because of her tireless efforts, program evaluation across all communities of color has become more accurate and valuable to NSF and more meaningful and important to our communities. AIHEC also commends Joan LaFrance and Richard Nichols for their ongoing leadership of this effort, their commitment to improving the lives, wellbeing, and future prospects for all American Indians, and for their conscientious work in helping to sustain American Indians cultures and communities. AIHEC thanks all of the Elders, faculty members, and community members who have given us the tremendous gift of their wisdom and experience. We thank the more than 230 participants who attended workshops and meetings; and finally, we thank the members of the AIHEC Indigenous Evaluation Framework Advisory Board for their willingness to share their knowledge and expertise.

I. PARTICIPANTS

A. Program Staff.
Staffing has been consistent throughout the duration of the initiative. Staff included:
1. Carrie Billy, President & CEO, American Indian Higher Education Consortium (AIHEC), Principal Investigator
2. Joan LaFrance, Mekinak Consulting, Co-Principal Investigator
3. Richard Nichols, Colyer Nichols, Inc., Co-Principal Investigator

B. Other Individuals.
In addition to program staff, the initiative has an active and engaged Advisory Board, which met on ten occasions in this capacity during the planning for and implementation of this project. Representatives of the Board also attended pilot training meetings, contributed to the curriculum draft and offered suggestions on the content of the Indigenous Evaluation Framework.
Members of the Advisory Board have been consistent, with one new member joining the Advisory Board for Phase II. The Members include:

- Sharon Nelson Barber, Director of Culture & Language in Education Research, WestEd
- Carol Davis, TCU EPSCOR Liaison Manager, North Dakota State University
- Eric Jolly, Director, Minnesota Museum of Science
- Stafford Hood, College of Education, University of Illinois at Urbana Champaign
- Iris Pretty Paint, Kauffman Associates, Inc.
- Rosemary Ackley Christensen, American Indian Studies, University of Wisconsin-Green Bay
- Michael Timms, Managing Director, Center for Assessment and Evaluation of Student Learning, WestEd
- Gregory Cajete, Native American Studies, University of New Mexico (Honorary Member)
- John Haas, President, The Red Stone Group (former project evaluator and Honorary Member).

In addition to the Advisory Board, the project includes consultant services from:

- Karen Kirkhart, Syracuse University: Special consultant on integration of evaluation theories and practices; and
- Mary Jiron Belgarde, Native American Studies, University of New Mexico: Special consultant serving as the evaluator of this project.

C. Other Partnering Organizations.
The University of New Mexico American Indian Program hosted the first training workshop held in February 2007 in Albuquerque, New Mexico.

The University of Montana and Salish Kootenai College, a Tribal College in Pablo, Montana, organized the second training workshop held in Missoula, Montana in April 2007 in conjunction with events surrounding the large gathering of Indians on the University of Montana campus during their annual Kyi-Yo Powwow event.

The Center for Teaching and Learning West provided support for doctoral fellows involved in the NSF-funded CLT to attend the workshop in Missoula. Northwest Indian College, a Tribal College in Bellingham, Washington, hosted a pilot workshop in September 2008.
D. Institutions Represented in the Workshops.
The major goal of this initiative was to improve the evaluation of STEM program in Tribal Colleges and Universities and in schools or state/federal agencies that influence K-12 Indian education. In the past five years, AIHEC has had considerable support from these institutions, most of which have sent participants to one of the nine workshops conducted in the last three years of this initiative (three pilots and six using the final curriculum). Participants at these workshops represent a significant number of Tribal Colleges and a broad range of individuals engaged in American Indian K-12 education.

Over the course of the initiative, twenty-two TCUs, which represent two-thirds of AIHEC’s member colleges, were involved in pilot or training workshops. Faculty and staff from the TCUs listed below participated in one or more workshops.

- Blackfeet Community College
- Cankdeska Cikana Community College
- Fond du Lac Tribal and Community College
- Fort Belknap College
- Fort Berthold Community College
- Haskell Indian Nations University
- Institute of American Indian Arts
- Keweenaw Bay Ojibwa Community College
- Leech Lake Tribal College
- Navajo Technical College
- Northwest Indian College
- Red Crow Community College
- Saginaw Chippewa Tribal College
- Salish Kootenai College
- Oglala Lakota College
- Sisseton Wahpeton College
- Sitting Bull College
- Southwestern Indian Polytechnic Institute
- Stone Child College
- Tohono O’odham Community College
- Turtle Mountain Community College
- United Tribes Technical College

The following K-12 Indian educators and education officials participated in the workshops:

- Wahelut Indian School
- Santa Fe Indian School
- Bureau of Indian Education, U.S. Department of the Interior
- Education Department State of New Mexico
- Tucson Unified School District
- Minneapolis Schools – Indian Education
- Education District 196 – Minnesota.

Although the project did not target mainstream universities, we received requests to attend the workshops from a number of faculty and administrators at various institutions involved in Indian education and program evaluation. Faculty and staff from the following institutions participated during the past four years:

- Arizona State University
- Northern Arizona University
E. Other Collaborators and Contacts.
The Indigenous Peoples Evaluation Topical Interest Group (IPE) in the American Evaluation Association (AEA) is working with members of the program staff and Advisory Board to engage discussion regarding elements of the Framework. Most significantly, the IPE hosted a “Think Tank” session at AEA’s Annual Conference in Denver, Colorado in November 2008. The focus of the session was issues regarding the use of Elders in evaluation. Notes from this session will be used to explore ways to develop a dialogue through a special conference or meeting that involves Elders and evaluators.

Program staff is providing information and support to the U.S. Department of Education’s Office of Indian Education (ED-OIE) and the U.S. Department of the Interior’s Bureau of Indian Education. ED-OIE is planning to use elements of the Indigenous Framework for Evaluation in its efforts to identify best practices in Indian education. During 2007 and 2008, most specifically, program staff participated in several workshops and conferences hosted by the two agencies.

Several federal agencies that fund American Indian, Alaska Native, and Native Hawaiian programs have expressed an interest in working with AIHEC to expand the use of the Indigenous Framework for Evaluation. In addition, officials of some states and school systems with significant American Indian student populations have contacted AIHEC to explore the possibility of collaborating on this effort.

II. Activities and Findings

Major Research and Education Activities.
Previous annual reports documented the development of various sections in AIHEC’s Indigenous Evaluation Framework, such as the guiding principles, the use of the Cherokee basket metaphor in defining Indigenous evaluation and outlines of the training manual’s content. This report summarizes project activities and describes our successful efforts to accomplish each of this initiative’s important goals.

Development of the Indigenous Evaluation Framework was accomplished in two phases. Phase I, funded as a planning year through NSF Award #REC-0335670, established the research approach. During the planning phase, the conceptual framing for evaluation practice in Indian
Country was based on grounded theory built upon a process involving data collected from three regional focus groups with representation from several American Indian culture areas — the Southwest, Great Lakes Northern Plains, Northwest and Alaska. The focus groups included Indian educators, cultural traditionalists, and academicians and elicited data regarding Indigenous conceptualizations of evaluation, appropriate models and practices for conducting evaluation in Indian Country, Indigenous concepts (traditional knowledge and ways of knowing) related to science education, and Indian tribal values associated to how STEM education relates to American Indian communities.

Phase II of this initiative, a nearly five-year effort funding through the current grant, addressed three goals:

- Refine and validate the initial framing based on the concepts of indigenous evaluation established through grounded research.
- Strengthen the American Indian and Alaska Native community of evaluation practice through the development of an American Indian STEM program evaluation curriculum based on an Indigenous Framework for STEM evaluation.
- Build the capacity of evaluators to plan and conduct culturally relevant American Indian STEM education program evaluation.

**Goal 1: Refine and Validate the Indigenous Evaluation Framework.**

Phase II continued the same grounded-theory research approach to validate the conceptual framing used in Phase I. The critical framing identified traditional ways of knowing based on a comprehensive literature search and focus group data to capture key elements of Indigenous tribal epistemologies that influence evaluation practice. Related to ways of knowing are the core values that are common among tribal communities and their influence on evaluation practice.

These elements and their implications for evaluation in Indigenous communities were refined and validated through a series of “pilot” meeting held at seven Tribal Colleges. These meetings served as an extension of the focus group process initiated in Phase I. Each meeting included TCU faculty and administration engaged in STEM, representatives from K-12 schools serving the community and cultural experts. Participants reviewed the framing elements from Indigenous epistemologies and core values. They were asked to identify if and how the core values applied in their communities and whether other values and epistemologies should be considered in the Framework.

The pilot meetings were held during the first and second years (2005-06) of the grant at the following sites:

- Sinte Gleska University, Rosebud, SD
- Blackfeet Community College, Browning, MT
- Salish Kootenai College, Pablo, MT
- Northwest Indian College, Bellingham, WA
Additionally, special pilot meetings were held in March 2006 at the annual AIHEC Student Conference and at Kamehameha Schools in Hawaii later that same year.

This extensive review and commentary on the validity of the conceptual framing was augmented through numerous presentations (reported in section II-D below), and by the critical review and suggestions at the Advisory Committee meetings in 2006. Once the key conceptual framework was validated through this extensive community-based review process, the next major activity was completing the second goal of developing the training curriculum.

**Goal 2: Strengthen the American Indian and Alaska Native community of evaluation practice through the development of an American Indian STEM program evaluation curriculum based on an Indigenous Framework for STEM evaluation.**

The goal of the training curriculum was the development of an evaluation implementation framework that would have connections to Native values and ways of knowing, thereby giving evaluation of STEM education more validity and use in Indian Country. As such, the AIHEC Indigenous Evaluation Framework is not a new theoretical model in the grain of experimental, qualitative, participatory, collaborative or empowerment evaluation theory. The Indigenous Evaluation Framework might be best termed as a new implementation model that takes some Western approaches, together with Indigenous strategies and practices, and frames them within a cultural context and Indigenous ways of knowing.

After validating the cultural framing, the curriculum authors/program staff developed the curriculum by framing the various steps in planning and implementing an evaluation through Indigenous ways of knowing and core cultural values. The first drafts of the training model were pilot tested at two workshops held in February and April 2007.

Throughout 2007 and 2008, the chapters in the curriculum manual were expanded and revised based on the pilot workshops. Resources and additional readings relevant to Indigenous evaluation were added to the training manual. A third pilot workshop was conducted in September 2008. The Advisory Board continued to review and assist in the revision process throughout 2007 and 2008.

The final model for the curriculum and
training is illustrated by a set of concentric circles that depict the cultural framing based on Indigenous knowledge and the core cultural values. Within the circle using the medicine wheel as a metaphor, are essential elements in planning and implementing an evaluation. The Indigenous framing and each of the implementation steps are describe in nine chapters in the manual. In addition to the training manual, a PowerPoint presentation and set of posters were developed for the workshops. These products connect with the content in the manual.

The training is designed to cover two and a half days. The focus of the first day of training is cultural framing. During the second day, participants begin a series of exercises to plan and conduct an evaluation of a program in their college or school. The final half day focuses on assessing how the principles of Indigenous knowledge and core cultural values will be represented throughout the evaluation.

A. Opportunities for Training and Development.
One of the major goals of this initiative was the provision of training to develop evaluation capacity in TCUs and among K-12 Indian educators. Activities in this section summarize these activities.

Goal 3: Build the capacity of evaluators to plan and conduct culturally relevant American Indian STEM education program evaluation.
In 2009, AIHEC hosted six training workshops. The workshops were held in different regions to facilitate the geographic distribution of TCUs. More than 100 people enrolled in the workshops, which were conducted in:

- January 29-31, 2009: Albuquerque, NM,
- February 5-7, 2009: Minneapolis, MN
- September 24-26, 2009: Rapid City, SD
- October 8-10, 2009: Billings, MT
- November 5-7, 2009: Minneapolis, MN
- November 19-21, 2009: Tucson, AZ.

The project also provided training at three pilot workshops that engaged another 47 participants. These were held in Albuquerque, NM in February, 2007, Missoula, MT in April 2007 and Bellingham, WA in September 2008.

B. Major Findings.
Development of the AIHEC Indigenous Evaluation Framework was guided by six principles that were shared at all the pilot meetings and training sessions as well as in the final six workshops. Those principles are:

- Indian peoples have always had ways of assessing merit or worth based on traditional values and cultural expressions. This knowledge should inform how evaluation is done in our communities.
- An indigenous framing for evaluation can incorporate broadly held values while also remaining flexible and responsive to local traditions and cultures.
- Responsive evaluation use practices and methods from the field of evaluation that fit our needs and conditions.
By defining evaluation, its meaning, practice, and usefulness in our own terms, we take ownership.

Indigenous Evaluation respects and serves tribal self-determination and sovereignty.

Evaluation is an opportunity for learning from our programs and using information to create strong, viable tribal communities.

These principles are expressions of the assumptions that guided this project. The assumptions implied are:

- There are traditional Indigenous ways of knowing and common cultural values that can guide contemporary evaluation practice.
- It is possible to provide a cultural framing that is common, yet provides for flexibility to fit within different tribal cultures.
- An Indigenous Evaluation Framework can include Western evaluation approaches and methods while still retaining its cultural validity for tribal peoples.
- American Indians and Indian education educators will welcome and use evaluation practices that are viewed as Indigenous in nature while also relevant to their responsibilities to learn from and improve program implementation.

A major finding from this initiative is the critical importance of using a community-based approach to create a framework that meets the first two assumptions. Throughout Phase I and II, the conceptual framework was discussed with more than 120 people through day long focus groups and meetings with the Advisory Board. This extensive review contributed to a framework that speaks broadly to the American Indian community, while also honoring specific cultural beliefs and contextual situations.

The feedback from participants’ evaluations of the workshops indicates that the assumptions were correct – the curriculum was praised for its Indigenous focus and applicability. The workshop experience encouraged participants to value the importance if evaluating and learning from program implementation.

Participants stated that the training curriculum and workshop reflected tribal values and Indigenous ways of knowing. Examples of comments include:

- What I like about the training is the opportunity to include Indigenous focus that would address all levels of evaluation.
- Validation of an “Indigenous” mindset!
- I liked the framework. It incorporated a lot of Native values and represented a good perspective of Native philosophy.
- The information is so appropriate—to finally include the Native community voices and context.

Participants respected that voices of tribal Elders and scholars were incorporated into the curriculum. One participant offered praise for using “scholarly justification for incorporating
culture/Indigenous knowledge into evaluation.” Workshop participants also commented on the broad application of the Framework and its flexibility. One participant noted that: “All of the hands-on exercises made it possible for our group to apply the concepts to a real world program. Looking at others doing the same thing provided an opportunity to see how broadly the framework can be applied.”

When asked to rate how useful the training is to their situation, virtually all participants indicated it was useful, with the majority noting that it was “very useful.” Many comments on the evaluation forms illustrated how the training and materials encouraged participants to take ownership of evaluation concepts and incorporate the Indigenous Evaluation Framework into their strategic planning, program design, as well as program evaluation. Examples of comments include:

- The empowerment to develop our own. The excitement of the potential of a different process that involves all.
- I have always strongly promoted incorporating evaluation into program design. This provides a framework that will increase the likelihood that people will not have a negative knee jerk reaction to evaluations.

Participants appreciated the structure of the workshops, particularly the balance between presentation and small group exercises. Many noted that working in the small groups on programs that were specific to their own college or school facilitated their learning. One participant commented that “This was the most comprehensive program evaluations I have ever attended. I enjoyed all aspects, and have learned so much that I will be sending some people to the next meetings so we have people that can integrate this into the future of the college.”

The success of the workshops and the number of praises for the training manual and workshop are evidence that the extensive participatory process used to develop the Indigenous Evaluation Framework is essential.

The time and effort in design of the material are other important factors contributing to the success of the project. The design contributes to the Indigenous framing of the written material. The manual is filled with pictures of tribal college life – students doing research, making presentations, sharing in community activities. These, along with pictures of sacred site, elders, ceremonial activities, and graphic designs incorporating various tribal symbols welcome readers into the content of the manual.
Although the workshops were successful in introducing participants to a different way of thinking about evaluation and provided opportunities to practice aspects of evaluation planning, concerns were expressed that led program staff to the conclusion that this initiative needs to be continued and expanded. Many participants recommended that AIHEC develop consultation capacity at the program level to help TCU and Indian-serving K-12 apply aspects of the model while conducting an evaluation. Participants also recommended that AIHEC work with funders so they understand the implications of applying the Indigenous Evaluation Framework and support its use and development.

C. Outreach Activities.
Throughout the grant, program staff made numerous presentations, including:

2005:
In the first year of this grant, program staff and Advisory Board members made a number of presentations to describe the project and to share the emerging elements of the indigenous framework. Presentations were made at:

- March, 2005: Professional Development in Native Communities/Future Directions in American Indian Education Conference, Helena, MT
- June, 2005: Aboriginal Research Conference, Winnipeg, Manitoba, CA
- Various presentations to federal agencies and TCU presidents and faculty throughout project year.

2006:
During the second year of this grant, program staff and Advisory Board members made a number of presentations to describe the project and to share the emerging elements of the indigenous framework. Presentations were made at:

- Various presentations to federal agencies and TCU presidents and faculty throughout project year.

The Tribal College Journal of American Indian Higher Education published articles and a resource guide on this project in its Winter 2006 edition, Volume 18, No. 2.

2007:
During the third year of this grant, program staff and Advisory Board members made a number of presentations to describe the project and to share the emerging elements of the indigenous framework. Presentations were made at:

- July 2007: Bureau of Indian Education Conference, Denver, CO
- October 2007: National Indian Education Association Conference, Honolulu, HI
- November 2007: American Evaluation Association, Baltimore, MD
Throughout year: Various AIHEC Board of Director and Tribal College regional and national meetings.

At several of the meetings, participants were offered an opportunity to provide names and contact information if they were interested in continuing the receive information about this initiative, its products, and future workshops. More than 60 people indicated an interest in learning more about the project. Further, several state directors of Indian Education and Tribal College and University presidents, chief academic officers, and program administrators have inquired about sponsoring workshops in the future. In addition to the formal conference presentations, various presentations were made to federal agencies and TCU presidents and faculty throughout project year.

2008-09:
During the fourth and fifth year of this initiative, program staff and Advisory Board members made a number of presentations to describe the project and to share the elements of the indigenous framework. Presentations were made at:

- December, 2009: Symposium on Cultural Competent Use of Logic Modeling, New Orleans, LA
- November 2009: American Evaluation Association, Orlando, FL

In addition, some State Directors of Indian Education and several Tribal College and University presidents and chief academic officers have inquired about sponsoring workshops in the future.

III. PRODUCTS

A. Journal and Book Publications.
In addition to the Tribal College Journal article referenced above, two peer reviewed journal articles and two book chapters have been published based on the work of this initiative.

Journal publications:

Book Chapters:
Book: Training Manual:

- The principal product of this grant is the comprehensive training manual, *The AIHEC Indigenous Evaluation Framework: Telling Our Story in Our Place and Time*. The official APA citation for the product is:
  

An ISBN number for this manual is pending.

B. Web and Internet Sites.
AIHEC has established a secure (password protected) collaborative Internet site for ongoing work on this project, using Microsoft SharePoint software, which was generously donated to AIHEC by the Microsoft Corporation. Upon finalization of the training manual for mass distribution, various materials, including most of the manual, will be made available to the general public via AIHEC’s website, www.aihec.org.

C. Other Products.
Other products developed include Indigenous Evaluation Framework worksheets, a comprehensive PowerPoint presentation, and a set of six Indigenous Evaluation Framework posters.

Major sections of the training manual, as well as the workshop PowerPoint presentation will be available through AIHEC’s website, as noted above.

IV. CONTRIBUTIONS

A. Development of the principal discipline of the project.
This initiative will broaden the national and international evaluation discourses through the inclusion of Indigenous epistemologies that are not typically included in Western evaluation models. Further, we believe this initiative and the Framework will serve as models for the design and evaluation of culturally responsive educational interventions. One of the longer range outcomes of this effort is to contribute to the dialogue regarding evaluation theory. We began to engage in this dialogue in 2008 with a special “presidential” strand presentation at the American Evaluation Association. Dr. Karen Kirkhart, an evaluation theorist and a consultant to this initiative served as discussant for a panel that included program staff, an Advisory Board member, and a participant in one of the training sessions. That discussion initiated the development of a conceptual paper on the ways in which the Indigenous Evaluation Framework fits the conditions of an evaluation theory as described by Shadish and Cook (1991). This paper will be submitted to the *American Journal of Evaluation*.

Program staff and Dr. Kirkhart have been asked to be included in the prospectus of two different issues being submitted to the *New Directions in Evaluation*, one focusing on roles of values and the other on the role context in evaluation.
B. **Other disciplines of science or engineering.**
Through broadening national and international discourses on evaluation and, ultimately, changing the way program evaluation is conducted and used in Indian Country, new education strategies and pedagogies could emerge.

C. **Development of human resources.**
This initiative will have major ramifications for identifying and training Indigenous evaluation professionals to assess the effectiveness of educational programs serving American Indians communities. Further, as STEM programs are evaluated in Indian Country using elements of the Indigenous Framework for Evaluation, an anticipated outcome is improved education and research programs, which in turn will lead to improved STEM achievement among American Indian students, more American Indian students choosing STEM careers, and a higher quality American Indian STEM workforce.

The Bureau of Indian Education has expressed interest in using the AIHEC model to build evaluation capacity in BIE K-12 schools and the two Tribal Colleges supported by this federal funding stream. Likewise, other federal agencies and states with significant Indian student populations are requesting more information on the Indigenous Evaluation Framework, training, and assistance in integrating the Framework in their programs.

The training manual is a significant, original contribution to the literature on evaluation, and interest has been expressed in using it to develop graduate and undergraduate courses in evaluation for those who will be working in Indian Country. For example, Dr. Iris Pretty Paint, one of the Advisory Board members, has developed a special upper division research course which was offered at the University of Montana. Dr. Pretty Paint used much of the AIHEC curriculum in this course.

D. **Physical, institutional, and information resources that form the infrastructure for research and education.**
Nothing significant to report.

E. **To the public welfare beyond science and engineering.**
Because the AIHEC Indigenous Evaluation Framework can be used to evaluate any type of community program, this initiative has the potential to significantly change and improve program implementation throughout Indian Country, including all levels of education programs, Native language and culture programs, social service programs, economic development activities, government administration, health programs, and agriculture and natural resource management.

References