

Qanemcikarluni Tekitnarqelartuq [One must arrive with a story to tell]: Traditional Alaska Native Yup'ik Eskimo Stories in a Culturally Based Math Curriculum

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This article describes an ethnographic study of the process of collecting, transcribing, translating, retelling, and adapting of a traditional Yup'ik story for a children's bilingual picture book, which is part of a culturally based math curriculum project, Math in a Cultural Context (MCC). The article opens with an overview of MCC and the role that storytelling and traditional Yup'ik stories play in its development as well as in language revitalization and maintenance and school-based literacy and reading comprehension. The data have been analyzed and organized according to three phases of the project: (a) collection, transcription, and translation of stories; (b) literacy team, illustrator, and Yup'ik elders' work with new and archived stories—a draft composite story and illustrated children's text; and (c) creation of a second- and third-grade version of a bilingual children's picture book.

Introduction

For Indigenous peoples, oral storytelling is an integral and highly prized part of the culture. In the Yup'ik culture, elders usually come to meetings with stories to tell. Arriving with a story is so important that in some instances even when elders were on their way out of the village to go to the hospital they made sure that they told their story before they left the meeting.

Stories perform a number of important functions. They are a way to preserve a people's historical and cultural memory and a way to connect the past and the present. Stories can also provide instruction not only in cultural values and norms, how to act, but also in ways of survival and tasks of everyday living. Although elder storytellers tell many stories in meetings and gatherings, stories can also be told outside of a formal storytelling event. For example, when children

or even adults misbehave, or say something inappropriate, there is no reprimand, such as, “That was a wrong thing to say,” or “You shouldn’t do that.” Rather, a short story, providing instruction about the way to conduct oneself, is told.

In the Yup’ik storytelling tradition, an important aspect of traditional stories is that each listener can construct his or her own meaning from the same storytelling. According to Lily Afcan, a cultural teacher and leader in the Yup’ik village of St. Mary’s, the listener has specific needs at different points in his or her life. When a story is told, each person takes away a message that fits her or his particular physical, emotional, or spiritual needs at the time. Thus, stories not only mediate learning in all aspects of life, they also hold the power to change and transform.

This article is a story about stories. More specifically, in this article we tell about an ethnographic study of the collection and use of traditional Yup’ik stories in a culturally based math curriculum project, Math in a Cultural Context (MCC), which is based out of the University of Alaska Fairbanks, School of Education. We begin with a brief overview of MCC and the role that storytelling and traditional Yup’ik stories have played in the development of these culturally based math modules. We then outline the assumptions concerning storytelling and traditional stories and the role this genre plays in MCC, in language revitalization and maintenance, and in the development of school-based literacy and reading comprehension, in which the present research project is based. In the remainder of the article, we describe the ethnographic study of the overall process of collecting, transcribing, and translating the stories and focus on the adaptation of one story, *Iluvaktuaq*, into two bilingual children’s texts: a children’s illustrated picture book for first through third grade and expanded text for older readers in Grades 4 through 6.

Overview of the Culturally Based Math Curriculum Project: Math in a Cultural Context

The benefits of a culturally based curriculum and culturally responsive pedagogy that allows for culturally congruent participation structures are well documented in the literature (Brenner, 1998; Au, 1980; Lipka, 1991; Mohatt & Erikson, 1981; Delpit, 1996; Heath, 1982). Over the past few years, educators, researchers and community members have been involved in a series of interrelated projects that connect Yup’ik Eskimo elders’ knowledge to the development of supplemental math modules (Lipka, Mohatt, & Ciulistet, 1998; Lipka & Yanez, 1998; Lipka, 2003; Lipka & Adams, 2003). The curriculum presents math concepts through activities that are based in:

1. Hands-on activities that allow for inquiry-based learning.
2. Multiple intelligences.
3. Culturally based pedagogy that incorporates modeling as instruction.
4. Subsistence activities and survival skills.
5. Cultural activities such as storytelling and skin sewing.

From 1999 through the spring of 2002, students involved in this program have made statistically significant gains on outcome measures when compared to similar groups of Yup'ik and other students who used their regular school math curriculum (Lipka & Adams, 2001). These gains have not only been made by Alaska Native students, in both rural and urban schools, the disaggregated data has also indicated gains by non-Native students—Caucasian, Latino, African American and Asian-Pacific Islander. Additionally, analysis of classroom discourse suggests that students are becoming more engaged in discussions about math, exhibit greater interest and enthusiasm about the culturally based modules, and show a higher degree of understanding of the vocabulary and concepts they are acquiring. Further, anecdotal data gathered from related research projects¹ about the implementation of MCC between 2000 and 2004 suggests that stories, such as *Egg Island* (Hardy & Masterman, 2003), which describes the traditional Yup'ik subsistence activity of eggling and *Berry Picking* (Charles, Wahlberg, & Green, 2004) which describes the subsistence activity of gathering berries, included in the two math modules, *Going to Egg Island: Adventures in grouping and place values* (Lipka, 2003), and *Picking berries: Connections between data collection, graphing, and measuring* (Lipka, Parmelee, & Adams, 2004), have played an important role in the engagement of students in the traditional storytelling genre as well as in the math activities and concepts presented in the modules.

Rationale for Inclusion of Stories

The importance of the stories and their contribution to MCC are documented by anecdotal evidence collected as part of the ongoing research projects associated with the implementation of MCC. For example, interviews with rural students say they like the use of Yup'ik games, Yup'ik stories, and hands-on projects. Students relate their own stories about berry picking, fishing, or building fish racks to those presented through the modules.

Another anecdote that provides an example of the cultural connections that stories provide, which also promote engagement and interest in math, is told by an Alaska Native Inupiaq mother, who is a teacher. The story, taken from an interview (Lipka, 2002²), is about her daughter, who was in an urban second-grade classroom that used the culturally based curriculum, with particular references to the *Egg Island* story and Annie Blue of Togiak, a Yup'ik elder and storyteller.

The first time I heard about the Yup'ik math project was when my daughter came home one day. She is in the fourth grade now; then she was in the second grade. She came in all excited one day and said the strangest thing to me, "Mom, mom can I wear my *qaspeq* [women's dress] tomorrow? We are going to learn math." "You are going to wear your *qaspeq* for math?" "Yes, yes, we are going to learn about Yup'ik math and learn Yup'ik and there is this nice lady and I think her name is Blue and we are going to watch her on television. Isn't that neat? She skipped off happily to school the next morning. Came in right after the lesson and she usually just comes in to see

me at lunch. “Oh, I learned how to speak these numbers and did you notice that they do math this way and there is a different way of counting?” She was exposed to so much in just a little bit of time. Just seeing my daughter who loves math who loves school talking about this. . . . As a teacher I said yes, and as a mother I thought yes, and as a bonus it was something that was feeling culturally relevant to her and seeing it through her eyes made me really appreciate the fact that her teacher signed on to participate and try out this math unit. And, in fact, even after the math unit was finished and periodically throughout the year she would say, oh mom this reminds me of the videotape. . . . The fact that she made that connection and it was being maintained and to supplement everything else she was doing I thought that was one of the best learning experiences she had ever had.

This story illustrates how this curriculum and the story associated with it resonated culturally as well as mathematically with this student. That a culturally relevant curriculum that includes traditional stories imbues feelings of cultural pride and identity in students—even in urban areas—seems highly significant.

Finally, an anecdote (Lipka, 2002) from a teacher in Anchorage tells of a young second-grade student who joined her class during the *Berry Picking* module. The student, who was silent and disengaged at first, became an active learner, talking about his cultural experiences that were related to the story. The teacher elaborated:

I have a boy from a village in my class who appeared to be autistic. He sat with his back to the class. Students asked if he could talk, right in front of him. “Mrs. M, can he talk?” He is special education certified in all three areas. Not much eye contact was made. Maybe it was more than cultural maybe he was autistic. One day, I broke the ice. I just started singing. He looked up at me and made eye contact with a restrained smile. “You are new to our class and you have not seen me be silly.” I showed him the berry-picking pictures (in the storybook). I went through picture by picture and asked him, “Can you tell me about this?” He started with four-word sentences. . . . He told me about the bear and berry picking. He said it was funny the picture of the dreaming bear. He talked about the boat. He made a connection to practically every page in there. That was the beginning. The berry-picking illustrations got him to feel comfortable in his class. Now they are viewing him as an expert for the whole class.

These anecdotal data then provided us with a strong rationale for integrating traditional Yup’ik stories into MCC. It was at this critical juncture that the notion of collecting and including traditional stories coupled with a stronger literacy component became an important focus for developing additional modules within MCC.

Assumptions Guiding the Project

The inclusion of Yup’ik stories in MCC, such as *Egg Island* and *Berry Picking*, reflect important assumptions that have guided the project over the past several years. These assumptions also provide a theoretical and methodological framework for developing an expanded literacy component within the project.

The first assumption is that the oral storytelling tradition represents an integral piece of Alaska Native culture in general and Yup'ik Eskimo culture in particular (Fienup-Riordan, 1983; Tennant, & Bitar, 1981; Orr, Orr, Kanrilak, & Charlie, 1997; Orr & Orr, 1995;) and, thus, must also take a major role in a culturally based curriculum. The central role of storytelling in the Yup'ik Eskimo culture leads us to another related assumption concerning the urgency of the collection and preservation of stories.

There are two important reasons why oral stories told in Yup'ik must continue to be collected and preserved through the process of audio- and videotaping, transcription, and translation. First, language shift poses a serious threat to the maintenance of the language. In the Alaska Native language context³ in general, intergenerational transmission has already dramatically been reduced or ceased, and networks of existing speakers are shrinking (Marlow & Webster, 2004). This is true even in the Yup'ik language regions of the state, which have had the greatest number of first-language speakers, due primarily to a high degree of intergenerational transmission (Krauss, 1980). For example, according to Sharp (Webster & Sharp, 2004), the numbers of students entering her kindergarten and first-grade immersion class speaking Yup'ik as their first language have significantly diminished from previous years. As language shift continues to result in fewer Yup'ik first-language speakers, there is a danger that traditional oral storytelling in Yup'ik could face extinction with the passing of elder storytellers. Thus, preservation of the stories seems crucial to maintaining the language used in the stories, which often contain words that are not in everyday use.

Second, important stylistic and rhetorical devices found within oral storytelling, such as the cadence of the spoken language, including voice inflections, pitch tone and volume variances, chants and singing within the story, and mnemonic cues are part of the linguistic register of Yup'ik storytelling that must be preserved. Although live performances are the most optimal scenario for telling a story, video- and audiotaping can provide a window into the interactive dynamics between narrator and audience that occur during a storytelling event. In addition, the nuances of detail that exist in each storyteller's telling of the same story are preserved. Of special note here is that although every oral performance of a given story differs somewhat from others, there are "constants" that remain, and these must be faithfully rendered. Elders stress the importance of the fidelity to the story, and if one cannot remember a particular part of the story, he or she must not attempt to tell it (Orr, et al., 1997). Thus, by continually collecting and preserving the stories we can address not only the issue of language (and cultural) maintenance and perhaps even revitalization, but also the preservation of the register and nuances within each story.

The second assumption guiding the project is that traditional oral storytelling is a "literary" genre that should be part of school-based literature curriculum that reflects state academic standards. Historically, Western literary genre and dominance of the Western literary "canon" has been privileged in schools. However, oral storytelling in Indigenous cultures such as the Yup'ik

(word for the people or cultural group, while *Yup'ik* is the language) represents a historically strong literary tradition or genre, if you will, that contains subcategories. *Yup'ik* traditional narratives are often divided into the two categories of *qulirat* and *qanemciq* (both plural forms of *quliraq* and *qanemciq*; see explanation below). Explanations of the differences between the two categories vary considerably (Orr et al., 1997). For example, one explanation is that *quliraq* (singular) is a story that “originates in the distant past, is passed down from generation to generation and has the stamp and authority of collective tradition and authorship, and *qanemciq* (singular) is a personal and historical narrative that can be attributed to an individual author, even though he or she has been forgotten” (p. 214). In this classification then, what is identified as myth or fairytale in the Western or European tradition is a *quliraq*, and a personal or historical narrative is a *qanemciq* (Orr et al., 1997).

However, the alternative classification that Orr et al., subscribe to is:

a *quliraq* is a traditional narrative that has a framed and formulaic introduction (A long time ago there was a village, which was situated on the banks of a river, which flowed out into the ocean. On the far extremity of the village there was a grandmother and grandchild. . . .). A *quliraq* is perceived as being fictional, and therefore the actuality of events and characters is not predicated. On the contrary, a *qanemciq* tells of events that are perceived as actually having occurred (p. 214).

Thus, in this alternative classification, myths and legends are *qanemciq*, events that actually took place, and *quliraq* are framed stories that everyone understands generally as narrations of fictional events.

Annie Blue, *Yup'ik* elder and storyteller from Togiak, says that some *qanemciq* can become *quliraq* over time. According to Annie Blue, *Iluvaktuq* is such a story. It began as a *qanemciq* told about this great warrior during his lifetime, and over time, as it was handed down over generations, the story became a *quliraq*, telling of *Iluvaktuq's* super-ordinary and heroic accomplishments.

In any case, stories in the oral tradition represent a well-developed literary genre that contains unique stylistic and rhetorical features and structures. These features and structures can be compared to the rhetorical devices found in Western literature (e.g. foreshadowing and repetition) and at the same time reflect devices that are only available to the oral storyteller, such as voice inflections, pacing, and gesture. Thus, because traditional oral storytelling is a literary genre, it seems important for children, regardless of linguistic, ethnic, or cultural backgrounds, to experience this genre as part of the curriculum of school.

A third assumption concerns the bridge that traditional *Yup'ik* stories can provide to school-based literacy. Since school-based literacy is based in a Western notion of literature and use of Western literary genres to teach reading and writing, and a culturally based approach includes traditional oral storytelling as a genre, each can support the other through the literary connections between the two traditions. Drawing on these two traditions has the potential to expand the notion of literary genre and contribute to literacy development for all students.

Further, inclusion of traditional stories into the curriculum can help Alaska Native students' connections between the cultural literacies (Moll, Armanti, Neff, & Gonzalez, 1992) and knowledge that they already have developed outside of school and school-based literacy.

A corollary to the above two assumptions is that creating bilingual children's picture storybooks from traditional oral stories can further enhance children's school-based literacy and reading comprehension. The creating of bilingual storybooks is predicated on the notion that literate and oral traditions may not always be distinct and separate and can, thus, enhance and support one another. For example, according to Orr et al. (1997), many of the oral stories are found in written Yup'ik sources. Further, in their text, Orr et al., refers to one storyteller's use of a published written account (in Yup'ik) to "refresh" his memory of some forgotten details of the story he had heard in his youth in the *qasgiq* or men's house (see Orr et al., 1997, p. 181). Thus, in this case the written and oral traditions enhanced and supported one another. Similarly, experiences with traditional oral storytelling and reading bilingual picture books can work together to support students in their literacy development and comprehension of both oral and written texts. In addition, bilingual picture books can provide print-based materials for Yup'ik-immersion classrooms that are central to school-based language maintenance and revitalization projects.

A final assumption underlying the inclusion of stories in MCC is that the stories provide a cultural grounding for the math concepts and activities presented in the modules. For example, *Egg Island* (Hardy & Masterman, 2003) describes a trip the villagers take to Egg Island as they participate in the traditional subsistence activity of egging, collecting birds' eggs for food. This story ties together the 19 lessons that are in the module, which are centered in the math concepts of grouping and estimating. The cultural grounding also provides a pathway not otherwise open by mainstream math textbook series for students to more readily engage in the math activities, which also increases students' understanding of math concepts and appreciation of math as a content area that has relevance to their lives.

Method

As humans we share a basic need for stories to organize our experiences into important life events, both public and private, and to connect the past to the present. Likewise, a common thread that runs through the qualitative research tradition is the notion of narrative—the unfolding of a story. As such, the data collected are primarily in the form of words or visual images, and these describe the phenomena studied. We chose the methodology defined within an ethnographic study (Heath, 1982)⁴ to examine and describe the process of collecting, transcribing, translating, combining different storytellers' tellings, retelling, and adapting of stories for children's bilingual picture books. The data include audiotapes and videotapes of elders telling stories and meetings with elder storytellers, an illustrator, and a literacy team, observational field notes, archived

and recent transcriptions and English translations of *Iluvaktuq*, interviews and researcher journal entries. These data have been organized according to three phases of the project. Each phase is characterized by specific microprocesses (e.g., transcribing, translating, or combining various tellings of a story, etc.) that form cohesive moments in the overall process of the project.

1. Phase 1: Collection, transcription, and translation of stories.
2. Phase 2: Literacy team, illustrator, and Yup'ik elders work with new and archived stories—draft composite story and illustrated children's text.
3. Phase 3: Creation of second- and third-grade version of bilingual children's picture book.

The remainder of the article describes these phases in the development of the story *Iluvaktuq*.

Phase 1: Collection, Transcription, and Translation

The first phase of the project involved collecting traditional Yup'ik stories told in Yup'ik by elder storytellers. Although many stories were previously recorded, translated, and compiled into an unpublished archival collection, one of the project goals was to collect additional tellings of the stories currently residing in the archived collection as well as stories that may have not been included. Of particular interest was the collection of stories that would directly relate to the math content of the math modules being developed. Another compelling reason for this new round of stories was the pressing need to seize another opportunity to gather stories from aging elders.

To obtain these new tellings and additional stories, a weeklong storytelling event was held in the village of Togiak in March 2004. During that event, stories such as *Iluvaktuq* in the *Patterns and Parkas* Second Grade Module (see the Lipka & Sharp article in this issue), were told by elders Annie Blue of Togiak and Mary Bavilla of Togiak. Although we already had a transcribed Yup'ik version of *Iluvaktuq* in the archived collection, we wanted to collect additional tellings of the story, because as stated previously, every oral performance of a given story differs somewhat from other performances of the same story, and we wanted to capture the various nuances of detail that might occur. Also present at this event were three members of the University of Alaska Fairbanks (UAF) literacy team of researchers: folklorist Ben Orr, Yup'ik translator and transcriber Eliza Orr, and Evelyn Yanez, researcher and cultural consultant, who facilitated the event.

At this 5-day-long event, which was video- and audiotaped, elders from all over the region gathered to tell and listen to stories. This typifies the context for storytelling in the oral tradition. Storytellers in the oral tradition depend primarily on the fidelity of memory and employ various mnemonic aids. According to Orr et al., (1997), one such aid is the conventionalized script, which is composed of episodes that are highly stylized and invariant with formulaic beginnings, such as the marriage proposal script and the young apprentice's sea

and land mammal hunting script. Another aid in memory is the custom of telling stories in the presence of knowledgeable elders. "When the principal narrator has concluded his (her) narration, the audience is given an opportunity to bring to mind those parts that have been left out" (Orr et al., p. 181). At the end of the five days, numerous traditional stories as well as stories about subsistence activities and survival techniques were collected on audio- and videotape.

The advent of audio- and videotaping of live storytelling performances provides greater fidelity to the narrative event, thus contributing a strategic improvement to a process that had previously depended solely upon an observer's skill at recording field notes. After recording the performance, the story goes through two microprocesses: transcribing spoken language using Yup'ik orthography and translating the Yup'ik transcription into English. Orr (2003) describes these processes this way:

First, the actual narrative performance, that is, the storyteller telling a story to a live and understanding audience in the original language in a particular situation and place, is absolutely primary. This is the master text that we work from if we really want to come to appreciate and understand a story in its pristine form. Every redaction is a filtering and transformation of the information in [from] the original into something else (p. 3).

Other important considerations that are part of transcribing and translating, aside from the actual language used, are the style of the narration and the context in which the story is told. In other words, what was the occasion for the story, and who were participants in the event? Changes in these variables can sometimes change the content, nuances, or details of the story. In each context, there are also the elements of gesture, voice intonation, tempo, and so on, as previously stated. Therefore, a recording of a live narrative performance is not the "master" text; even an accurate transcription in a good orthography is yet another step removed from the reality of an actual live storytelling event (Orr, 2003). Thus, the inclusion of a story, such as *Iluvaktuq*, into the *Patterns and Parkas* module would actually be a collection of the various iterations of the story (e.g. sample video-clips of the storytelling event, Yup'ik transcription, English translation, and adaptation into children's bilingual text), which is reflective of the project's overall process of collecting oral performances and producing written texts

Phase 2: Iluvaktuq: Drafting Composite Story and Children's Text

At this point in the process, the team decided to focus on *Iluvaktuq*, because the *Patterns and Parkas* module had already been field tested and some preliminary illustration sketches had already been drafted. The basic storyline is about a great hunter and warrior named Iluvaktuq, who was known throughout the region as a big man with a very big appetite. His enemies wanted to get rid of him. They concocted a plan to capture him and force him to eat so much caribou that he could not run away. Then they would kill him. But Iluvaktuq outsmarted them, and as he ran away, he vomited the caribou he had eaten, which allowed him to run even faster. The enemy could not catch him, and he escaped. The symbol of

the vomit, the *miryaruak*, is part of the parka design for the people of this region, and the story provides a cultural grounding for the math module based on geometric pattern designs found on traditional Yup'ik parkas (see Lipka & Sharp article in this issue).

Two members of the literacy team (Evelyn and Joan) then began to compare the transcriptions and the two new English translations of the Togiak story performances with a previously transcribed and translated story of *Iluvaktuq* from the university archived collection of elders' stories. The "constant" elements formed the framework for the composite story, and details were added from the various performances. This involved a recursive comparative process that moved back and forth between Yup'ik transcriptions and English translations performed by Evelyn in consultation with the elder storytellers. For example, in one narrative performance, the storyteller (Annie Blue) starts with this formulaic beginning: "There was a young and very successful hunter who would catch all kinds of things."

In another performance, a different storyteller (Mary Bavilla) names the hunter, *Iluvaktuq*, in her opening. She also includes a reference to the War of the Eye, a historical event that occurred in the first two decades of the 19th century involving the inhabitants of the Kuskokwim River area.

I am going to tell you a story about wars that happened a long time ago.

I am going to tell a story that I heard about the Great War that happened a long time ago.

At that time of the war they had living amongst them a warrior, a lethal weapon. He was named *Iluvaktuq*.

In the final composite the identification of the character of the story, *Iluvaktuq*, as a great warrior and hunter also includes the historical setting of the War of the Eye.

Coincidentally, we began the adaptation of *Iluvaktuq* into a children's illustrated version of the story. Thus, working from the composite, our goal was to create a text that preserved the narrative flow of the original transcribed/translated stories, keeping as much of the translated text as possible, while, at the same time, making it accessible to children. For example, the formulaic opening for the children's story describes *Iluvaktuq* as a hunter and warrior and also references the historical event—War of the Eye.

I am going to tell a story about a great war that happened a long time ago in the Kuskokwim river area. During this time, there lived a warrior. The people called him their lethal weapon because he could incite his men to attack whenever they set out on a war party. This warrior's name was *Iluvaktuq*.

Not only was *Iluvaktuq* a great warrior, he was also a successful hunter. He could go out into the wilderness and get not one, but many caribou or arctic char in one hunt.

In addition to creating a children's version of the story, the literacy team also wanted to provide cultural and historical information with which many students, both Alaska Native and non-Native students, may have not had any prior knowledge or experience. For example, many students, even though they have been brought up in a Yup'ik village, may not know the history of the War of the Eye. This is also true for those students who are in urban areas as well as their non-Native counterparts. Therefore, we decided to include text boxes in the story narrative, which present historical as well as cultural background information for the story.

In this phase, we also consulted with elders, checking the preliminary sketches of the story illustrations for accuracy and compatibility with text. From their review of the illustrations and text, several inaccuracies and omissions of textual details were discovered by the elders. For example, in one sketch of the character, *Iluvaktuq*, the figure was wearing a tonsure. After consulting with the elders, we learned that although men in some regions may have worn hair this way, this was not the practice for men in the context of this particular story. This debriefing and revision stage also involved the formatting of the text such that page breaks and illustrations would occur in a flow that coincided with the story's natural narrative pacing and action segments.

After the preliminary draft of this version of the children's story was completed, we decided to consult various reading specialists—elementary classroom teachers, specifically second- and third-grade teachers—about the accessibility and readability of the text. Since the children's text *Iluvaktuq* would be used directly with students in second and third grades (*Patterns and Parkas* is geared for second and third grade), we wanted to know if and how the text in its present draft form could best be used at this grade level. In other words, was the text appropriate for reading aloud by the teacher, or was it at an average instructional or independent reading level for children in those grades?⁵ Feedback indicated that the draft was mostly appropriate for reading aloud by a teacher in second or third grade. Further, it was more appropriate for older students (fourth grade and up) to read independently or in a paired reading situation, particularly because of the inclusion of the informational text boxes, which contained content information in a nonfiction format. The data from the piloting of the storybook also suggested that the second- and third-grade text be shortened and not include the second part of the fifth- and sixth-grade version of the *Iluvaktuq* story, which was about another warrior named Paluqtalek, who also lived during the same era.

Based on the feedback, the literacy team then decided to create another version of *Iluvaktuq* that was geared toward a second- and third-grade-level picture book that also contained bilingual text. The goal here was to provide a children's bilingual picture storybook that would serve readers at the independent instructional levels primarily in English, and at the same time provide culturally based instructional material in Yup'ik for those children in immersion classrooms or others who were learning to read Yup'ik.

Phase 3: *Iluvaktuq*: Creating the Bilingual Picture Storybook

The primary challenge for this phase was maintaining the integrity of the story and language as much as the reading level would allow. Working from the fifth- and sixth-grade version, we carefully considered word choice and placement and number of sentences on a page and the complexity of ideas presented in those sentences. For example, the sentence, “The people called him their lethal weapon because he could incite his men to attack whenever they set out on a war party” contained the word *incite*, a vocabulary word that might present problems for second-grade readers and two complex ideas, namely “lethal weapon” and “war party.” We decided to delete the word “incite” and reword the sentence to relate the same idea but with simpler language. We also decided to keep “lethal weapon” because of the possible familiarity with the term due to an association with popular culture (movies) that readers were likely to make. Another consideration was the introduction of the character’s name earlier in the text, because of the shortened sentence and paragraph length on the page and in order for readers to identify the main character with the title of the story. Thus, the first page of the second- and third-grade version read:

I am going to tell you a story that happened a long time ago when a great war took place in the Kuskokwim River area. During this time, there lived a great warrior and hunter named *Iluvaktuq*.

Iluvaktuq led many attacks against the enemy. He was such a mighty warrior that his people called him their lethal weapon.

Iluvaktuq was also a skillful hunter. When he went out into the wilderness to hunt, he came back with many caribou and arctic char.

Other challenges involved keeping the story’s oral attributes, its natural flow and pacing, such that the action sequences of the story would fit into page breaks. These formatting issues also required consideration of the placement and content of the illustrations such that they provided visual clues for the text on the facing page, giving the reader additional support for meaning making.

After the second- and third-grade English version was completed, it was translated into Yup’ik and formatted such that the Yup’ik and English appeared on the same page, one above the other, with the illustration on the facing page.

*Qanemcitqataramken ak’a imumi anguyagpallratni Kusquqviim nuniini.
Tamatum nalliini anguyagetangqellruuq nukalpiamek at’legmek Iluvaktumek.*

*Iluvaktuq tauna amllerqunek ciulistekluku curugaqluteng anguyameggnun.
Arenqialan-llu tuknian yuut anguyagcuutmeqqnek piqaluku.*

*Piculuni tuaten tauna Iluvaktuq. Pissuryarraarluni yuilqumun tekitaqluni
piliqluni tuntunek iqallugpiqqnek-llu.*

I am going to tell you a story that happened a long time ago when a great war took place in the Kuskokwim River area. During this time, there lived a great warrior and hunter named Iluvaktuq.

Iluvaktuq led many attacks against the enemy. He was such a mighty warrior that his people called him their lethal weapon.

Iluvaktuq was also a skillful hunter. When he went out into the wilderness to hunt, he came back with many caribou and arctic char.]

The final step in this phase was to check with the elders on the adaptation and Yup'ik translation. At a face-to-face meeting, the literacy team, illustrator, and elder storytellers came together to make final corrections, additions, or deletions necessary for completion of the second- and third-grade story, and for continuing work on the completion of the fifth- and sixth-grade version. One important detail in the text that was discussed and changed concerned the *miryaruak*, or white fur trim, which represents what *Iluvaktuq* vomited on his parka as he ran away from the enemy warriors. In the draft, we described the *miryaruak* as a white fur tassel sewn on the shoulders of the parka. However, in the revision, the elders told us that these were white pieces of fur, triangular in shape, that were sewn on the front of the parka just below the shoulders. At the time of this article, we are presently awaiting the drafting of two additional illustrations to go with the formatting of the text and revised drafts of the original sketches, which will be reviewed by the elders and literacy team before a final draft of the second- and third-grade bilingual storybook version of *Iluvaktuq* is submitted to the publisher. At the same time the work on the fifth- and sixth-grade illustrated version with informational text boxes is undergoing the revising process, much in the same way as described above.

Conclusion

In this article, we described the process of the collection and use of traditional Yup'ik stories in a culturally based math curriculum project, *Math in a Cultural Context*. The collection and inclusion of these stories in their various iterations represent a way to utilize the literary genre of traditional oral storytelling in teaching math concepts as well as developing literacy skills and reading comprehension. More specifically, the use of traditional Yup'ik stories, told in Yup'ik and translated into English, can provide a way to bridge the culture of the community with the culture of school. By including the historically untapped wisdom and knowledge embedded in these traditional stories in our schools, we open new pathways to greater levels of engagement with math activities and an understanding of conceptual mathematical knowledge. We can also develop students' meaning-making abilities through a literary genre that has historically rested outside of the Western literary tradition taught in school. This notion of using traditional stories for these purposes goes well beyond the idea of cultural appreciation. Although learning to appreciate another culture is an important and

worthy goal, we must also consider our educational goals for student learning. As MacGillivray, Rueda and Martinez (2004) state, “Appreciating the cultural knowledge and resources that families and communities bring to school is not the same as appropriating those resources for important educational goals and for furthering intellectual development” (p. 148). Through this project, we hope not only to continue to preserve these important resources, but also utilize them to increase all students’, Alaska Native and non-Native alike, knowledge and intellectual growth.

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ENDNOTES

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²Data from NSF project (award #9618099).

³There are 20 Alaska Native languages that can be broadly situated in geographical areas of the state. There are three languages in Southeast Alaska: Tlingit, Haida and Tsimshian. There are three languages in South Central Alaska: Eyak (Cordova), Sugpiaq (extending from Prince William Sound to the Alaskan Peninsula), and Dena’ina (surrounding Cook Inlet and extending north into the Interior). There are 11 distinct, but closely related languages in Interior Alaska: Han, Gwich’in, Tanana, Upper Tanana, Dena’ina, Deg Xinag, Tanacross, Koyukon, Ahtna, Upper Kuskokwim, Holikachuk. The Aleutian and Pribilof Islands are home to a single language, Aleut. Western Alaska is home to Central Yup’ik while St. Lawrence Island in the Bering Sea is home to Siberian Yupik. Northern Alaska from the Seward Peninsula to the Canadian border is home to Alaskan Inupiaq. For a complete list of these languages and their geographical locations, please refer to the language map on the Alaska Native Language Center website: www.uaf.edu/anlc.

⁴Heath (1982) distinguishes between a full-scale ethnography and ethnographic studies. In ethnography the goal of describing the ways of living of a social group is accomplished by a range of techniques that include mapping, charting kinship, patterns of interaction, collecting life histories, interviewing, studying documents, folklore, songs, etc. Ethnographic studies apply this kind of methodology to educational settings.

⁵A text that is easy for a child to read and to make meaning from without any outside help is termed as an “independent” reading level. An “instructional” level suggests that the child

is somewhat familiar with the message and meanings of the story, but must engage in reading work and problem-solving that may require some additional help to read the text (Clay, 1993).

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