

## **FIGHTING DIABETES THROUGH A SERVICE LEARNING PARTNERSHIP BETWEEN TURTLE MOUNTAIN COMMUNITY COLLEGE AND THE UNIVERSITY OF NORTH DAKOTA**

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### **INTRODUCTION**

Turtle Mountain Community College (TMCC) is situated on the Turtle Mountain Indian Reservation, one of the nation's smallest reservations (six by twelve miles) just south of the Canadian border in north-central North Dakota. In 2005, the problem of diabetes on the reservation and in the surrounding area was chosen as the focus of the college's interdisciplinary service learning program because type 2 diabetes is a widespread problem that directly or indirectly affects everyone on the reservation. According to Shirley Butts, director of the diabetes program at the Indian Health Service, up to 25% of the people on the reservation may have diabetes, although many may not as yet know they are diabetic and are not receiving treatment.

In addition, screening done by Eric Dionne of the Tribal Diabetes Program of children in kindergarten through eighth grade in the schools on and around the reservation strongly suggests that unless something is done to change the situation, the percentage of young people with diabetes will also increase dramatically in the next ten to twenty years. Of the children screened, 58% of the children on the reservation and surrounding communities may be at high risk of becoming diabetic. Since American Indians are more than twice as likely to develop diabetes sometime during their lifetime as non-Hispanic whites, it is extremely important to take steps to reduce the risk whenever possible by controlling weight and increasing activity.

### **INSTITUTIONAL PERSPECTIVE**

The epidemic of diabetes on the reservation has many causes and no simple solution. However, an important first step is making people aware of what is happening and how changes in lifestyle and policy can make a difference, which is what TMCC's service learning and community engagement project has worked with a variety of community partners to do for the past three years.

The college believes its service learning activities have made a difference and may be one reason for the increase in the numbers of people seeking treatment for diabetes. However, getting people to change their behavior is an ongoing challenge. One common obstacle to lifestyle change is the belief many people have that they do not have time to include exercise in their lives. While continuing to work with the different coalitions and agencies to make people aware of the problem of diabetes, the college decided to also find ways to get people to make exercise a part of their busy lives. To assist with this plan, the college established a partnership with the University of North Dakota, specifically students enrolled in classes within the Department of Technology taught by TMCC graduate Alex Johnson. He was asked to have his students design an inexpensive holder for a laptop computer that could be mounted on an exercise bike, which would then allow an individual the opportunity to keep physically

active while at the same time multitasking by using a computer at the same time. While it is possible to purchase bikes that are equipped with computers, they are not affordable for most residents of the reservation, many of whom live below the poverty level.

## FACULTY PERSPECTIVE

The following are Alex Johnson's thoughts on the partnership and his first formal use of service learning in his classes as well as the results of his students' participation in the project.

When Turtle Mountain Community College approached me with the idea of having my students design a holder for a lap top computer that could be mounted on an exercise bike, I was intrigued and interested for a number of reasons. First of all, I owe a debt of gratitude to Turtle Mountain Community College for the education I received there, and my experiences at TMCC made me an advocate of service learning.

When I enrolled at TMCC in 1995, my previous experience with formal education had not provided me with a good impression of school in general. My earliest experiences with school were frustrating because of a system that never really reached me at a level that seemed of any use. What I experienced at Turtle Mountain Community College surprised me. The instructors differed in many ways from the ones I had encountered in my secondary school. Instead of the meaningless structure that seemed so common in most of the classes that I had taken in high school, the instructors at TMCC actually seemed to care about the students as much as the subjects that they taught. They provided explanations of the processes and the significance of them as they applied to real world situations. With such real life learning, I started to grasp concepts more quickly and learned faster than I had ever learned before and discovered that learning could be fun.

Fortunately, when I enrolled in the Industrial Technology program at the University of North Dakota after I graduated from TMCC, I encountered more fine instructors who were also interested in showing practical applications to the processes that they taught. Theory was still taught, but it was blended with a practical curriculum and real life learning, which I could understand.

The struggles that I encountered during my early years in school and the vast difference I encountered in college classes have measurably impacted the way that I view education. Service learning is one effective way to make the material that I teach as realistic as possible for students, which is another reason I welcomed the opportunity to involve my students in TMCC's service learning project.

IT 202 Technical Drawing, one of the courses in which I introduced the project, is designed to introduce students to the study of technical drawing techniques, such as projections, pictorials,

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dimensioning, development and tolerance practices used in business and industry. In short, it is a class in which students learn how to communicate ideas with 2D and 3D drawings. Traditionally this course was taken by mainly manufacturing majors in our program;

however, changes in the curriculum resulted in this course being a requirement for the graphic design majors in our program as well. The typical graphic design student is somewhat at a disadvantage in the traditional curriculum of this course since they generally do not have a strong mechanical background—something that is a definite benefit in a highly technical course such as this. Since my own experiences in industry showed me that the world is rarely composed of textbook problems, it was, I felt, important for instructors to keep their curriculum as real as possible in order to prepare students for jobs in industry. This was something that I felt could be accomplished with a service learning approach.

I felt that the service learning project offered an opportunity for students to learn what they needed to learn in the course while also addressing a real and challenging problem. Issues that would have to be overcome to design an appropriate laptop holder involved mounting issues—there are, after all, hundreds of different styles of exercise bikes in existence; the holder would have to be able to adapt to different styles. Other issues involved safety, aesthetics, material selection, tolerance, and a host of other issues that go along with any design project. It was a definite real world problem that needed to be overcome. However, the project was more than just an exercise in product design; it was also something that I felt students would embrace and run with. A key element of the project was combating diabetes and helping children stay healthy. I felt that even if I did have some students who were not overly mechanical to start with, this was a project that would still be approached with interest on the part of the learner.

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I incorporated this project into my class as both a midterm and final project. The students were not forced to adopt this project—they had the option of going a different route with their midterm and final projects—but about two-thirds of the class did decide to design the laptop holder. As a class we still covered all of the traditional elements that normally would have been covered, but instead of relying solely on the textbook for problems, I incorporated the students' projects as much as possible. By using a real problem to help explain such areas as orthographic drawings and tolerance issues, students were better able to understand the principles and see the effect that these principles had on the total design.

This project affected a number of things about my teaching and also my students' learning. First of all, I tended to see my students a bit clearer as a result of the project. Although I have always tried to be a student-centered instructor, because of this project I developed better relationships with my students than I had previously had. This has perhaps resulted in a greater comfort level between my students and me and has certainly helped them be more candid in their opinions of not only the class but also external forces that impact their lives.

I think the thing that surprised me the most during this project was the candidness of the students as they approached the class and their conversations with me. The level of trust that they were willing to show was very interesting, and I feel that I have helped to make a difference. I find it very reassuring that they do admit to their limitations and also seem able to accept mine as well. This project has served to reaffirm my belief that most students do want to

succeed, but that there are internal and external forces that often intervene and serve as roadblocks to their destinations. Being able to help them along these paths and getting to know them as individuals is, I feel the greatest reward of my job and it is one that I truly enjoy.

In one sense, the service learning project provided students with an activity that had intrinsic merit. I believe that students are more likely to enjoy the process and continue it if they know it is leading to an end result that is desirable. Knowing real people might become healthier because of what they designed provided motivation for the students.

During the semester that I had students designing laptop holders, I witnessed students spending more time working on their projects throughout the semester than had been the case with previous projects that I had assigned in other classes. I realized when students in some of my other classes started asking if they could be involved in the project, too, that students weren't just working for the grade; it was something that they really wanted to be doing. It was this sort of reaction that demonstrated to me that I was on the right path. Students were learning and enjoying the process because the learning was tied to their own experiences. I felt confident that this project would be one that students would have a genuine interest in completing and one that they could feel good about doing.

In the end, a lot of good came out of the project. Students were generally very excited about the work that they were doing with Turtle Mountain, and many of them came and told me about members of their own families that had been impacted by diabetes. Diabetes was indeed an issue that touched most of them and was something to which they could positively relate.



*Prototype designed by one of Professor Alex Johnson's service learning students. Alex's son Logan is pictured on the exercise bike which is designed to hold books while children are engaged in activities that teach them about making healthy choices.*

I have always been grateful for the experiences in my life that shaped me as an educator, including the years I spent as a student at Turtle Mountain Community College and the many excellent instructors I had while I was there. It is this awareness of just how important a teacher is to a student's successes and the value of real life learning that attracted me to teaching, and it is an awareness that I hope I never lose.

## **ABOUT THE AUTHORS:**

**Margaret (Peggy) Johnson** is an assistant professor at Turtle Mountain Community College, where she has taught writing and literature classes since 1991. Prior to teaching at Turtle Mountain Community College, she was a secondary teacher for over twenty years. In 1987, she received a Christa McAuliffe Fellowship to explore the use of technology to enhance composition instruction and has been using technology in her teaching since that time. Since 1999, she has taught online classes for the college, and currently all the courses she teaches are either online or blended classes. Currently she is a service learning project coordinator for TMCC and is a strong advocate of service learning as a way to enhance student learning.

**Alex Johnson**, a graduate of UND with a Master of Science degree in industrial technology, is an assistant professor in the Department of Technology at the University of North Dakota. His focus in the department is on manufacturing and technical design. He teaches courses ranging from production processes to computer-aided design and drafting. Johnson spent several years working for companies such as Bobcat, Cirrus Design Corp, EAPC Architects Engineers, and Concrete, Inc., which provided him with valuable experience that he brings to the classroom. Johnson has a special interest in practical and hands-on learning and includes service learning in his courses to broaden the students' learning experiences. He has established a partnership with Turtle Mountain Community College to involve his students in service learning and has presented at workshops regarding service learning. Johnson is currently pursuing a Ph.D. in Teaching and Learning with a focus on the use of technology in education.