In this issue:

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Keywords: introduction to computers, computer literacy, course design, curriculum, self-paced, tutorial, SAM XP, WebCT

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1. INTRODUCTION

Black Hills State University and Northern State University are two of the six universities in the South Dakota University System. Introduction to Computers, taught as MIS/CIS/CSC 105, is a "common course" and is offered at all of the universities throughout the system. Students entering the course have a wide range of knowledge and skills, making it difficult to know how in-depth to design class lectures. Additionally, during the 2003-2004 academic year, approximately one hundred fifty sections of the Introduction to Computers course were offered in the system. To staff these sections would require the equivalent of about twenty full-time faculty. Therefore, the course was redesigned to a "flexibly-structured" paradigm in which students can work at their own pace, with pre-assigned assignment/exam deadlines. The new design was implemented in all eleven sections at BHSU as well as a pilot project (six out of thirty-four sections) at NSU. Because of the potential for significant cost savings statewide, the Board of Regents (the governing body for the university system) supported our efforts with the funding necessary for the redesign.

Work on the redesign took place in the summer of 2003 and the new design was successfully implemented in the fall semester of that same year. This paper begins by looking at the reasons why a new method was necessary and then describes the redesigned course. For a more detailed description of the redesign, see Mackin, Paranto, and Johnson. The paper then goes on to discuss the impact of the redesign on students, faculty and the university. Statistics on the first year and comparisons to past years' average grade distributions and drop/fail rates is presented. Finally, suggestions for improvements are given.

2. REASONS FOR THE COURSE REDESIGN

An assortment of factors were discussed over a period of time before faculty agreed that a redesign of the Introduction to Computers course would benefit students, faculty, and the university. Those discussions concen-

trated on the method of course delivery and the affect on resources at BHSU. The discussions included the following topics:

- **Background of Students** – Students bring a variety of backgrounds and technological capabilities to college. Many have been using the Internet, e-mail, word processing, and spreadsheet software throughout elementary and high school. Yet others enter this introductory course with no computer experience. Prior to the redesign, the course was geared to the "middle ground" students with material covered in a classroom/lab setting using a lecture/demonstration style. This resulted in boredom (and eventually a drop off in attendance) for the capable students. In addition, the instructor was not able to give personal attention to the true beginner during class without holding up the rest of the class.

- **Allocation of Faculty Resources** – Because of the high enrollment in MIS 105 and limitation of class size, several sections of this class are offered each semester. To cover those sections, faculty who could be better utilized teaching upper level Business and Management Information Systems courses find themselves teaching this introductory course.

- **Limited Computer Lab Availability** – With the number of sections of MIS 105 and other classes that are scheduled in the computer labs, a limited amount of time is available to students for open use of the lab.

- **Lack of Computer Lab Assistants** – Outside of the regularly scheduled class times, the computer labs are available to any student attending the university. Should a student have a question or a problem, there was no assistance available.

- **Desire to Expand Course Coverage** – With many students entering college with previous experience, faculty would like to expand the material covered in the course to better benefit the experienced students. This would be difficult under the traditional method of instruction.

The discussions at BHSU led to the agreement that the course needed to be redesigned. With the support of administration, BHSU faculty applied for and received a Governor Rounds' Grant[i] to fund the work. These grants are administered by the Board of Regents and require that faculty from at least two universities from the state system collaborate on the project. Therefore, a faculty member from Northern State University was involved in the redesign.

3. DESCRIPTION OF THE COURSE REDESIGN

MIS 105 is an introductory course in computer concepts and applications. The primary objective of the course is for the student to gain a working knowledge of the Windows operating system, Word, Excel, Access, and PowerPoint (all products from Microsoft Corporation). Prior to the fall of 2003, the MIS 105 course was taught using a traditional instructor led / hands-on approach in a computer lab. Each lab could accommodate up to thirty-five students. A small portion of the class time was used to go over fundamental concepts of computers. The majority of class time was spent with the instructor demonstrating how to use the software products and the students were encouraged to follow along on their own workstations. Tests were given on each application being covered. Most instructors would create exams that consisted of a concepts portion and a production portion, all of which would be hand graded.

The main concept of the new course design uses a flexibly-structured approach. This means that students work through the material at their own pace using a tutorial-type textbook. Additional help is available from undergraduate student lab assistants. The course still includes some structure in that there are set deadline dates for each assignment and exam. There are a few differences in the implementation depending on the location. The new course design includes the following:

1. Students work through the material in the textbook at their own pace. An assignment must be completed that incorporates all of the main topics from the material. The Word assignment is to write a letter to the student's parents, the Excel assignment is to create a personal budget, etc. By personalizing the assignments in this way, we are increasing the likelihood that a student is handing in his/her own work.

2. "Deadline dates" are set for turning in each of the assignments and the taking of exams. For example, the Windows 2000 exam must be taken by the third week of the course; the Word assignment is due by the fifth week. A schedule of these dates is provided to the student at the beginning of the semester. This helps to ensure that students continue to progress at a sufficient rate to complete the course. Students are not penalized for working ahead, but are encouraged to do so when possible.

3. During the first two weeks of the semester, students must attend a lecture at the regular class time. These lectures are held in a large lecture room and are used to give instruction on how to access the campus network and campus e-mail, how to use WebCT to get course information, how to use the on-line testing software, and other course basics.

4. To encourage student/instructor contact, additional class lectures are scheduled every other week throughout the semester. These lectures are used to cover computer concepts, discuss any problems that the students may be having and verbally remind them of the ongoing expectations of the course and upcoming exam and assignment deadlines.

5. Because the student is expected to learn the material on their own, some will require additional help. This help is provided in the following ways:
   - For on-campus BHSU sections, a computer lab has been devoted to MIS 105 and is staffed by undergraduate student lab assistants. These

lab assistants are available from 8:00 am to 3:00 pm Monday through Friday. Students are encouraged to work through material in this lab and to ask for help as needed. The faculty member assigned to the course is available during posted office hours should a student require additional help.

- For off-campus BHSU sections at the Ellsworth Air Force Base[ii] (EAFB) extension, classes meet one night per week for three hours. The instructor acts as the lab assistant during that time. No additional "staffed" lab time is available for these students and the instructor is not available outside of class. The students are strongly encouraged to attend class regularly even though most work is completed using the self-paced structure.
- For the NSU sections participating in the new design, the instructor is on hand during the regular class time in the classroom/lab. No additional "staffed" lab time is available for these students. Students are encouraged to do their course work during the scheduled class period. The instructor is available during posted office hours.

6. WebCT is used to facilitate the delivery of information and for student feedback. WebCT, like BlackBoard or other course management systems, enables the efficient delivery of online education. It provides a complete set of easy-to-use teaching and learning tools for course development, course delivery, and course management (see WebCT in References). We are using WebCT primarily as a repository of information for students in the course including the course syllabus, class schedule, homework assignments and glossary of terms. WebCT's grade reporting capability is used to "post" the exam and assignment scores as well as student's "semester to date" grade. Since each student is assigned an individual account in WebCT he/she is only able to see his/her own grades.

7. Online testing is administered using the Skills Assessment Manager (SAM XP) software from Course Technology. This software has the ability to track the actual keystrokes that the student has made, something that would be impossible in a traditional setting. To illustrate, if the desire was to test a student on his/her ability to do such tasks as creating a page border in a Microsoft Word document or copying files from their floppy disk to the hard drive, the traditional test would have the student write down on paper the steps necessary to complete this task or actually do the task with no way to retrace the steps performed. The main strength of the Windows environment is its visual presentation. Most users of visual products may not be able to recall the exact steps but are able to recognize key icons, or visual cues that lead them to the desired result. The SAM software is able to test the students in this type of real-world setting

and trace back through how they accomplished the task or what they tried but did not work. At BHSU, students are able to take exams at any time during regular lab hours up to a specified deadline date. The lab assistant on duty is required to enter the password for each exam. The same exams are administered to the Ellsworth and NSU sections, except that students must either take the exam during the regularly scheduled class period or schedule time with the instructor outside of class.

8. Practice exams are provided so that students can better prepare themselves for the actual exams. These are also taken using SAM XP and allow students to pre-test their skills, become aware of the types of tasks and questions that appear in the actual exam, and they can review their results and receive immediate feedback.

9. Retake exams, again using SAM XP, are offered as an incentive to students not only to raise their grade, but also to encourage further study in each application. These retake exams were only offered in the Word, Excel, Access, and PowerPoint applications. No retakes are given on the Windows exam or the concepts exam. A student can take the retake only one time. The retake exams are different from the actual exam. The higher of the two scores is used in determining their course grade.

10. To facilitate in the grade reporting process, additional software was developed for grade export/import from the on-line testing software to the WebCT grade database. This is necessary because of the volume of exams that are being administered at a variety of times throughout the semester. In a matter of a few minutes, the exam scores are moved from SAM XP to WebCT.

4. IMPACT OF REDESIGN

The new course design has now been implemented for two semesters. Detailed student surveys were administered to students enrolled in the course to provide their opinions of the new design. Data related to enrollment and grades has also been gathered. Statistics from that data is given in the next section. The impact of the new design is summarized as follows:

- **Better allocation of faculty resources** - The new course design better allocates faculty time. By offering one large section of MIS 105 at BHSU, the faculty members, who were previously assigned to teach the many sections of this course, are now assigned to teach the upper division courses. In addition, the faculty members assigned to the new redesign are able to devote more time to help students who are true beginners and need the extra attention.
- **Benefits to students** – Additional help for students in the MIS 105 course, lab assistants available to other students, and expanded computer lab availability are benefits of the new design. The way that students are exposed to software in the new design will also help him/her in the future. By essentially

requiring the student to be his/her own instructor, a student should not feel as apprehensive about switching to a new version or a different software product.

- **Increased course coverage** – The new course has a computer concepts component as well as a web page component where the student builds and publishes a personal webpage using Netscape Composer. Both of these were not part of the previous requirement at BHSU.
- **Cost savings to the university** – On the BHSU main campus, we have reduced the number of sections of MIS 105 from seven sections per year to only two (one per semester). Due to the increased number of students in those sections, the requirement to manage the lab assistants, and administrative demands of the new design, the faculty member that teaches these two sections is allowed the equivalent of one course release time in addition to the two sections assigned. Factoring in the additional cost of the lab assistants, the net result is an overall savings to the university of about $17,000 for the academic year. This same amount is expected for future years.
- **Decreased course preparation/ administration for the faculty** - For the four sections of MIS 105 that are being offered at BHSU's Ellsworth branch campus as well as six sections taught at NSU, the instructor served as the "lab assistant". Therefore, there were no monetary savings. The faculty assigned to these sections personally benefit in that they did not have to create/administer/grade their own exams. The assignments are also standardized and can be easily graded by work study students. The faculty member also has very little preparation that must be done for each individual class period since there are very few lectures. All of this helps to free up the faculty members time for service and research activities.

5. FIRST YEAR STATISTICS

Student Opinion Survey Results
A detailed survey was administered to students at the end of both semesters to gather student opinions on the new course design. The data gathered does support the flexibly-structured nature of the course redesign. Table 1 summarizes the data from four of over 40 questions from the survey administered in the Fall at BHSU and in the Fall and Spring at NSU.

From the data shown in the tables and results from other questions on the survey, the following statements are supported:

- Over 68% of the students prefer the new paradigm for the introductory computer course.
- At least 60% of students would recommend this type of course to other students.
- Over 62% would take another course structured as this one was.

- Over 74% of the students indicated that they learned as much or more in the new paradigm then they would have in the old.
- When asked to rate their ability before and after the course, all students indicated an increased understanding in each area covered (Windows, Word, Excel, Access, PowerPoint, computer concepts).
- Over 80% of the students indicated that the course helped improve their overall computer technology skills.
-

In order to determine if the type of students had any impact on their perceptions, a number of "personal" questions were added to the survey, including questions related to age, gender, student classification (freshman, sophomore, etc.), major, marital status, number of children, number of hours worked, self-reported ACT scores, class load (number of credit hours), and traditional vs. non-traditional categorization. At NSU, a series of t-tests were run on the data. No significant differences were found among the various groups. However, one interesting factor did surface. In terms of majors, business students consistently rated their knowledge/skills in each of the seven topic areas (word processing, spreadsheets, database, webpage design, presentation software, overall technology skills, and knowledge of computer concepts), both prior to and after completing the course, higher than students from other majors. Although the difference was not statistically significant, the data seemed to indicate a trend.

Exam Scores and Assignment Grades
Tables 2 and 3 give the results of exam scores and graded homework assignments at both universities. For BHSU, the data is separated into two distinct groups, the first being the main campus students who worked with lab assistants at various times during the week in an open lab. The second group is made up of those students taking the course on the Ellsworth Air Force Base branch campus. These students are working in the lab at one assigned time per week, for example Monday from 4:00pm to 7:00pm. They work at their own pace during this time, but the instructor is available for assistance. The Ellsworth students traditionally do better than the main campus students in all courses. These students are on average 4 years older than the main campus students and a significant portion are military personnel The same on-line exams were administered in all sections and the same homework assignments were used.

After looking at Tables 2 and 3 above, the following observations can be made:

- The EAFB students do better in every category as compared to the on campus students. Although not statistically significant, on average, they scored higher on all of the exams and a greater percentage of them are taking the time to restudy and retake the exam.
- All BHSU students did very well on the Windows 2000, Word, PowerPoint, and to a lesser extent, the

Table 1. Results from Student Opinion Survey – Fall 2003 – Spring 2004						
Question/Statement		Strongly prefer NEW	Prefer NEW	No prefer-ence	Prefer OLD	Strongly prefer OLD
Given the choice of taking a traditional computer class (OLD) or a flexibly-structured course (NEW) like this one, you	Fall 03 BHSU	44.4%	24.4%	8.9%	13.3%	8.9%
	Fall 03 NSU	46.3%	29.6%	13.0%	5.6%	5.6%
	Spr 04 NSU	52.3%	29.5%	15.9%	2.3%	0.0%
		Very likely	Likely	Neutral	Unlikely	Very unlikely
Based on what you learned in this flexibly-structured course, how likely are you to recom-mend this course to other stu-dents	Fall 03 BHSU	24.4%	35.6%	24.4%	6.7%	8.9%
	Fall 03 NSU	27.8%	44.4%	20.4%	3.7%	3.7%
	Spr 04 NSU	27.3%	36.4%	31.8%	2.3%	2.3%
How likely would you be to take another flexibly-structured course, given the opportunity?	Fall 03 BHSU	31.1%	31.1%	20.0%	6.7%	11.1%
	Fall 03 NSU	42.6%	31.5%	16.7%	3.7%	5.6%
	Spr 04 NSU	38.6%	36.4%	25.0%	0.0%	0.0%
		Learned much more	Learned more	Learned about same	Learned less	Learned much less
How would you rate your learn-ing in this course compared to traditional computer applica-tions courses?	Fall 03 BHSU	4.7%	25.6%	44.2%	20.9%	4.7%
	Fall 03 NSU	5.6%	42.6%	42.6%	3.7%	5.6%
	Spr 04 NSU	9.1%	36.4%	52.3%	2.3%	0.0%

Table 2. Exam Results for Fall and Spring by Location											
Location		Win 2K	Word	Word Retake	Excel	Excel Retake	Access	Access Retake	Power Point	PPoint Retake	Concepts
BHSU-Main	Mean	83.3%	75.6%	80.3%	67.5%	71.7%	59.9%	66.1%	81.0%	83.7%	76.4%
	Count	165	147	57	137	77	126	84	126	69	136
EAFB	Mean	85.0%	79.9%	82.8%	74.7%	77.9%	68.7%	70.7%	86.6%	86.4%	82.3%
	Count	101	90	43	78	54	63	53	73	30	77
All -BHSU	Mean	84.0%	77.3%	81.4%	70.1%	74.2%	62.9%	67.8%	83.0%	84.5%	78.6%
	StdDev	7.8%	13.5%	12.6%	14.7%	13.6%	13.0%	12.0%	11.1%	11.2%	11.8%
	Count	266	237	100	215	131	189	137	199	99	213
NSU	Mean	83.0%	81.0%	---	74.0%	---	69.2%	---	87.6%	---	64.5%
	Count	132	128	---	122	---	108	---	108	---	106

Table 3. Assignment Scores for Fall and Spring by Location						
Location	Assignment	Word	Web Page	Excel	Access	Power Point
BHSU-Main	Mean	80.1%	88.2%	86.2%	79.6%	85.9%
	Count	155	131	135	125	129
EAFB	Mean	86.3%	91.6%	89.5%	84.6%	90.4%
	Count	86	85	79	70	75

All – BHSU	Mean	82.3%	89.6%	87.4%	81.4%	87.6%
	StdDev	16.7%	13.8%	12.7%	17.6%	13.1%
	Count	241	216	214	195	204
NSU	Mean	81.6%	89.4%	79.2%	71.7%	83.7%
	Count	111	103	112	99	104

Computer Concepts Exam. Students did below average on the Excel exams and they did very poorly on the Access Exams. These low exam scores will be addressed in the suggestions for course improvement later in this paper.

- All BHSU students did very well on the graded homework assignments. This would suggest that given the time, a student is able to produce the required output from the software applications.
- The NSU students did very poorly on the Access Concepts exams. Again, these low exam scores will be addressed in the suggestions for course improvement later in this paper.
- Although the NSU students did very poorly on the Access assignment in the fall semester, the grades improved considerably when additional examples were incorporated into the class to help students understand the concept of a database.

Average Grade Comparison
Data was collected for all sections taught at BHSU and those sections taught by Dr. Paranto for the Spring of 2000 to the Spring of 2004 at NSU. Over this time period the Windows NT / 2000 Operating system was being taught along with the Office 2000/XP Suite of software products. The average grade data is summarized in Table 4.

The tests of significance show that there is a drop in the average grade for the New Redesign vs the traditional method for the main BHSU campus and for Dr. Paranto's sections at NSU. There is not enough statistical evidence to show that the average grade for the sections at EAFB is different under the New Redesign.

Part of the reason there was a drop in average grade for the Main BHSU Campus is due to a change in the "types" of students that are enrolled in the MIS 105 course. Starting in Fall 2001, the College of Business and Technology at BHSU changed the mandatory computer proficiency requirement from MIS 105 to MIS 205 (a more advanced computer applications course). Therefore, the enrollment in MIS 105 at the BHSU main campus has decreased over time (see Table 5). What this has done is change the mix of students taking MIS 105. Prior to the change, both computer literate and novices would have taken MIS 105. After the requirement change, the computer literate students go directly into MIS 205 without taking MIS 105 course.

Table 4. Average Grade Analysis								
	BHSU Main Campus			EAFB			NSU		
Method	Avg Grade	Std Dev	Count	Avg Grade	Std Dev	Count	Avg Grade	Std Devt	Count
OLD[*]	2.42	1.26	1008	2.61	1.39	430	2.55	1.17	482
NEW[*]	2.15	1.20	158	2.48	1.37	94	2.19	1.24	122
p-value = .0108			p-value = .3681			p-value = .0035		
[*] OLD refers to sections taught before the redesign (prior to Fall 2003) – NEW are Fall 2003 and Spring 2004								

The average grade at NSU went from 2.55 under the old model to 2.19 under the new mode (see Table 4). Part of the reason for the drop in the average grade was due to a large number of students who stopped attending the class without dropping the course, resulting in a grade of F. In order to determine if this was a result of the course redesign, data was collected on the students who withdrew from the course and the students who received F's in the course. Of the eleven students who failed the course in the fall 2003, ten had stopped attending the class (but did not withdraw). However, these ten students had grades of W, F, or D in most of the courses they took that semester. The 11th student did not fail any other courses, but the other courses that this student was taking were remedial courses. This student was encouraged to drop the course, but chose not to, even

though a number of homework assignments were not completed and two exams were not taken. Of the six students who failed the class in the spring 2004, four failed all of their courses, and the other two received D's and/or F's in all classes except one. In other words, it appears that the low grades were not a reflection of the course redesign, but rather an indication that a large number of the students who enrolled in the course in 2003-04 were not prepared for a college environment (demonstrated by the high failure rate in multiple courses by these students).

It is worth noting that when we first began discussions about a self-paced format, we had anticipated that this would reduce the dropout rate and could possibly raise the average grades for the MIS 105 course. We felt that

the more computer savvy students would not be bored and frustrated since they could work quickly through the material and finish the course requirements early in the semester. To many students this would be an easy way to earn an A. This did not happen. We had only a handful of students that finished two to three weeks before the end of the semester. We believe that the stronger students who would have benefited most from the self-paced nature chose to enroll in MIS 205 rather than MIS 105, again because of the change in requirements for business students. Had this group of students began by taking MIS 105, they would likely have gotten high enough scores so as to have caused an overall increase in the average grade rather than the decrease that was experienced.

Drop/Fail Rates
Table 6 lists the Drop/Fail Rates for academic years beginning in the Fall of 2000. A statistical analysis of the Drop/Fail rates for the sections being taught by BHSU were found to be not significantly different (alpha=.05) for the old method of instruction as opposed to the redesigned course.

The drop/failure rate increased considerably at NSU after the redesign was implemented. The rate went from 11.0% in 2002-03 to 23.9% in 2003-04. As indicated earlier, data was collected on those students who withdrew from or failed the redesigned course at NSU. It has already been noted that most of the students who failed this course also failed or withdrew from most of the courses they were taking. Similarly, of the five students who withdrew from the course at NSU in the fall 2003, four failed or dropped most of their courses and the other student failed a remedial class, passed a second remedial class, and received a C a third class. Of the eleven students who withdrew from the course in the spring 2004, ten either withdrew from or received grades of F or D in other courses, as well. This would seem to indicate that the withdrawal/failure rate is not a reflection of the course redesign, but rather an indication that a large number of the students who were enrolled in the course in 2003-04 were not prepared for a college environment, as shown by the high rate of withdrawals and failures in multiple courses by these students.

Table 5. Number of BHSU Students Completing MIS 105 and MIS 205				
	2000-01	2001-02[*]	2002-03	2003-04
MIS 105	443	372	374	278
MIS 205	96	205	241	270
* Business students are required to complete MIS 205 as a minimum rather than MIS 105 starting with incoming freshmen in the Fall of 2001.				

Table 6. Drop/Fail Rates for MIS 105											
	BHSU Main Campus				EAFB				NSU		
A/Y	Enroll	Drop	Fail	D/F%	Enroll	Drop	Fail	D/F%	Enroll	Drop	Fail	D/F%
01	383	47	47	24.5	118	11	15	22.0	165	14	8	13.3
02	295	32	38	23.7	119	10	18	23.5	163	10	20	18.4
03	269	29	22	19.0	150	16	20	24.0	82	7	2	11.0
04	173	15	24	22.5	130	12	18	23.1	138	16	17	23.9

6. SUGGESTIONS FOR COURSE IMPROVEMENT

After the completion of one academic year under the new design, several options for improvements and changes have been identified. Some of these changes will immediately affect the students while others will provide additional feedback to faculty that might lead to further changes. Suggested improvements/changes are as follows:

- The lab assistants need additional training in Excel, Access, and the software and processes used for the web page component of the class.
- During the first two weeks, we will increase the amount of instructor-led presentation for students. Additional handouts for problem areas are being developed. More effort will be made to encourage electronic communication between instructor and students, especially the problem students that are

not utilizing the computer lab.
- The low scores on the Excel and Access exams at BHSU and on the Access and Concepts exams at NSU are of concern. The texts used for these components may need to be re-evaluated. With Access, the problem may also be that students do not recognize the importance of databases in our everyday lives and are therefore not motivated to devote much time to this component. Additional lectures and handouts might be necessary to overcome this.
- WebCT has the ability to track student access as well as provide usage statistics on the individual pages that are being displayed. This information can help the instructor in the determination as to the "value" of the items that are available in WebCT. For example, if the glossary of terms is not being accessed then another means of getting the information out to students may be appropriate. If the FAQ section is being accessed repeatedly, the in-

structor could devote additional time to keep this area up-to-date.

- One feature of the SAM XP testing software is the report option. The reporting capability has been used by students to view results of their practice exams and by faculty to track student progress, but it can also be used to obtain a frequency analysis of exam questions. The results of this type of report can help faculty to identify exam questions and topics that present the most trouble for students and follow up with some change to help improve student success in that area.

- Student Question Tracking Software has been developed for use in the lab and will be implemented during the Fall 2004 semester. As students work through the material in the computer lab, they have had questions. Lab assistants tried to track the questions in a notebook, but because it was so cumbersome and time consuming they stopped doing this altogether. Therefore, to track these questions a software has been developed that will be used by the students. This software provides a detailed, but easy-to-use list of tasks/concepts for which the students might have questions. Once the student selects an item from the list or enters their own question if an appropriate question doesn't appear, the information is displayed on the Lab Assistant Workstation and entered into a database of asked questions. The main benefit to this software will be to have accurate information on the individual problem areas. A side benefit will be that we can use the time logs to determine the most efficient scheduling of Computer Lab Assistants. We can anticipate more accurately the peak times for questions, and if necessary, we can schedule more that one lab assistant.

- Student Active Program Tracking Software was developed and tested in the spring of 2003. The software will be implemented for the Fall 2004 semester. This software tracks the actual programs that a student is using while in the computer lab. The software polls the computer once per minute to see what programs are loaded and which program is "active". This information along with the username and computer name is tabulated in a database. Queries of the database will provide information on an individual student's lab time usage as well as get a general feel for how much time the students are spending in the lab working on the material for MIS 105.

- The student opinion surveys will continue to be used to provide student feedback. Additional questions will be added regarding previous computer experience so this can be correlated with other answers.

7. CONCLUSION

The administration at BHSU is very pleased with the success of our redesigned course. We have been able to

bring about economic savings while not sacrificing academic excellence. Students taking the course like the new format. Students and faculty across our main campus have been taking advantage of the increased computer lab availability and lab assistants. The success has also been acknowledged by other schools in our university system. We are currently meeting with representatives from the South Dakota School of Mines and Technology about redoing their introductory computer applications course using the same paradigm.

Although the NSU campus has not seen the same economic savings as BHSU, students taking the course have responded very positively to the redesign. The new paradigm provides students with more flexibility in developing schedules that meets their individual needs, which is a very positive move when you consider the fact that most of students have jobs and families that demand much of their time.

8. REFERENCES

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[i] 2003 Governor Rounds' Grants for Course Redesign were awarded for nine faculty-led projects in South Dakota. Each project consisted of a team of faculty from at least two public universities who redesigned courses to improve students' learning of course content and reduce the costs of offering the course. (http://www.sdbor.edu/publications/PressReleases/2003/051203RoundsAwards.htm)

[ii] Ellsworth Air Force Base is located near Rapid City, SD. Black Hills State University offers courses for several degrees at the branch campus located there. Approximately 800 military and civilian students attend classes at this location. (http://www.bhsu.edu/rapidcityclasses/)