

2002

# Learning Styles of Teachers and Usage of Technology

Kiranmayi Padmaraju

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Learning Styles of Teachers and Usage of Technology  
(Title)

By

**Kiranmayi Padmaraju**

**THESIS**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF

Master of Science in Elementary Education

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY  
CHARLESTON, ILLINOIS

2002  
(Year)

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING  
THIS PART OF THE GRADUATE DEGREE CITED ABOVE

[Redacted]

(Date)

[Redacted]

(Thesis Director)

[Redacted]

(Date)

[Redacted]

(Department Chair)

## DEDICATION

To my late father who had tremendous confidence in my abilities,  
my most supportive mother who is my best friend,  
my dear husband who has more confidence in me than myself,  
my brothers and sister who have always been very supportive,  
my wonderful children and  
my dear friends for always being there for me.  
Thank you.

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I have always been surrounded by highly accomplished people who have driven me to do my best and have been forthcoming with their tremendous support through all my endeavors. My parents always showed tremendous confidence in my abilities. My late father, K. L. N. Raju remains with me in spirit as I go on with my education with his blessings and unforgettable words of encouragement. Thank you, Dad. My mother, Jayalakshmi, continues to support all my endeavors and drives me to fulfill all my dreams. Thank you, Mom not only for being such a great mom but also for being such a wonderful friend. My dear husband always supports whatever I plan to do and helps in hundreds of ways. Thank you, Raju. To my very accomplished and supportive brothers, Arun & Phani. Thank you for your continued support and encouragement. Aparna, my sister is not only a wonderful sister but also a true friend who has always been there for me through thick and thin. Thank you, Aparna. My dear friends, Vasudha, Lakshmi & Uma who always told me that I could do whatever I wanted to. Thank you. And to my children, Mukta and Kashyap who bring joy to my life every day.

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## VITA

### EDUCATION

- |           |  |
|-----------|--|
| 2000-2002 | Eastern Illinois University<br>Charleston, IL, USA<br>M. S. Elementary Education |
| 1990-1992 | Osmania University<br>Hyderabad, AP, India<br>M. A. English Literature           |
| 1989-1990 | Annamalai University<br>Chennai, TN, India<br>B. Ed English & Social Studies     |
| 1984-1987 | Osmania University<br>Hyderabad, AP, India<br>B.Com                              |

### PROFESSIONAL EXPERIENCE

- |           |   |
|-----------|---|
| 2000-2002 | Graduate Assistant<br>Eastern Illinois University, Charleston, IL             |
| 1996-2000 | Head, English Department<br>Jubilee Hills Public School, Hyderabad, AP, India |
| 1987-2000 | English Teacher<br>Jubilee Hills Public School, Hyderabad, AP, India          |

### HONORS & ACTIVITIES

- |                     |   |
|---------------------|---|
| Feb. 2002 - Present | Phi Delta Kappa   |
| April 2002          | Distinguished International Graduate Student, Dept. of Elem. Ed.            |
| 2001 – 2002         | National Council of Teachers of Mathematics                                 |
| April 2001          | Thomas R. Drury Scholarship Recipient                                       |
| May 1997            | Best Teacher Award<br>Jubilee Hills Education Society, Hyderabad, AP, India |

## **Abstract**

'Every child can learn' is the mantra being advocated today. The Multiple Intelligences theory put forth by Gardner has revolutionized the perceptions of learning styles. Currently more and more teachers are accepting the reality that children learn differently and in this context, their own learning style should not be a limiting factor for using multiple modes of instruction in their classrooms. A correlational study will be done to determine if there is a relationship between learning styles of the teacher and technology usage, particularly computer-based technology. The subjects in this study will be inservice teachers (N = 30). The MIDAS (Multiple Intelligences Developmental Assessment Scales) will be administered to the teachers to determine their preferred learning style. This assessment tool is designed to determine the best suited learning style based on Gardner's Multiple Intelligences theory. A second survey will be conducted with the same set of teachers to determine how much and how frequently they use computers in relation to their schoolwork both within and outside the school. Background variables such as socio-economic status, prior exposure to technology and gender will be controlled. The results of both these data sets will be examined to determine if there is a relationship between learning style of the teachers and their usage of computers in the teaching process. More research needs to be done using a longitudinal study over a five-year period to determine the effects of computer-assisted instruction on learning styles of students.



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## Chapter One

### Introduction

#### **Importance of the Study**

'Every child can learn' is the mantra being advocated today. The Multiple Intelligences theory put forth by Gardner has revolutionized the perceptions of learning styles. Currently more and more teachers are accepting the reality that children learn differently and in this context, their own learning style should not be a limiting factor for using multiple modes of instruction in their classrooms. Accommodations based on learning styles have the potential to significantly improve attitudes towards learning. Technology is playing a vital role in the present day teaching methodology. Teachers use technology both to plan and implement multiple modes of instruction. New and updated technology is being marketed as an effective means of diversifying modes of instruction in the classroom. Teachers have multiple opportunities, actually the need for using computer technology in their classrooms. Would their own learning style have an effect on how often and how much technology they use in their classrooms? Do teachers with different learning styles have more or less propensity for using technology in the classroom? With technology being all pervasive, there is a need to investigate if teachers with a particular learning style are more likely to use technology. This would be useful in determining which teachers need to be more motivated or guided toward using technology, which they may not otherwise do because of their learning style.

## **Statement of the Problem**

Is there a relationship between the learning style of teachers and their attitudes towards usage of technology in the teaching process? If there is indeed such a relationship, then, which learning style/s of teachers' is/are better suited to enhanced use of technology in the classroom?

## **Hypothesis**

Technology usage and knowledge are related to learning style. The more visual and intrapersonal a learner the teacher is, the better he/she will be able to use technology in the learning process.

## **Definition of terms**

access to computers: having a computer with Internet connection both at home and at school

cognitive style: how one prefers to learn new information, through reading, watching or in some other way

competencies: ability to do something well

computer technology: internet usage, word processing skills

curricular augmentation: how the curriculum is enhanced

educational technology: technology like overhead projectors, slide projectors, multimedia equipment etc.

Hypermedia: computer-based information retrieval system

integration of computer technology: using the Internet and computers in the teaching process

intellectual inquiry: a systematic investigation

introversion-extroversion: ability to understand and express

intuitive-sensate: ability to perceive and feel

judging-perceiving: ability to understand and determine if something is right or wrong

learning environment: the physical surroundings where the learning process occurs

learning style: based on Gardner's Multiple Intelligences theory, the strongest mode of learning:

logical, kinesthetic, linguistic, musical, interpersonal etc.

log: a record of usage of computers for work related to teaching

modes of instruction: variety of methods used for teaching: lecture, activity-based, inquiry-based

etc.

proficiencies: measure of how effectively a person can do something

resource acquisition: getting resources from various sources

schematic mapping software: software like the Inspiration software or Webquests

socially maladjusted students: students who do not interact sufficiently with peers and others

student-directed inquiry: learning that occurs with the student exploring something to acquire

new information

tactile learner: a person who learns best by actually touching and feeling

teacher-directed instruction: teaching based on the teacher's planning and mode of instruction

technology-based learning: learning that happens because of usage of some sort of technology

thinking-feeling: ability to think and feel

visual learner: a person who learns best by seeing

## **Assumptions**

The following assumptions will underlie this study:

1. Assessing the relationship between learning styles and technology usage will be a valid and worthy research topic.
2. The study will be done over a period of two weeks.
3. The teachers participating in the study will be representative of a high socio-economic group with prior exposure to technology.
4. The teachers will have prior knowledge of technology and will have access to computers in their schools for their students to use technology for their schoolwork.
5. Researcher will have prior knowledge about the Multiple Intelligences theory and will be trained on how to administer the Multiple Intelligences Developmental Assessment Scales (MIDAS).
6. The MIDAS will be a valid and reliable instrument to measure the strengths of teachers with regard to different learning styles.
7. The teachers will complete the testing tool to the best of their ability.
8. The MIDAS will be administered according to the time frame and instructions given.
9. The log will be a valid and reliable tool to report the frequency of computer usage by teachers both at home and at school.
10. Teachers participating in the study will be given prior instructions about maintaining a log of computer usage with regard to schoolwork at home.



## **Delimitations**

The following delimitations will underlie this study:

1. The study will be limited to teachers in Illinois.
2. The study will be limited to inservice teachers.
3. The study will be limited to teachers who have access to computers both at home and at school.
4. The study will be limited to two weeks.
5. Administrators of the Multiple Intelligences Developmental Assessment Scales will be limited to those who have prior knowledge of Gardner's MI theory.
6. Data obtained on usage of computers will be limited to two weeks.
7. Data obtained on usage of computers by teachers for schoolwork will be limited to frequency, length of usage and its application in their classrooms.
8. Time allotted for the testing will be limited to the tests' given time frame.

## **Limitations**

Limitations of this study include:

1. The use of in-service teachers, thereby preventing generalizability to pre-service teachers.
2. The use of teachers having access to computers at home and at school, thereby preventing generalizability to other teachers who have no access to computers.
3. The use of teachers from Illinois, thereby preventing generalizability to teachers from other states in USA.
4. The focus on computer usage, thereby preventing generalizability to other forms of educational technology such as use of overhead projectors.

## Chapter Two

### Review of the Literature

This chapter will review literature related to learning styles and teaching style, and technology integration in classrooms. The chapter is divided into three sections: learning styles and teaching style; technology integration in the classrooms; and summary of the literature review.

#### **Learning Styles and Teaching Style**

Carol Lyons (1984) led a two-part correlational study to investigate the relationship between teacher's learning style and their teaching style with elementary education majors (N=20). Initially the subjects were administered the Myers-Briggs type indicator which determined the dominant personality type (sensing-thinking, intuition-thinking, intuition-feeling, sensing-feeling) indicated in the model. To determine the cognitive style of teachers, the portable Rod and Frame Test, the Group Embedded Figures Test, and the Concealed Figures Test were administered. Teaching style was documented in diaries, observations, and interviews. The follow-up study was done with two teachers from the previous study. Cumulative results from this two-part study provided initial evidence that there is a relationship between learning style and teaching style.

Sato, Manabu & others (1990) did a comparative study of thinking styles of novice (N = 5) and expert (N = 5) teachers to determine implications with regard to teacher education programs in Japan. Qualitative and quantitative methods were used to analyze the reactions of the subjects to a videotaped lesson given by an expert teacher. Results suggested much more advanced skills in expert teachers with regard to thinking in action, multiple perspectives, active

involvement in situations, problem-solving strategies and content-relevant as well as context-relevant thinking processes. The study further emphasized the importance of case methods rather than lecture methods in the teacher education programs for developing more autonomous, more creative and more intellectual teachers.

Shindler's (1998) study examined cognitive style data from preservice elementary education students (N = 219) from four universities to determine how cognitive style affected the choice of teaching as a career. The paragon Learning Style Inventory, which obtains measures of four dimensions of intelligence -introversion-extroversion, intuitive-sensate, thinking-feeling, and judging-perceiving, was used. The pattern for educators and comparison of this data with data on practicing teachers indicated that patterns were identical. This finding suggested that within the dimension of learning style, the teaching style was not learned but was in fact recruited.

Rizza and others (1996) completed a study that explored the preferences of elementary school students for learning environments. The study explored the effectiveness of a questionnaire to measure four dimensions: teacher-directed instruction, student-directed inquiry, independent study, and group study. It was administered to students from third to fifth grades (N = 481 ). The study found that three factors were well assessed by the questionnaire: teacher-directed activity, student-directed activity, and group activity. The questionnaire was determined to be a good tool to assess the preferences of students with regard to the nature of activities done in class.

A factor validity study of the learning style profile was done by Hardigan & Sisco (2000). The National Association of Secondary Schools Principals developed the Learning Style Profile (LSP) for use with students from grades six through twelve. Undergraduate college students (N = 937) completed the profile that consisted of 26 questions to be completed in approximately 60 minutes. Results indicated that the LSP could not measure with validity two of the skills – analytical skill and spatial skill, but all other dimensions of the learning style could be measured with validity.

### **Technology Integration in the Classrooms**

To find out how many schools and classrooms were connected to the Internet, Cattagni & Farris (2001) did a survey on behalf of National Center for Education Statistics (NCES). This study was a continuation of an annual survey being done by the NCES since 1994. The survey was conducted in schools all over the country (N = 1000) through a fast response survey system. Results of the survey indicated that by the fall of the year 2000, ninety eight percent of schools were already connected to the Internet with an average student to computer ratio being five is to one.

Dugger & Rose (2002) researched the attitudes of Americans towards technology through a survey done for the International Technology Education Association (ITEA). The Gallup survey done through telephone interviews was done from a national sample (N = 1000) found that Americans were unanimous with regard to the development of technological literacy as an important goal for people at all levels. The survey also found that many Americans felt that schools must include the study of technology in the curriculum.

Hubbard (1998) analyzed data collected after an extensive workshop on Internet usage for teachers and students to determine the likelihood of using the Internet. The data revealed that both teachers and students showed a marked increase in the use of the Internet as they went through the program. The continuous, ongoing support they received lessened their anxiety allowing them to use the Internet for curricular augmentation on a regular basis.

A study designed by Stegall (1998) described the importance of a principal's technology leadership. A survey of principals in elementary schools {N = 54) revealed that while all principals agreed on technology being an important aspect of a school, it was involved and enthusiastic leadership of the principal that ensured high scores for the school with regard to technology.

Bernato and others (1998) led an investigation with teachers (N = 5) to address the parameters of computer training in Meadowbrook Elementary School led to the design of a survey. The survey administered to professional staff (N = 45) was aimed at gathering information related to proficiencies and competencies, software applications, observed results of student computer usage, overall benefits for students and staff development preferences. Findings ascertained that intensive training sessions were the key to further integration of computer technology in the instructional setting.

To investigate the correlation between three variables: elementary teachers' perceptions about their preparation for efficient, effective implementation of technology, the adaptability of technology to teaching style and the effect on students of their technology usage, Hurley and

Mundy (1997) designed a survey. The survey given to elementary teachers in a school that had recently introduced technology-based learning found that there was a positive correlation between the variables. Teachers participating in the survey strongly felt that they had been efficiently prepared for implementing technology, that technology was adaptable to their teaching styles and that the use of technology positively affected students.

This case study done by Hill and Stephens (1999) describes how one autistic child became a co-researcher with university literacy instructors to investigate how hypermedia could help him in developing language and literacy skills. Data were collected for a year through videotapes, journal notes, interviews with teachers and parents, test scores and student artifacts. Findings indicated that fast-paced behavioral games were detrimental to learning language processes but talking books on CD-ROM, schematic mapping software and simulations helped the learner to increase competency in reading and writing to the extent that scores doubled every six months.

A longitudinal study of Computer-Using teacher candidates was done by Levin (1999) to examine how teacher candidates emphasized the integration of computer-based technologies as tools for teaching and learning. The study explored four factors that influenced the usage of technology by teacher candidates: sense of self-efficacy about using computer tools, attitudes about using computer-based technologies, skill and knowledge base about computer technology and actual usage of technology during internships and student teaching. Results suggested that prospective teachers could and would apply what they had learned about computer-based technology to their teaching situations.

To determine the connections between learning styles and teachers' technology attitudes and usage, Galowich (1999) did a survey. The survey was conducted in a large Southern California school district with teachers from elementary schools (N = 5). The survey results confirmed the existence of a relationship between technology attitudes, usage outside of work and their usage of technology to teach. Age ranges and ethnicity also proved to be an important factor in determining whether and how much technology teachers used in the teaching process.

### **Summary**

A careful analysis of the past literature generally supports the hypothesis that there is indeed a relationship between teacher's learning style and their attitudes towards using computers and related technologies in their classrooms. However, no studies were found to identify the learning styles of teachers that have more propensities towards using computers and related technologies in the classroom.

The studies reviewed in the first section focused on learning styles, the teaching style of teachers and the correlation between the two. Numerous studies done by a number of researchers established that the learning style of teachers and their teaching style are closely related. Studies also emphasized the importance of exposing preservice teachers to multiple modes of instruction suited to various learning styles so that they could incorporate the same later when they became teachers.

In the second section of literature review, the importance of technology integration, its impact and how it is related to the teaching style and learning style of teachers were the areas of

focus. Studies indicate that technology is very important and many Americans feel that it must be an essential part of the school curriculum. The relationship between the teaching style and attitudes towards computers and their usage was also established by a number of studies. One important factor that was seen in many studies was the importance of training both preservice and inservice with regard to technology integration in the classrooms.

Having established the relationship, research for identifying which teachers with which learning styles need more motivation for using technology is an area worth exploring.



## Chapter Three

### Research Design and Procedures

Procedures involved in this study are reviewed in this chapter which is organized in four sections: overall design; population; instrumentation; and statistical analysis.

#### **Overall Design**

A correlational study was done to determine if there is a relationship between learning styles of the teacher and technology usage, particularly computer-based technology. The subjects in this study were inservice teachers (N = 80). The MIDAS (Multiple Intelligences Developmental Assessment Scales) was administered to the teachers to determine their strengths with regard to different learning styles. This assessment tool is designed to determine the strengths of participants with regard to different learning styles based on Gardner's Multiple Intelligences theory. A second survey was conducted with the same set of teachers to determine how much and how frequently they use computers in relation to their schoolwork both within and outside the school. Background variables such as socio-economic status, prior exposure to technology and geographical location were controlled. The results of both these data sets were examined to determine if there is a relationship between learning style of the teachers and their usage of computers in the teaching process.

#### **Population**

The teachers (N = 80) involved in this study were teachers from schools in Illinois. Only teachers who have computer access at home participated in this study. The assessment tool, the Multiple Intelligences Developmental Assessment Scale was used to determine the strengths of the

teachers with regard to different learning styles on an individual basis. The teachers were then asked to maintain logs for collecting data about their computer usage for schoolwork within and outside the school. These logs measured the frequency of computer usage for schoolwork of these teachers over a period of two weeks.

### **Instrumentation**

Through the assessment tool, MIDAS, the strengths of teachers with regard to different learning styles were determined and recorded. Then with the logs, the frequency of computer-usage was recorded for each teacher. Data from both the tools was studied to establish if there is a relationship between learning styles and technology, particularly computer-based technology. Researcher administered the MIDAS. The logs to determine computer-usage were given to the teachers with explicit instructions on how to record their computer usage in a systematic and readable manner. Teachers were also asked to authenticate their log entries by stating the context in which they used the computers so as to eliminate any entries with regard to personal use. Data from both these tools was used to investigate the relationship between learning styles and computer-usage.

### **Statistical Analysis**

Statistical analysis procedures were conducted in the department of elementary education at Eastern Illinois University. Statistical Package for the Social Sciences (SPSS) was used to correlate data from both the assessment tools and to do a descriptive analysis for both sets of data.

## Chapter Four

### Results

The results of this study were recorded in this chapter. The chapter is divided into three sections: descriptive statistics; correlations; and hypothesis.

#### **DESCRIPTIVE STATISTICS**

##### **Descriptive Statistics – Multiple Intelligences Test Scores**

The Multiple Intelligences Developmental Assessment Scales (MIDAS) identified the scores of the participating teachers on eight different intelligences as identified by Gardner. Frequencies and/or percentages related to scores on MIDAS are provided in the following tables and graphs.

##### **Scores of teachers on the MIDAS tests**

Table 1 reports about the analysis of scores of the teachers in various intelligence areas. On average the teachers had the highest scores in naturalist intelligence. The mean score in the naturalist intelligence was 62% as compared to the lowest mean score of 41% in the area of musical intelligence. The participating teachers had high average scores in the areas of interpersonal (60%) and intrapersonal (60%) intelligences also.

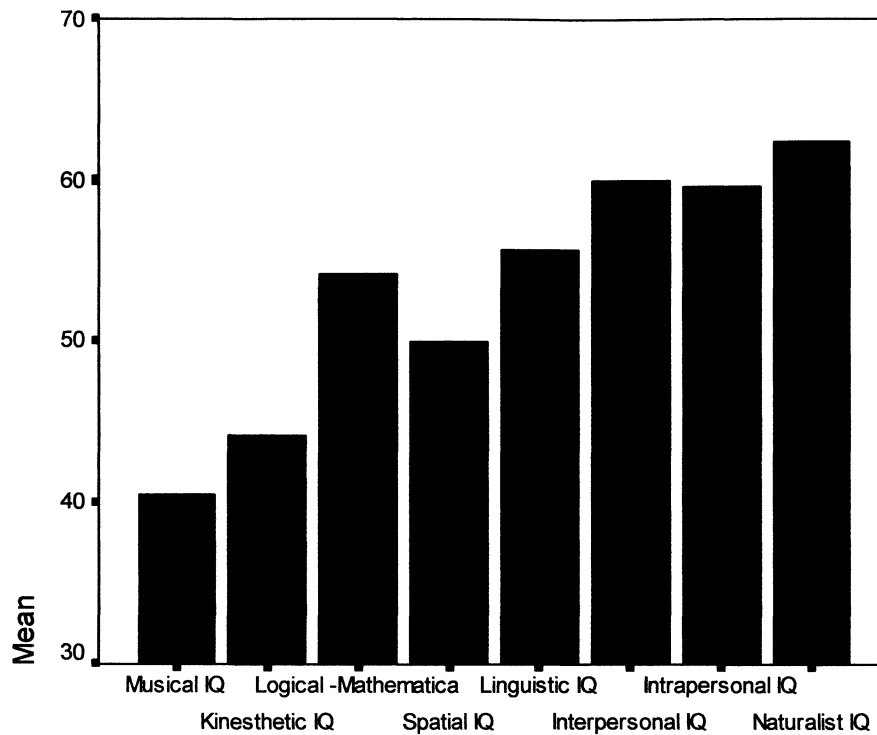
Table 1

#### MULTIPLE INTELLIGENCES SCORES

	<b>N</b>	<b>Mean (in %)</b>	<b>Minimum (in %)</b>	<b>Maximum (in %)</b>	<b>Std. Deviation</b>
<b>Musical Intelligence</b>	<b>50</b>	<b>41</b>	<b>13</b>	<b>80</b>	<b>19.5</b>
<b>Kinesthetic Intelligence</b>	<b>50</b>	<b>44</b>	<b>13</b>	<b>90</b>	<b>20.8</b>
<b>Logical-Mathematical Intelligence</b>	<b>50</b>	<b>54</b>	<b>25</b>	<b>88</b>	<b>15.9</b>
<b>Spatial Intelligence</b>	<b>50</b>	<b>50</b>	<b>14</b>	<b>89</b>	<b>20.7</b>
<b>Linguistic Intelligence</b>	<b>50</b>	<b>56</b>	<b>25</b>	<b>87</b>	<b>15.6</b>
<b>Interpersonal Intelligence</b>	<b>50</b>	<b>60</b>	<b>34</b>	<b>91</b>	<b>13.2</b>
<b>Intrapersonal Intelligence</b>	<b>50</b>	<b>60</b>	<b>25</b>	<b>84</b>	<b>12.8</b>
<b>Naturalist Intelligence</b>	<b>50</b>	<b>62</b>	<b>6</b>	<b>98</b>	<b>24.6</b>

The lowest minimum score was 6% in the area of naturalist intelligence as compared to the highest minimum score of 34% in interpersonal intelligence. The bar graph given below gives a clear idea about the scores of the participating teachers in different areas.

**Bar Graph 1**  
**Multiple Intelligences Scores**



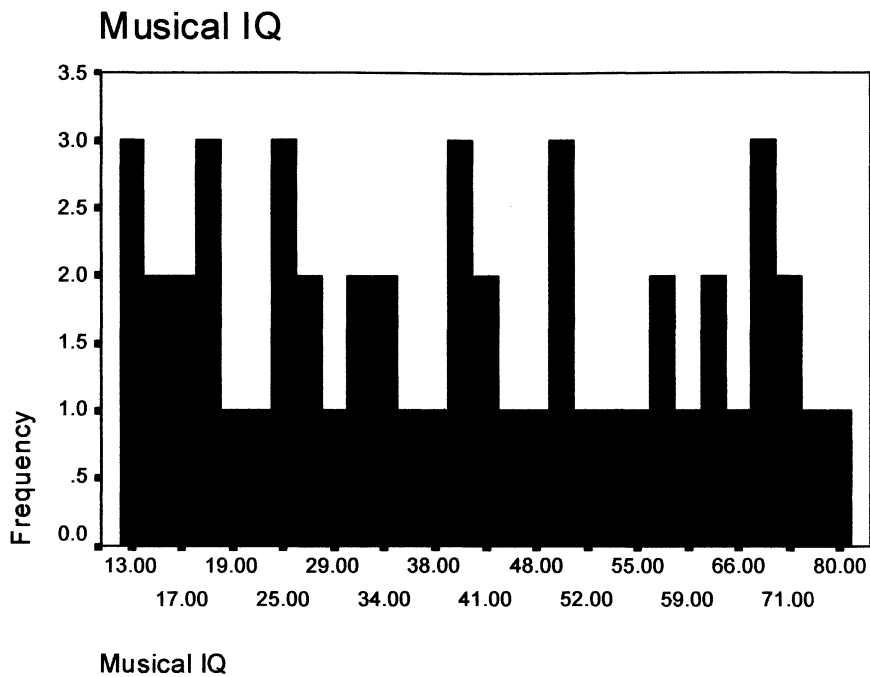
The standard deviation was highest in naturalist intelligence scores with scores ranging from a low of 6 to a high of 98. Other areas with high standard deviation were kinesthetic intelligence scores and spatial intelligence scores. The lowest standard deviation at 12.8 was in scores for intrapersonal intelligence. Teachers displayed high scores in naturalist, intrapersonal and interpersonal intelligences.

Looking at each intelligence area separately gives a more detailed picture of the study. The following tables and graphs will give detailed analysis of different intelligences of the participating teachers based on their scores on the MIDAS.

Table 2  
MIDAS SCORES ON MUSICAL INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Musical Intelligence	50	41	39	13	13	80	67	19.5

Bar Graph 2  
MIDAS Scores on Musical Intelligence



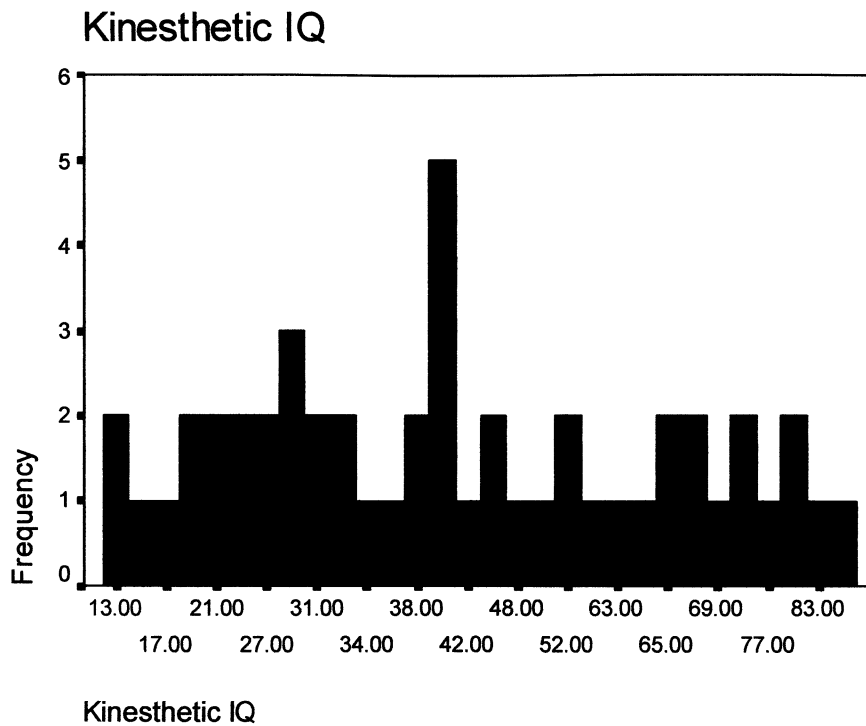
Very few teachers had high scores on musical intelligence. Most of the teachers had a score of 13% (mode) while the average score was 41%. Overall, the participating teachers did not show much strength in the area of musical intelligence.

The scores of teachers in kinesthetic intelligence were similar to those on musical intelligence.

Table 3  
MIDAS SCORES ON KINESTHETIC INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Kinesthetic Intelligence	50	44	40	40	13	90	77	20.8

Bar Graph 3  
MIDAS Scores on Kinesthetic Intelligence



The standard deviation in the scores for kinesthetic intelligence was much higher at 20.8.

Very few teachers had high scores in kinesthetic intelligence. The average score was 44% (mean) with most of the teachers scoring about 40% (mode).

The scores of teachers in the logical-mathematical intelligence were not very high. Very few teachers had high scores in logical-mathematical intelligence.

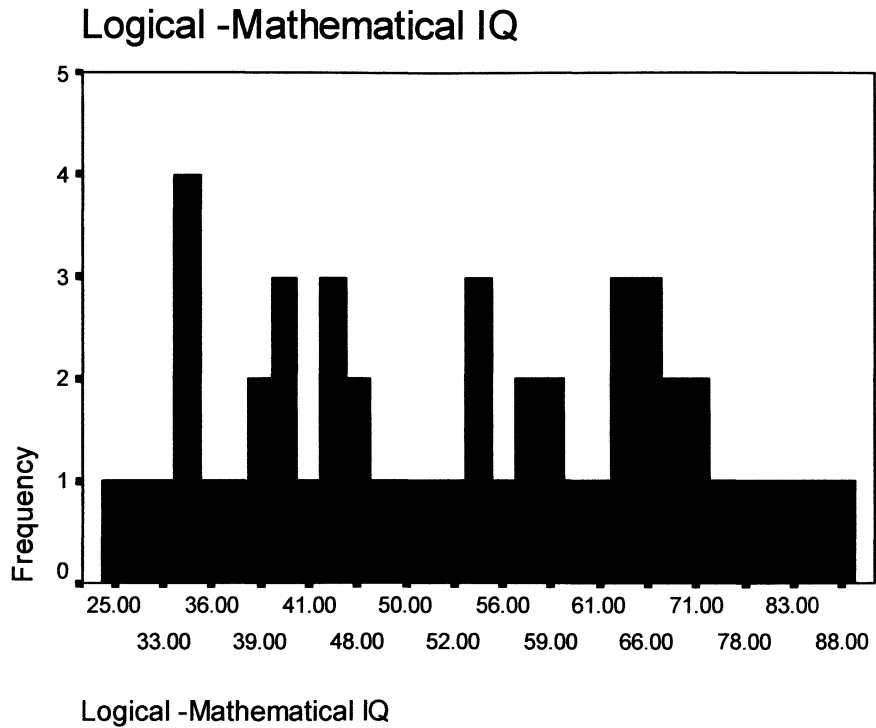
Table 4

MIDAS SCORES ON LOGICAL-MATHEMATICAL INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Logical-Mathematical Intelligence	50	54	55	34	25	88	63	15.0

Bar Graph 4

MIDAS scores on Logical-Mathematical Intelligence



The scores of the teachers on logical-mathematical intelligence ranged from 25% to 88%. The average score was 54% (mean) and the most common score was 34% (mode). Compared to the scores on musical intelligence and kinesthetic intelligence, the standard deviation (15.9) on the scores on logical-mathematical intelligence was much less.

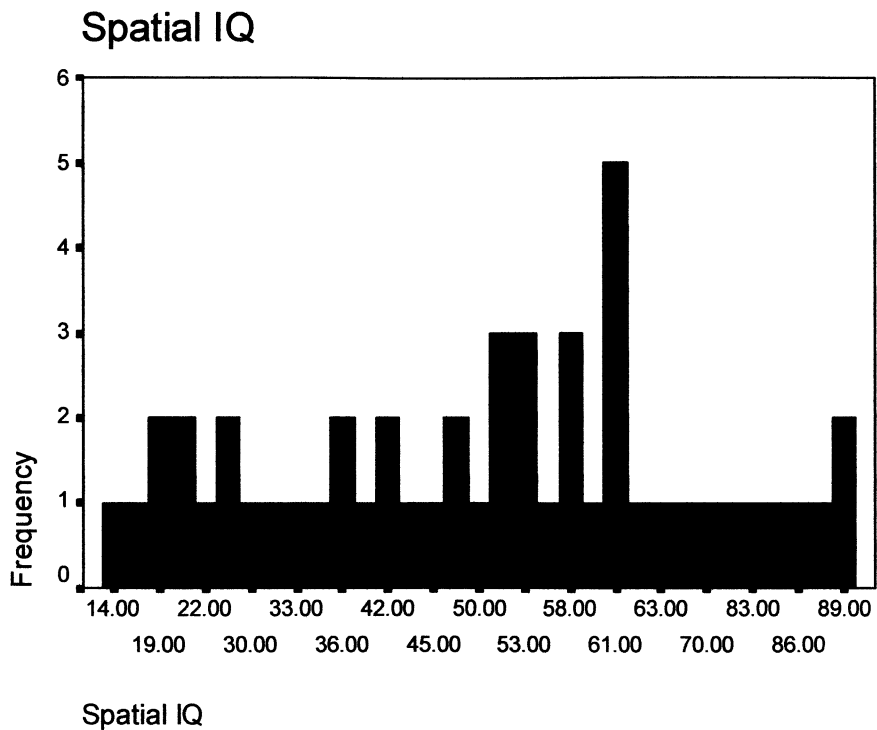
The participating teachers did much better in the area of spatial intelligence.

Table 5

MIDAS SCORES ON SPATIAL INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Spatial Intelligence	50	50	52	61	14	89	75	20.7

Bar Graph 5  
MIDAS Scores on Spatial Intelligence



More teachers had scores just above the 50% mark. The average score on spatial intelligence was 50% (mean) while most teachers had the score of about 61% (mode). The standard deviation was high at 20.7.

The participating teachers had a fairly high score on linguistic intelligence though most of them were not language teachers.

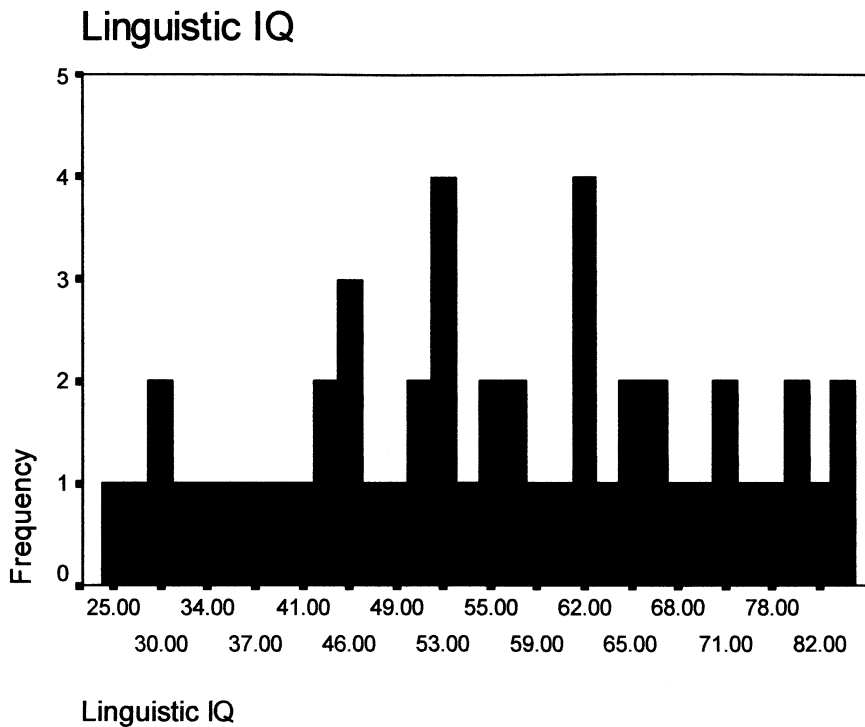


Table 6

MIDAS SCORES ON LINGUISTIC INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Linguistic Intelligence	50	55	55	53	25	87	62	15.6

Bar Graph 6  
MIDAS Scores on Linguistic Intelligence



The mean score for linguistic intelligence was 56% and most teachers had the score of about 53% (mode). The standard deviation on the linguistic score (15.6) was at the lower end as compared to scores in other areas.

Teachers usually display strength in the area of interpersonal intelligence. This group also displayed similar results.

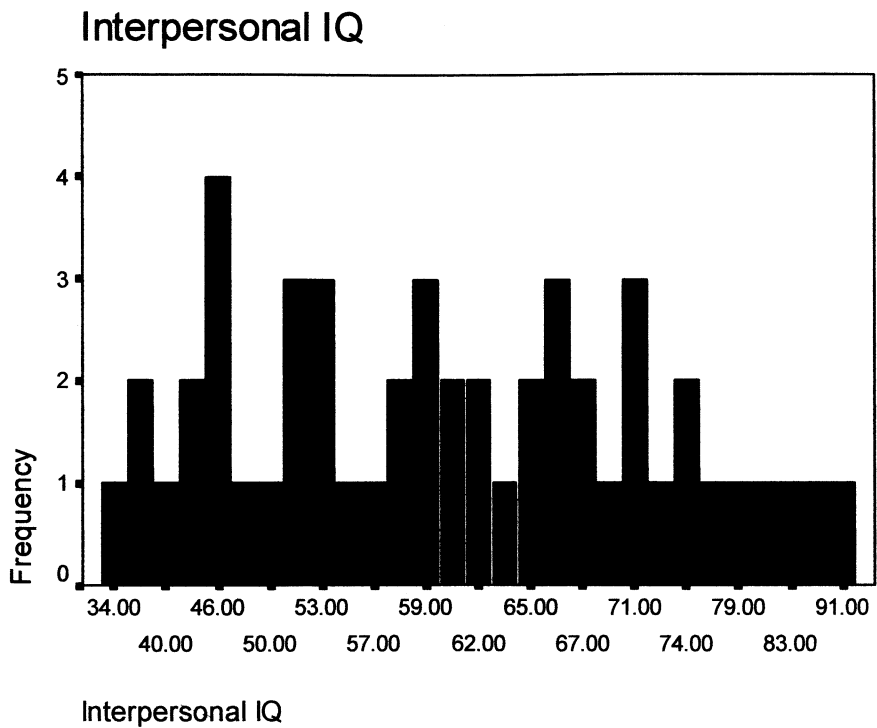
Table 7

MIDAS SCORES ON INTERPERSONAL INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Interpersonal Intelligence	50	60	60	46	34	91	57	13.2

Bar Graph 7

MIDAS Scores on Interpersonal Intelligence



The teachers had a high mean score of 60% on interpersonal intelligence though the mode stood at only 46%. The standard deviation was low at only 13.2.

The results were quite similar for interpersonal and intrapersonal intelligence scores. The teachers displayed fairly good strength in the area of intrapersonal intelligence.

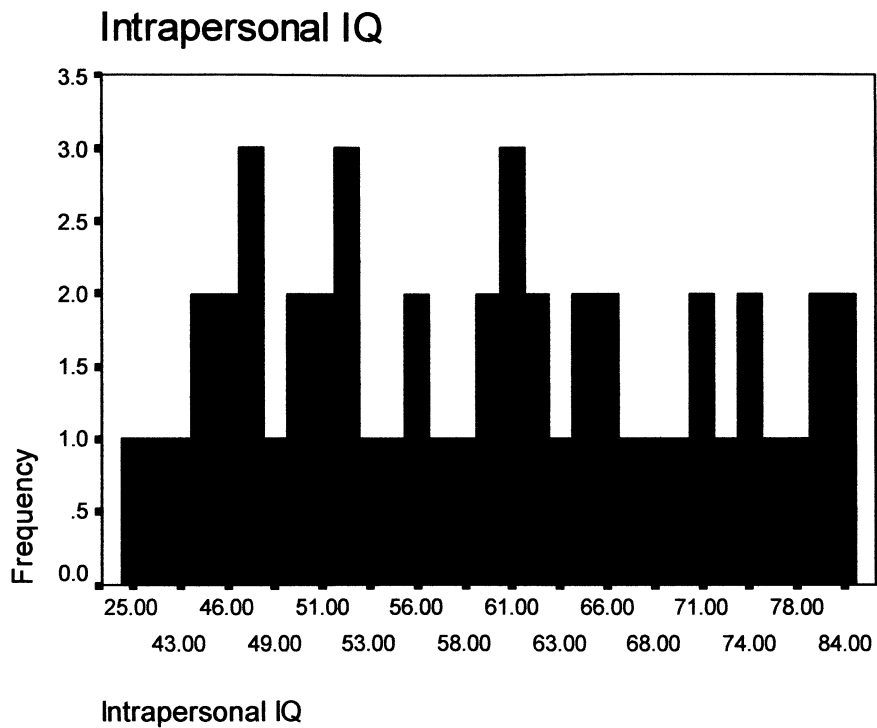
Table 8

MIDAS SCORES ON INTRAPERSONAL INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Intrapersonal Intelligence	50	60	59	48	25	84	59	12.8

Bar Graph 8

MIDAS Scores on Intrapersonal Intelligence



The mean score on intrapersonal intelligence was 60% and the most occurring score was 48%. The standard deviation at 12.8 was the lowest compared to scores on all other intelligences.

Most of the participating teachers were science teachers and not surprisingly they did very well in the area of naturalist intelligence.

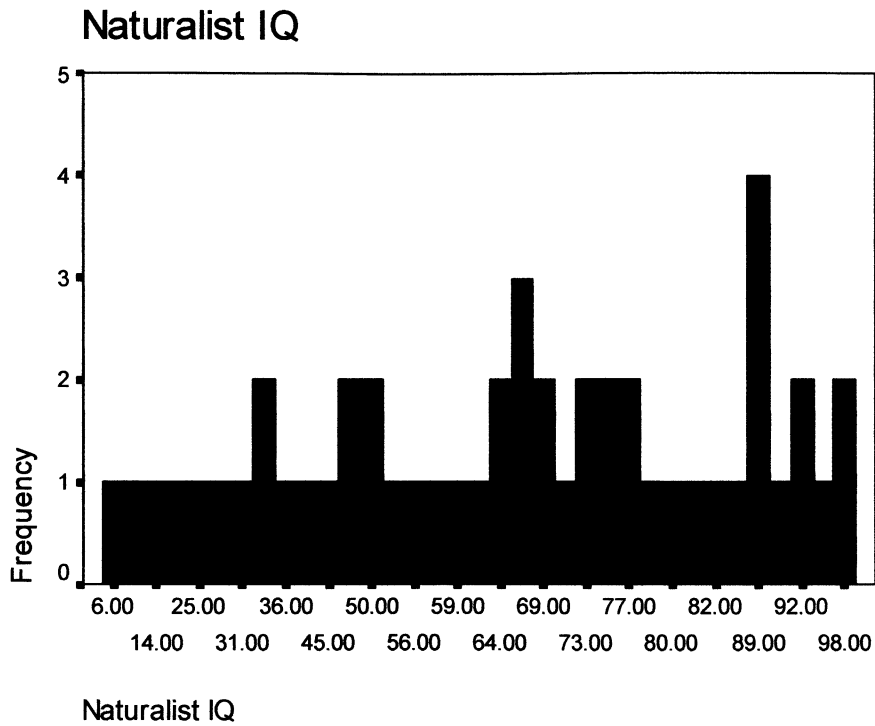
Table 9

MIDAS SCORES ON NATURALIST INTELLIGENCE

	N	Mean	Median	Mode	Min.	Max.	Range	Std. Deviation
Naturalist Intelligence	50	62	67	89	6	98	92	24.6

Bar Graph 9

MIDAS Scores on Naturalist Intelligence



The participating teachers had the highest average score (62%) in the naturalist intelligence but also displayed the most difference in scores with the highest standard deviation at 24.6. The scores ranged from a low 6% to a high 98%.

## **Descriptive Statistics – Logs on Usage of Computers**

The participating teachers maintained a log to record their usage of computers for various purposes for a period of two weeks. Based on the logs statistics were deduced regarding usage of computers specifically for four different purposes – research, record-keeping, networking and direct instruction. For statistical analysis ranges of number of hours were used for individual cases. The variables used and the ranges used for different variables are as follows:

Time Range	Value	Ranges
	0	Time Spent - 0-3 hours
	1	Time Spent - 3-5 hours
	2	Time Spent - 5 -7 hours
	3	Time Spent - 7-9 hours
	4	Time Spent - 9-12 hours
	5	Time Spent - More than 12 hours

### Time Spent on Record-keeping

Value	Ranges
0	Time Spent - 0-2 hours
1	Time Spent - 2-4 hours
2	Time Spent - 4-6 hours
3	Time Spent - 6 + hours

### Time spent on Research

Value	Ranges
0	Time Spent - 0-2 hours
1	Time Spent - 2-4 hours
2	Time spent - 4-6 hours
3	Time Spent - 6 + hours

### Time spent for Networking

Value	Ranges
0	Time Spent - 0-2 hours
1	Time Spent - 2-4 hours
2	Time spent - 4-6 hours
3	Time Spent - 6 + hours

### Time spent for direct instruction on computers

Value	Ranges
0	Time Spent - 0-2 hours
1	Time Spent - 2-4 hours
2	Time spent - 4-6 hours
3	Time Spent - 6 + hours

The following tables and graphs give a detailed analysis of the logs maintained by the participating teachers.

Table 10

#### RECORD OF AVERAGE TIME SPENT

	N	Minimum	Maximum	Mean	Std. Deviation
Average Time Per Week	50	2.50	20.00	8.9	4.2

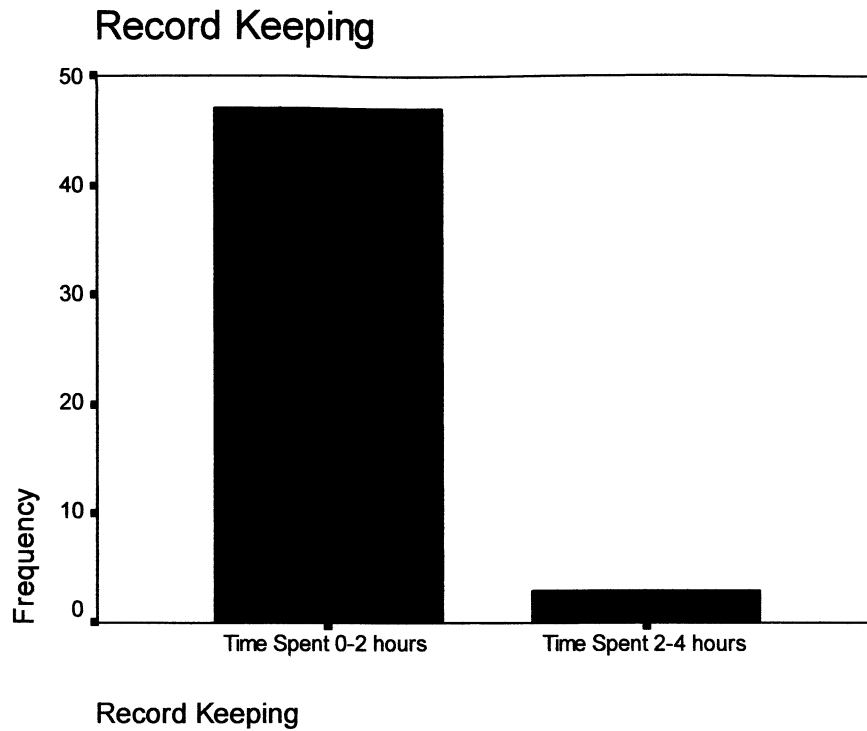
The teachers had very different records of time spent on computers. The lowest recorded time was only 2.5 hours per week while the highest was 20 hours per week. Overall, the average time spent by the participating teachers was 8.9 hours per week.

The statistics were broken down to categorize the time spent by teachers into four different areas - record-keeping, research, networking and direct instruction.

The participating teachers did not spend much time for record keeping. No one had more than 4 hours recorded for this category.

## Bar Graph 10

### Time Spent on Record Keeping

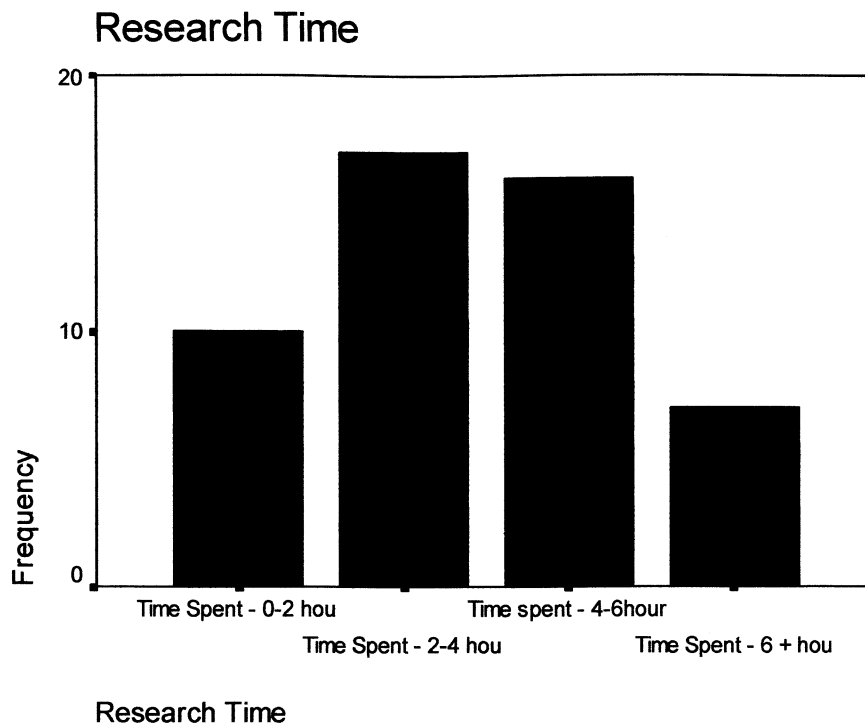


As the graph shows, most of the teachers spent less than 2 hours for record-keeping and very few had recorded a time between 2 to 4 hours.

Compared to record keeping, the teachers spent much more time on research. The research included activities like looking for lesson ideas, technology-integrated lessons, looking up information for lessons and keeping up with the latest developments in their fields of interest.

## Bar Graph 11

### Time spent on Research



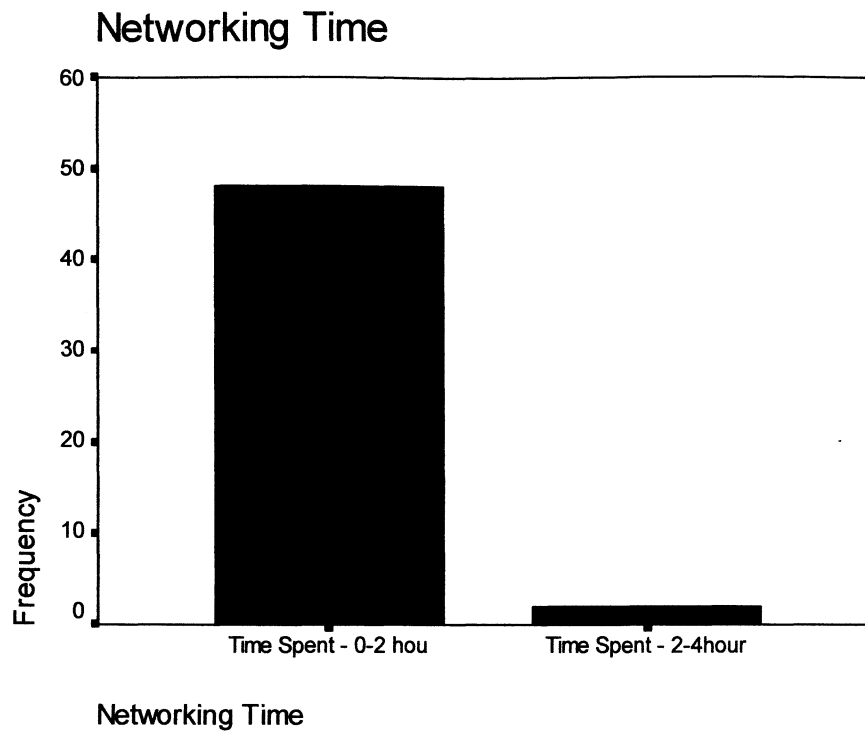
Most teachers spent about 2 to 4 hours per week on research. Very few teachers spent more than 6 hours per week for research activities on computers.

Networking time recorded was very similar to time spent on record keeping. Very few teachers spent much time on computers for networking. Some of them made comments on their logs that the networking they did was mostly with other teachers in their own schools, so they didn't use any e-mails for the same.



## Bar Graph 12

### Time Spent on networking

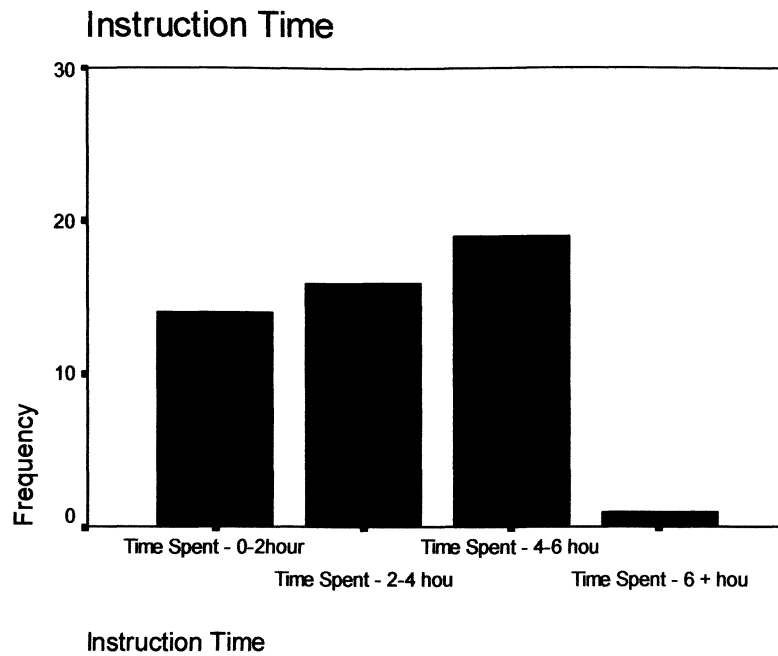


Most of the teachers recorded about 0 to 2 hours per week for networking. A very limited number of teachers recorded about 2 to 4 hours spent on computers for networking.

The logs maintained showed a lot of variation with regard to time spent by teachers on computers for direct instruction.

### Bar Graph 13

#### Time Spent on Direct Instruction



Many teachers spent about 2 to 6 hours using computers for direct instruction in their regular teaching. Very few of them had more than 6 hours recorded in their logs.

Based on the logs, most of the teachers who participated in the study showed favorable attitudes towards using computers regularly in their classrooms or in their homes.

## CORRELATIONS

This section of the chapter will record the correlations between the two sets of data as analyzed by the Statistical Package for the Social Sciences (SPSS) program.

### **Pearson's Correlations between Time Range & Scores on Different Intelligences**

The Pearson correlations between average time and scores of participants on different intelligences were analyzed using the SPSS program and the results are shown in the table given below.

Table 11

Pearson's Correlations Between Scores on MIDAS Tests and Time Recorded in Logs

Pearson Correlation	Musical Intelligence	Kinesthetic Intelligence	Logical – Mathematical Intelligence	Spatial Intelligence	Linguistic Intelligence	Inter-personal Intelligence	Intra-personal Intelligence	Naturalist Intelligence
Average Time	<b>.095</b>	<b>.201</b>	<b>.499</b>	<b>.284</b>	<b>.264</b>	<b>.161</b>	<b>.375</b>	<b>.295</b>

The highest correlation recorded was between the logical-mathematical intelligence and time on the logs. It was very significant at **0.499**. The second highest correlation at **0.375** was between intrapersonal intelligence and average time. The lowest correlation was between musical intelligence and average time at 0.095.

The time recorded on the logs maintained by participating teachers was categorized into four areas: record-keeping; research; networking; and direct instruction. The SPSS program was used to find Pearson's correlations between each category of time spent on computers by participating teachers to their score on each type of intelligence. The following table gives a detailed analysis of the same.

Table 12

PEARSON'S CORRELATIONS BETWEEN MIDAS TEST SCORES AND

DIFFERENT CATEGORIES OF TIME RECORDED ON LOGS

	Time Range	Record Keeping	Research Time	Networking Time	Instruction Time
Musical IQ	.095	-.007	.047	.032	.035
Kinesthetic IQ	.201	-.027	.104	-.012	.156
Logical - Mathematical IQ	<b>.499</b>	-.115	.377	-.060	<b>.497</b>
Spatial IQ	.284	-.193	.077	.040	.274
Linguistic IQ	.264	-.169	.133	-.082	.192
Interpersonal IQ	.161	.141	.105	-.126	.155
Intrapersonal IQ	<b>.375</b>	-.025	.345	-.058	<b>.400</b>
Naturalist IQ	.295	-.188	.165	.055	.112

As can be seen from the table, the highest Pearson's correlations were between logical-mathematical and time spent on computers at **0.499**. Further categorization of time spent led to the highest Pearson's correlation between instruction time and logical-mathematical scores at **0.497**. Significantly high Pearson's correlations were also found between intrapersonal intelligence scores and time spent (**0.375**). In this category a high Pearson correlation was between instruction time and scores on intrapersonal intelligence at **0.400**.

**HYPOTHESIS**

Data resulting from the analysis of the study were employed in the acceptance or the rejection of the hypothesis.

**Hypothesis**

Technology usage and knowledge are related to learning style. The more visual and intrapersonal a learner the teacher is, the better he/she will be able to use technology in the learning process.

The Multiple Intelligences Developmental Assessment Scale (MIDAS) was used to determine the preferred learning style of the participating teachers. The logs were used to record the time spent on computers by participating teachers. This instrument also revealed the different uses of computers by participating teachers. Based on this data, the time spent was categorized into four different areas – record keeping, research, networking, and direct instruction.

When the data from both these instruments were analyzed by the SPSS program significant correlations were found between logical-mathematical intelligence scores and time spent on computers. Some of the categories of time spent had higher correlations than others. The study thus established that there is a relationship between usage of technology and learning style. However the highest correlation was not between intrapersonal intelligence and time spent on computers. The highest correlation was between logical-mathematical intelligence and time spent on computers. The hypothesis is therefore partly accepted and recommendations for further study are given later to validate the significant correlations found in this study.

## Chapter Five

### Summary, Conclusions and Recommendations

In this chapter a summary of this study is provided, conclusions are drawn and recommendations for further study and practice are made.

#### **Summary**

This study was conducted to determine if there was a correlation between learning styles of teachers and their usage of computers in the teaching process. If such a correlation did exist, the study aimed at finding which learning style/s of teachers' is/are better suited to enhanced use of technology in the classroom.

#### **Major Conclusions**

The findings of this study allow the following conclusions to be drawn:

1. There is a significant correlation between learning style of a teacher and their propensity for using technology in the classroom.
2. The most significant correlation found was between logical-mathematical intelligence and time spent on computers.
3. With regard to usage of computers for direct instruction, the correlation between logical-mathematical intelligence and usage of computers is the highest.
4. Depending on the most dominant intelligence and learning style of a teacher, it is possible to make a fair judgment on whether the said teacher will use a lot of technology in his/her classroom.

## **Recommendations for further research**

Based on the findings of this study, it is suggested that:

1. A survey should be conducted to determine how many computers are available for student use in elementary schools in central Illinois.
2. More research needs to be done using a longitudinal study over a five-year period to determine the effects of computer-assisted instruction on learning styles of students.
3. An experimental research needs to be done to determine the effect of in-service training for teachers with regard to use of computer technology integration in elementary classrooms.
4. A correlational study should be done in inner-city schools to determine the relationship between elementary teachers' learning styles and their attitudes towards using technology in their classrooms.
5. A causal comparison study of technology usage in elementary schools should be done to determine the effectiveness of computer-integrated teaching in terms of achievement on standardized tests.
6. A survey of elementary schools should be done to determine how computer technology is integrated into teaching methodology.
7. A comparative study should be done to evaluate the cost effectiveness of computer-assisted instruction in elementary schools in relation to other instructional methods.
8. An observational study should be done to determine the effectiveness of providing in-service training for elementary teachers for using computer technology in their teaching process.

### **Recommendations for practice**

1. It is suggested that a grant be written to buy the Multiple Intelligences Developmental Assessment Scales (MIDAS), implement it and analyze it.
2. It is suggested that elementary school teachers take in-service training for computer technology integration into their teaching methodology.
3. It is suggested that adequate funding be provided for having computers and related technologies in the school.
4. It is suggested that schools hire technology coordinators to help teachers with integration of technology in the classrooms.
5. It is suggested that students be allowed to use computers and related technologies during recess time and before and after school if required.
6. It is suggested that incentives be given to teachers who use technology for more than fifty percent of their lessons.
7. It is suggested that a teacher-networking program be set up so that teachers from schools in nearby areas are able to share ideas about technology integration.
8. It is suggested that administrators take an active role in ensuring that teachers make technology integration an important goal while planning their lessons.
9. It is suggested that district wise workshops be organized for teachers to demonstrate how technology can be integrated into teaching for better outcomes.
10. It is suggested that administrators provide teachers with release time quarterly to attend workshops on or to network with other teachers with regard to technology integration in the classrooms.



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# APPENDIX A

## MULTIPLE INTELLIGENCES

## DEVELOPMENTAL ASSESSMENT

## SCLAES (MIDAS)

# M I D A S

by  
C. Branton Shearer, Ph.D.

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1994

# INSTRUCTIONS

Please read!

These questions take about 35 minutes to answer. There are 8 areas of activities, skills and interests covered. Think of this as if you are interviewing yourself. You may be surprised by what you know about yourself when you think carefully. **For questions that give you several choices, pick the one activity you're strongest in and rate yourself on that only.**

You do not have to answer or guess at every question because each one has an "I don't know" or **Does not apply** choice. Use this answer whenever it fits best for you. For example, some of the questions may ask about things you may not remember or you never got to do.

FOR EXAMPLE:

1. Can you sing 'in tune'?

A= A little bit

B= Fair

C= Well

D= Very Well

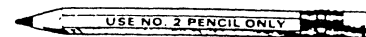
E= Excellent

F= I don't know

If "D" is your choice then darken this 'circle':

	A	B	C	D	E	F	G	H	I	J
1	①	②	③	●	⑤	⑥	⑦	⑧	⑨	⑩
	A	B	C	D	E	F	G	H	I	J
2	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
	A	B	C	D	E	F	G	H	I	J
3	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

Answer Sheet



-> Darken one 'circle' only for each question with a pencil.

The circles marked G, H, I and J are not used.

-> Please **do not write** on the answer sheet or questionnaire.

-> Erase all changes **completely**.

**Your profile will only be as accurate as your answers.**

**It is important that you give *honest* responses.**

**Be fair to yourself.**

**Do not over or under rate what you do.**

**It's O.K. to respond that you do not know.**

## MUSICAL

1. As a child, did you have a strong liking for music or music classes?

- A= A little.
- B= Sometimes.
- C= Usually.
- D= Often.
- E= All the time.
- F= I don't know.

2. Did you ever learn to play an instrument?

- A= No.
- B= A little.
- C= Fair.
- D= Good.
- E= Excellent.
- F= I don't know.

3. Can you sing 'in tune'?

- A= A little bit.
- B= Fair.
- C= Well.
- D= Very well.
- E= Excellent.
- F= I don't know.

4. Do you have a good voice for singing with other people in harmony?

- A= A little bit.
- B= Fair.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

5. As an adult, did you ever play an instrument, play with a band or sing with a group?

- A= Never.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost all of the time.
- F= I don't know. Does not apply.

6. Do you spend a lot of time listening to music?

- A= Every once in a while.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

7. Do you ever make up songs or write music?

- A= Never.
- B= Once or twice.
- C= Every once in a while.
- D= Sometimes.
- E= Often.
- F= I don't know.

8. Do you ever drum your fingers, whistle or sing to yourself?

- A= Every once in a while.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

9. Do you often have favorite tunes on your mind?

- A= Every once in a while.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

10. Do you often like to talk about music?

- A= Never.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Nearly all the time.
- F= I don't know.

11. Do you have a good sense of rhythm?

- A= Fair.
- B= Pretty good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

12. Do you have a strong liking for the SOUND of certain instruments or musical groups?

- A= Every once in a while.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

13. Do you think you have a lot of musical talent or skill that was never fully brought out?

- A= No.
- B= Some.
- C= A fair amount.
- D= A good amount.
- E= A great deal.
- F= I don't know.

14. Do you often have music on while you work, study or relax?

- A= Every once in a while.
- B= Sometimes.
- C= Usually.
- D= Almost always.
- E= Always.
- F= I don't know.

## KINESTHETIC

15. In school, did you generally enjoy sports or gym class more than other school classes?

- A= Not at all.
- B= A little.
- C= About the same.
- D= Enjoyed sports more.
- E= Enjoyed sports much more.
- F= I don't know.

16. As a teenager, how often did you play sports or other physical activities?

- A= Every once in a while.
- B= Sometimes.
- C= Often.
- D= Almost always.
- E= All the time.
- F= I don't know or does not apply.

17. Did you ever perform in a school play or take lessons in acting or dancing?

- A= Never.
- B= Maybe once.
- C= A couple of times.
- D= Often.
- E= Almost all the time.
- F= I don't know.

18. Do you or other people (like a coach) think that you are coordinated, graceful or a good athlete?

- A= No.
- B= Maybe a little.
- C= About average.
- D= Better than average.
- E= Superior.
- F= I don't know.

19. Did you ever take lessons or have someone teach you a sport such as bowling, karate, golf, etc.?

- A= No.
- B= Rarely.
- C= Sometimes.
- D= Often.
- E= Nearly all the time.
- F= I don't know.

20. Have you ever joined teams to play a sport?

- A= Never.
- B= Rarely.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I don't know.

21. As an adult, do you often do physical work or exercise?

- A= Rarely.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know. Does not apply.

22. Are you good with your hands at things like card shuffling, magic tricks or juggling?

- A= Not very good.
- B= Fair.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

23. Are you good at doing precise work with your hands such as sewing, making models, tying flies, typing or have good handwriting?

- A= Not at all.
- B= Fairly good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

24. Do you enjoy working with your hands on projects such as mechanics, building things, preparing fancy food or sculpture?

- A= Never or rarely.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know or doesn't apply.

25. Are you good at using your body or face to imitate people such as teachers, friends, or family?

- A= Not at all.
- B= A little bit.
- C= Fair.
- D= Good.
- E= Very good.
- F= I don't know.

26. Are you a good dancer, cheerleader or gymnast?

- A= Not at all.
- B= Fairly good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

27. Do you learn better by having something explained to you or by doing it yourself?

- A= Always better by explanation.
- B= Sometimes better by explanation.
- C= No difference.
- D= Usually better by doing it.
- E= Always better by doing it.
- F= I don't know.

## MATH / LOGIC

28. As a child, did you easily learn math such as addition, multiplication and fractions?

- A= Not at all.
- B= It was fairly hard.
- C= Pretty easy.
- D= Very easy.
- E= Learned much quicker than all the kids.
- F= I don't know.

29. In school, did you ever have extra interest or skill in math?

- A= Very little or none.
- B= Maybe a little.
- C= Some.
- D= More than average.
- E= A lot.
- F= I don't know.

30. How did you do in advanced math classes such as algebra or calculus?

- A= Didn't take any.
- B= Not very well.
- C= Fair. (C's)
- D= Well. (B's)
- E= Excellent. (A's)
- F= I don't know or does not apply.

31. Have you ever had interest in studying science or solving scientific problems?

- A= No.
- B= A little.
- C= Average.
- D= More than average.
- E= A great deal.
- F= I don't know.

32. Are you good at playing chess or checkers?

- A= No.
- B= Fairly good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

33. Are you good at playing cards or solving strategy or puzzle-type games?

- A= Not at all.
- B= A little.
- C= About average.
- D= Better than average.
- E= Excellent.
- F= I don't know.

34. Do you often play games such as Scrabble or crossword puzzles?

- A= Very rarely or never.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

35. Do you have a good system for balancing a checkbook or figuring a budget?

- A= Not at all.
- B= Fairly good.
- C= Good.
- D= Very good.
- E= An excellent system.
- F= I don't know or does not apply.

36. Do you have a good memory for numbers such as telephone numbers or addresses?

- A= Not very good.
- B= Fair.
- C= Good.
- D= Very good.
- E= Superior.
- F= I don't know.

37. How are you at figuring numbers in your head?

- A= Can not do it.
- B= Not very good.
- C= Fair.
- D= Good.
- E= Excellent.
- F= I don't know.

38. Are you a curious person who likes to figure out WHY or HOW things work?

- A= Every once in a while.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.



39. Are you good at inventing 'systems' for solving long or complicated problems? For example, betting at the race track or organizing your home or life?

- A= Not very good.
- B= A little.
- C= Somewhat.
- D= More than average.
- E= Very much so.
- F= I don't know.

40. Are you curious about nature like fish, animals, plants or the stars and planets?

- A= A little.
- B= Sometimes
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

41. Have you ever liked to collect things and learn all there is to know about a certain subject such as antiques, horses, baseball, etc.?

- A= Not at all.
- B= A little.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I don't know.

42. Are you good at jobs or projects where you have to use math a lot or get things organized?

- A= Not at all.
- B= Fairly good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know or does not apply.

43. Outside of school, have you ever enjoyed working with numbers like figuring baseball averages, gas mileage, budgets, etc.?

- A= Not at all.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost all the time
- F= I don't know.

44. Do you use good common sense for planning social activities, making home repairs, or solving mechanical problems?

- A= Sometimes.
- B= Usually.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

## SPATIAL

45. As a child, did you often build things out of blocks or boxes, play with jacks, marbles or jump rope?

- A= Never or rarely.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

46. As a teenager or adult, how well could you do any of these: mechanical drawing, hair styling, woodworking, art projects, auto body, or mechanics?

- A= Didn't take any.
- B= Fair.
- C= Good. (C's)
- D= Very good. (B's)
- E= Excellent. (A's)
- F= I don't know. Does not apply.

47. How well can you 'design' things such as arranging or decorating rooms, craft projects, building furniture or machines?

- A= Never do.
- B= Not very well.
- C= Pretty good.
- D= Good.
- E= Excellent.
- F= I don't know.

48. Can you parallel park a car on your first try?

- A= Rarely or do not drive.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know. Does not apply.

49. Are you good at finding your way around new buildings or city streets?

- A= Not at all.
- B= Fairly good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

50. Are you good at using a road map to find your way around?

- A= Not at all.
- B= A little bit.
- C= Good at it.
- D= Very good.
- E= Excellent at reading maps.
- F= I don't know.

51. Are you good at fixing 'things' like cars, lamps, furniture, or machines?

- A= Not at all.
- B= Not very good.
- C= Fair.
- D= Good .
- E= Excellent.
- F= I don't know.

52. How easily can you put things together like toys, puzzles, or electronic equipment?

- A= Not at all.
- B= It was hard.
- C= It was fairly easy.
- D= It was easy.
- E= It was very easy.
- F= I don't know.

53. Have you ever made your own plans or patterns for projects such as sewing, carpentry, crochet, woodworking, etc.?

- A= Never.
- B= Maybe once.
- C= Every once in a while.
- D= Sometimes.
- E= Often.
- F= I don't know.

54. Have you ever drawn or painted pictures?

- A= Rarely or never.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I don't know

55. Do you have a good sense of design for decorating, landscaping or working with flowers?

- A= Not very good.
- B= Fair.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

56. Do you have a good sense of direction when in a strange place?

- A= Not at all.
- B= Fairly good.
- C= Good.
- D= Very good.
- E= Superior.
- F= I don't know.

57. Are you good at playing pool, darts, riflery, archery, bowling, etc.?

- A= Not at all.
- B= A little.
- C= Fair.
- D= Better than average.
- E= Excellent.
- F= I don't know.

58. Do you often draw a picture or sketch to give directions or explain an idea?

- A= Never.
- B= Rarely.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

59. Are you creative and like to invent or experiment with unique designs, clothes or projects?

- A= Very little or not at all.
- B= A little.
- C= Somewhat.
- D= Often.
- E= Almost all the time
- F= I don't know.

## LINGUISTIC

60. Do you enjoy telling stories or talking about favorite movies or books?

- A= Not at all.
- B= Rarely.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I'm not sure.

61. Do you ever play with the sounds of words like making up jingles, or rhymes? For example, do you give things or people funny sounding nicknames?

- A= Never.
- B= Rarely.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

62. Do you use colorful words or phrases when talking?

- A= No.
- B= Rarely.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

63. **Have you ever written a story, poetry or words to songs?**

- A= Never.
- B= Maybe once or twice.
- C= Occasionally.
- D= Often.
- E= Almost all the time.
- F= I don't know.

64. **Are you a convincing speaker?**

- A= Not at all.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost all of the time.
- F= I don't know.

65. **How are you at bargaining or making a deal with people?**

- A= Not very good.
- B= Fair.
- C= Pretty good.
- D= Good.
- E= Excellent.
- F= I don't know.

66. **Can you talk people into doing things your way when you want to?**

- A= Not at all.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I'm not sure.

67. **Do you ever do public speaking or give talks to groups?**

- A= Very rarely or never.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I don't know.

68. **How are you at managing or supervising people?**

- A= Never do or not very good at it.
- B= Fair.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know or does not apply.

69. **Do you have interest for talking about things like the news, family matters, religion or sports, etc.?**

- A= A little.
- B= Some interest.
- C= Average interest
- D= More than average.
- E= A great deal.
- F= I don't know.

70. **When others disagree are you able to easily say what you think or feel?**

- A= Rarely.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

71. **Do you enjoy looking up words in dictionaries, or arguing with others about "the right word" to use?**

- A= Never or rarely.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Very often.
- F= I don't know.

72. **Are you often the one asked to "do the talking" by family or friends because you are good at it?**

- A= Very rarely or never.
- B= Rarely.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I don't know.

73. **Have you ever been good at imitating the way other people talk?**

- A= Not really.
- B= Fairly good.
- C= Pretty good.
- D= Good.
- E= Very good.
- F= I don't know.

74. **Have you ever been good at writing reports for school or work?**

- A= Not really. Never do any.
- B= Pretty good.
- C= Good.
- D= Very good.
- E= Superior.
- F= I don't know.

75. **Can you write a good letter?**

- A= No or fair.
- B= Pretty good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

76. **Do you like to read or do well in English classes?**

- A= A little.
- B= Sometimes.
- C= Usually.
- D= Often
- E= All the time.
- F= I don't know.

77. Do you write notes or make lists as reminders of things to do?

- A= Rarely or never.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost all the time.
- F= I don't know.

78. Do you have a large vocabulary?

- A= Not really.
- B= Less than average.
- C= About average.
- D= Above average.
- E= Superior.
- F= I don't know.

79. Do you have skill for choosing the right words and speaking clearly?

- A= Not at all or rarely.
- B= Sometimes.
- C= Usually.
- D= Most of the time.
- E= Almost always.
- F= I don't know.

## INTERPERSONAL

80. Have you had friendships that have lasted for a long time?

- A= One or two.
- B= More than a couple.
- C= Quite a few.
- D= A lot.
- E= A great many long lasting friendships.
- F= I don't know.

81. Are you good at making peace at home, at work or among friends?

- A= Fair.
- B= Pretty good.
- C= Good.
- D= Very good.
- E= Excellent.
- F= I don't know.

82. Are you ever a 'leader' for doing things at school, among friends or at work?

- A= Rarely.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= Almost always.
- F= I don't know.

83. In school, were you usually part of a particular group or crowd?

- A= Rarely.
- B= Every once in a while.
- C= Sometimes.
- D= Most of the time.
- E= Almost all the time.
- F= I don't know.

84. Do you easily understand the feelings, wishes or needs of other people?

- A= Sometimes.
- B= Usually.
- C= Often.
- D= Almost always.
- E= Always.
- F= I don't know.

85. Do you ever offer to 'help' other people such as the sick, the elderly or friends?

- A= Sometimes.
- B= Usually.
- C= Often.
- D= Very often.
- E= Always.
- F= I don't know.

86. Do friends or family members ever come to you to talk over personal troubles or to ask for advice?

- A= Every once in a while.
- B= Sometimes.
- C= Often.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

87. Are you a good judge of 'character'?

- A= Every once in a while.
- B= Sometimes.
- C= Usually.
- D= Almost always.
- E= Always.
- F= I don't know.

88. Do you usually know how to make people feel comfortable and at ease?

- A= Every once in a while.
- B= Sometimes.
- C= Usually.
- D= Almost always.
- E= Always.
- F= I don't know.

89. Do you generally take the good advice of friends?

- A= Every once in a while.
- B= Sometimes.
- C= Usually.
- D= Often.
- E= Almost always.
- F= I don't know.

90. Are you generally at ease around (men or women) your own age?

- A= Rarely.
- B= Sometimes.
- C= Usually.
- D= Almost all the time.
- E= Always.
- F= I don't know.

91. Are you good at understanding your (girlfriend's or wife's) ( boyfriend's or husband's) ideas and feelings?

- A= Every once in a while.
- B= Sometimes.
- C= Usually.
- D= Almost all the time.
- E= All the time.
- F= I don't know. Does not apply.

92. Are you an easy person for people to get to know?

- A= Not at all.
- B= Pretty hard.
- C= Fairly easy.
- D= Easy.
- E= Very easy.
- F= I don't know.

93. Do you have a hard time coping with children?

- A= Usually have a hard time.
- B= Sometimes it is hard.
- C= Usually easy.
- D= Almost always easy.
- E= Always very easy.
- F= I don't know.

94. Have you ever had interest in teaching, coaching or counseling?

- A= Very little or none.
- B= A little interest.
- C= Some interest.
- D= A lot of interest.
- E= A great deal of interest.
- F= I don't know or doesn't apply.

95. Can you do well when working with the public in jobs such as sales, receptionist, promoter, police, or waiter?

- A= Fair.
- B= Fairly well.
- C= Well.
- D= Very well.
- E= Excellent.
- F= I don't know. Does not apply.

96. Do you prefer working alone or with a group of people?

- A= Always alone.
- B= Usually alone.
- C= No preference.
- D= Usually with a group.
- E= Always with a group.
- F= I don't know.

97. Are you able to come up with unique or imaginative ways to solve problems between people or settle arguments?

- A= Maybe once or twice.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

## INTRAPERSONAL

98. Do you have a clear sense of who you are and what you want out of life?

- A= Very little.
- B= A little.
- C= Usually.
- D= Most of the time.
- E= Almost all the time.
- F= I don't know.

99. Are you aware of your feelings and able to control your moods?

- A= Every once in a while.
- B= Sometimes.
- C= Most of the time.
- D= Almost all the time.
- E= Always.
- F= I don't know.

100. Do you plan and work hard toward personal goals like at school, at work or at home?

- A= Rarely.
- B= Sometimes.
- C= Usually.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

101. Do you 'know your own mind' and do well at making important personal decisions such as choosing classes, changing jobs or moving?

- A= No or every once in a while.
- B= Sometimes.
- C= Usually.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

102. Are you happy with the work you choose because it matches your skills, interests and personality?

- A= No or rarely.
- B= Sometimes.
- C= Usually.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

103. Do you generally know what you are good at (or not good at) doing and try to improve your skills?

- A= Every once in a while.
- B= Sometimes.
- C= Usually.
- D= Almost all the time.
- E= All the time.
- F= I don't know.

104. Do you get very angry when you fail or are frustrated?

- A= Almost all the time.
- B= Sometimes.
- C= Every once in a while.
- D= Rarely.
- E= Almost never.
- F= I don't know.

105. Have you ever had interest in 'self improvement'? For instance, do you attend classes to learn new skills or read 'self-help' books or magazines?

- A= No.
- B= A little.
- C= Sometimes.
- D= Often.
- E= Almost always.
- F= I don't know.

106. Have you ever been able to find unique or unusual ways to solve personal problems or achieve your goals?

- A= Once or twice.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

## NATURALIST

107. Have you ever raised pets or other animals?

- A= Never or rarely.
- B= Every once in a while.
- C= Sometimes.
- D= Often.
- E= All the time.
- F= I don't know.

108. Is it easy for you to understand and care for an animal?

- A= Not at all.
- B= Maybe a little.
- C= Fairly easy.
- D= Quite easy.
- E= Very easy.
- F= I don't know.

109. Have you ever done any pet training, hunting or studied wildlife?

- A= No.
- B= A little.
- C= Sometimes.
- D= Quite a bit.
- E= A great deal.
- F= I don't know. No opportunity.

110. Are you good at working with farm animals or thought about being a veterinarian or naturalist?

- A= Not at all.
- B= A little.
- C= Some.
- D= Quite a bit.
- E= Very much so.
- F= I don't know.

111. Do you easily understand differences between animals such as personalities, traits or habits?

- A= Not at all.
- B= A little.
- C= Fairly easy.
- D= Quite easy.
- E= Very easy.
- F= I don't know.

112. Are you good at recognizing breeds of pets or kinds of animals?

- A= Not at all.
- B= At little.
- C= Somewhat.
- D= Quite good.
- E= Very good.
- F= I don't know.

113. Are you good at observing and learning about nature, for example, types of clouds, weather patterns, animal or plant life?

- A= Never.
- B= A little.
- C= Some.
- D= Quite a bit.
- E= A great deal.
- F= I don't know.

114. Are you good at growing plants or raising a garden?

- A= Not at all.
- B= A little.
- C= Somewhat.
- D= Quite a bit.
- E= Very good.
- F= I don't know.

**115. Can you identify or understand the differences between types of plants?**

- A= Not at all.
- B= A little.
- C= Somewhat.
- D= Most of the time, yes.
- E= All the time.
- F= I don't know.

**116. Are you fascinated by natural energy systems such as chemistry, electricity, engines, physics or geology?**

- A= No.
- B= A little.
- C= Somewhat.
- D= Quite a bit.
- E= A great deal.
- F= I don't know.

**117. Do you have a concern for nature and do things like recycling, camping, hiking or bird watching?**

- A= No.
- B= A little
- C= Some.
- D= A lot.
- E= A great deal.
- F= I don't know.

**118. Have you taken photographs of nature or written stories or done artwork?**

- A= No.
- B= A little.
- C= Some.
- D= A lot.
- E= A great deal.
- F= I don't know.

**119. Is spending time with nature an important part of your life?**

- A= Not really.
- B= A little.
- C= Somewhat.
- D= Quite a bit.
- E= Very much so.
- F= I don't know.

**You're Finished!**

## APPENDIX B

# LOG FOR RECORDING TIME SPENT ON COMPUTERS



### **Log for usage of computers**

This log has been developed to be used as a tool for collecting data with regard to the usage of computers by in-service teachers. It will be used for the sole purpose of making a data analysis for a thesis titled, "Learning Styles of Teachers & Technology Usage." The thesis is aimed at determining if the learning style of a teacher has an influence on the propensity of that teacher for using technology in the classroom or for preparation of classroom teaching. To determine the learning style of the teachers participating in the study, the MIDAS (Multiple Intelligences Developmental Assessment Scales) has been used. The results of the assessment in the form of a complete profile will be sent to every teacher participating in the study. Both the results of the assessment and the record of the logs shall be kept confidential and will be exclusively used for the purpose of data analysis for the thesis. No names shall be used in the thesis so as to ensure the privacy of the participating teachers.

I hope you will participate enthusiastically in this educational endeavor. I am thankful to all the participating teachers who are helping me prepare this thesis.

Thank you.

Kiran Padmaraju

## Instructions

1. Please use this log to record the usage of a computer by you either in the classroom or anywhere else if it is for the purpose of teaching or for preparing to teach.
2. Only when computers are used for professional purposes should this log be used. The usage may include searching the web, maintaining records, networking with other teachers, classroom use, preparing presentations and so on. This does not exclude emails to other teachers or other professionals in the field of education if the mail is for inquiry, for sharing information or for networking. Please do not record any usage for personal emails.
3. You can keep separate logs at school and at home or any other place you usually use a computer.
4. Please record every use for professional purposes even if it is for a short time.
5. This log is to be maintained from October 5<sup>th</sup>, 2002 to December 5<sup>th</sup>, 2002. Please return these logs in the self-addressed envelopes provided to you for this purpose.
6. This log will also be sent to you by e-mail and you may maintain it as a file on the computer and send it back by e-mail to me if you so wish.

Thank you for assisting me in this thesis. Please feel free to call me or email to me any time you have any questions.

Kiran Padmaraju  
Home Phone: (217) 348 – 0826  
Office Phone: (217) 581 – 7888  
E-mail: [kiranmayip@yahoo.com](mailto:kiranmayip@yahoo.com)

## LOG

**Name:**

**Grade Taught:**

Date	Time logged on	Time logged off	Purpose

# APPENDIX C

## SAMPLE PROFILE GENERATED BY THE MIDAS TEST

MULTIPLE INTELLIGENCE DEVELOPMENTAL ASSESSMENT SCALES  
MIDAS Version 2.1 Processed 11-29-2002  
for  
Wendy Bergmann

Sex: f            Grade:            Birth Date:  
ID number: 54      Code:

The following Profile represents areas of strength and limitation as reported by you at this time. This is preliminary information to be confirmed by way of further discussion and exploration.

Scales  
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Musical                            \*\*\*\*\*  
  
Kinesthetic                        \*\*\*\*\*  
  
Logical-Mathematical            \*\*\*\*\*  
  
Spatial                             \*\*\*\*\*  
  
Linguistic                         \*\*\*\*\*  
  
Interpersonal                     \*\*\*\*\*  
  
Intrapersonal                    \*\*\*\*\*  
  
Naturalist                         \*\*\*\*\*

The following Profile represents your intellectual style. These scales indicate if you tend to be more inventive, accurate or social in your problem solving abilities.

Scales  
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Leadership                        \*\*\*\*\*  
  
General Logic                    \*\*\*\*\*  
  
Innovative                        \*\*\*\*\*

Completed items: 100%

The MIDAS subscales are listed below from highest to lowest. They are useful for identifying specific areas of skill that you describe as your strongest and weakest.

Specific Skill	Category
Athletic	Kinesthetic
Written/Reading	Linguistic
Working with People	Interpersonal
Animal Care	Naturalist
Science	Naturalist
Persuasion	Interpersonal
Management	Leadership
Effectiveness	Intrapersonal
Spatial Awareness	Spatial
Expressive	Linguistic
Sensitivity	Interpersonal
Personal Knowledge	Intrapersonal
Spatial Problem-Solving	Intrapersonal
Social	Leadership
Plant Care	Naturalist
Rhetorical	Linguistic
Communication	Leadership
Appreciation	Musical
School Math	Logical-Mathematical
Everyday Problem-Solving	Logical-Mathematical
Instrument	Musical
Everyday Math	Logical-Mathematical
Art Design	Spatial
Working with Objects	Spatial
Dexterity	Kinesthetic
Calculations	Intrapersonal
Vocal	Musical
Logic Games	Logical-Mathematical
Composer	Musical

The following are percentage scores based on the total number of completed items for the main scales and subscales. Approximate category ranks are included to aid interpretation. Please refer to the current manual for interpretative information.

Clusters	Score	Score
Musical	20	Very Low
Appreciation	33	Low
Instrument	25	Low
Vocal	6	Very Low
Composer	0	Very Low
Kinesthetic	46	Moderate
Athletic	75	High
Dexterity	17	Very Low
Logical-Mathematical	34	Low
School Math	33	Low
Logic Games	6	Very Low
Everyday Math	25	Low
Everyday Problem-Solving	33	Low
Spatial	34	Low
Spatial Awareness	50	Moderate
Art Design	20	Very Low
Working with Objects	19	Very Low
Linguistic	50	Moderate
Expressive	50	Moderate
Rhetorical	38	Low
Written/Reading	75	High
Interpersonal	61	High
Persuasion	67	High
Sensitivity	50	Moderate
Working with People	75	High
Intrapersonal	43	Moderate
Personal Knowledge	50	Moderate
Calculations	10	Very Low
Effectiveness	55	Moderate
Naturalist	63	High
Animal Care	75	High
Plant Care	42	Moderate
Science	69	High

# APPENDIX D

A SAMPLE COMPLETED LOG

RECORDING USAGE OF

COMPUTERS



## LOG

**Name: Lawrence Cwik**  
**Grade Taught: 7<sup>th</sup> Grade**

Date	Time logged on	Time logged off	Purpose
10/5	5:45 PM	7:00 PM	Research Illinois Glacial geology
10/6	10 AM	10:45 AM	Download and edit map of Illinois glacial periods
10/7	1:22 PM	2 PM	Grades and quiz writing
10/8	7:30 AM +1:25P	7:50 AM+1:45P	Enter grades and printout Work on State re-certification plan
10/9	7:20 A +1:30 P + 3PM	7:40A +2 P + 4PM	Work on field trip grouping Enter Grades Printout report for parent conferences
10/10	7:30 A + !:25 PM + 3PM 5 PM	7:50 A +2 PM + 4PM + 9PM	Work on Field trip groupings. Parent conferences materials and grade discussion.
10/11	7:30AM	Noon	Parent conferences materials and grade discussion.
10/12	6 PM	8PM	Field trip assignments
10/13	6 PM	8 PM	Work on Field trip assignment sheets
10/14	7:30 AM + 1:20 PM +5 PM	7:45 AM + 2 PM + 7 PM	Entering grades, preparing quiz, Researching sites for field trip
10/15	7:20 AM + 1:25 PM	7:45 AM + 2 PM	R-certification materials, test prep, grades,
10/16	7:10 + 12:40PM + 1:25 Pm	7:45 AM + 1:10 PM + 2 PM	Printout final bus and field trip schedules, Student concerns meeting, Finish worksheets for field trip

10/17	7:20 AM + 2 PM	7:40 AM + 3 PM	Finalize field trip rosters and chaperones, show images from field trip to class
10/18	8 AM	3 PM	Use computer to display images from yesterday's fieldtrip
Date	Time logged on	Time logged off	Purpose
10/19	10 AM	1 PM	Begin making template pages for the TIE-Ins project for students to work with
10/21	7:25 AM + 1:20 PM	7:45 AM + 2 PM	Upload web pages templates to computer server for students to work with, research sites for students to obtain information.
10/22	7: 20 AM + 1:20 PM	7: 7:45 AM + 2 PM	Checked student projects on the server research
10/23	7:20 AM + 1:20 PM	7: 45 AM + 2	Check email, download data from Fermilab data base for graphing project
10/24	7:35 AM + 11:10 AM+ 1:20 PM	7:45 AM + 11:50 AM + 2 PM	Worked on quiz, checked mail, researched material on ecology
10/ 25	7: 45 AM + 8 PM	3 PM + 10 PM	Recorded grades from quiz, worked on web pages and prepared sheets for tryouts on Saturday.
10/28	7:25 AM + 11:20 AM + 3 PM	7:45 AM + 11:50 AM + 4:15 PM	Prepared Unit 2 assignment sheets, worked on parent journal assessment worksheet, wrote instructions for almanac essay assignment
10/29	7:25 AM + 11:20 AM + 1:20 PM	7:45 AM + 11:50 AM + 2 PM	Printout student grade sheets, worked on daily weather data collection sheet, Reviewed student web pages
10/30	11:20 AM + 1:20 PM +7 PM	11:50 AM + 2 PM + 9 PM	Entered grades, worked on basketball statistics and roster sheets, edited images for students to use on webpages.
10/31	11:20 AM + 1:20 PM +	11:50 AM + 2 PM +	Worked on basketball team forms, uploaded images to server for student use.