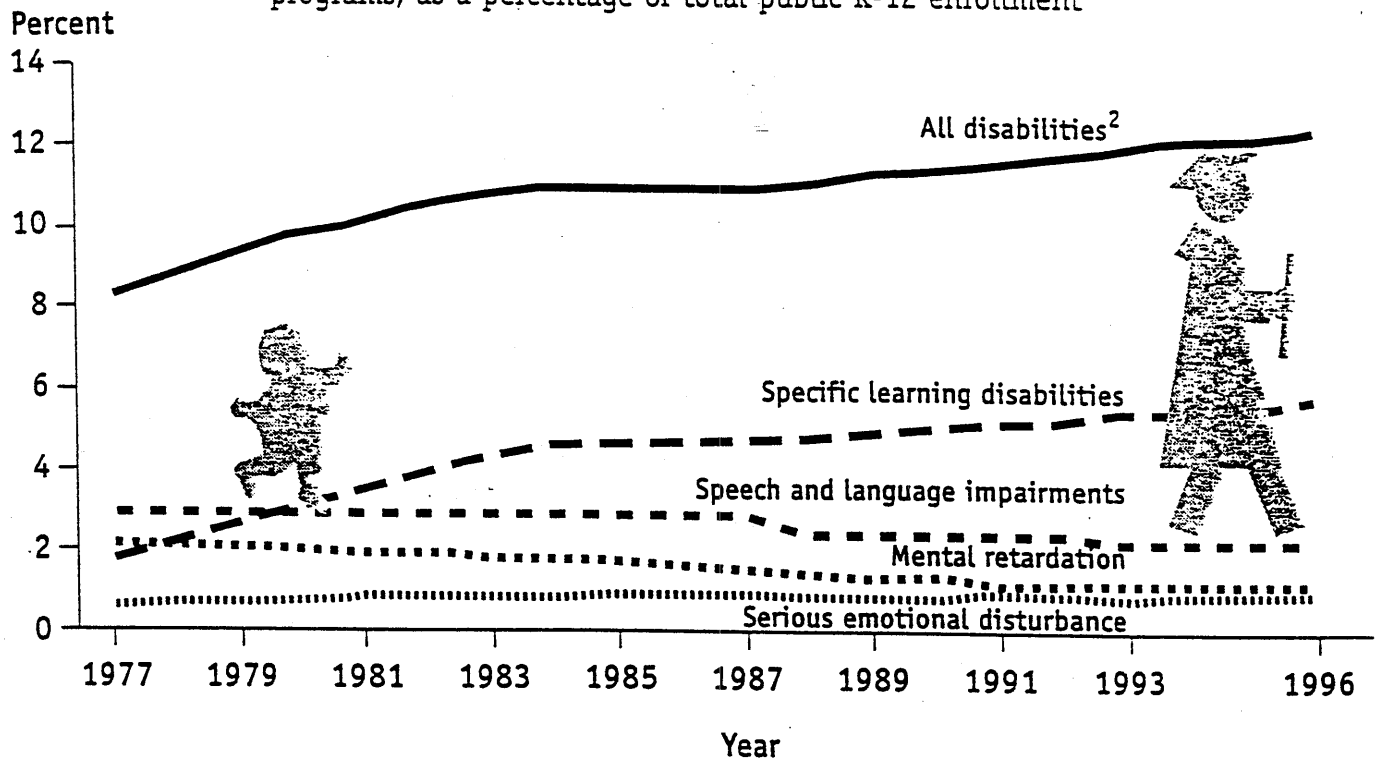


Education of Students with Disabilities

- In 1996, children with disabilities receiving services in federally supported programs constituted 12 percent of all students enrolled in public schools (grades K-12), up from 8 percent in 1977.
- The number of students who participated in federal programs for children with disabilities increased 51 percent between 1977 and 1996, rising from 3.7 to 5.6 million students.
- Between 1977 and 1996, the percentage of children with specific learning disabilities as a percentage of total public school (grades K-12) enrollment rose from 2 to 6 percent.

Number of children with disabilities who were served by federal programs, as a percentage of total public K-12 enrollment¹



¹ Based on K-12 enrollment in public schools, including a small number of prekindergarten students.
² Included in the total but not shown separately are other types of disabilities.

Note: This analysis includes students who were served under Chapter 1 of the Education Consolidation and Improvement Act (ECIA) and Part B of the Individuals with Disabilities Education Act (IDEA).

Source: U.S. Department of Education, Office of Special Education and Rehabilitative Services, Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, various years, and unpublished tabulations; and National Center for Education Statistics, Common Core of Data Survey

C. M. Achilles, EdD, Professor

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February 28, 1999

The Honorable Senator Patty Murray, WA
The Honorable Senator Edward M. Kennedy, MA

Dear Senators Murray and Kennedy:

Thank you both for caring about young students in America's schools. Educators and parents have long known about a "class-size effect" in schooling.

As one of the four principal investigators of the STAR experiment and a person who has conducted class-size research since 1984, I am heartened that policy persons are recognizing and using the powerful STAR results. Constituents in both of your states have reviewed and praised the STAR study.

The large (over 11,000 students), longitudinal education experiment (STAR) conducted in Tennessee, 1985-1989, its continuing analyses, and other studies have scientifically substantiated this class-size effect and its benefits.

Professor Donald Orlich (Washington) commented about STAR in The Kappan (1991, April) as follows:

The study lasted for four years and, in my opinion, is the most significant educational research done in the US during the past 25 years. (p. 632).

After a year-long review of STAR, Professor Emeritus F. Mosteller at Harvard said in The Future of Children, (1995), 5 (2) that:

... the Tennessee class size project, ... illustrates the kind and magnitude of research needed in the field of education to strengthen schools (p. 113). ... it is important that both educators and policy makers have access to its statistical information and understand its implications. (p. 126).

Wisconsin's SAGE project has demonstrated student gains similar to STAR's. Governor Thompson has included funds to expand SAGE in his budget. Michigan has instituted a pilot class-size reduction effort. In spite of its hurried implementation, California's class-size reduction (CSR) is already showing positive student academic gains. Texas, Tennessee, Utah, Nevada, and other states are joining international efforts such as in British Columbia and The Netherlands. Without fanfare and national commissions, the states are leading in using education research to improve schools for small children, but they need the help that the much needed "Class Size Reduction and Teacher Quality Act of 1999" can provide them. Research on class size shows what class sizes are appropriate for young learners and what class sizes let teachers teach effectively. Indeed, what research supports the large class sizes we now have for schools? What do the following have in common: home schooling, exclusive private schools, special classes, special projects, apprenticeships, etc? What education improvement relies on larger classes?

The benefits of small classes are the ABCD's of Quality: Improved achievement for all students in Academics, Behavior (fewer discipline problems), Citizenship, (participation in school) and Development (e.g., reduction in special education problems). Small classes provide Equality: All students get the same treatment. More importantly, small classes offer Equity: Those students who need the benefits of small classes and individual attention most get the largest benefits. Wenglinsky's (1997) national study found:

In other words, fourth graders in smaller-than-average classes are about a half a year ahead of fourth graders in larger-than-average classes (p. 24)... The largest effects seem to be for poor students in high-cost areas. (p. 25).

Some non-educators argue that class size does not make a difference, but they typically use pupil-teacher ratio (PTR) data to criticize class-size results. CLASS SIZE AND PTR ARE NOT THE SAME, and arguments using these as synonyms are flawed. Class size is the number of children in a teacher's room daily and for whom the teacher is accountable. The PTR is generated by dividing the number of students, usually at one site, by all educators or even adults who serve the site, including administrators, counselors, special teachers, etc. Class size is often 10 or more than the PTR. Class-size change does help students in many ways; PTR change does not much influence student outcomes. (This may explain the poor results of Title I).

Adults must speak for young children by developing sound education policies. What if kids voted? (See attachment). Does anyone believe that they'd vote for larger classes? Small classes are a direct benefit to each young child. All who attend small classes benefit from them, and the benefits are reciprocal for teachers, students, and parents.

Just as the large Framingham Heart Study has changed the health knowledge and habits of many adults, so may smaller classes be education's equivalent of better health. Project STAR and its legacies have provided more than 15 years of solid class-size data. These data should become part of the base for education policy.

Class-size researchers could present information to policy makers at the Federal level. The available studies and positive evidence of class-size benefits are large and growing, and access to the latest information could help policy makers develop well informed education policies. Small classes constitute education's IRA for young students, and for adults. We welcome the opportunity to support your efforts.

Sincerely,

C. M. Achilles
Professor



CMA: jw

ATTACHMENTS: "What if Kids Voted?"

Two Tables of class-size results from

Achilles (in Press) Let's Put Kids First, Finally.

CMA/Letter/Class-size/Senators

WHAT IF KIDS VOTED?

Jefferson said that if a nation wished to be ignorant and free it wished what never was and never will be. A democracy requires well educated citizens. Education is important. If kids could vote, what would they say about current education policy debates about class size?

What do small classes provide young children? They cause improvements in achievement, behavior, and participation that continue at least into high school. They improve student and teacher morale, increase parent involvement and confidence in schools; they allow teachers to use and do in their classes what they were taught to do in their teacher preparation. They offer young kids a family-like learning environment. This does not surprise anyone who thinks about it.

The ultimate class size is one-to-one, or tutoring. Tutoring, used in successful programs such as Reading Recovery, is expensive but effective. Special education, programs for the gifted, apprenticeships, seminars, home schooling, remedial programs, and exclusive private schools have small classes in common. Small classes offer education improvement and individual attention for young students.

Adult critics of small classes advocate other agendas to improve education, but should policy for little children build on research rather than on advocacy? Special interests ask educators to use such "innovations" as total quality management or increased technology, yet no reputable research that I know about relates these expensive efforts to increased student achievement or improved behavior outcomes that the public seeks from education. We seldom hear demands that these ideas be evaluated, especially when the fads profit big business or avid advertisers.

What research should help to guide education policy? An extensive, long-term education experiment is Project STAR, a class-size study that since 1985 has involved over 11,000 students. STAR researchers randomly assigned students into classes of about 15:1 and 25:1. Teachers were assigned at random to classes. Researchers analyzed achievement and other data, and followed the progress of students throughout the grades. Other researchers have re-analyzed the STAR data and substantiated the positive results. Professor Mosteller of Harvard called STAR "a controlled experiment which is one of the most important educational investigations ever carried out . . ." STAR experimentally demonstrated a major class-size effect in early grades that was determined in meta-analyses by Glass and Smith in 1978 and 1979. The results surprise no one who works with children or knows group dynamics.

Part of the confusion is semantics. Class size and pupil-teacher ratio or PTR differences cloud the issues. Class size is the number of students regularly in a teacher's room for whom that teacher is responsible and accountable. The PTR is computed by dividing the number of students at a site by the number of educators there, including special teachers, administrators, counselors, etc. Class size and PTR are NOT the same. Class size influences overall student performance; PTR has little effect. Policy discussions or education decisions that use the terms as synonyms are flawed.

Persons who support appropriate class sizes in early grades are correct. Classes with 15-18 children and 1 teacher (15:1) in K through grade 3 provide many positive outcomes: higher achievement, improved behavior, and long-term benefits. Teachers know about small-class benefits. Parents know, too. What to do for students in K-3 is no longer a question. How to do it raises tough questions.

Students should experience small classes when they first start school in K or earlier. Small classes should begin in grades K and 1, and be added, one grade per year until grade 3 or so. Class-size savings add up. In the long run, appropriate use of class-size results should not cost much extra, if anything. Examples of these cost savings exist in American schools. Differences between PTR and

class size are one way to establish smaller classes, contain costs, and not hire untrained educators.

Some critics want schools to be more "businesslike." When the economy was bad they blamed schools; when the economy is good they credit business. Before the economic "Asian Flu," they wanted to "fix" U. S. education by emulating education in foreign countries. Some critics of small classes for children use a "span of control" of 7:1 to 12:1 or so in their own businesses. If such group-to-supervisor sizes are useful with adults, who presumably can read and write, why is 25:1 or 30:1 right for teachers and students? Why do legislators use committees if large groups are better?

The Framingham Heart Study had fewer participants than did Project STAR. Its results changed the health habits of American adults. STAR, with 13 years of data starting with a randomized, longitudinal experimental base and including numerous other well-controlled class-size studies has the potential to focus policy debates so that young children can have education results similar to health benefits provided by the Framingham Study. The biggest impediment to using class-size results may be that kids don't vote. When discussing class sizes for the important learning tasks of America's very young who increasingly endure more poverty and social deterioration than do children in any other industrialized nation, critics might consider these questions:

- What research supports today's large classes?
- What education improvement relies on large classes?
- What expensive, exclusive school advertises large classes?
- Would the class-size debate change if people knew that small classes in early grades could save money?
- What other large-scale, public or private American enterprise besides schooling is housed in facilities that the General Accounting Office says will cost over \$120 billion just to meet building and safety codes?
- Why do we have and use better research in agriculture, for cows and pigs, than we do for our children?

Media support may help improve the condition of education, but constant media negativism and reporting of erroneous information hinder serious debate about education. Use of anecdotes, rather than solid research on education outcomes is the equivalent of saying "Grandmother lived to be 100 and smoked two packs a day" to refute research on smoking.

People whom I encounter advocating larger public-school classes send their children to private schools with small classes and their voucher-enriched savings to tax shelters. The enlightened public-policy and education leadership issue is how to get appropriate-sized classes to improve student learning in a democratic society.

If we let kids vote on it, would they vote for larger classes? What parents seek larger classes for their own child? Educators and parents must secure for all children the best education environments possible. A democracy requires no less.

NOTE: This material has been used with minor modifications in response to critics of education initiatives to improve the condition of children and the context of teaching. C. M. Achilles, 3/99.

Table: Academic Benefits of Small (1:15 - 1:20) Classes Summarized from Selected Studies.

Source/Subject*	Effect Size (ES) or Difference: Small Class Advantage				Notes or Comments
1. Glass & Smith (1978)*	.40 (Well-designed Studies)				No differences between reading & math (Reported in Cahen and Fillby, 1979, p. 493).
2. STAR (By Grades)	K	1 st	2 nd	3 rd	
a. Original	.21	.34	.26	.24	Range .13 to .40 with added benefit to minority. (Finn and Achilles, 1998)
b. Re-analysis ^a	.52	.45	.63	.63	Comparing classes of 13-15 vs. 23-27. (Boyd-Zaharias et al., 1995)
c. Class-level ^a 1)	—	.64	—	—	Finn & Achilles (1990, p. 566).
2)	—	17% gain for minority students		—	Finn & Achilles (1990, p. 566).
d. LBS (By Grades)	4 th	5 th	6 th	7 th	
	.13	.22	.21	.15	Reported in Finn and Achilles (1998) as taken from various LBS Reports
3. SAGE (Molnar, 1998)	12% test-score advantage for small classes, on average, over large classes in grade 1.				
4. Burke Co., NC	a. .37 ES for students matched as second graders.				Achilles, Harman, and Egelson (1995)
Grade 3	b. .56 ES for students matched as first graders.				Burke Co. Reports (1998)
	c. .65 ES for End-of-Grade tests, grade 3.				
5. Fairfax Co. VA (1997)	21% greater passing rate for low SES students, grade 2				Office of Program Evaluation. (1997)
6. Clovis, CA (1998)	17.9% increase in grade-1 reading				CUUSD Office of Assessment (1998)

* Data are for reading scores. Glass & Smith reported no difference in benefits between reading and math. STAR and LBS results between reading and math were similar. Burke Co. math was slightly better than reading. SAGE results were similar for reading and for math. Class size benefits for reading and math are consistently about the same magnitude. ^a In one re-analysis, .56, the average reading ES for STAR, is similar to the ES by classes presented by Finn & Achilles. Class-level ES is not usually estimated, but STAR was a study of class size. The Glass and Smith estimate of .40 is about mid-point of STAR original analysis which included the "out-of-range" classes (see Appendix A), and the re-analysis which corrected for "out-of-range" classes.

Table: Summary of Small-Class Benefits: Source, Study. (x= Yes, as included in the source named)

STUDY or SOURCE *

Observed In-Class Changes	Lind-bloom	Olson	Glass & Smith	Smith & Glass	Burke Co.	SAGE	SSS	FCPS	Cooper	STAR	Project Success	Teacher "Stories"
A. Increases												
• Time on Task		X	X	X	X	X	X	X	X	X	X	ALL ↑
• Hands-on	X	X		X	X	X	X	X		X	X	
• Indiv. Attn.	X	X	X	X	X	X	X	X	X	X	X	
• Diagnosis	X			X	X	X	X	X		X	X	
• Social Climate	X	X		X	X	X	X		X	X	X	
• Management	X	X	X	X	X		X	X	X	X	X	
• Participation	X	X	X	X	X	X	X	X		X	X	
• Academics	X		X		X		X	X	X	X	X	
• Parent Involv.					X					X	X	
• Early ID of Spec. Ed.										X	X	
• Morale	X	X		X	X		X		X	X	X	
• Space					X		X			X	X	
• Enrichment	X	X			X		X		X	X	X	
• Text/Methods	X	X			X		X	X	X	X	X	
• Group Work	X			X	X		X	X		X	X	
B. Decreases												
• Discipline	X	X		X	X		X		X	X	X	ALL ↓
• Retention										X		
• Spec. Ed.										X	X	
• Stress		X		X	X		X		X	X	X	

* SSS: Success Starts Small: Achilles et al. (1994); Kiser-Kling (1995). SAGE: Student Achievement Guarantee in Education, Molnar (1998). Project Success from Achilles et al. (1994). FCPS: Fairfax County (1997).

Paul Zavada
District Administrator
School District of Westfield

My name is Paul Zavada. I am the District Administrator for the School District of Westfield. Westfield is a school district of 1450 students which is located approximately 50 minutes south of here. Before I went into administration I was a Special Education Teacher. I bring a unique perspective to a problem that has the potential to be one of the most divisive in the field of education and a problem that I believe needs to be addressed. The problem is the funding of special education within the revenue caps.

I need not tell you about what is billed as landmark legislation in Iowa. Actually that is the second \$300,000.00 per student case that has gone through the court system and the second case where school districts lost. We all now know that the individual needs of special education children will be met regardless of the cost.

I am not here to tell you that the individual needs of special education youngsters should not be met. I am here to tell you that for every extra dollar spent on special education a dollar that is taken from regular education.

Let me discuss how my statement effects Westfield. We have a per pupil cost of \$ 6631. Like many districts our size we purchase CESA services for special ed. administration and for some staffing. We send some of our children to programs in other districts when we do not provide the service. As an example we sent 3 children to Wild Rose. We pay \$12,482 per child. Thus, we could be educating 2 regular education youngsters for the price we are paying to educate one special ed. youngster.

The situation I mentioned covers average special ed. costs. Let's look at a situation that Westfield is faced with next year. We have a youngster coming in who has many needs. The estimated cost for that one youngster is estimated at \$42,000 per year. That \$42,000 is going to have to come within the revenue caps. \$42,000 would hire a reading teacher that could benefit many youngsters. \$42,000 could be used to reduce class size.

Revenue cap relief is needed for special education students. Special Ed. is the largest mandate that is under funded. Relief has to come from some sector. State funding or a local cap exemption is needed to fund all mandated special ed. programs.

**Unified School District
of Antigo :**

**District Data for Presentation to Joint
Committee on Finance;**

**University of Wisconsin - Stevens Point
April 13, 1999**

**Lance C. Alwin
District Administrator**

Unified School District of Antigo

Lance C. Alwin
District Administrator

Bonnie Dana
Asst. District Administrator

Larry A. Nelson
Dir. of Student Services

ADMINISTRATIVE OFFICE
120 S DORR STREET, ANTIGO, WI 54409-1220
PHONE: 715-627-4355 FAX: 715-623-3279

Mary Jo Filbrandt
Dir. of Business Services

Jeffrey Gress
Dir. of Human Resources

Joseph Schroeder
Dir. of Building & Grounds

Resolution to Include Wisconsin Rural Challenge Initiative in the 1999-2000 State Budget

Whereas, the Unified School District of Antigo believes it is important to go on record as taking a position on legislation affecting our School District; and

Whereas, our State has long been recognized as a progressive leader in policymaking which enhances increased capacity and self-sufficiency at the local community level; and

Whereas, our District has assumed our rightful democratic responsibility and duty to increase the level of educational productivity with our finite community resources; and

Whereas, we endeavor to sustain a universal and on-going level of educational opportunity within our rural community that benefits all members; and

Whereas, we bear the public trust to maintain a rural community way of life that is a legacy of our forefathers and serves as cornerstone of our community's intellectual and moral purposes; and

Whereas, "from little acorns do mighty oak trees grow",

Now Therefore, Be Resolved that the Unified School District of Antigo Board of Education, on behalf of its educational community members and our shared dreams of "policies premised upon potentiality", calls upon the honorable members of the Joint Finance Committee, recipients of being able to see further on down the road because of those who have come before, to include in the 1999-2000 budget, and support, the onetime funding required to enact the Wisconsin Rural Challenge initiative.

Approved by the Unified School District of Antigo Board of Education on
April 12, 1999.

Signed Linda Szitta
Ms. Linda Szitta,
Board President

Unified School District of Antigo

Lance C. Alwin
District Administrator

Bonnie Dana
Asst. District Administrator

Larry A. Nelson
Dir. of Student Services

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Joseph Schroeder
Dir. of Building & Grounds

Resolution to Retain Declining Enrollment Exemption as Part of the Revenue Limit Formula

Whereas, the Unified School District of Antigo believes that it is important to go on record as taking a position on the legislation affecting our School District; and

Whereas, the State of Wisconsin recognized the need for a declining enrollment exemption in calculating the 1998-99 revenue limit, and

Whereas, the declining enrollment exemption proved beneficial in allowing our District to properly address the impact of declining enrollment, and

Whereas, the declining enrollment exemption is due to expire at the end of the 1998-99 year, and

Whereas, the elimination of the declining enrollment exemption would cause an undue financial burden on our District when compounded with the level of low funding our District was engaged in at the time of the implementation of the revenue caps, and

Whereas, elimination of the declining enrollment exemption will significantly undermine our efforts to create improved capacity and educational productivity presently being developed within our educational system,

Now Therefore, Be Resolved that the Unified School District of Antigo Board of Education, on behalf of its educational community members, calls upon the honorable members of the Joint Finance Committee to support the following consideration :

Support the maintaining of the declining enrollment exemption as part of the revenue limit formula. Furthermore, consider legislation that facilitates local school districts' efforts to seize leadership in pursuing the common educational good of our communities by improving local capacity and avenues of enhanced productivity.

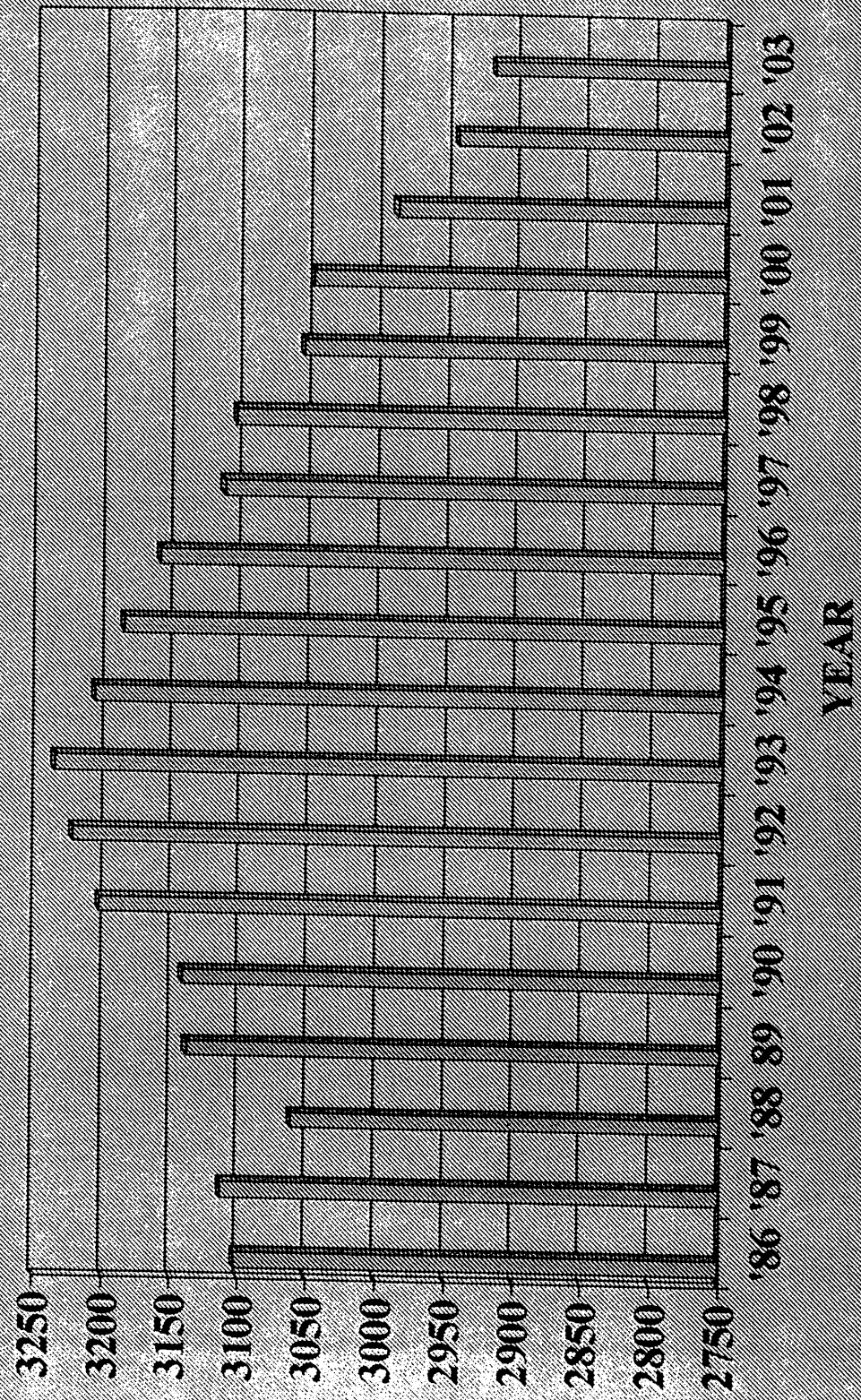
Approved by the Unified School District of Antigo Board of Education on

April 12, 1999.

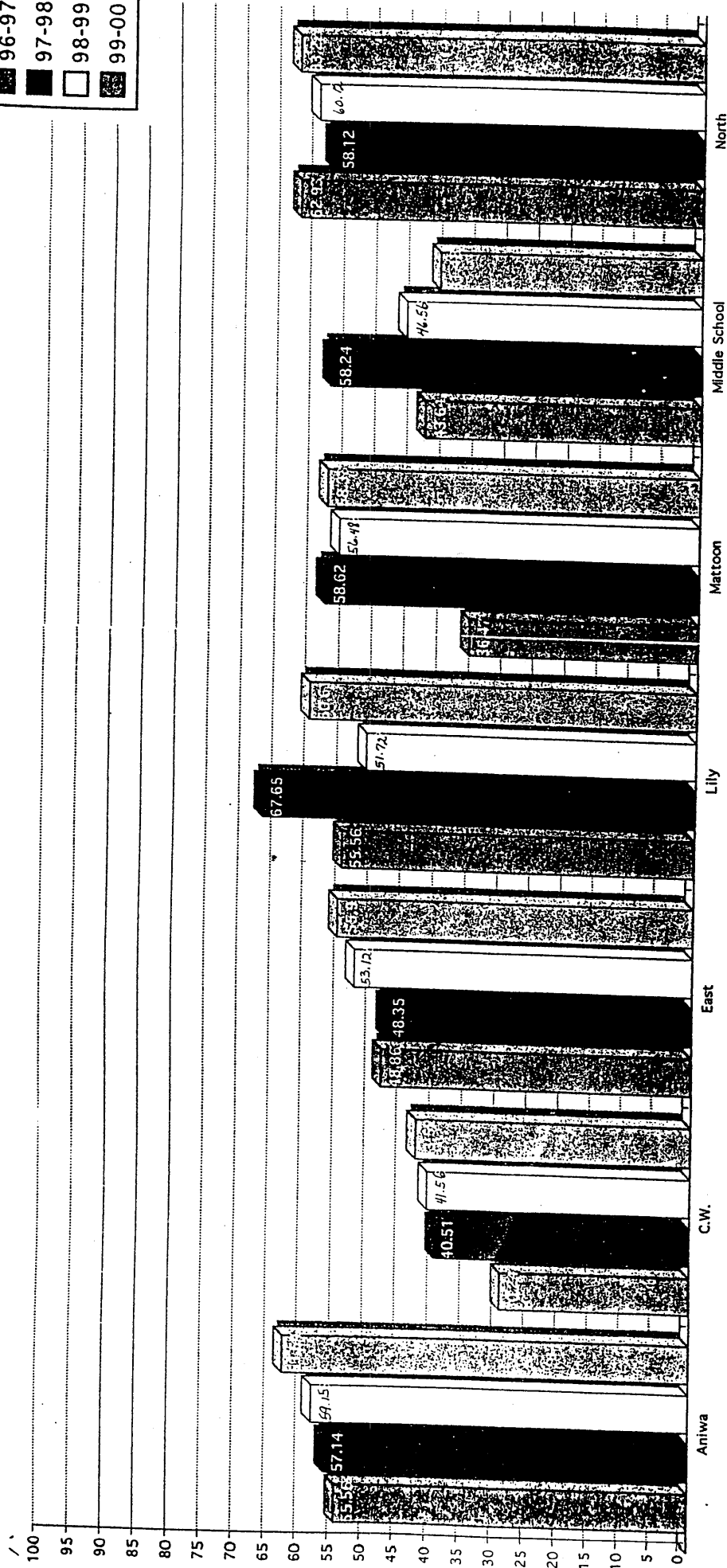
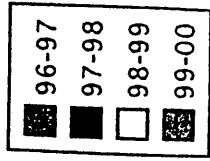
Signed

Linda Szitta
Ms. Linda Szitta,
Board President

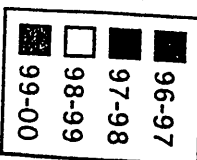
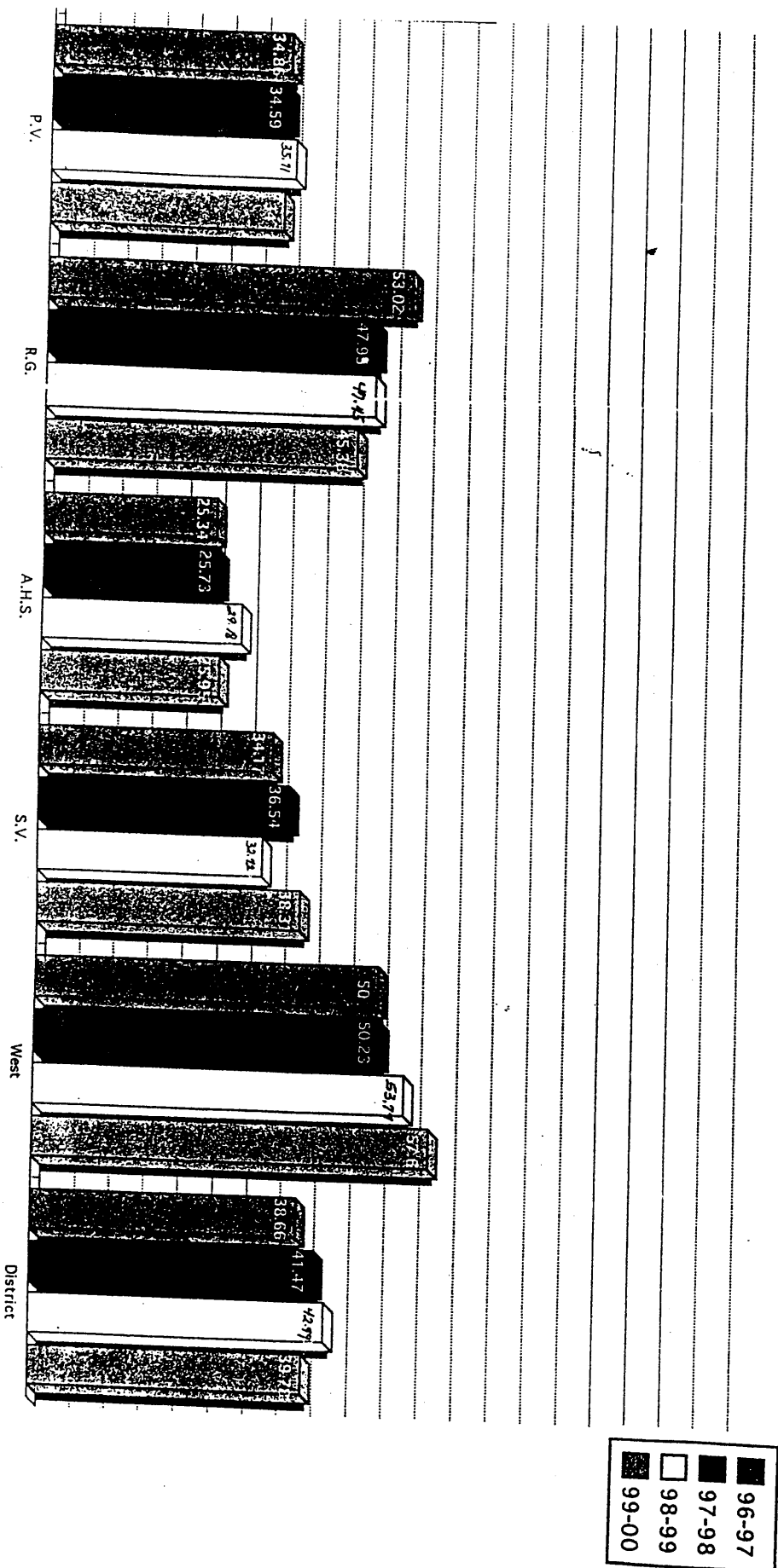
ENROLLMENT



LOW INCOME (FREE AND REDUCED LUNCH PERCENTAGES)
BY ATTENDANCE AREA WITHOUT PAROCHIAL STUDENTS



LOW INCOME (FREE AND REDUCED LUNCH PERCENTAGES)
 BY ATTENDANCE AREA WITHOUT PAROCHIAL STUDENTS



10-YEAR ENROLLMENT PROJECTION

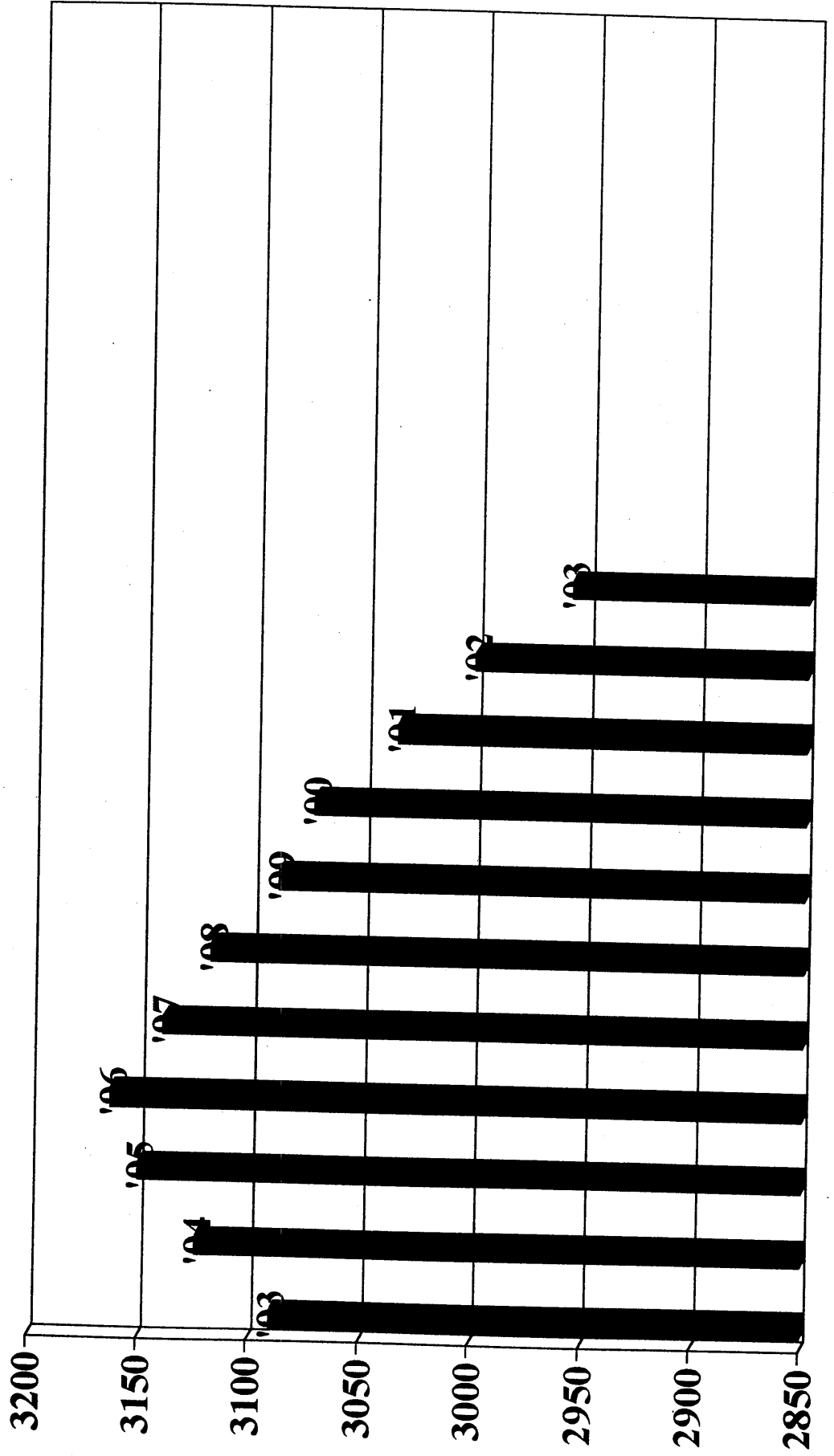
	1999-2000	2000-1	2001-2	2002-3	2003-4	2004-5	2005-6	2006-7	2007-8	2008-9
Kinderg.	189	215	176	215	184	200	200	200	200	200
1	216	189	215	176	215	184	200	200	200	200
2	212	216	189	215	176	215	184	200	200	200
3	189	212	216	189	215	176	215	184	200	200
4	196	189	212	216	189	215	176	215	184	200
5	213	196	189	212	216	189	215	176	215	184
6	199	213	196	189	212	216	189	215	176	215
7	234	199	213	196	189	212	216	189	215	176
8	262	234	199	213	196	189	212	216	189	215
9	259	313	285	256	262	249	240	277	260	260
10	316	259	313	285	256	262	249	240	277	260
11	287	316	259	313	285	256	262	249	240	277
12	273	287	316	259	313	285	256	262	249	240
TOTAL	3045	3038	2978	2934	2908	2848	2814	2823	2805	2827

Note: 1999-00 through 2003-04 was based on census data for k-enrollment.

	Parochial Enrollment	Added in at the 9th grade	1998-99 Data
Kinderg.	Total	All Saints	Peace
1	51	27	24
2	65	47	18
3	51	38	13
4	53	40	13
5	49	32	17
6	57	38	19
7	51	34	17
8	42	26	25
		22	20
			216
			212
			189
			196
			213
			199
			234
			262
			217
			1148
			3086

Note: Census data was utilized for births- 91% was the history data used to project public school attendance
A count of 200 students was used for data not yet available

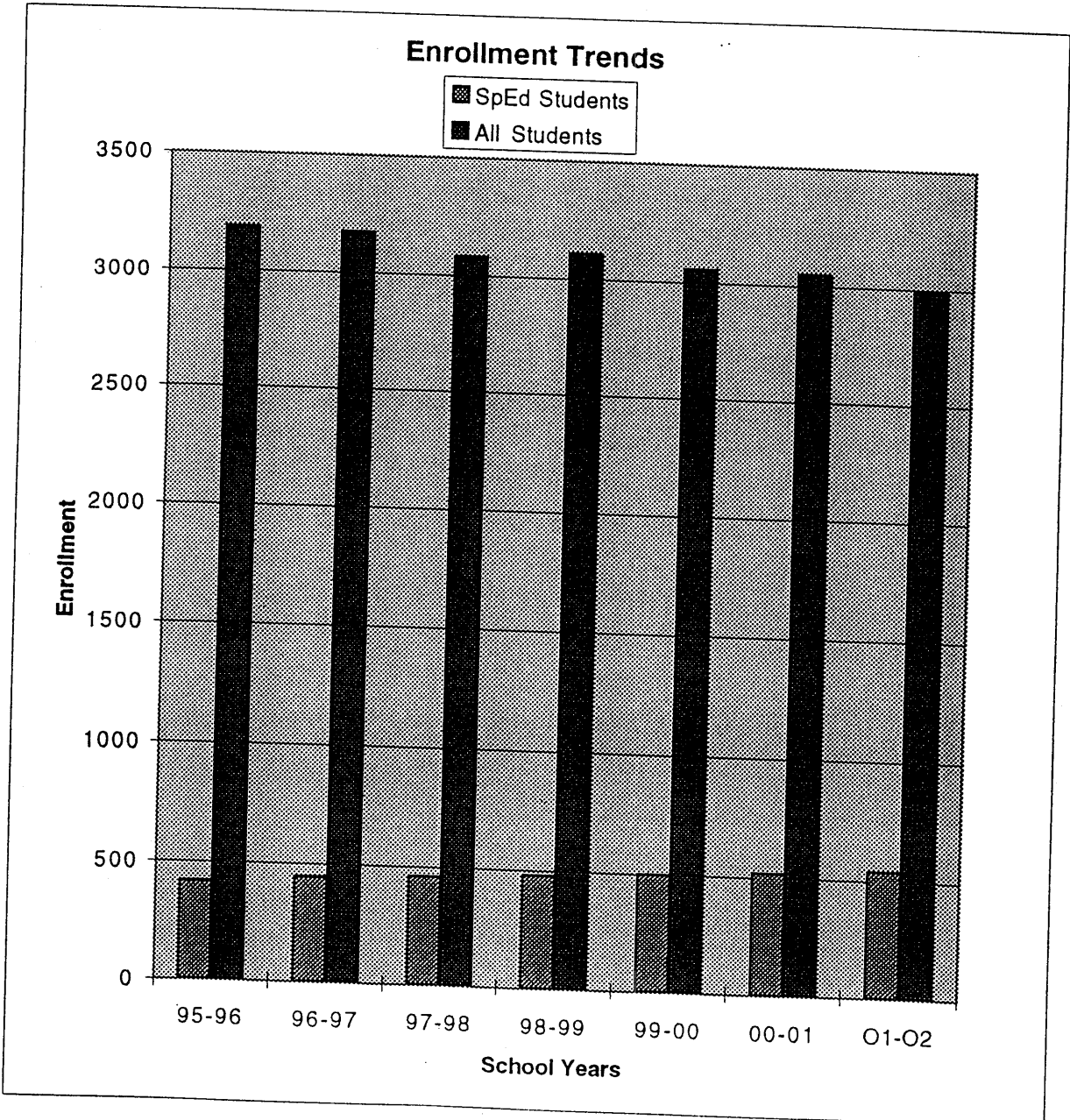
Revenue Cap 3 year average enrollment



Enrollment Trends - Special Education / All Students

Sch Year	95-96	96-97	97-98	98-99	99-00	00-01	01-02
SpEd Students	420	448	461	480	500	520	540
All Students	3184	3173	3081	3109	3057	3050	2990

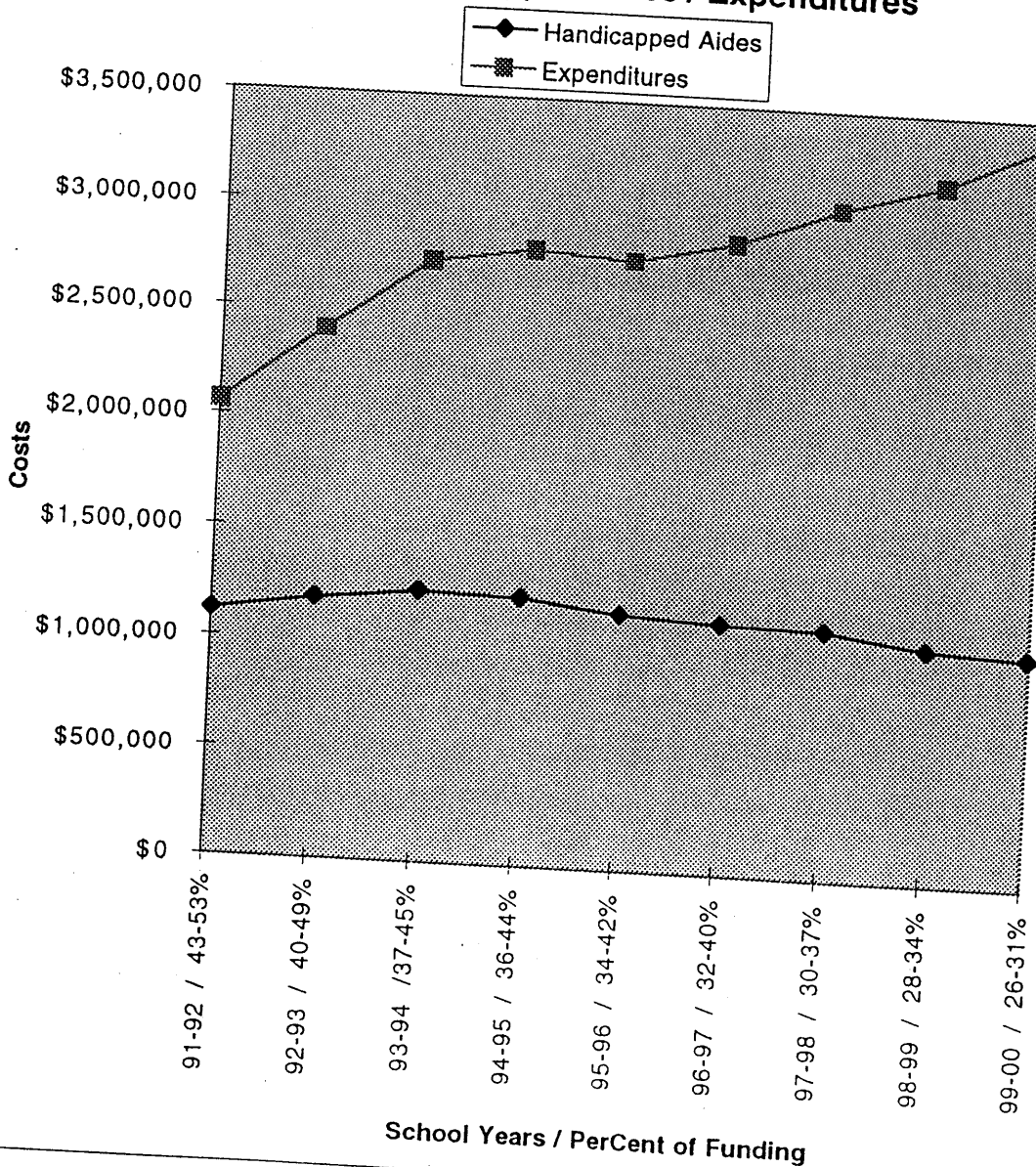
Estimate Estimate Estimate



Handicapped Aides / Expenditures

Sch Yrs / PerCent	Handicapped Aides	Expenditures
91-92 / 43-53%	\$1,117,921	\$2,059,910
92-93 / 40-49%	\$1,183,799	\$2,401,389
93-94 / 37-45%	\$1,230,580	\$2,733,700
94-95 / 36-44%	\$1,220,740	\$2,802,336
95-96 / 34-42%	\$1,166,005	\$2,770,754
96-97 / 32-40%	\$1,142,973	\$2,870,780
97-98 / 30-37%	\$1,134,317	\$3,052,575
98-99 / 28-34%	\$1,072,342	\$3,184,405
99-00 / 26-31%	\$1,050,345	\$3,396,753 (Estimated)

Handicapped Aides / Expenditures



ENROLLMENT - REVENUE CAP INCREASE

<u>ENROLLMENT</u>	<u>WITHOUT DECLINING ENROLLMENT PROVISION</u>	<u>WITH DECLINING ENROLLMENT PROVISION</u>
3,105	\$450,000	\$525,000
3,088	\$335,000	\$490,000

Salary Increase	~	\$600,000
Other Budgetary Increases		\$75,000
Handicap Aids <u>Decrease</u>		<u>\$50,000</u>
ADDITIONAL REVENUE NEEDED		\$725,000

RANGE DEFICIT	\$200,000	-	\$390,000
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Gearing Up for the Future

BY

Larry Kind

Some Antigo High School youth apprenticeship students won't just walk away with a high school diploma when they graduate. They will also earn a technical diploma from Northcentral Technical College along with substantial work experience.

Thanks to the cooperation of industry and Antigo High School, NTC began offering its machine tooling operator program in Antigo to students, as well as the public, last fall. The partnership that has been formed between local industry, NTC, and the high school is unique and grew out of the need to provide local industry with skilled machine tool operators.

Various meetings with area industry showed there was a need for machine tool operators in the area. NTC officials realized



Instructor Tony Bierdermann with adult student Robert Woldt.

Kind is the director of the Antigo campus of Northcentral Technical College.



High school senior Matt Spiegel working on a lathe.

that if the college was going to provide local industry with the skilled employees it needed, they would have to be trained in Antigo.

Another factor was Lance Alwin, superintendent of the Antigo School District, who really wanted advanced training for the students in the Manufacturing Youth Apprenticeship program.

"I am excited about the partnership developed between industry, the school district, and NTC," Alwin says. "It only makes sense that all of the educational partners work together for the benefit of our children



Instructor Tony Bierdemann inspecting a part with high school student Dann Lucht.

and our community."

All involved see the partnership between education and industry as a positive start to future opportunities.

Courses, such as machine shop, machine tool programming, precision inspections, and others are being taught at the technical college by Waukesha Bearing employees Tony Bierdemann and Joe Metko. The two instructors are being provided by Waukesha Bearing to teach as part of their regular work day. Other related classes are being offered by NTC and the high school.

For the high school student enrolled in the program, the typical day starts at 7 am with two hours of youth apprenticeship training at a local industry. They report to the technical college at 9:30 for their machine tool and other occupational classes. At noon some of the students return to the high school and others stay at NTC to complete their required course work.

Participants have the option of taking all their classes at NTC or completing some general education and related classes at the high school. Two students are taking all of their classes at NTC, and five others return to the high school at noon.

This fall, most of the students enrolled are from Antigo High School. The program is not only for high school students, however; thus far two adults have enrolled in the full program. In addition seven others who are already employed as machine tool operators have been taking selected classes from the program curriculum, such as machine tool programming and CAD, to upgrade their skills.

In the future, we expect to see students from other high schools as well as more adult students from the community. The technical college is also working with Waukesha Bearings to determine whether some employees might qualify for advanced standing in the program based on their work experiences. The partners are hopeful that this advanced credit will encourage entry-level operators to return to school to upgrade their skills.

The combination of high school students, adults and entry-level machine tool operators all enrolled in a class taught by two

Vote Now on the School Day!

This month's feature article discusses block scheduling and its effect on La Follette High School in Madison. Starting school later in the morning is another approach that some school reformers recommend—based on research showing that teenagers are not at their best early in the day. Do you believe that the idea of starting school later in the morning is a reasonable school reform? Or is it simply another example of schools' coddling youngsters who don't have the self-discipline to go to bed at a reasonable hour?

Your choices are:


1. I think that starting school later in the morning for high-schoolers should be explored as a reasonable approach to meeting the needs of teenagers.
2. Moving the school day back is a silly approach to improving student achievement. If teenagers went to sleep earlier at night they would be ready for school in the morning.

To vote, call our Voice Poll feedback line at **1-800-269-9383** (poll number 4705) or send an e-mail message to votenow@wasb.org. (Please indicate in your message whether you are a school board member, administrator, or other.) Be sure to vote by midnight April 5. We will report the results in the next issue of the *School News*.

WHAT GROUP OR PERSON AFFECTS SCHOOLS MOST?

The January Poll

And the winner is ... Gov. Thompson by a wide margin. Although we received only a few (21) responses to the January Vote Now readers' poll, a large majority of respondents said the governor has the most impact on public schools in Wisconsin (13). The runner up was local school boards (5), followed by the Legislature and WEAC. No one selected the Department of Public Instruction.



experienced and full-time machinists certainly makes for a one-of-a-kind class, Kind says.

And what does local industry think of the partnership?

"The cooperation between industry and the schools has been wonderful," says Carol Weiler of Waukesha Bearings, who plays an active role in the youth apprenticeship program. "It is helping us and other area businesses gain skilled operators as well as giving our current employees an opportunity to upgrade their skills."

Weiler looks forward to helping students expand their future opportunities, but also sees benefits for the entire community.

"All of us working together as a team is really a plus for the Antigo area," she says. "Not only will we have good-quality employees for the area, but we are developing a good cooperative working arrangement."

Along with Waukesha Bearings, other area businesses have played a significant role in making the idea of the machine tool operator program in Antigo a reality. Anron Corporation has donated inspection equipment and assisted in renovating other equipment. Merit Gear Corporation is also active in the program, both in an advisory role and in providing staff time to help keep things running smoothly. ☺

School Districts With Declining/Stable Enrollment

(School Districts With An "*" Have A Three Year Average Decline)

Adams-Friendship Area School District
Albany School District
* Algoma School District
* Almond-Bancroft School District
* Amery School District
* Antigo School District
* Arcadia School District
Argyle School District
Arrowhead UHS School District
Ashland School District
Ashwaubenon School District
Athens School District
Auburndale School District
Augusta School District
* Baldwin-Woodville Area School District
Bangor School District
* Barron Area School District
Beaver Dam School District
* Beecher-Dunbar-Pembine School District
* Beloit
Beloit Turner School District
* Benton School District
Berlin School District
* Big Foot UHS
* Birchwood School District
* Black Hawk School District
Black River Falls School District
* Blair-Taylor School District
* Bloomer School District
* Boscobel Area School District
* Bowler School District
Brown Deer School District
* Bruce School District
* Butternut School District
* Cadott Community School District
* Cambria-Friesland School District
Cambridge School District
Cameron School District
* Campbellsport School District
* Cashton School District
* Cassville School District

Cedar Grove-Belgium School District
Chetek School District
Chippewa Falls Area School District
Clayton School District
Clear Lake School District
* Clinton Community School District
Clintonville School District
* Cochrane-Fountain City School District
* Colby School District
* Coleman School District
* Crivitz School District
* Cuba City School District
Darlington Community School District
De Forest Area School District
De Soto Area School District
* Dodge Land School District
* Dover #1 School District
Drummond Area School District
* Durand School District
East Troy Community School District
* Eau Claire Area School District
Edgar School District
Elk Mound Area School District
* Elkhart Lake-Glenbeulah School District
Ellsworth Community School District
* Elmwood School District
* Elroy-Kendall-Wilton School District
Erin #2 School District
Fall Creek School District
* Fennimore Community School District
* Flambeau School District
Florence School District
* Fond du Lac School District
* Fort Atkinson School District
Fox Point J2 School District
Franklin School District
* Frederic School District
Friess Lake School District
* Gibraltar School District
* Gillette School District
* Gilman School District
* Glendale-River Hills School District
Glenwood City School District
* Glidden School District
* Goodman-Armstrong School District
Grafton School District

* Granton Area School District
Grantsburg School District
Green Bay Area School District
* Green Lake School District
* Greendale School District
* Greenwood School District
* Hartford Jt. #1 School District
* Hayward Community School District
* Herman #22 School District
* Highland School District
* Hilbert School District
Horicon School District
Howards Grove School District
* Hurley School District
* Hustisford School District
* Independence School District
Iowa-Grant School District
Ithaca School District
* Jefferson School District
Kaukauna Area School District
Kewaskum School District
* Kewaunee School District
Kiel Area School District
* La Crosse School District
La Farge School District
* Ladysmith-Hawkins School District
* La Farge School District
Lake Country School District
* Lake Geneva-Genoa UHS
* Lake Holcombe School District
* Lancaster Community School District
* Laona School District
* Lena School District
Linn J4 School District
* Linn J6 School District
* Loyal School District
* Luck School District
Madison Metropolitan School District
Manawa School District
Maple School District
Maple Dale-Indian Hill School District
* Marathon City School District
* Marinette School District
* Marion School District
* Markesan School District
* Marshfield School District

* Mauston School District
McFarland School District
* Medford Area School District
* Mellen School District
* Melrose-Mindoro School District
Menominee Indian School District
* Menomonie Area School District
Mequon-Thiensville School District
* Mercer School District
Milwaukee School District
Mineral Point School District
* Minocqua J1 School District
* Montello School District
* Monticello School District
Mosinee School District
* Mukwonago School District
* Neosho J3 School District
* New Auburn School District
New Berlin School District
* New Holstein School District
* New Lisbon School District
New London School District
New Richmond School District
* Niagara School District
Norris School District
* North Crawford School District
North Fond du Lac School District
* Oakfield School District
* Oconomowoc Area School District
Oconto School District
Onalaska School District
* Oostburg School District
Oregon School District
Osseo-Fairchild School District
* Owen-Withee School District
* Palmyra-Eagle Area School District
Pardeeville Area School District
* Paris J1 School District
* Park Falls School District
* Parkview School District
* Pecatonica Area School District
* Pepin Area School District
* Peshtigo School District
* Phelps School District
* Phillips School District
* Pittsville School District

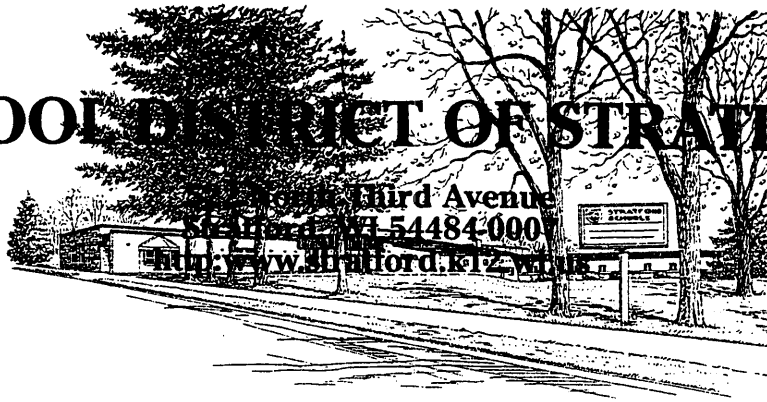
* Platteville School District
* Plum City School District
* Plymouth School District
* Port Edwards School District
Port Washington-Saukville School District
* Potosi School District
* Prairie Farm School District
* Prentice School District
Prescott School District
Racine School District
* Randolph School District
* Random Lake School District
Raymond #14 School District
Reedsburg School District
* Reedsville School District
Rhineland School District
* Rib Lake School District
* Rice Lake Area School District
Richfield J1 School District
* Richland School District
* Ripon School District
* River Ridge School District
* Riverdale School District
* Rosendale-Brandon School District
* Rosholt School District
Rubicon J6 School District
* Saint Croix Falls School District
* Saint Francis School District
* Salem J2 School District
* Seneca School District
* Sevastopol School District
* Sharon J11 School District
Sheboygan Falls School District
* Shell Lake School District
Shiocton School District
Shorewood School District
* Shullsburg School District
Silver Lake J1 School District
* Solon Springs School District
South Milwaukee School District
* South Shore School District
* Southern Door School District
* Southwestern Wisconsin School District
Sparta Area School District
* Spencer School District
Spooner School District

* Spring Valley School District
* Stanley-Boyd Area School District
Stevens Point Area School District
* Stockbridge School District
Stone Bank School District
* Stratford School District
* Sturgeon Bay School District
* Superior School District
Suring School District
Thorp School District
* Tigerton School District
Tomah School District
* Tomorrow River School District
* Twin Lakes #4 School District
Two Rivers School District
* Unity School District
* Viroqua Area School District
* Washburn School District
Washington-Caldwell School District
* Waukesha School District
Waupaca School District
* Waupun School District
Wausau School District
Wausaukee School District
* Wautoma Area School District
Wauwatosa School District
* Wauzeka-Steuben School District
Webster School District
* West Allis-West Milwaukee School District
* West Bend School District
Westby Area School District
Westfield School District
* Weston School District
* Weyauwega-Fremont School District
* Weyerhaeuser Area School District
White Lake School District
Whitehall School District
Whitewater School District
Whitnall School District
Williams Bay School District
* Wilmot Grade School District
* Winter School District
Wisconsin Heights School District
Wittenberg-Birnamwood School District
* Wonewoc-Union Center School District
* Yorkville J2 School District

SCHOOL DISTRICT OF STRATFORD

BOARD OF EDUCATION

Frank Nikolai, President
Ellen Leick, Vice-President
Marty Kramer, Clerk
John Zuelke, Treasurer
Darlene Schmitt, Member



Thomas J. Tuttle
District Administrator
Bob Thom
Business Manager
715-687-3130
715-687-4074 Fax
Paul Rozak
Jr. - Sr. High Principal
715-687-4311
715-687-4652 + Fax
Barbara Gaulke
Grade School Principal
715-687-3535

Resolution to alter the proposed school funding bill by eliminating the 75% cushion on the three year enrollment average and then freezing the 1998-99 three year enrollment of its three straight years of declining enrollment districts

Whereas, the Stratford School Board believes the proposed legislation is unfair to the declining enrollment districts, especially the districts that have had three years of declining enrollment. Please see attachments.

Whereas, the Stratford School Board has laid off four teachers because of the proposed school funding legislation. Lower elementary class size will be greatly affected where those classes will be 26 in size. Previously, those class sizes were 17.

Whereas, the Stratford School Board is requesting the Wisconsin Legislature and Governor Thompson to freeze the 1998-99 three year enrollment of its three straight years of declining enrollment districts.

Approved by the Stratford School Board of Education on April 12, 1999.

Signed Francis Nikolai
School Board President

SCHOOL DISTRICT OF STRATFORD REVENUE AND EXPENSE PROJECTIONS

Prepared by Business Manager Bob Thom as of 2-24-99

No 75% exemption for declining enrollment.

School Year	Projected Enrollment	3 Year Average	Revenue Cap Per Pupil	Total Revenue Cap	New Cap Dollars	Projected Expenses(3.8%)	Revenue Outside Cap	Revenue Shortfall
1998-99	762	785	6,361	5,044,275	153,000			
1999-00	747	762	6,570	5,008,530	(35,745)	5,399,740	352,000	(39,210)
2000-01	716	742	6,779	5,027,758	19,228	5,604,930	352,000	(225,172)
2001-02	693	719	6,988	5,022,043	(5,716)	5,817,917	262,000	(533,875)
2002-03	678	696	7,197	5,006,713	(15,330)	6,038,998	262,000	(770,285)
2003-04	685	685	7,406	5,075,579	68,866	6,268,480	262,000	(930,902)
2004-05	674	679	7,615	5,170,585	95,006	6,506,683	262,000	(1,074,098)
					279,310			(3,573,541)

With 75% exemption for declining enrollment.

School Year	Projected Enrollment	3 Year Average	Revenue Cap Per Pupil	Total Revenue Cap	New Cap Dollars	Projected Expenses(3.8%)	Revenue Outside Cap	Revenue Shortfall
1998-99	762	785	6,361	5,044,275	153,000			
1999-00	747	762	6,570	5,120,220	75,945	5,399,740	352,000	72,480
2000-01	716	742	6,779	5,129,443	9,223	5,604,930	352,000	(123,487)
2001-02	693	719	6,988	5,140,839	11,395	5,817,917	262,000	(415,079)
2002-03	678	696	7,197	5,129,062	(11,777)	6,038,998	262,000	(647,936)
2003-04	685	685	7,406	5,134,827	5,765	6,268,480	262,000	(871,654)
2004-05	674	679	7,615	5,208,660	73,833	6,506,683	262,000	(1,036,023)
					317,385			(3,021,698)

Freeze 1998-99 three year enrollment average.

School Year	Projected Enrollment	3 Year Average	Revenue Cap Per Pupil	Total Revenue Cap	New Cap Dollars	Projected Expenses(3.8%)	Revenue Outside Cap	Revenue Shortfall
1998-99	762	785	6,361	5,044,275	153,000			
1999-00	747	785	6,570	5,157,450	113,175	5,399,740	352,000	109,710
2000-01	716	785	6,779	5,321,515	164,065	5,604,930	352,000	68,585
2001-02	693	785	6,988	5,485,580	164,065	5,817,917	262,000	(70,337)
2002-03	678	785	7,197	5,649,645	164,065	6,038,998	262,000	(127,353)
2003-04	685	785	7,406	5,813,710	164,065	6,268,480	262,000	(192,770)
2004-05	674	785	7,615	5,977,775	164,065	6,506,683	262,000	(266,908)
					1,086,500			(479,074)

IS THIS FAIR?

EXAMPLES OF ENROLLMENT TRENDS

ENROLLMENT DECLINING 20 PER YEAR

School Year	Projected Enrollment	Three Year Average	Revenue Cap Per Pupil	75% Declining		New Cap Dollars	Projected Expenses(3.0%)	Revenue Shortfall
				Enrollment (Cushion)	Total Revenue Cap			
1996-97	800	800	6,500	-	5,200,000	-	5,200,000	-
1997-98	780	793	6,709	35,222	5,355,459	155,459	5,356,000	(541)
1998-99	760	780	6,918	67,451	5,463,491	108,031	5,559,528	(96,038)
1999-00	740	760	7,127	106,905	5,523,425	59,935	5,770,790	(247,365)
2000-01	720	740	7,336	110,040	5,538,680	15,255	5,990,080	(451,400)
2001-02	700	720	7,545	113,175	5,545,575	6,895	6,217,703	(672,128)
2002-03	680	700	7,754	116,310	5,544,110	(1,465)	6,453,976	(909,866)
						338,680		(2,377,337)

NO DECLINE IN ENROLLMENT

School Year	Projected Enrollment	Three Year Average	Revenue Cap Per Pupil	75% Declining		New Cap Dollars	Projected Expenses(3.0%)	Revenue Shortfall
				Enrollment (Cushion)	Total Revenue Cap			
1996-97	800	800	6,500	-	5,200,000	-	5,200,000	-
1997-98	800	800	6,709	-	5,367,200	167,200	5,356,000	11,200
1998-99	800	800	6,918	-	5,534,400	167,200	5,559,528	(25,128)
1999-00	800	800	7,127	-	5,701,600	167,200	5,770,790	(69,190)
2000-01	800	800	7,336	-	5,868,800	167,200	5,990,080	(121,280)
2001-02	800	800	7,545	-	6,036,000	167,200	6,217,703	(181,703)
2002-03	800	800	7,754	-	6,203,200	167,200	6,453,976	(250,776)
						668,800		(636,877)

ENROLLMENT INCREASES 20 PER YEAR

School Year	Projected Enrollment	Three Year Average	Revenue Cap Per Pupil	75% Declining		New Cap Dollars	Projected Expenses(3.0%)	Revenue Increase
				Enrollment (Cushion)	Total Revenue Cap			
1996-97	800	800	6,500	-	5,200,000	-	5,200,000	-
1997-98	820	807	6,709	-	5,411,927	211,927	5,356,000	55,927
1998-99	840	820	6,918	-	5,672,760	260,833	5,559,528	113,232
1999-00	860	840	7,127	-	5,986,680	313,920	5,770,790	215,890
2000-01	880	860	7,336	-	6,308,960	322,280	5,990,080	318,880
2001-02	900	880	7,545	-	6,639,600	330,640	6,217,703	421,897
2002-03	920	900	7,754	-	6,978,600	339,000	6,453,976	524,624
						1,108,960		1,650,450

April 13, 1999

To: the Joint Finance Committee

From: Paul Shogren- Stevens Point- teacher

This record is submitted with more general written testimony of the effects of the revenue caps on public education in the social studies classrooms at Stevens Point Area Senior High.

1. 19 students signed up to take the AP Comparative Government course at SPASH next year. But because of new enrollment minimums are going from 18 to 20 in our district, this course will not be offered. As our best and brightest are trying enrich their course loads to get into the best schools, we won't be able to offer them this opportunity.
2. When EEN students were mainstreamed into regular education courses, Stevens Point fought hard to keep enrollment numbers between 24-25 students per class. Classes will now have to be closer to 28-30 students. How much individualized instruction can be given in that situation? This is exacerbated even more with the tight money supply in the Special Ed. Department that sees their case loads increasing as well.
3. AP US History used to be around 25-27 students per class. Sections next year will be closer to 30 and above. In a writing-emphasis, such as this course, this becomes very difficult to manage.
4. We've lost the ability to replace textbooks that are lost or damaged. Moneys recouped from lost books are deferred into the general operating fund. Text purchase rotation was once every 7 years, and is now closer to 14 years per department. AP courses use college level texts which are cycled out every six semesters. My current AP text was purchased in 1993 and has been used for eleven semesters.
5. It is increasingly more difficult to maintain quality desks, tables, and chairs. As these items wear out, there's insufficient funds to replace them on a regular basis. The quality of the desks to begin with oftentimes makes them difficult to repair.
6. Trying to abide by the new state standards are going to erode/degrade course offerings as we will be forced to remediate students to pass the test. Along these lines, it is becoming increasingly an exercise in futility to adequately address all of the social studies standards without gutting our existing program. I have not seen any indication that passing such state requirements will enhance a student's ability to get into the university.tech college of his/her choice.
7. As opportunities for student learning come along in the form of special events, field trips to important workshops, and new equipment, the existing budgets cannot accommodate any change without cutting something else. This is difficult to do as an even-up exchange of priorities. More often, we have turned to user fees to allow some students to get the "extras." This only enhances the elitist notion that only those who can afford a better education deserve one. We do try to accommodate those who cannot afford certain opportunities, but one has to

apply/request for such a discount which puts students in the position (that to some) appears to be begging.

8. As districts become increasingly cannibalistic to make ends meet, one has to wonder how much longer we can function this way and still get the job done to the level we're expected to.

WISCONSIN RIVER VALLEY ACADEMY

The River of Opportunity
Working to Meet the State Standards!

June 14 - 18, 1999

**Stevens Point Area
Senior High School (SPASH)**

Stevens Point, WI



Wisconsin River Valley Academy

"Your River of Opportunity"

GENERAL INFORMATION



Academy

Purpose

To provide educators with the staff development necessary to ensure that Wisconsin children can meet the academic standards at the proficient and advanced levels.

The Wisconsin River Valley Academy (WRVA - pronounced "riva") is a one week institute designed to help K-12 instructors improve their teaching skills and their student's achievement in Mathematics, Science, and Technology (Technology Education and Educational Technology). The Academy is based on a "hands-on, minds-on" approach to these three areas. Veteran teachers instruct other teachers about integration of subjects and concepts, cooperative learning, critical and logical thinking, and new forms of assessment. This is done with the latest technological equipment and teaching curriculum by experienced teachers that have successfully implemented these approaches and techniques with their students.

A very important aspect of the Academy is the Business Partnership Day which is designated for interaction with business and industries in the local area. The participants will start the morning touring a local business or industry. During lunch, representatives from the businesses and industries will join the participants for an informal discussion. At 1 p.m., the participants and representatives will be divided into small groups for round table dialogue on how to build partnerships with each other, and establish common goals on developing an adaptable, skilled labor force of good citizens.

The Academy is modeled after the successful CRAY ACADEMY in Chippewa Falls and is part of the WASDI initiative which is expanding academies to eleven other locations throughout the state. The Academy is a cooperative effort of local school districts, teachers, The University of Wisconsin - Stevens Point, Mid-State Technical College, local businesses, and CESAs 5 & 9.

It is the hope of the Wisconsin River Valley Academy to provide a "River of Opportunity" for teachers which will impact the learning opportunities for students in their districts.

Expenses

Each educator will be assessed a \$300 registration fee. This fee covers the cost of workshop materials, DPI clock hours, tours, daily continental breakfasts, lunches, breaks, and a WRVA t-shirt. Registration and application fees may be paid with district Eisenhower funds or, in many districts, School-to-Work funds. Carl Perkins funds may be available

for high school teachers. Some districts also use Gifted and Talented funds or Special Education funds. Policies vary from district to district and/or grant to grant. Please reserve these funds with your school immediately.

Wisconsin River Valley Academy provides equal opportunities in employment and programming.

Scholarships

A few scholarships may be available for teachers unable to receive district funding for registration. Scholarship application, if needed, is available by calling (715) 345-5569.

Credit Options

One graduate credit is available through UW-Stevens Point for attendance at the WRVA for \$55. For questions regarding UWSP credit, please contact Julie Hellweg at 1-800-898-9472 or in Stevens Point at (715) 346-3730.

A second UW-Stevens Point graduate credit may be earned by completing a follow-up project under the direction of Dr. Perry Cook or Dr. Jay Price. The project will involve some form of action research including the teaching of concepts learned in the WRVA workshop, assessment of subsequent student learning, and a reflection paper. It will require several e-mail correspondences and may include an actual site visit. The cost for the second graduate credit will be at full University tuition of \$182.50 (Fees subject to change by the Board of Regents.) *Mandatory attendance is required for full credit.*

One graduate credit is available through Viterbo for attendance at the WRVA for \$65. For questions regarding Viterbo credit, please contact Christine Valenti at 1-800-234-8721.

Schedule: 8 a.m. - 4 p.m. daily

Monday: Keynote and Workshop Sessions
Tuesday: Workshop Sessions
Wednesday: Business/Industry Tours, Business Discussions
Thursday: Workshop Sessions
Friday: Workshop Sessions

Administration

Dave Rasmussen,
Academy Director
715-345-5569

Don Stevens,
Fiscal Director
608-742-8814 Ext. 222

Program Assistance,
Lori Omernik
Lorraine Jacobs

WRVA Office
2400 Main Street
Stevens Point, WI 54481
Phone: 715-345-5569
Fax: 715-345-7340

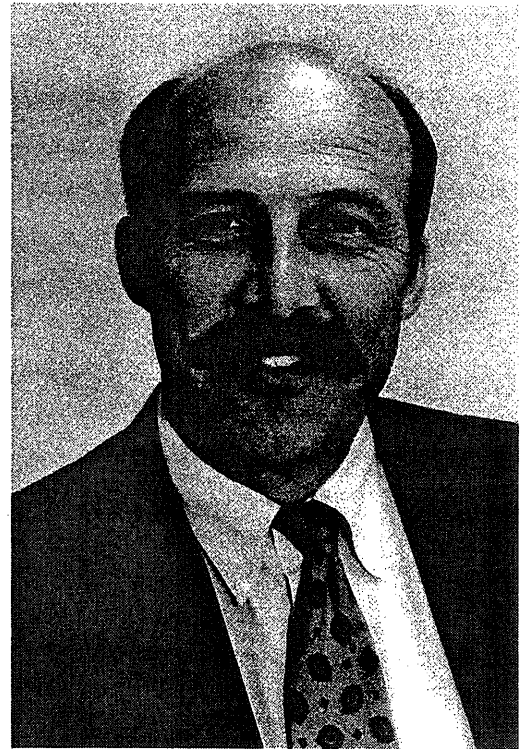
SUMMER WORKSHOP KEYNOTE

Monday, June 14, 1999

Steven B. Dold

Strengthening Professional Practice

Steve has spent almost 25 years in the field of education, as a teacher of social studies at both the middle and high school levels, as a teacher and administrator of adult level special education programs, and in college-level program administration.



After serving as the education analyst in the governor's budget office, he came to the Department of Public Instruction as the Director of the Bureau for Policy and Budget. He next served as an Assistant State Superintendent administering the department's educational accountability and policy division.

Currently, he is the Deputy State Superintendent of Public Instruction and the exceedingly proud father of three wonderful children.


Steve will discuss the challenges and opportunities educators face in implementing standards and assessment-based reforms, the importance of meaningful professional development, and the status of related state budget initiatives.


SUMMER WORKSHOP DESCRIPTIONS


Math 901 **AIMS-Math Connections** *Patterns, Problem Solving, and Practice* **Grades K-2** **To Be Announced**


Students will find the AIMS approach to the study of numbers refreshing and interesting. In geometry, the approach differs from that in common use. Studies begin with solids, the geometric objects most familiar to students. Piaget would love this! Solids embody the characteristics of volume, surface area, length of edges, angles, etc. which are abstractions. By studying solids first, students are provided a context for such abstractions that imparts meaning.

The connection between mathematics and science becomes more meaningful within the AIMS curriculum in which combinations of measurements are studied for their production of new units of measurement. For example, rate multiplied by time produces a new measure: distance. Mass divided by volume produces the measure of density. Surface area divided by volume gives rise to scaling, a fundamental factor for determining how often an animal eats, where it can live, how rapidly its heart beats, and how long it can be expected to live!

 **Number Sense and Operations:** Number sense; counting; numeration; number relationships; place value; patterned arrangements; effect of operations on numbers; basic addition facts; fair shares; comparisons; mental math.

 **Geometry and Spatial Sense:** Observe, match, contrast, identify, describe solids; collect and use objects in a child's world, investigate objects' properties and relationships; build, draw, put together, take apart, and visualize solid figures; develop understanding of length, mass, area, capacity, volume, temperature, time, and money through direct and indirect comparisons and understanding of measurement tools that will be constructed.

 **Dealing with Data and Chance:** Gathering data by counting; comparing, organizing, and interpreting data; telling a story about graphs; drawing conclusions and looking at the shape of data.

 **Patterns and Functions:** Patterns and functions will be integrated in all activities and will serve as the principal means for studying all of the content.

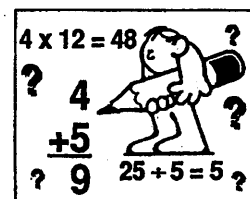
Math 902 **Building Basics With Better Understanding** **Grades K-2** **Maggie Paoletti**

This workshop is designed to emphasize the use of manipulatives and problem solving in a constructivist classroom. Participants will review CGT (Cognitively Guided Instruction), how best to manage the classroom using CGI, manipulatives, and math center activities.

Activities will include number sense and numeration, probability, geometry, communication, and guided practice of CGI problem types.

Friday's work will include a make and take session to recreate materials for use in your own classroom.

Math 903 **Mathematics Their Way** **Grades K-2** **Chris Weinhold**



This workshop introduces mathematical topics through practical and meaningful activities which inspire thinking and curiosity in the learner. The emphasis of the workshop is to help the learner understand interrelated mathematical processes within the context of rich experiences rather than mastery of isolated skills.

Mathematics Their Way provides teachers with a variety of classroom methods and materials which allow children to develop and use mathematical concepts.


The program is one in which the teacher becomes a facilitator of knowledge rather than a dispenser of information. The teacher learns to trust that children have already assembled a considerable amount of useful knowledge on their own. The teacher helps to provide ways for children to organize this knowledge and bring it out in a systematic, logical, usable form.


The goal of this program is to teach children how to learn. Learning is limitless. Mathematics Their Way takes away the arbitrary and unrealistic boundaries that are placed around areas of learning through the traditional textbook approach.


Math 906
AIMS-Math Connections
Patterns, Problem Solving, and Practice
Grades 3-5
To Be Announced


Students will find the AIMS approach to the study of numbers refreshing and interesting. In geometry, the approach differs from that in common use. Studies begin with solids, the geometric objects most familiar to students. Piaget would love this! Solids embody the characteristics of volume, surface area, length of edges, angles, etc. which are abstractions. By studying solids first, students are provided a context for such abstractions that imparts meaning.

The connection between mathematics and science becomes more meaningful within the AIMS curriculum in which combinations of measurements are studied for their production of new units of measurement. For example, rate multiplied by time produces a new measure: distance. Mass divided by volume produces the measure of density. Surface area divided by volume gives rise to scaling, a fundamental factor for determining how often an animal eats, where it can live, how rapidly its heart beats, and how long it can be expected to live!

 **Number Sense and Operations:** Developing meaning for operations; intelligent, playful practice of basic facts/skills; alternate algorithms; place value; problem solving in mathematical microworlds; historical connections; literature correlation.

 **Geometry and Spatial Sense:** Sort and classify solids, observe properties; study shadows of 3-D objects, cut down solids into nets, construct solids from nets, make isometric drawings; study cubes, spheres, cylinders, cones, rectangular prisms, and pyramids; study measurable properties, use customary and non-customary units, build measuring tools, understand the approximate nature of measurement.

 **Dealing with Data and Chance:** Move from disorganization to organization; look at relationships; learn how to select and construct tables, charts, and graphs; learn how to interpret data.

 **Patterns and Functions:** Patterns and functions will be integrated in all activities, used to achieve mastery of basic skills, stimulate interest and understanding and serve as the principal means for studying all of the content.

Math 907
Meeting the Challenge of the State Math Standards
Grades 3-6
Elaine Hutchinson

The workshop is designed to give teachers experiences that focus on the goals of the Wisconsin Academic Standards.

Hands-on activities will relate the concepts of number operations and relations, geometry, measurement, probability, statistics, and algebraic relationships to the overarching goals of developing mathematical processes.

The workshop will be organized so that participants will work in group problem solving situations. The learning experiences for participants will model the framework for teaching described in both the National and State Standards.

Participants will be given exposure to activities and learning processes similar to those described in the State Standards. They will then be expected to use the experiences from the workshop to develop materials that can be used in their classrooms.

Math 908
Hot Numbers With Skillet
Grades 6-8
Lynn Scala



Don't be cooled off to math. It's time to warm up to "Hot Numbers" with Skillet. Participants will be led through classroom tested activities that model the Curriculum and Assessment NCTM Standards.

Participants will use an investigative approach to the following math strands: geometry, problem solving, measurement, number sense, ratio, and statistics.

Teachers will work in small groups to focus on Mathematics and implementation of the NCTM Standards, technology and mathematics, math in the business world, and alternative assessments.

Participants will have an introduction to the use of Hyperstudio in the math classroom. TI 80 graphing calculators and interactive television will also be used.

Math 909

Take Those Standards On The Road







An Integrated, Process Approach to Science, Math, and Technology

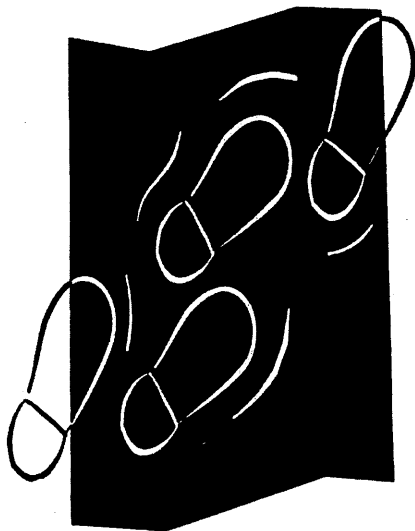
Grades 6-8

Polly Goepfert

Let's take a tour through the geometry strand of CMP (Connected Mathematics Project developed by Michigan State University, based on the NCTM Standards). We'll make a stop at Origami Land and the City of Standards and conclude our tour at the Assessment Arena.

Objectives:

-  To experience many investigations of CMP unit.
-  To increase the awareness of the philosophy behind the CMP project.
-  To connect the standards to the investigations.
-  To make a cube by paper folding.
-  To apply authentic assessment to the geometry strand.
-  To develop a better understanding of the vision the standards are seeking.



Math 910

AIMS-Math Connections


Patterns, Problem Solving, and Practice


Grades 6-9


To Be Announced


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The connection between mathematics and science becomes more meaningful within the AIMS curriculum in which combinations of measurements are studied for their production of new units of measurement. For example, rate multiplied by time produces a new measure: distance. Mass divided by volume produces the measure of density. Surface area divided by volume gives rise to scaling, a fundamental factor for determining how often an animal eats, where it can live, how rapidly its heart beats, and how long it can be expected to live!

 **Number Sense and Operations:** Proportional reasoning; distributive property; multiplication table patterns; multiplicative nature of proportions; common proportions; fractions, decimals, ratios, rates, percents, etc.

 **Geometry and Spatial Sense:** Relationships of shapes, 2-D and 3-D dimensional studies of perimeter, area, surface area, volume, and useful ratios among them; isometric drawings; spatial visualization; study of angles, lines, rays, segments; applications in density, light, mapping, etc. with focus on combinations of measurements that produce new measurement units.

 **Dealing with Data and Chance:** Decide on information to include for tables and graphs, how to gather, organize, interpret and communicate that information; study and compare numerous graph types.







 **Patterns and Functions:** Patterns and functions will be integrated into all activities and utilized to build bridges of understanding among the topics of mathematics, arithmetic, and algebra.

Math 911
Technology, Toys and Teaching Math
Grades 7-12
John C. Katz

Technology is changing the way we teach and allowing students to experience mathematics in a more hands-on and real world atmosphere. Focus on activities using both computer software and TI-92 Graphing Calculators which will transform a traditional math classroom into an interactive, hands-on, exciting learning environment your students will look forward to entering. Many of the activities involve applications to Geometry using Geometer's Sketchpad software as well as the Cabri II Geometry software on the TI-92. Other activities involve use of the CBL (Calculator Based Laboratory), applications of the TI-92 to courses from Algebra to Calculus, and hands-on experience applying geometric transformations to miniature golf and billiards.

Bring in your "How can I...?" and "I'd really like to..." ideas and leave with an arsenal of technology-enhanced activities that are sure to make your classroom an exciting place for students and teacher alike.

Objectives:

-  Participants will learn how the TI-92, Cabri II Geometry and Geometer's Sketchpad can be used to improve their students' motivation and interest.
-  Participants will learn the similarities and differences between these tools and gain a basic understanding of how to use each in creating or following previously created activities.
-  Participants will develop and present a lesson/activity and guide the class to the desired outcome of the activity.
-  Participants will become more aware of the Wisconsin's Model Academic Standards with regard to content and instruction. They will be given the opportunity to discuss how effectively the technology used in this course helps to meet those standards.
-  Participants will be given the opportunity to raise and discuss equity issues which may be encountered as a result of this type of instruction.
-  Participants will be able to share ideas on the proper format of assessment for activities involving technology.

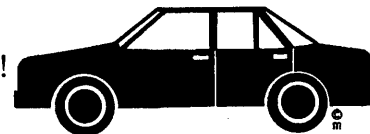
Math 912
The Five Cs of Mathematics:
Toy Cars, Computers, Calculators, CBLs, and
CBRs!
Grades 9-12
Lauren Jensen

Bring your favorite toy car and come join us in investigating how mathematics can come alive by using technology and creative projects within the mathematics curriculum. Along with toy cars, participants will be working with other "toys" (weights, rubber bands, string, playground balls, and other easy to find equipment), with graphing calculators (TI-83 and TI-92), CBLs (Calculator Based Laboratory), and CBRs (Calculator Based Ranger) to obtain realistic data.

We will explore various models of the data with the use of residuals. Internet projects and an investigation of geometry with the Geometer's Sketchpad will be included.






Scope of the workshop will focus on student tested projects, activities, and materials designed for Algebra through Precalculus.

Don't forget your toy car!

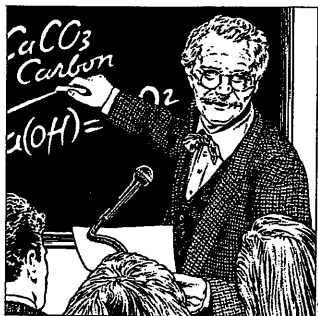


"My workshop will consist of 5 mini-workshops aimed at providing the participant with hands-on experience on how to integrate various technologies within the mathematics curriculum/classroom."

Objectives:

-  Gain knowledge of how to use simple equipment to model real world data.
-  Use residuals to investigate various equations to model data.
-  Use the Internet for research, data, and student projects.
-  Explore Geometer's Sketchpad and how it can be utilized within the classroom.
-  Gain experience using graphing calculators, CBLs, and CBRs.

Math 913
Core-Plus Mathematics Project (CPMP). . .
An Integrated High School Curriculum
Grades 9-12
Mary Rosin and Marcia Olson



This workshop offers an exciting opportunity to explore an integrated high school curriculum. The Core-Plus Mathematics Project is based on the philosophy that all students can learn mathematics, if it is presented in a way that makes sense to them. The

curriculum is challenging, yet accessible to all students who are willing to learn.

The four major strands which run through this curriculum are algebra/functions, geometry/trigonometry, statistics/probability, and discrete mathematics. The NCTM's standards of problem-solving, communication, mathematical connections, and reasoning permeate every lesson.

This project incorporates technology and relevant problems as a means for learning and doing mathematics.

Objectives:

- ✎ Develop a knowledge of how this curriculum relates to the NCTM standards.
- ✎ Explore alternative assessment methods.
- ✎ Gain confidence using the TI-83 calculator for line plots, box plots, and creating tables.
- ✎ Investigate new ideas for teaching content from the four major strands of algebra/functions, geometry/trigonometry, probability/statistics, and discrete mathematics.
- ✎ The four-phase cycle of classroom activities will be modeled to allow the participants to understand the advantages of presenting mathematics with a specific cycle of instructional activities. The four-phase cycle is launch, explore, share and summarize, and on your own.

Math 914
(TI) AC²E-II Institute
Grades 9-12
Provided By Texas Instruments

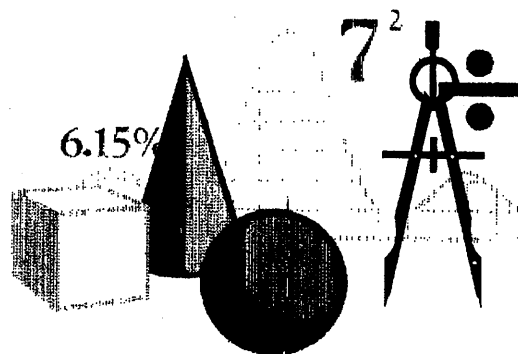
The T³ AC²E-II Institute is a week-long professional development program for teachers of Algebra I and high school algebra.

The primary focus of the activities is to explore algebra concepts and problems using hand-held calculator/computer technology as a tool for teaching and learning.

Participants will learn new teaching strategies and will have opportunities for hands-on experience. The goal of the institute's program is to instruct teachers in new and innovative ways to effectively teach mathematics using technology in the spirit of NCTM's *Curriculum and Evaluation Standards for School Mathematics* (NCTM, 1989) and *Professional Teaching Standards* (NCTM, 1991).

Objectives:

- ✎ Assist teachers in gaining confidence to use new teaching strategies and lessons as they incorporate the use of technology in their classrooms.
- ✎ Instruct teachers in the exploration/investigation mode of teaching secondary mathematics including algebra, data analysis, and other topics.
- ✎ Engage teachers in significant problem situations and in the use of technology as a tool for learning mathematics.
- ✎ Develop teachers' familiarity with the TI-83, the Calculator-Based Laboratory System (CBL) and/or Calculator Based Ranger (CBR).






Math 915
(TI) IM92 (Integrated Math for the 92TI)
Grades 9-12
Provided By Texas Instruments

IM92 is a one-week institute for all high school mathematics teachers. The institute will introduce participants to a wide range of context-based investigations emphasizing the relationships of topics within mathematics as well as between mathematics and other disciplines. Each topic will incorporate many of the features of the Texas Instruments TI-92 and the multiple perspectives this tool enables. Pedagogical and classroom management issues related to the routine use of the TI-92 level of technology will be addressed. Assessment, testing and grading issues will be approached "hands-on" during each day of the institute. Time is also set aside each day to focus on a variety of critical meta-issues such as how algebra understanding should be developed in an integrated mathematics environment based on technology. IM92 will focus on materials drawn from *Integrated Mathematics: A Modeling Approach Using Technology*. This four-year, high school curriculum was developed between 1991 and 1997 by the mathematics teachers of Montana through the Systemic Initiative for Montana Mathematics and Science (SIMMS). It is being published by Simon and Schuster Custom Publishing Company.

The curriculum at all levels assumes that every student has a graphing calculator and daily access to the functionality of a spreadsheet program, a geometry construction utility, a symbolic manipulator program, a statistics package, a graphing package, and a word processing program. In addition, many of the SIMMS modules assume that the students have access to a science interface device, such as the Texas Instruments CBL™, for electronic data collection within the classroom. Integrated mathematics written with this level of technology in mind benefits from the availability of an integrated tool such as the TI-92 which, with the CBL, incorporates nearly all of the required technology.




















Objectives of IM92 are:

-  To prepare teachers to make effective use of the TI-92 as an integrated tool for teaching integrated mathematics.
-  To develop teachers' understanding of integrated mathematics within real world contexts.
-  To discuss with teachers the critical changes in high school mathematics due to NCTM standards and the increasing access to technology in classrooms.

Science 916
Terra's Tots: Earth's Tiny Stewards
Grades PreK-1
Janet Hurley

Terra's Tots is a course designed to create and nurture a love for the natural world. Participants will be involved in activities that will develop an awareness and appreciation for plants, animals, and the environment. Developmentally appropriate activities will address multiple intelligences through a thematic approach. Come and experience drama, songs, poems, finger plays, the creation of models, and much more. Return to the classroom with ready-to-use materials and a notebook full of ideas. Topics covered will include habitats and wildlife, seasons, every growing thing, bugs and butterflies, and every day is earth day.

Objectives:

-  Develop an awareness and create an appreciation for the natural environment.
-  Share the wonder resulting from a deepened awareness of the natural world.
-  Understand that living things have four basic needs: space, shelter, water, food.
-  Identify and demonstrate understandings of life cycles of various living things.
-  Describe various animal and insect habitats.
-  Compare insect senses with those of humans.
-  Construct an insect model or sculpture, design and maintain an insect habitat.
-  Understand how camouflage can help animals survive.
-  Describe ways ants work together and how this cooperation helps the colony.
-  Observe insects and their behaviors.
-  Understand the concept of migration.
-  Follow and interpret animal tracks.
-  Compare features and changes of the seasons.
-  Observe and classify seeds and demonstrate how seeds travel.
-  Describe many uses of trees and seeds.
-  Understand that some plants and animals are endangered species.
-  Understand that concentrated heat from the sun is hot enough to cook food.
-  Develop an awareness of pollution and solutions to it.
-  Demonstrate stewardship and conservation.

Science 917
Nature-alizing Your Students
Grades K-8
Scott Lee

It doesn't matter what the season, what resources you have available, how knowledgeable you feel you are of our natural world, what age you teach - there is a lot that can be taught to help your students learn about their natural environment.

Many hands-on activities, make-and-take projects, and games to teach about nature to all age levels will be presented.

You will be presented many ideas to "environmentalize" and "nature-alize" your students in a fun and educational way.

This session's activities are very adaptable for high school ages.

Casual dress is recommended as participants will be actively involved, actually playing the games, etc. - not much "sitting around".



Science 918
Water Works
Grades 2-6
Joel Anderson and Randall Colton

The workshop goal is to promote awareness, appreciation, knowledge, and stewardship of water resources. Experience a collection of innovative, inquiry-based, interdisciplinary, water-related activities that are hands-on and easy to use.

The workshop will incorporate a variety of formats, including large group and small group learning. Field trips and resource people will be part of the week. We will examine how the course material relates to the National Science Education Standards and the Wisconsin State Science Curriculum Standards.

Instructors will model strategies from brain-based research. Participants will learn about networking which connects water education, business, industry, and related agencies.

Drop in for a flood of ideas that won't swamp you.

Participants will be able to:

- ☞ Use water as a topic for investigations in science content standards of earth, life, physical sciences, and science in personal and social perspectives.
- ☞ Receive training in **Project WET** and walk away with a 500-page **Project WET K-12 Curriculum and Activity Guide**.
- ☞ Explore water lessons in FOSS (Full Option Science System).
- ☞ Customize water units to their curriculum.
- ☞ Create their own water resources network.
- ☞ Return to their schools and initiate links with water-related businesses, industry, and agencies.
- ☞ Examine local water issues with greater understanding.

Science 919

Criminalistics:

An Introduction to Forensic Science

Grades 7-12

James R. Hurley

Criminalistics is the scientific analysis of crime scene evidence for the purpose of determining the guilt or innocence of those suspected of breaking the law.



Participants in this workshop will examine a one semester high school criminalistics course and the activities involved, survey books and videotapes related to introductory forensic science, and perform experiments written as crime scene investigation scenarios.

Objectives:

- ☛ Compare and contrast the fields of criminology and criminalistics and discuss classic cases in forensic science.
- ☛ Determine density and index of refraction values for microscopic glass samples.
- ☛ Analyze soil samples utilizing density gradient tubes.
- ☛ Perform electrophoretic analysis of organic samples
- ☛ Exhibit proficiency in stereo and compound microscopy and identify scale and medullar patterns in animal and human hair samples.
- ☛ Employ appropriate techniques in lifting latent fingerprints from various surfaces.
- ☛ Perform Duquenois-Levine analysis on suspect marijuana samples.
- ☛ Prepare tool mark casts for stereoscopic examination.
- ☛ Perform elementary handwriting analysis.
- ☛ Discuss the incorporation of forensic science topics into existing curricula.

NOTE: It is a goal of the workshop to have participating teachers align the activities they elect to use to the appropriate Wisconsin state standards.

Science 920

Detectives, Dangers, Deductions: Dastardly Deeds! *A Multidisciplinary Unit on Mysteries, Crimes, and Forensic Science.*

Grades 4-9

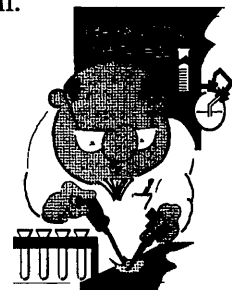
Christine Pace

Join us for the adventure of solving a real-life mystery! ***This class is not for the faint hearted!***

Teacher/Detectives will experience first hand crime solving techniques. Exciting centers, computer programs, field trips, simulations, puzzles, fascinating labs, and speakers will be components of the course. Fingerprinting, chromatography, blood/hair/dental/fiber analysis, criminology, autopsies, critical thinking, and problem solving skills are course highlights.

Objectives:

- ☛ Teachers/Detectives will examine a crime scene and apply rules, methods, principles, laws and theories of forensic science. Wisconsin Science Standards: A.8.3, A.8.4, A.8.5, A.8.6, A.8.7, C.8.1, C.8.2, D.8.1, D.8.4, F.8.1, F.8.4, F.8.7, G.8.1, G.8.2, G.8.3, G.8.5, G.8.6, G.8.7, H.8.1, H.8.2.
- ☛ Teachers/Detectives will evaluate and differentiate between evidence and inferences. Wisconsin Science Standards: B.8.4, B.8.5, B.8.6, C.8.1, C.8.2, C.8.4, C.8.8.
- ☛ Teachers/Detectives will explore literature from the genre of mysteries and relate these to today's world. Wisconsin Science Standards: C.8.9, C.8.10, D.48.1, D.8.2, E.8.1, E.8.2, H.8.1, H.8.2.
- ☛ Teachers/Detectives will work individually and collaboratively, using a variety of technology to evaluate a crime scene and recommend logical conclusions. Wisconsin Science Standards: B.8.1, B.8.2, B.8.4, B.8.5, C.8.9, C.8.10, D.48.1, D.8.2, H.8.1, H.8.2.
- ☛ Teacher/Detectives will be able to discuss/plan the incorporation of forensic science topics into existing curricula, integrating science with all other areas of instruction.



Science 921

Foods/Biology:

Using Foods To Teach Biological Concepts

Grades 9-12

Mark Totten

A basic "hands-on" course, providing activities using plants, bacteria, fungi, and DNA. Intended for general Biology, Advanced Biology, and teams of Family and Consumer Education and Biology teachers.

This course will use everyday food materials to teach biological concepts.

Objectives: *Teachers will be exposed to the benchmarks stated for grades 9 - 12 for:*

- ☛ The Nature of Science.
- ☛ The Nature of Mathematics.
- ☛ The Nature of Technology.
- ☛ The Human Organism.

Teachers will be expected to integrate mathematics and science, and food and biology.

Teachers will be evaluated on the higher levels of Bloom's Taxonomy.



Science 922

What's It Like Where You Live?

A Study of Local and World-Wide Biomes

Grades 5-8

Traci Roth

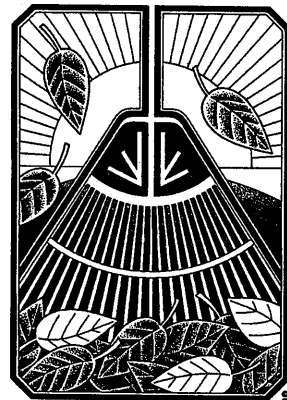
What's It Like Where You Live? is a curriculum developed by the Missouri Botanical Gardens that investigates the biomes of the world.

Participants will get a peek at this multi-media curriculum, targeted at the intermediate grades, and its activities, as well as other resources that can be used to develop an inquiry-based study of the world's biomes.

Participants should come prepared to share ideas and resources.

Objectives:

- ☛ Participants will familiarize themselves with an inquiry-based way to study one or more of the world's biomes in a way that is standards-based.
- ☛ Participants will actively engage in activities that can be done with students to study the biomes and the ecology issues, and concepts that are associated with ecosystem study (for example: predator/prey relationships, limiting factors, adaptations).
- ☛ Participants will familiarize themselves with a variety of resources that can be used to study biomes including: the What's It Like Where You Live? curriculum, CD-ROMs, trade books, Web sites, and natural science resources such as Project WILD and NatureScope.



Science 923
Basic Molecular Biology Techniques
Grades 9-12
Terese Barta

Genetics has become the fastest developing branch of biology.

The goals of this course are to give hands-on experience performing some basic molecular biology techniques and to show how those procedures are used to answer biological questions.

This is an introductory course for high school biology teachers who are looking for ideas to incorporate molecular biology into their courses, or those who simply wish to have a better understanding of the science in order to discuss current issues in their classes.

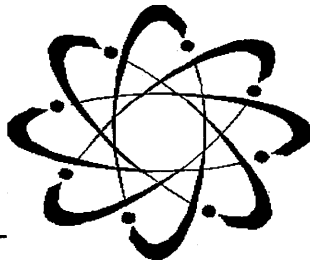
The course may be taken for one week (1 credit) or two weeks (2 credits).

Experiments carried out during week one will include:

- Introduction of DNA into bacterial cells
- Analysis of DNA by restriction enzymes
- Purification of DNA from bacterial cells

Week two will cover analysis of DNA by Southern blot hybridization and the polymerase chain reaction (PCR).

There will be a \$20.00 course fee for lab manual (complete with experimental procedures), supplies, enzymes, and molecular biology reagents.



Technology Education 924
Assessment Workshop
Investigating Mandated Standardized Tests
Portfolios as a Learning Tool and Assessment
Grades K-8
Faye Miller and Mary Lou Harris-Manske

This workshop is designed for teachers who are interested in preparing students for mandated standardized tests and how to interpret results to parents and the public.

Teachers will also explore how portfolios can enhance assessment and classroom practices.

Participants will have the opportunity to develop strategies and rubrics that can be easily integrated into current instruction and a variety of curriculum areas.

Objectives:

- 💡 To examine mandated standardized tests and how information may be reported to parents and the public.
- 💡 To use portfolios as learning tools and ongoing assessments.
- 💡 To share and model a menu of successful teaching strategies that can enhance current practices and not be considered add-ons.
- 💡 Developing rubrics across the curriculum will be modeled and teachers will have opportunities to design their own.
- 💡 To explore ways in which students can be involved in self-reflection and self-evaluation.



Technology Education 925
Get Connected
Linking and Webbing Your Classroom
Grades K-12
Steven Stevenoski

This workshop is intended to be a hands-on, experiential institute with teachers interested in designing and implementing cross-disciplinary units that allow students the freedom and the opportunity to solve real world and highly complex problems using computers, the Internet, and other low cost digital technology.

The goal of the workshop is to provide the participants with an opportunity to investigate how vocabulary and approach may make the same data seem completely different when studied in a science or mathematics classroom.

The intention is to create a dialog where the technology can serve as a tool that bridges the two disciplines and serves as a resource for students to more fully understand mathematics and science applications.

Participants will also learn how the addition of a single computer with an Internet connection can be used to expand the science and mathematical opportunities for students using data collect using the computer and digital probes.

Objectives

The workshop will be conducted in three parts:

💡 Learning the language of the Internet and computers. Topics will include but will not be limited to:

- a) What is the Internet?
- b) How do you get on the Internet?
- c) What is a Web Page?
- d) How can I use CD-ROM software?
- e) What is E-mail?
- f) What is presentation software?
- g) How to use digital cameras and experimental probes.

💡 Putting the computer to work in the classroom. Topics will include but will not be limited to:



Technology Education 925 Continued
Get Connected

- a) Participants will participate in a variety of sample lessons and activities that can be used to integrate the Internet and various types of computer software into their classroom curriculum.
- b) Produce an activity or lesson of their own which will be classroom ready for inclusion into their subject area this school year.
- c) Conduct a variety of science experiments using a variety of digital probes.
- d) Work in groups to analyze the data from a math and science perspective.

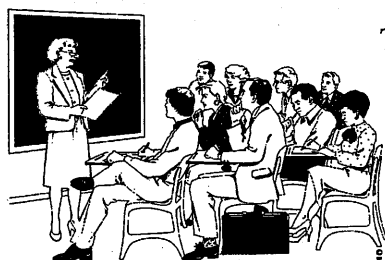
💡 Navigating the Internet. Topics will include but will not be limited to:

- a) How to use Web Browser to view Web pages. . .
- b) Finding data and resources on the Web and making them useable for your students.
- c) Using search engines to find things on the Internet.

Technology Education 926
Unlock the Door: Open the Communication
Grades 3-6
Janet Alekna and Jan Drehmel

Open the door; flip the switch; and turn on the POWER! Here's your opportunity to make a powerful connection between school-home communications. Together parents and students can experience hands-on, minds-on science, technology, and math activities.

This is a workshop designed to get you, your students, and parents involved in meaningful activities with the math, science, and technology standards. Parents and students can be brought together in the school setting, or the activities are versatile enough to be completed at home. Research shows that these kinds of connections strengthen the relationships of parents/teachers/school and community.



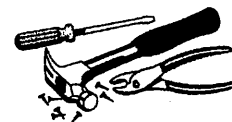
Teachers will come away with many ideas and projects to be used with their students on parent nights or in the classroom.

Join us and experience the "surge" of power from the school-home connection!

Participants of this workshop will:

- 💡 Experience a variety of hands-on activities supporting the math, science and technology standards.
- 💡 Design a plan for implementing a student/parent/school connection.
- 💡 Lead the teachers/parents to a better understanding of the standards.
- 💡 Incorporate problem solving, critical thinking, investigation, and inquiry strategies that integrate math, science, and technology.
- 💡 Gain an appreciation for the importance of parental involvement in school activities
- 💡 Appreciate the value of using community resources in connecting school to everyday life.

Technology Education 927
Ready-Design-Go
Grades 4-6
Judy and Ruth Shookman



Does your "tired" classroom need a "SHOT" in the arm? Are you frustrated with problem-solving projects that are impractical and just don't work? DESIGN-READY-GO is a week of designing, measuring, sawing, wiring, hammering, gluing, and testing that will provide you with projects and experiences to be carried back to your classroom, exploring the themes of design technology and, MORE IMPORTANTLY, exciting and preparing your students for the workplace of the 21st century!

Objectives:

- 💡 Introduce participants to the concept of systems and the four themes composing a design technology program. Benchmarks: 8B, 8D, 11A, 11B, 11C - grades 3-8. Technology Standard B: Systems
- 💡 Help participants identify the Science, Math, Technology and Benchmark Standards forming the backbone of a design technology lab. Benchmarks: 3A, 3B, 3C - grades 3-8.
- 💡 Give participants the opportunity to experience first-hand the technological process so that they can incorporate what they have learned into their classrooms. Professional Science Development Standards: A, B, C. Technology Standard A: Nature of Technology.
- 💡 Model the format of the design brief and encourage participants to create their own. Science Assessment Standards: A, B, C.
- 💡 Provide resources.
- 💡 Explore activities which can be adapted to multiple intelligences.
- 💡 Construct working models of projects related to the four themes of design technology which participants can use to start their own design technology programs. Science/Tech Content Standards: A, B, E, F, G - grades 5-8. Technology Standard C: Human Ingenuity.
- 💡 Promote leadership and confidence among participants in using design technology. Technology Standard D: Impacts.

Note: There will be a \$25 student fee for a rocket launcher and circuit tester.