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Math in Two Cultures  
University Honors Program  
In Partial Fulfillment of the  
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Department of EPSY  
by  
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ATTACHMENT: VIDEO

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**HONORS THESIS ABSTRACT  
THESIS SUBMISSION FORM****AUTHOR:** Sheila A..Yochum**THESIS TITLE:** Math in Two Cultures**ADVISOR:** Kathleen Best**ADVISOR'S DEPT:** Educational  
Psychology**DISCIPLINE:****YEAR:** 1994-1995**PAGE LENGTH:****BIBLIOGRAPHY:** Yes**ILLUSTRATED:** See video**PUBLISHED (YES OR NO):** No**LIST PUBLICATION:****COPIES AVAILABLE (HARD COPY, MICROFILM, DISKETTE):** videotape**ABSTRACT (100-200 WORDS):**

My honor\$ thesis consists of a videotape as well as written documentation of math classes in Australia and the united States. The purpose of this study was to compare the differences in teaching strategies and then to help other students appreciate multiculturalism and how it can be used in the classroom.

I observed three high school math classes in the united States. Videos were taken during the class periods and then later shown to the Australian teachers. The Australian teachers then commented on the American teaching styles. Videos were also recorded in Australia. The American teachers then commented on these tapes.

Most of the differences consisted of discipline strategies and the physical structure of the school. Each school has positive qualities, but both could be improved. My thesis covers these differences in depth.

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## Introduction

"Parents, teachers, educational administrators, and researchers debate what school should teach .... and how schools might best teach their students." (Steinberg 190) How can we best teach our students so they can learn? What is the solution? As a future teacher I set out to find answers. During the months of May and June 1994 I traveled to Brisbane, Australia and taught eighth grade math for five weeks. This student teaching was arranged through the International Programs Office and the Honors Program at Northern Illinois University.

## Summary of Study

The high school in which I taught was Craigslea High School. Besides teaching, I also closely observed and videotaped three math teachers. To make a comparison, three teachers from Middleton High School in Middleton, Wisconsin were also videotaped. These teachers were interviewed and asked to critique a videotape of the teachers from the other school.

## Demographics

Craigslea has a population of about 800 students in grades 8-12 whom are mostly Caucasian with a few Japanese and Indian students. The students are from a middle to upper-middle socioeconomic background. Craigslea is located in West Chermshire, a town of about 10,000. Middleton High School consists of grades 9-12. The school demographics were similar to Craigslea in that 1200 students attend Middleton. These students also come from a middle to upper-middle class background. The town of Middleton has approximately 12,000 residents.

## Similarities

All of the teachers I observed use direct teaching (lecture) for at least 20-30 minutes of class time. The remaining 15-25 minutes are left for correcting homework, working problems, and for individual help from the teacher. An of the teachers find it important to give students individual attention in class. This attention was normally given to the students at the end of the class period, while they were working on in class problems.

Andrea Lemke, one of the teachers at Middleton High School, uses cooperative learning during her class period. The students arrange their desks in groups of three to four to complete a worksheet together.. Tom Waller, a teacher from Craigslea, also uses cooperative learning as a teaching strategy. He hands out worksheets and the students work at their tables in groups of two or three.

Both sets of teachers use the blackboard and the overhead projector during class time. "Providing a variety of teaching techniques is the number one characteristic of a good teacher, " according to Waller..

The ratio of male to female teachers is the same at both schools. About three out of four teachers are male.

## Physical Buildings

Physically the schools were built differently. At Craigslea High School the buildings are separate. There is a mathematics block, a science block, a block for all other subjects, as well as a block for all of the grade 8 classes. One reason for Craigslea's unique structure is the climate. Brisbane is quite warm, 90-95 degrees Fahrenheit in the summer and about 40-70 degrees in the winter.. The teachers' staffrooms are located within each block.. Students are forbidden (without the teacher's permission) inside these staffrooms. Craigslea has a large gymnasium and an outdoor rugby field and netball courts.

Middleton High School consists of a large two story building with every room contained within. Since the winters in Wisconsin are so cold, the enclosed structure of the high school is necessary. The math teachers at Middleton have staffrooms in the math hallway. All of the math classes are located in one hallway. Students are free to walk in the staffrooms to locate any teacher they wish to find. There is an indoor Olympic size swimming pool, four interconnecting gymnasiums, a soccer field, football field, and an outdoor track. For students at Middleton their enclosed structure makes winters bearable.

### Classrooms

Within the blocks at Craigslea, there are approximately six classrooms. These classrooms are separated by retractable walls. The rooms are not used every period but if neighboring classrooms are being used, the rooms become quite noisy. There are no desks at Craigslea, only long segmented tables with chairs. These tables are set up in five to six horizontal rows facing the teacher. One setback of having tables is that they are difficult to move when students participate in cooperative learning activities. So when students work in groups, they usually work with the students sitting next to them. Students are not assigned to a specific seat. The classrooms at Craigslea have whiteboards in addition to blackboards. Whiteboards are more commonly used since they don't produce any chalk residue. But the blackboards are used to vary their method of teaching.

No backpacks are allowed in the classrooms at Craigslea. Students must leave them outside the building before they enter each class. During class the students at Craigslea are required to take off their hats. They do this out of respect for the teacher. Also, throughout Australia students are required to wear uniforms in years 1-12 in both private and public schools.

At Middleton, the students sit at individual desks. The desks are moved around often during class. Students may sit in rows during a lecture then move their desks into groups for cooperative learning activities. The students here too do not have a seating chart.

Students either carry their backpacks to class or leave them in their lockers. Most students prefer to visit their lockers between classes and carry only their books for their next class. The blackboards at Middleton are large, at least half of the room is covered with blackboard space. This allows the teacher to take advantage of the entire classroom. Many schools in Wisconsin forbid students to wear baseball caps since it is a gang symbol. Since Middleton does not have a gang problem, the students at Middleton are allowed to wear baseball caps.

#### Grading Policies

At Craigslea the students are graded by:

VHA: very high achievement

HA high achievement

SA: suitable achievement

LA low achievement

VLA: very low achievement

At Craigslea there is always a curve. The teachers use criterion based grading and the students' grades are compared to each other. The students' grades are determined by two exams, two sets of homework to be handed in and graded, and two investigations.

Emphasis is put on exams and investigations. The investigations are long term projects which last between one and two weeks. The students write up explanations and may give presentations in class. A few homework problems are assigned every night, but they are not collected or graded.

At Middleton the students are graded by:



A: superior

B: above average

C: average

D: below average

F: failing

These are similar to the corresponding grades at Craigslea, but at Middleton there is a preset percentage such as 90-100 A, 80-89 B, 70-79 C, and so forth. There may be a curve if the teacher wishes. The grading policy at Middleton differs from teacher to teacher. One of the teachers bases his grades on 50% exams and 50% homework, where homework is collected once a week. Bill Curtin bases grades 10% on homework and 90% on exams. He spot checks this homework every day. The students are penalized only if they did not attempt a problem. It is not necessary to find the correct solution.

### Discipline

At Craigslea, once a week the students unite in the gymnasium to listen to the principal give announcements from the previous week. At one certain assembly the principal was quite upset with a student. The principal told the student to stand and the principal began to name off every one of his misbehaviors. The student stood in embarrassment for five minutes while everyone stared at him. During the principal's speech he heard another student talking. The principal sent this boy to his office telling the entire student body "You won't be seeing this boy next week." Earlier that week a student brought a gun to school. The principal pointed out that the student was from Afghanistan. Classroom discipline is somewhat different. The students at Craigslea are in general very respectful of their teachers. When the teacher is talking the students are quiet. If the students' voices are too loud while they are working, the teacher asks them to "Quiet down please," or "It's Mary's turn to talk now."

Roll call is taken in homeroom before the school day begins. If a student is absent he needs a pass form the office. Missing class is not a common problem since most of the students are too young, under 17, to drive.

At Middleton High School there are no all-school assemblies except for pep-rallies to raise spirits before sports events. Many students feel free to talk during class, even when the teacher is talking. One teacher deals with this problem by making the entire class stay after the bell the amount of minutes they wasted while talking. Larry Henderson begins to talk quieter. Eventually the students quiet down so they can hear them speak..

Roll is taken at the beginning of every class. If a student is late, they are given a "tardy." By school policy, three tardies will lower their grade by one letter. An unexcused absence warrants an after school detention of one hour.

#### Class Structure/Teachers

At Craigslea, the math classes are set up in vertical time tables. For each year of school a student advances to the next level of math. This is tough for some students like "Joel." He did not understand math in eighth grade. Now he is a ninth grader. How can he complete ninth grade math when he does not know the math from eighth grade?

Teachers at Craigslea have a tremendous amount of responsibility. Other teachers are required to teach a class during their free period if one teacher from their department is absent. Also, once a month teachers are required to monitor the students during lunch. The whole school has lunch from 12:45 to 1:45 every day. Besides lunch, students break for morning tea for about fifteen minutes every morning.

The school day consists of seven class periods of 45 minutes each and begins at 9 am and ends at 3:00. The classes are dismissed by the teacher (no bells are sounded). The students have approximately five minutes to get to their next class.

Many of the classes at Craigslea do not use textbooks. The students get a packet at the beginning of the year containing a syllabus, an outline of the course, and a few sample worksheets. The teacher uses his own creative techniques to teach the class. This may sound unorganized, but most of the teachers teach in similar styles so the students learn the same material.

At Middleton, horizontal time tables are used to place the students. Students stay in one math class based on their abilities, until they can pass the class. This allows students to advance at their own pace. But this procedure is not without problems. Students from freshman to senior year may be in the same class. This may make older students feel awkward and thus they may not perform as well in the class.

If a teacher is absent at Middleton a substitute teacher, who may or may not know anything about math, is called in. The substitute usually passes out worksheets for the students to work on for the entire period.

There are three lunch periods of thirty minutes each. The students are divided randomly into thirds. If a student does not have a study hall, this may be his only break of the day. Days at Middleton start at 8:00 am till 3:05 pm. The class periods are 50-55 minutes each and dismissed by three tones. Students here are also given five minutes to get to their next class.

Every math class at Middleton uses at least one textbook. Teachers may supplement this text with his or her own worksheets, but generally they use the assigned textbook.

### Student Body

At Craigslea, all of the students are mainstreamed. "Paul," a student with cerebral palsy sits in his eighth grade math class. Twice a week a teacher's aide sits in class to give him some extra help. Ramps are located around school so the classes are accessible to everyone.

Of course there are always a few "rebel" students. These students sit in a circle near the far boundary of campus during the lunch hour. They try to sneak a puff on their cigarettes, since smoking is prohibited at Craigslea. About 30% of the students from Craigslea continue their education after high school. In Australia a college degree is not considered a "necessary" achievement to pursue a career.

Upon interviewing the students at Craigslea, their major problems at school consist of being bullied and stealing.

There are programs at Middleton designed for students with special needs. They have a work-study program for students who have cognitive disabilities. These students may work at McDonald's, a local nursing home, or at a hospital about ten miles from school. Students are bused to and from work for half days. The students then attend classes for the rest of the school day.

The students at Middleton rebel in slightly different ways. Students are permitted to smoke in a smoking section outside the school. In winter students may get caught trying to smoke in the bathrooms. About 70-75% of the students from Middleton attend some form of higher education after high school.

According to these students, drugs were a major problem. "John" told me that he could buy LSD during the lunch period if he wished.

## Conclusion

As shown in this paper, there are many differences between teaching at Middleton and Craigslea High Schools. We need to look at these differences, analyze them, and learn from them. From my observations I determined that students in Australia are much more respectful of their teachers, and more conservative in their behavior than the American students. This means that teachers in the United States have a lot of work to do to get the respect that they deserve.

Both schools have benefits. But schools can never stop improving. The schools improve by teachers observing, speaking, and listening to other teachers. Teachers need to find the strategies that best work for them.

## References

- Steinberg, Laurence. Adolescence. New Baskerville: Ruttle, Shaw, and Wetherill, 1993.
- Stevenson, Harold W. "Learning From Asian Schools," Scientific American, December 1992. Pg 70-76.
- Stevenson, Harold W.; Chen, Chuansheng; Lee, Shin-ying. "Mathematics Achievement of Chinese, Japanese, and American Children: Ten Years Later," Science, January 1, 1993. Pg 53-58.
- Tobin, Joseph J; Wu, David YH; Davidson, Dana H, Preschool in Three Cultures. Yale University, 1989.

## References

- Batshaw, M., & Perret, Y., (1992). Children with disabilities: A medical primer (3rd ed.). Maryland: Paul H. Brooks.
- Heimburge, J. & Reif, S. (1996). How to reach and teach all students in the inclusive classroom. New York: Center for Applied Research.
- Jacoby, R., & Pierangelo, R. (1996). Parents complete special education guide. New York: Center for Applied Research.
- Schwarz, S. (1991). Exceptional people: A guide for understanding. New York: Mc. Graw Hill,