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ABSTRACT

Scheduling concerns such as how to keep instructors teaching in the areas for which they are qualified and how to allow for elective offerings in a student's schedule led North Cache Middle School, a year-round education school serving grades 8 and 9 in Richmond, Utah, to explore a number of solutions. Seven solutions are examined along with difficulties encountered with each: (1) tracking; (2) semester registration; (3) rainbow classes; (4) cross grade scheduling; (5) cross track scheduling; (6) single semester scheduling; and (7) using new technology. A final section reviews staffing concerns. (CLA)

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**TAMING THE BEAST: DEVELOPING A MASTER
SCHEDULE FOR MULTI-TRACK SECONDARY YRE**

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THE PROBLEM

North Cache Middle School is a grade 8-9 middle school. It is unusual to see schools with student populations as mature as ours designated as middle schools. North Cache is better understood as a junior high for purposes of scheduling. Our ninth graders earn high school credit and participate in a wide variety of high school activities. It wasn't possible for us to use the technique employed by most year-round middle schools. Namely, abandoning elective offerings in favor of exploratory offerings. We had to find a way to preserve, and even expand, those elective classes.

Secondary schools present particular problems when implementing year-round education. Problem #1: How do we keep teachers teaching in those areas in which they are qualified to teach? Problem #2: How do we allow for elective offerings in a student's schedule? Both of these problems result when a school is broken into tracks. Where we once had five sections of an offering in a traditional school, we now have one section on each track, that is, one section available to any one student. Typically, we have taken a very large, overcrowded school and broken it into several smaller schools. Small schools have always struggled with the problems of allowing teacher specialization and offering a rich and varied curriculum. Large schools have never had to deal with these problems before. This

paper will offer some solutions to these problems. Not all of these solutions are currently in use at North Cache Middle School, and not all of them will work in any particular location. There are social, political, and practical forces that limit the effectiveness of some of these recommendations.

SOLUTION NUMBER ONE: TRACKING

One of the obvious solutions to both of the above mentioned problems is to simply place any class on a single track. Students who needed or desired the class would be placed on that track along with the teacher. Quite often this is the most attractive option to the teacher of that class. In practice it is actually the least attractive option. At North Cache we placed the ninth grade band classes on D track only. We did this for two reasons. First, it was observed that performance was a very important part of this program. Second, the ninth grade band students were to practice and perform with the high school band. They needed a longer summer, hence the selection of D track, which starts school later. It seemed like a reasonably good solution at the time, but problems ensued. These were the problems (in more or less chronological order):

1. Teachers of other classes were angry when their classes or extracurricular programs were not given the same treatment.
2. Parents of students in other programs, especially athletics, were angry when those programs did not receive the same treatment.
3. It became difficult, and eventually impossible, to keep the numbers of students registered in

each track nearly equal.

4. Registration in elective classes was unequal across the tracks. Band students couldn't sign up for other electives. D track had many elective classes that were just too small to teach. Rainbow classes became huge when D track was off.
5. Honors classes on D track were so large that they had to be split.
6. Classes had to be closed or opened from track to track, depending on the number of students registered.
7. Teachers became angry when their schedules were changed to accommodate those registration problems. Some teachers worked without a preparation period or had two preparation periods, depending on which track was on.
8. Students became angry when they tried to transfer out of a class after a semester and found their options limited because classes that once had low registration had been closed out altogether on their track.

Most people are aware of the sociological problems inherent in placing any class or program on a single track. Few would put Special Education, ESL programs, or Chapter I programs on just a single track. Those who have tried to track gifted programs have discovered the pitfalls there. Our experience indicates that there are practical problems as well as philosophical ones that attend the idea of tracking. One more thing, you can't track more than one class or program unless they are mutually exclusive or both on the same track.

SOLUTION NUMBER TWO: SEMESTER REGISTRATION

Anyone who has ever scheduled before knows that it is easier to get students scheduled if they can be re-registered into year-long courses at the semester. This becomes even more important in YRE schools where more classes are going to be available just one hour for any student. Scheduling year-long classes as two semester classes allows semester-long electives that are only offered one class period to fit into a student's schedule. Classes that are longer than a single class period are also difficult to schedule.

SOLUTION NUMBER THREE: RAINBOW CLASSES

The single most effective mechanism for scheduling YRE schools is the rainbow class. This is a class that has students from all tracks in the same class. Assume that you have 120 students registered in any elective class in a four-track system. You could create one class on each track with about thirty students in each class. You could create three rainbow classes with forty students in each one. Ten would be off track at any one time leaving thirty to teach. You could create four rainbow classes of thirty each. Seven or eight students would be off-track at any time leaving twenty-two or twenty-three to teach.

The advantage to the rainbow offering is that there are now three or four classes that are available for a student where before there is just one class per track. That one class is bound to conflict with something.

Certainly not all classes can be rainbowed. At least half

of the time students in a rainbow class have not spent the same amount of time in school and may not be together instructionally. Math classes are particularly difficult to rainbow.

When looking for classes to rainbow, consider these:

1. Any class that is individualized.
2. Any class that relies upon group work.
3. Any class that can be taught in discreet units the same length as the time a group spends off-track.
4. Any class in which learning is not sequential.

Integrated learning labs, cooperative learning, and reading and writing workshops are a few of the techniques that have worked well in our district and are particularly suited for rainbow classes. Some teachers may have to change the way they organize and teach some classes. Complete and worthwhile inservice is a must.

Please note: It is a common misconception that students in a four track system would be in four different places instructionally in a rainbow class. This should not be true. In any multi-track system the students in a rainbow class can be divided into two groups: Those who have had their break this term and those who haven't. Additionally, the whole class should be together instructionally when the first and last tracks are off.

SOLUTION NUMBER FOUR: CROSS-GRADE SCHEDULING

Until the present time we have offered most of the courses in our middle school to one grade or the other. We have only now discovered that offering classes to both grades where possible will allow more students to be scheduled into their first choice of electives. We will no longer offer two sections of pre-algebra to eighth graders and one section to ninth graders. We will offer three sections of pre-algebra that are open to both grades. This will help to eliminate some of the singletons that we currently have in our schedule and allow us to schedule more students without conflicts.

A two-year curriculum would work great for a school like ours as far as scheduling is concerned. We could schedule eighth and ninth graders together into all of our academic classes. One year we could teach U.S. History and the next year geography. But we have problems where high school graduation requirements are concerned and movement in that direction is likely to be slow.

SOLUTION NUMBER FIVE: CROSS-TRACK SCHEDULING

Any class that is available to a student in just one place in the schedule is called a singleton. Singletons are the bane of schedulers and students alike. We have seen how singletons can be eliminated through scheduling rainbow and cross-grade classes. Singletons can also be eliminated by scheduling cross-track classes. Consider this teacher's schedule:

Period

Class

1	A Track French
2	B Track French
3	C Track French
4	D Track French
5	Rainbow Art
6	Rainbow Art
7	Rainbow Art

Notice that with this schedule the teacher's preparation period would depend upon which of the French classes is off-track at any time. Each of the French classes is a singleton, and a significant number of students will have a scheduling conflict that involves that French class. To ease that problem, schedule cross-track:

<u>Period</u>	<u>Class</u>
1	A and B Track French
2	C and D Track French
3	A and B Track French
4	C and D Track French
5	Preparation
6	Rainbow Art
7	Rainbow Art

This will cut the number of scheduling conflicts in half. This is an especially good strategy to use with those classes that are difficult to rainbow. We have scheduled our Honors

Biology classes this way. It has worked very well. The teacher reports that those times when one track is off are good times to schedule labs. He then repeats the labs when the other track goes off. In this scheme the class is never apart instructionally as long as compatible tracks have been chosen. An additional advantage of both cross-track and rainbow scheduling is that a class can be formed where registration was insufficient for one on any particular single track.

SOLUTION NUMBER SIX: SINGLE SEMESTER SCHEDULING

Consider the following schedule where both speech and novels and short stories are both semester classes and singletons:

<u>Period</u>	<u>1st Semester</u>	<u>2nd Semester</u>
1	English 9A	English 9A
2	English 9B	English 9B
3	English 9C	English 9C
4	English 9D	English 9D
5	Rainbow Speech	Rainbow Speech
6	Rainbow Novels & SS	Rainbow Novels & SS

Lots of conflicts can be anticipated with this schedule.

This is better:

<u>Period</u>	<u>1st Semester</u>	<u>2nd Semester</u>
1	English 9A	English 9A
2	English 9B	English 9B
3	English 9C	English 9C

4	English 9D	English 9D
5	RBW Novels and SS	RBW Speech
6	RBW Novels and SS	RBW Speech

More students will be scheduled into their choice of electives if the second schedule is used for that teacher.

SOLUTION NUMBER SEVEN: NEW TECHNOLOGY

Prior to the adoption of YRE in Cache County School District, our computer work was done by the state. We could get two or three runs every year. This year we did our computer work ourselves. We used SASI from Macro Educational Systems. This way we could test each schedule with any number of computer runs. Scheduling a year-round school is much more complex than a traditional school. At very least it is like scheduling three to five schools simultaneously. I couldn't imagine doing that if we had to send the data out to be processed. I once ran eight different master schedules in one day and still made a 2:00 p.m. tee time. Doing the work on-site is expensive, but it does afford the flexibility that makes scheduling possible.

STAFFING CONCERNS

Notice that all but one of these scheduling solutions have one thing in common. They all assume that the teacher will be in school as long as school is in session. This is a must in secondary school YRE. At North Cache, most of our teachers have extended contracts. The same results could be achieved with

shorter contracts through job sharing.