

10 Other timetable checks

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In the last three chapters we have seen how the data can be checked for impossibilities in:

- the staffing of departments (using the Combing Chart),
- the option blocks and other big teacher-teams (using the Conflict Matrix),
- the use of accommodation (using the rooming fraction).

With these impossibilities removed, a complete solution to the timetable may be possible without any further compromise.

However this could be decided only by attempting to schedule the data. For the complicated timetables that are attempted in most large schools today, it is worthwhile looking further for ways of providing still more flexibility.

In this chapter we look at ways of providing this extra flexibility.

If you have a 'Sixth Form' there are extra checks discussed in chapter 12.

A later part of the chapter is concerned with the problem of deciding priorities. This is an essential last step before going on to consider the scheduling stage in the next chapter.



10.2 Zarraga's Rule

One of the limitations on your timetable is the way in which the Teacher-teams of the Upper School interact with the 'pure class' activities of the Lower School. Zarraga's Rule can help you to reduce the interaction and find more flexibility for your scheduling. (The formal statement of Zarraga 's Rule is given later.)

Consider this example. Here is a teacher-team in Year 10, consisting of 6 teachers called AA, BB, CC, DD, EE and FF:

| | Monday... | Tuesday... | Wednesday... |
|----|-----------|------------|--------------|
| Dr | AA | | |
| IT | BB | | |
| Sc | CC | | |
| Sp | DD | | |
| Hi | EE | | |
| Pe | FF | | |

These 6 teachers are due to teach Year 10 all at the **same** time, in *parallel*. It might be an Option Block as shown here, or it could be a column of Maths 'sets'. Let's suppose that you have scheduled this block to Monday-period-1.

Now it may happen, by chance, that your Heads of Department request the **same** 6 teachers to all teach the **same** Lower School class, say 7A.

| | Monday... | Tuesday... | Wednesday... | | | |
|----------|-----------|------------|--------------|-----------|-----------|-----------|
| | En | Ma | Sc | Fr | Hi | Gg |
| Class 7A | AA | BB | CC | DD | EE | FF |

In this case these same 6 teachers are due to teach 7A, at **different** times, in *series*. This situation can lead to serious difficulties in scheduling.

Suppose for example that long after you have scheduled Year 10, you eventually come to schedule class 7A and look for a teacher to teach them on Monday-period-1 (ie. the same period as the Year 10 team above).

In this example you would find that teacher AA is not free, because he is teaching in the Year 10 team (above).

If you then try to schedule teacher BB with 7A, you find he is also not free -- he is also teaching in the Year 10 team. Similarly with teachers CC, DD, EE and FF.

If all the other teachers needed for 7A are not free, because they have been scheduled with other classes or with unavailable part-timers, then you are in difficulty.

The class is available, the room is available, the time-slot is available, but **none** of the teachers is free !

At the scheduling stage it is extremely difficult to see the reason for this. But applying this test at an early stage shows up the problem, and the solution is easy; see below.

And if you have reduced the number of staff teaching in Year 7 (eg. to try to emulate a primary school ethos, so that you have perhaps only 5 teachers for each class instead of the more traditional dozen) ...then the situation will be even more difficult !

The solution is easy:

Clearly this situation is less likely to arise if the 6 teachers who are in parallel in Year 10 are **not** put in series for the same Lower School class.

Unless there is a good educational reason against it, the 6 teachers should be allocated to **different** Year 7 classes. For example:

| | Monday... | Tuesday... | Wednesday... | | | |
|----------|-----------|------------|--------------|-----------|-----------|-----------|
| class 7A | AA | | | | | |
| class 7B | | BB | | | | |
| class 7C | | | CC | | | |
| class 7D | | | | DD | | |
| class 7E | | | | | EE | |
| class 7F | | | | | | FF |

Naturally you should discuss these changes with the Subject Leader, but because there is normally no issue of continuity of teaching, there is usually no problem.

I do not know who originated this idea but since it was first put to me by M.N. Zarraga of STAG, I think of it as **Zarraga's Rule**: *As far as possible, teachers who are members of the same teacher-team in one part of the school should be allocated to different classes for pure class activity in another part of the school.*

Applying this rule to Lower School classes, consulting with Heads of Departments as necessary, can lead to a surprising increase in flexibility in the later stages of scheduling.

The more heterogeneous the option blocks, the more important it is to apply this rule.

You may think that this example is slightly far-fetched. But in practice you will have not just a Year 10 block but also a Year 11 block of teachers at the same time (and maybe Years 12 and 13 as well), and perhaps a block of Maths sets in Year 9, all of them causing conflicts for 7A. So the more flexibility and freedom you can find, the better.

The chapter continues with:

- More on Zarraga's Rule, and how to use a computer to check it,
- Balancing the 'teaching power' for lower-school classes,
- Deciding Priorities:
Fixed Points, and how to prioritise them,
Part-time teachers, the two main types, things to consider,
Split-site schools, their particular problems;
Looking for ways to reduce movement in split-site schools,
Teacher-teams, how to prioritise them,
Rooms and their priorities,
Lesson-spread (pattern) and length,
Other constraints and priorities to consider
- Solving problems; Using diplomacy
- Looking for more flexibility before you start scheduling.