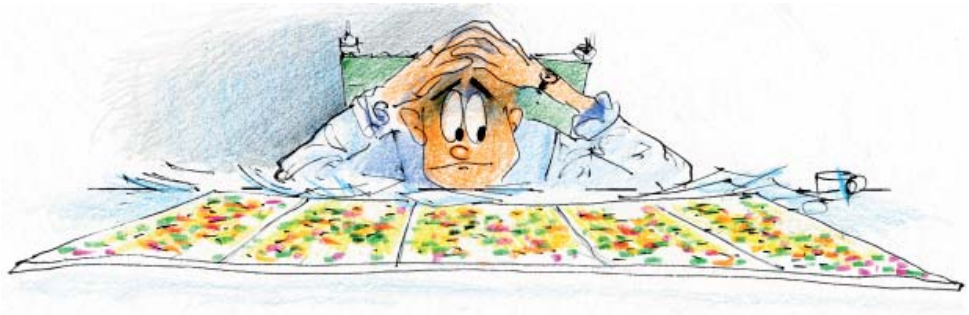
4 Schematic Diagrams

Whenever a new curriculum diagram is proposed, or structural changes are made to an existing curriculum, it is essential to look at the viability of the new ***structure***, to see if it is logically and practically possible.

This involves drawing a simplified timetable grid called a Schematic Diagram, to see if it shows us any impossibilities.

It is valuable to draw a Schematic Diagram for all, or part, of the curricular structure whenever the curriculum diagram changes, or whenever the constraints on the curriculum change.

It is far better to discover any problems at this stage, when you can see the underlying reasons, and find solutions, than later when you are deep in the complexities of scheduling.



And it was going so well, until I started to try to put lessons on the timetable...

4.2 Looking at the logic of the curricular structure

An 11-16 school in Derbyshire had only one Re teacher, so they teamed Re with Careers (Ca) and proposed a Curriculum Diagram like this:

Year 11	En En En En En En	Ma Ma Ma Ma Ma Ma	Sc Sc Sc Sc Sc Sc	Fr Fr Fr Te Te Te	Fr Fr Fr Te Te Te	It It It Pe Pe Pe	Pe Pe Pe It It It	Hs Pe Dr Mu Gg Ms	Ar It Hi Dr Sp Gg	Hi Hi Ms Gg Hs Ar	Re Ca Re Ca Re Ca	Se Se Se Se Se Se

Look at the Re + Ca blocks in the diagram. Is this feasible?
To staff each of these small blocks needs only 1 Re teacher + 1 Ca teacher.
But because everything else is blocked across the Year, all these Re+Ca blocks have to occur *at the same time!* And with only 1 Re teacher it means that this curriculum is not possible.

4.3 Looking at the spread that is available

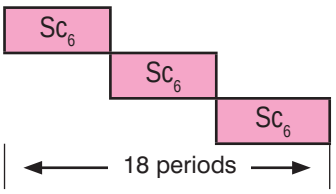
A 2-form-entry school in Staffordshire proposed the following:

6A	Se_2	Pe_1	Re_2	En_5	Te_4	Ma_6 Ma_6	Ga_2	Mu_2	Ar_2	Sc_6 Fr_4 Hi_2 Gg_2 Sc_6 Fr_4 Hi_2 Gg_2
6B	Se_2	Pe_1	Re_2	En_5	Te_4	Ma_6	Ga_2	Mu_2	Ar_2	Sc_6 Fr_4 Hi_2 Gg_2

14 periods

The Sc, Fr, Hi, Gg are in a Container Block, to provide 3 groups for each of these subjects, consistently-setted (see section 2.10), because the school has only one French teacher and only one Science lab.
Ignoring the oddness of consistently-setting Science-with-French, is this structure possible?

In fact the last block is mathematically impossible.
For Sc_6 to be taught to 3 groups non-simultaneously needs 6 + 6 + 6 = 18 periods:
But there are only 6 + 4 + 2 + 2 =14 periods included in the block. It cannot be done.



The solution is to add *at least* 4 more periods to the block, so it is *at least* 18 periods wide.
For example, bring Music and Art into the block:

Sc_6	Fr_4	Hi_2	Gg_2	Mu_2	Ar_2
Sc_6	Fr_4	Hi_2	Gg_2	Mu_2	Ar_2
Sc_6	Fr_4	Hi_2	Gg_2	Mu_2	Ar_2

4.4 Drawing a Schematic Diagram

A Schematic Diagram is like a simplified school timetable.
It plots **classes** against **time** but it ignores (at least initially) some of the essential features of the final timetable.

A Schematic Diagram completely ignores the effects of period-breakdown (singles or doubles, etc), the effects of part-time teachers, the effects of fixed times for PSHE or swimming, or the requirement for the distribution of lessons over the timetable cycle.

Instead it focusses on ***constraints***, to see whether these make the proposed Curriculum Diagram impossible.

Schematic Diagrams can be useful in answering "What if . . .?" questions, particularly when a major change in the curricular structure is being considered, or if the constraints on the curriculum change.

An 11-16 6-f.e. school in London proposed this Curriculum Diagram:

9A	Ma	En	Sc	Hu	Fr	Te	Pe	Ga	Re	Mu	
9B	Ma	En	Sc	Hu	Fr	Te	Pe	Ga	Re	Mu	
9C	Ma	En	Sc	Hu	Fr	Te	Pe	Ga	Re	Mu	
9D	Ma	En	Sc	Hu	Fr	It	Pe	Ga	Re	Mu	
9E	Ma	En	Sc	Hu	Fr	Ar	Pe	Ga	Re	Mu	
9F	Ma	En	Sc	Hu	Fr	Ar	Pe	Ga	Re	Mu	
periods:	3	3	3	3	3	4	2	2	1	1	= 25 pds

So far so good. But (like all schools) this school has some **constraints**:

1. Maths is shown in half-year blocks because the school does not have enough Maths teachers to teach both halves together.
   The same applies to En, Sc, Hu and Fr.
2. There is only 1 Re teacher.
3. There is only 1 Music room.
4. There are only 2 teaching-spaces for Pe (the Gym and the Hall).

Question : Is the Curriculum Diagram still feasible with these constraints?

The answer is to draw a Schematic Diagram, as shown on the next page.

The chapter continues with :