

This document gives an outline of the Cactus Subject Grouping Service. Further information on pricing and contacts can be found on the Cactus homepage: www.CactusOptions.com, or by emailing a member of our team at office@CactusOptions.com.

What is the Cactus Subject Grouping Service?

Every year, schools give prospective GCSE and A-level students a form asking them to choose the subjects they want to study in the following year. These are often known as “options columns” or “blocking structures”, and they may look something like this:

Please select one subject from four of the five columns				
(1)	(2)	(3)	(4)	(5)
Maths	Further Maths	Art	Chemistry	Biology
Media Studies	Geography	History	Computing	French
	Physics	P.E.		Spanish

The options available to each student are dependent on the way that the subjects are split into columns. In the example above, students cannot study Further Maths and Physics because they appear in the same column. On the other hand, they are free to study both Maths and Art, despite this often being an unpopular combination

The Cactus Subject Grouping Service ensures that the subjects in your school are arranged into columns in the correct way so as to maximise the number of students whose preferred options are met.

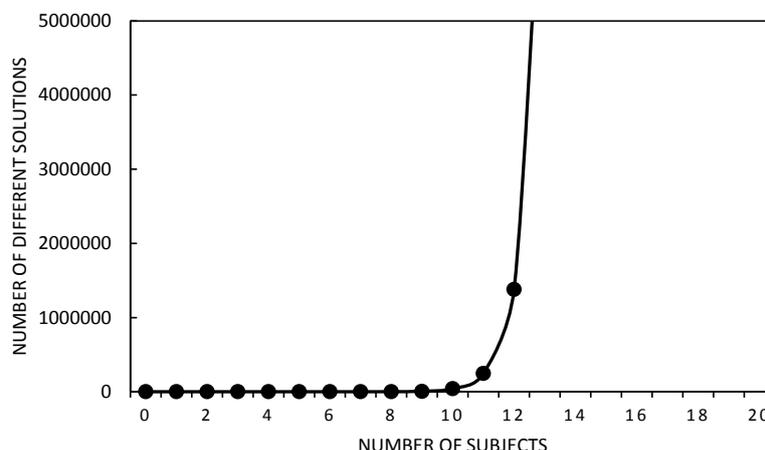
Why are subjects put into columns?

The main reason is that it assists the timetabling process, because subjects from the same columns can be taught at the same time. Using the example above, we could have a timetable like this:

Monday 09:00-10:00	Monday 10:00-11:00	Monday 11:15-12:15	Etc...
Subjects from Column 1 (Maths and Media Studies)	Subjects from Column 2 (Further Maths, Geography, Physics)	Subjects from Column 3 (Art, History, P.E.)	...

How do we split subjects into columns correctly?

In the above example, the thirteen subjects are split into five columns. The total number of ways of doing this (the total number of solutions that we might have used) is 10,306,752. Things get even more complicated for larger numbers. For example, with 30 subjects split into five columns there will be more than seven quintillion possible solutions. The following graph shows the number of subjects and the resultant number of solutions using five columns.



Cactus is able to identify the best possible solution for your school from among these many options. Schools simply find out what their prospective students want to study, and Cactus then uses this information to produce a solution that maximises the number of students whose preferences are met.

Why are students' subject options important?

The way that subjects are split into columns is very important for both the school and students.

1. In areas where schools compete for numbers, students are more likely to choose the school that allows them to study their favoured options. More students brings increased revenues.
2. Allowing students to select their favoured options is beneficial for their studies because:
 - a. It can bring bringing higher rates of successful outcomes.
 - b. It can improve student behaviour and engagement and reduce instances of students changing their options mid-term.
3. Where appropriate, it reduces the need for schools to have to create additional classes to accommodate students' needs.

How does the process work?

One of the main benefits of the Cactus Subject Grouping Service is that it requires minimal investment of time from your school. No staff training is needed, and no software has to be purchased. Ultimately, the only information needed to produce your customised solution is a list giving the preferred subject options of each student. This can be sent to us in a table (spreadsheet) like this:

A	B	C	D	E	F
Student #1	Maths	Further Maths	Physics	Chemistry	
Student #2	Physics	English	Maths	Further Maths	
Student #3	English	Physics	Maths	Further Maths	
Student #4	Chemistry	French	English		
Student #5	French	German	English Lit.	Latin	

This table shows example input for five students, one per-row. We see that the first student wants to study Maths, Further Maths, Physics and Chemistry (first to fourth options respectively). Similarly, Student #2 wants to study Physics, English, Maths and Further Maths.

We use our own specialised algorithms and computing facilities to process this information and produce a customised solution for your school that maximises the number of students whose options are satisfied.

Other factors to consider

Every school is different, and it is usual for individual schools to have additional needs.

1. Some subjects may always need to be in separate columns, such as those taught in the same room or by the same teacher.
2. Some subjects may need to be in the same column (e.g. pairs of subjects for which a student can take a maximum of one).
3. Subjects usually have a maximum class size and a limited number of qualified teaching staff.
4. Some schools also choose to prioritise students' first and second subject options over others.
5. Some subjects are offered as double subjects and therefore span two columns.

This information is captured in a short [questionnaire](#). It is then taken into account when producing your solution (This is downloadable as a [.pdf](#), or [.docx](#) word document).

We save you time

According to research carried out with our partner schools, we estimate that the administrative task of arranging a school's option columns can take an experienced member of staff up to 25 hours for A-levels, and a further 25 hours for GCSE, each year. In contrast we estimate that using our service reduces this to around 30 minutes at the school side. The only requirement for the school is to collect the information described above and then send it to Cactus.

What do I get for my money?

Upon receipt of the above data, schools are provided with a detailed report containing a breakdown of

- who wants to study what,
- the number of classes required for each subject,
- the most popular subject combinations,

together with a customised solution. This solution groups all of the required subjects into the specified number of columns such that the maximum number of student options are satisfied. A [report](#) is also provided giving a detailed breakdown of the requirements that have been met and those requirements that cannot be met (if any). If this solution involves any students whose first or second choices are not satisfied, a second solution is also included free of charge in which the satisfaction of students' first and second subject options are given a higher priority. (Some schools find that students place more importance on these options and are more flexible with their remaining subject choices.) An example report can be found [here](#), and an up-to-date price list [here](#).

Case Study: Bishop of Llandaff Church in Wales High School

Bishop of Llandaff is a co-ed, state comprehensive in Cardiff, one of the UK's major cities. The school came under new leadership in September 2014, and its sixth form was quickly identified as an area with significant untapped potential. Consequently, a leadership team implemented a range of actions, including updating the existing key stage 5 subject options.

Along with a strong focus on improving teaching and learning, a sixth form recruitment drive included the establishment of a close transitional relationship with current year 11 pupils and a concerted effort to market the sixth form to students from other institutions. To do this, in April 2016 questionnaires concerning the preferred study options of each student were circulated to both incumbent year 11s and prospective external students during a sixth form taster day. This information was then used in an anonymised form by Cactus to produce a set of optimal subject columns that maximised the number of students whose options were satisfied.

The school found that the solution returned by Cactus resulted in a situation where no existing year 11 pupil was forced to move to another school due to a key stage 5 subject clash. Meanwhile, more than ten applicants from other schools cited the viability of the options columns as one of their main reasons for applying to Bishop of Llandaff. **At the start of the following school year (September 2016) Bishop of Llandaff's applications to the sixth form had risen by 32%, from 134 to 177.** The impact of these improvements has also been felt financially in the school. The additional income is being used to fund future improvements to infrastructure, teaching and learning and community reach, greatly assisting the school's improvement journey.

What do I do now?

If you think your school would be interested in saving time, increasing GCSE and A-level admissions rates, and improving outcomes, then please visit our website and get in touch for a no-commitment consultation: www.CactusOptions.com, email: office@CatusOptions.com.



"Optimising Student Choices"