1. The research question needs to be **specific** and **focused**. It is one or two sentences, which clearly and specifically states the **objective** of your **investigation** (a grammatically correct question about a precise relationship is asked- precise locations, measurements and names are given).
2. Should ideally be an investigation using the **scientific method** and **quantitative**.
3. **Terminology** must be specific and relevant to your individual experiment.
4. A specific **independent variable** to be manipulated is included.
5. A specific measurable **dependent variable** is included.
6. Must **not** be ambiguous in any way
7. Investigate something quantitative and its **correlation** to something else quantitative.
8. You must **state** the dependent variable (you measure) and the independent (you change) and list all variables that need to be controlled and **HOW** you would ensure that they were indeed controlled.
9. **Cannot** have two variables changing at any one time.

**Things to think about…**

* Survey type research does not stand up to scrutiny unless it is a large sample without any group bias.
* Cannot mix **genders** or **age groups** in a sports science investigation since male-female physiology/anatomy/biochemical dynamics are different as is true of age groups.
* Be careful of **too much variation** in your question e.g if you had gender in your research question this would be difficult as there are too many differences such as age, body type, lifestyle etc so be specific.
* A **poor question** would be “Investigate environmental factors on physical performance. A **good research question** would be “What is the effect of humidity on the physiological factors that indicate an athlete is working at a steady rate?”
1. **Student question**

Is there a relationship between running surfaces and long distance performance?

**Teacher comment**

* *As long as it can be quantified but track surface is not quantitative. Nevertheless you can establish that the surface does/or does not affect the performance of a specific runner.*

***Important: you have to define ‘performance’.***

1. **Student question**

What is the impact of different BMI categories of non-athlete male 17-year-old students on their speed using the 40-meter sprint test?

**Teacher comment**

* *What does 'impact' mean?* ***Should be ‘Effect of’*** *How do we define 'non-athlete' ? Need to be careful in terminology.*
* *What is a non athlete? Make sure all variables same for all boys except of course BMI.*
1. **Student question**

How does posture affect vital lung capacity (slouching, straight back)?

**Teacher comment**

* *Cannot measure posture (its qualitative) but the experiment can allow a discussion of qualitative relationships.*
1. **Student question**

Does different types of shoes affect acceleration?"

**Teacher comment**

* *You cannot 'graph' shoe type, its qualitative.*

**Student question**

Could you graph height of soles and call it?

Does sports shoe heel thickness affect acceleration? and then she can graph the shoe heel thickness.

***Teacher comment***

* *That works but it would need to be acceleration in the first 4 seconds of a sprint as I predict negligible difference in acceleration over a longer period.*
* ***Must be same girl all the time though.***
1. **Student Question**

How does age affect vital lung capacity

***Teacher comment***

* *Yes, but big age range needed from year 1 to oldest staff member*
1. **Student Question**

How does gender affect diet preference? ***There are only two genders but in any case this is not a research question of any value as variables between even a pair of identical twins is enormous where ‘preference’ is concerned.***

Or

Is there a relationship between gender and dietary requirements? …this could allow for  such things as males having different body structure, muscle mass etc. **Too obvious**

***Teacher comment***

* *It can only be qualitative and not quantitative, survey only and it can't be measured. When you say gender, which means two groups only (men and women). There is so much variation among women or among men (ethnicity, height weight etc) that this survey becomes difficult in it's reliability.*
* *Think about, how do you measure things? how do you measure someone feeling full, you can't?*
* *This is all survey type research but would not stand up to scrutiny unless a large sample. Best to ask for calorie intake versus age type and look at this relationship for each ethnic group e.g. some races of people may be more energy efficient or energy demanding as they age.*
1. **Student Question**

"How does nationality (**meaningless factor i.e. which passport do you hold !!)**affect a person's dietary preferences?"

And I was wondering when I collect data, could I split "dietary preferences" into sub categories such as carb consumption, meat consumption, and vegetables consumption, and then plot 3 graphs in my data presentation?

***Teacher comment***

* *Ethnic background refers to where a person has descended from and is more specific than nationality. It would affect how they are brought up because of the influences.*
* *Dietary preferences will not be quantitative, it will only be only qualitative because your describing if you like something or not, you can't measure how much somebody likes something.*
* *Then of course there is cultural bias, a Thai person might not like Pad Thai because they have not grown up with it but like hamburgers because they grew up in the USA.*
* *To answer your questions, you can split dietary preferences into sub categories and you might see a trend, you can also plot 3 graphs, you might see something meaningful but remember a small amount of people won't have lots of meaning, you need to have 100's.*
* *Remember to also comment/ discuss underneath your graphs.*
1. **Student Question**

For the data collection for the IA, would it not be possible to ask a question like "Of the school lunch plates, how much of the rice do you finish?" to get a quantitative estimation? Or would that not be an accurate way of getting a "number" value and I should stick with more basic questions like "do you like vegetables?". ***There are only two answers, yes or no and there are different types of vegetables (carrots, parsnips etc)***

1. **Student Question**

"How do nutrients intake and dietary preference differ from athletes and non-athletes?"

***Teacher comment***

* *What is your definition of an athlete and a non-athlete- please explain?*
* *There are 2 variables here- intake and preference.*
* *A better question would be “How does an athletes intake differ in season (when they are active in their sport) and out of season? E.g for a golfer there is no difference but for a basketball player it will very different.*
1. **Student Question**

To collect a lot of data, I will ask about 10 athlete and 10 non-athlete students to record their diet (what they eat and how much they eat) for three days.

Since I can only change one aspect (athletes vs non-athletes), should I investigate people from same age, gender

***Teacher comment***

* *10 is too small but it would have more meaning if it was 50.*
* *Yes*
1. **Student Question**

How does advertising and culture affect dietary choice?

***Teacher comment***

* *This title is more a 'market research' question.*
1. **Student Question**

How does Gender affect ones Calorie intake- **too obvious**

***Teacher comments***

* *Too much variation within each gender (age, body type, lifestyle etc) and there are only two genders. Gender obviously affects calorie intake! Boys musculature is greater than female but less so at pre-pubescence.*
* *Therefore a better question how does the gender based difference in calorie intake change with age i.e. at age 10 there will be little difference but by 17 it will diverge. There might be an interesting convergence at around age 13 since girls mature faster than boys for a year or two.*