Finding good quality information to support your TeenTech Project

When you're doing **any** of the Teen Tech projects, you need to make sure that you have all the information you need to help you to make good decision. This guide will help you to become a more efficient and effective researcher.

What you will learn from this guide:

- It will **show** you how to be **more effective** when searching for information
- It will help you **make judgments** about **how useful** the information that you find is
- It will show you the **research process** from the **beginning to the end of your project**
- It will **suggest some websites** that you may find useful.

Key points about doing research:

1. It's easy to assume that you'll find all the information you need for your project with a search engine – **information is not always free** and **not everything you will need will be online**. Relying on a simple search means you could **miss** vital **information**. See below for how to make your online searches more rewarding.
2. Don't forget to check your **school, college or public library** for useful books. They may also have **online databases** that can give you access to extra resources.
3. **Discuss** what you need to find out with the **librarian** at your **school/college** or contact your local **public library** or **university library staff**. They should all be able to help you get the access extra resources.
4. Make sure that you ask your teachers and the Teen Tech contacts to help you make contact with the right person.

Search strategies or where and how to start:

Once you have an idea about **your project topic** you need to find **relevant information** to guide your project.

Common mistake: Most people will simply type in the first things that come into their head into a search engine. This approach will only get you so far. Time spent as **a team thinking** about what you want to find out, **is time well spent** and good researchers create a '**search strategy**' where they work out **what to search for** and **where to look for it**. As a first step, identify a range of **keywords** that describe your topic.

For example: Imagine you were carrying out a project to invent a **flying car.** The obvious words to use when searching for this topic might be ***flying car***. However, if you only search for ***flying car*** you might miss other resources where someone has described it differently. You can find more resources by using *synonyms* (similar or related terms). You can use a thesaurus, such as Thesaurus.com to help you find different words.

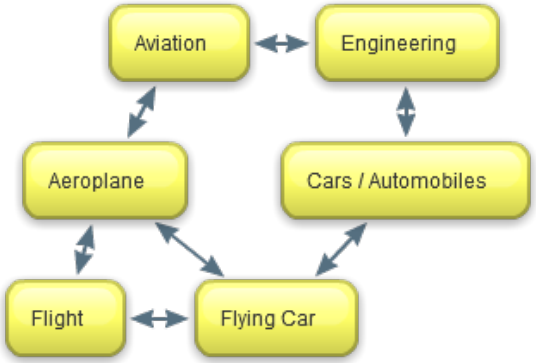
Other keywords you could use for this search:

Flying	Car
Fly	Automobile
Flight	Vehicle
Aviation	Motor
Aerial	Motor car
Aeronautical	Transportation

TOP TIP: Carrying out a **phrase search** is a simple way of improving your results. You put two or more words into speech marks so that the search engine will look for them together **e.g. "flying car"**

TRY THIS: Useful Ideas for expanding & evaluating your search:

1) **Create a word map** (see diagram) **to show how the terms that you are using link the words** together.



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It might start small and then **grow with your ideas.** You can use it to show how one word fits with another. It also creates **evidence of your thinking** that you can share with your team.

2) **Make a note of how successful using a particular word/phrase is** in one search engine so that you can use it again in another (don't just rely on Wikipedia or Google!). You can use these notes as evidence of your search strategy.

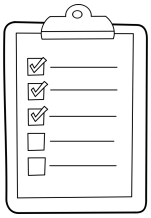
3) **Choose another word if the first one is not successful**. Sometimes you may have to use a more general one- for example "aviation" instead of "aeroplane" from the example given. **Don't forget to keep records of what you do for your research log!**

4) Make a note of the useful websites or resources that you have found for your team **to look at**. **You can easily create a list (or bibliography) of your sources by using www.citethisforme.com or www.noodletools.com and creating a free account.**

5) **Read** and **make notes** on the information that you find. You can do this by **creating a mindmap using a free online tool (e.g. https://coggle.it; you need to sign up for an account) or by hand.**

You might discover **new keywords** from the websites you discover e.g. from the search – flying car manufacturer = Terrafugia. The team can then research this company that makes flying cars to find out more about it and to make sure that it is a genuine website. **'Spoof'** or fake websites do exist online (as an example try researching the 'tree octopus' and you will find a website devoted to this **made up creature**!)

Is my information any good? Or how to evaluate a source of information



Just because the information you've found is about your topic or came high on the results list from a search engine, that doesn't mean it is useful or high quality. You need to evaluate every source of information you find and decide if it is **relevant** to your project and how **balanced or biased it is**. **If you are not sure if you've found the best information, ask your librarian or teacher for advice.**

Remember that anyone can post something online and there is nobody controlling quality on the internet. It could be a person working for an organisation or business or a person who wants to share a fact or opinion. You need to understand why they have decided to share. It could be because they want to tell their version of the facts or they feel that other versions miss some facts out. That's why finding several pieces of information that have been written by different people can give you *all* sides of an argument as most issues involve several points of view. **You then need to decide whose opinion you trust and why.**

You can make this decision by **doing the CRAAP test on any information that you find; that is finding out about its Currency, Relevance, Accuracy, Authority & Purpose**. Ask yourself the questions below and talk through your ideas with your team and teacher/librarian.

If you are not sure if you have located the best information, ask your librarian or teacher for advice.

Key Questions to ask of an information source:

1) **Currency: Is the website up-to-date?** Has it been updated recently? You can then compare it with other information that you find – has the situation changed since this website was written? This will affect how you use the information.

2) **Relevancy:** Does the information help you answer your research question/support your project? It's very easy to get sidetracked when searching the internet. **Can you understand it?** It's no good using information that you do not understand. If you are just starting to find out about your topic, try simple websites or books first then more advanced ones later. When you're using search engines add keywords such as "High School" or "Key Stage 3" to find sites suitable for your age group.

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3) **Accuracy: Is it correct?** You need to check how **accurate** the information you find it. **Check your website** with information from other sources. Once you know that the facts are correct you can think about what the author is actually saying about the information (see 3).

4) **Authority: Find out who has written the information**. Who are they and why have they put the information on the internet? Does the person know what they're talking about? This will give you an idea of bias and how balanced or one-sided the information might be. Also consider:
    - Is the information country specific – does it matter? Do you want UK or American information?
    - Is it a named person a business, educational website or charity? This will help you make a decision on if and how to use it; **different types of people have different reasons for sharing information.**
    - **Check out the author using Google scholar to see if they have any other publications.**

5) Purpose: Does the web site aim to inform, sell or entertain? Does it include facts or opinion? Do you think the information is impartial? If you decide the information is biased, find alternative views on other sites to help you make informed judgments.

Social media sites give you opinions from individuals. They ***may*** be experts in their field, equally they ***may not***. Opinions can be useful, so be aware of who has posted items online so that you can figure out why they have posted a comment. For example:

- **YouTube videos** – can be useful, but you will need to check their facts. A video could be there to advertise a business or just to promote a certain opinion. Check the authority of a video, is it from an official site?
- **Tumblr** – personal photographs and ideas – these will often have no authority
- **Blogs** – anyone can set up a blog very easily, they are written opinions and can link to other websites or articles. You need to think carefully about **who** has written the information on a blog before relying on it and **what they know about the topic -** try looking if other people mention them, respond or re-blog them.
- **Twitter** – many people use twitter to share short updates and again you need to spend time thinking about the reliability of information you find on twitter. Many serious science and technology organisations use Twitter (e.g. the magazine New Scientist https://twitter.com/newscientist) but it can also be used by anyone to share their opinions. Official or verified accounts have a badge on them to identify them, like so:

Finally, **make sure that you do not plagiarise** (use or directly copy other people's ideas, images or writing and pretend that they are yours). To avoid plagiarising, **when you use other people's information provide a credit or reference to whoever wrote it. For online sources** always give a **web-link** to where the image or ideas came from. It shows that you are in control of your information and want people to see where your information has come from.

Sources of information

There are lots of places to find the information you will need to complete your Teen Tech project.

Books are great both to give you the basics of a topic and sometimes for more advanced ideas. Information in books is easy to find using the Contents, Glossary and Index pages. Staff in your school, college or public library can help you find books on your project topic.

Magazines and **Journals** can also be useful to find information. Magazines are usually about a specific topic (cars, technology, gaming etc.) so find out what magazines there are about your project area and look through past issues to find articles about your topic. Journals are similar to magazines but their articles are usually more 'academic' in nature. Many schools have access to Philip Allan journals (http://www.hoddereducation.co.uk/magazines) which are journals designed for GCSE, AS and A-Level students – ask your teacher or librarian if your school has a subscription.

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There are some places to search that you can only get access to in a **library** because they pay for you to have access to the content. Librarians call these types of resources **online databases** and these include sources such as Credo Reference (http://search.credoreference.com/) and InfoTrac College Edition (http://infotrac.thomsonlearning.com/)

Your local library will give you access to many databases for FREE. Visit the webpage for your local library. Search by using the county name e.g. Worcestershire public libraries, to see what online databases they have on their **catalogue**. For example: Newspaper databases - (InfoTrac or UK Newsstand), Environmental information - (GreenFILE), Encyclopaedias - (Britannica, Credo Literati) and Business Information - (COBRA for business start-up and Chamber of Commerce)

Wikipedia http://www.wikipedia.com
This can be a useful starting place to get an overview of a topic, but it can also be quite complicated and hard to read. It is often best to go to the references listed and read the original documents to get the information first hand. Wikipedia Simple http://simple.wikipedia.org can be easier to read and understand than the normal Wikipedia.

Other Encyclopedias
Online encyclopedias are useful for a basic overview of a topic and for helping to think of different keywords.
Encyclopedia Britannica http://www.britannica.com/ is a respected and trustworthy information source.
Q-Files http://www.q-files.com/ is an illustrated encyclopedia that explains topics using images and diagrams.

BBC Science website **http://www.bbc.co.uk/science**
The BBC is an internationally respected company that produces up-to-date and general information.

Data.gov.uk **http://data.gov.uk/**
A convenient source for official UK government statistics and public data.

ONS: Office for National Statistics **http://www.statistics.gov.uk/default.asp**
Data on economy, population and society at national and local level.

Wolfram Alpha **https://www.wolframalpha.com/**
This 'computational knowledge engine' helps you find answers to questions, data, statistics and expert knowledge.

Chromatik **http://chromatik.labs.exalead.com/**
An innovative tool which allows you to search for images by colour and keyword.

ImageSource **http://www.imagesource.com**
Large collection of high quality royalty free images.

Open Clip Art **https://openclipart.org/**
Collection of free clip art (and where we sourced the images in this document)

Using Google:

Google Advanced Search **http://www.google.co.uk**
This is the most popular search engine. The advanced search option can help you narrow your search to specific types of information such as spreadsheets, Word documents or PDF or to search by date. Just type *google advanced search* into the Google search box to find it. Google also has specific search engines for news, maps and images.

Google Scholar **http://scholar.google.com/**
Aims to only find information from 'academic' and 'scholarly' sources. Be aware though that while some of the information you find will be freely available, some will require payment to access the material.

Google Books **http://books.google.co.uk/**
If Google books finds books which match your search terms, it will show you a snippet providing details of the book and a few sentences of your search term in context. For some books a Preview is available if the publisher or author has given permission to view a selected portion(s) of the book or the Full Book View if the book is out of copyright.

From 2016 TeenTech are launching a **Research & Information Literacy Award** supported by the CILIP Information Literacy Group.

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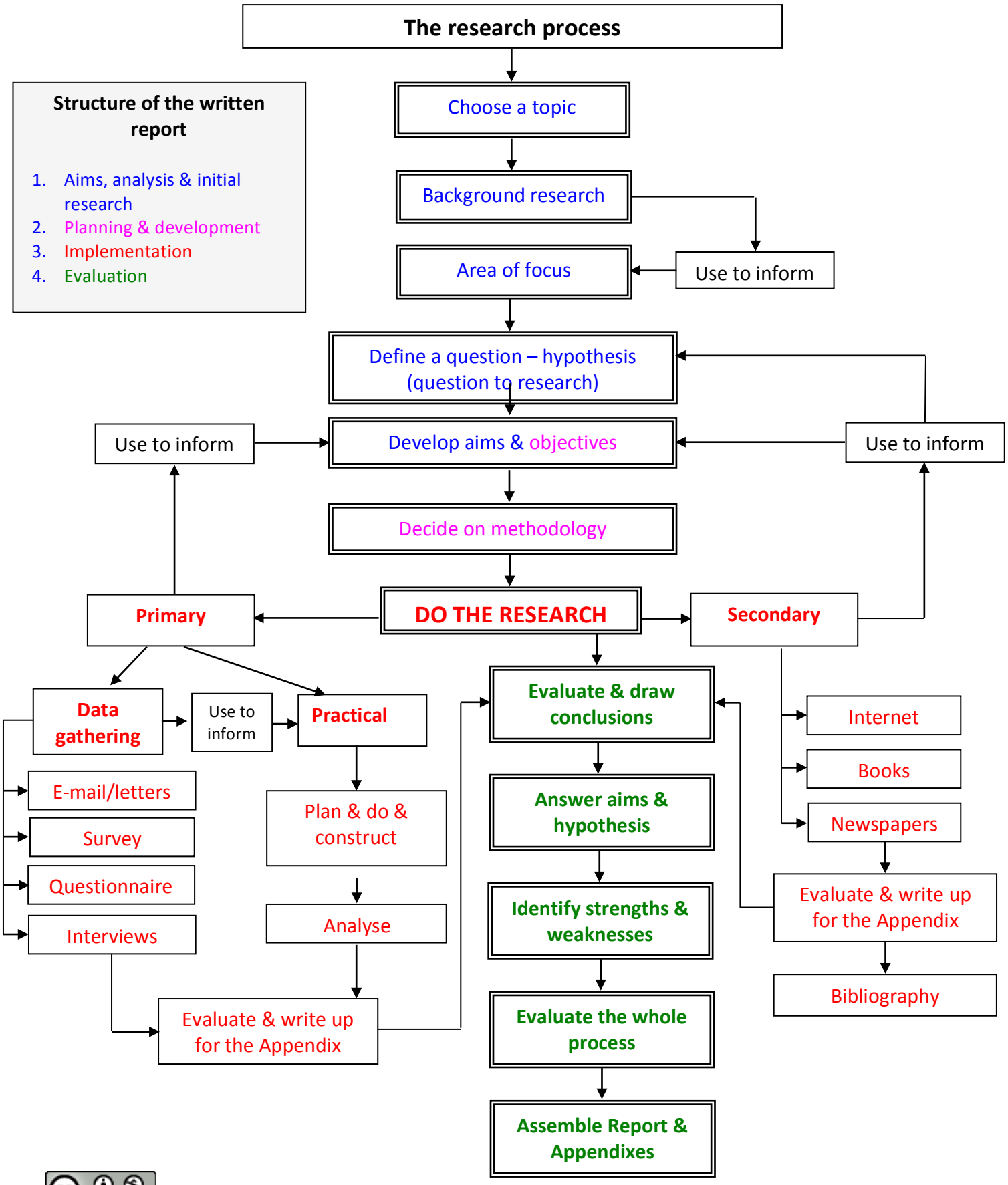
The following chart sets out the whole research process, which should help ensure your TeenTech project is of the highest possible quality:



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