

Teaching Students How To Write Their First Research Papers: A Research Guide Using Marc Aronson's *Trapped* and *Rising Water*

Book Summaries

Trapped: How the World Rescued 33 Miners from 2,000 Feet Below the Chilean Desert is the gripping, true story of the thirty-three hardy miners trapped in a Chilean mine for over two months. Based on interviews, news reports, and other research, Aronson uses a dual narrative of “Above” and “Below” to describe the tension and high emotions surrounding both the survival of the miners and the rescue effort to save them. Photos of the mine site, maps of the San José Mine, and illustrations of the massive equipment used in the rescue effort greatly enhance the reader experience; the counterpoint of light and darkness is both illuminating and terrifying. This true story reads like a suspenseful tale of desperation and triumph.

Rising Water: The Story of the Thai Cave Rescue is the true story of the Wild Boars, a Thai soccer team that got lost in Tham Luang cave and captured the attention of the world. *Rising Water* describes the international rescue operation in which cave-diving experts from all over the world collaborated on this delicate mission, factoring in concern for their own safety and for that of the trapped soccer team and coach. The boys needed to be rescued underwater, but how? Aronson tells a dramatic tale of death and life, of remorse and redemption, filled with as many twists and turns as the cave itself.

Writing a Research Guide

You've assigned your students to create their own book-based research project. You explain that you do not want a summary of the book, but an actual report on an original topic related to the book. Using issues related to *Rising Water* and *Trapped*, this guide will lead you through the process for any research topic.

When teaching good research techniques, remember QVC: Quality, Vetting, Compatibility.

Quality: Provide high quality resources for your students. You may automatically offer print resources and require one or more of them; however, don't assume that using books and magazines exclusively teaches students good research skills. Instead, encourage the use of the Internet. One way to do this safely is with a WebQuest. Collaborate with another classroom teacher or school librarian to discuss different research topics the students may be interested in. Then create a simple website (any wiki creator will do) with links to factual, unbiased URLs presenting cogent information. Some examples may include:

- <https://www.nationalgeographic.com/adventure/destinations/united-states/florida/two-divers-die-in-eagles-nest-cave/>
- <https://www.cnn.com/2013/07/13/world/americas/chilean-mine-rescue/index.html>

These types of websites are easy to find with Google searches, but they are not the first links on the page (Wikipedia is the first in both cases); that is why you may want to provide them online in the form of a WebQuest. Also, this gives you the opportunity to differentiate instruction and include regular and special education students by creating different WebQuests for different class levels, if appropriate.

Vetting: Some students will Google for answers regardless of your suggestions, so teach some simple online vetting skills. Allow your students to Google research topics, but insist on vetting. One way of vetting without penalty to the researcher is to require that students provide information about the website similar to an annotated citation. Have them provide information on the creator or owner of the website, the author, date created, name of the page, and most important, their rationale for using this website and accepting it as valid. Where did the author get the information? If it is from outdated or discredited sources, that should affect your decision to use it. This self-reflection often weeds out poor sources. The process may not prevent students from using unvetted websites, but it will enhance their skills by making them think about and identify their sources, the first step to successful vetting. Students can usually find the creator of the website on the About tab, often located at the very bottom of the webpage.

If you are a strict user of print resources, you can explain that the great thing about using print resources is that vetting them is much easier than vetting websites, and the information needed, like author, title, page numbers, and publisher, is easily found.

Compatibility: The easiest way to teach students to find research compatible with their chosen topic is to teach them to search targeted topics online. The most powerful online searching tool is the use of quotation marks. Consider the following searches* based on *Rising Water*:

- thai cave rescue—4,790,000 hits
- “thai cave rescue”—1,360,000 hits
- “thai cave rescue” map AND timeline—92,500 hits
- “thai cave rescue map” AND timeline—538 hits

*Google Chrome downloads as of 2/14/19

The issue is not using the Internet, it is searching on the Internet. Note how quotation marks reduce the hits from 4,790,000 to 477. Teach your students to search in phrases surrounded by quotation marks. Some sample searches include:

Trapped:

- “33 miners trapped”
- “copper mining in chile” danger
- “san jose mine chile”
- “common uses of copper”
- “nazca plate” tectonics chile
- “hephaestus god of the forge”

Rising Water:

- “tham luang cave” AND “wild boars”
- “cave diving accidents”
- “thai SEALs”
- “history of soccer timeline”
- “cave diving” AND “most dangerous sport”
- “international rescue efforts” “natural disaster”

Practice: Dr. Aronson had to approach *Trapped* and *Rising Water* like a student researcher: he brainstormed, exploring topics surrounding mine disasters and cave diving rescues, searching for significant aspects and people to decide what was important, relevant, and most interesting to his audience; those decisions became the books. Offer students that same opportunity for exploration by providing a series of links where they can access overarching information about the Thailand cave situation, such as <https://www.bbc.com/news/world-asia-44791998>, as well as sites that discuss more specific topics like the potential for an event to cause Post-Traumatic Stress Disorder (PTSD): <https://www.express.co.uk/news/world/639433/Chilean-miners-the-33-antontonio-banderas-juan-illanes-San-Jose-mine>. This can be done in writing or online if you use a classroom platform like Google Classroom or Edmodo. Discuss with students which facts or experiences from these articles they notice in *Rising Water*, and why Dr. Aronson might have decided to include them.

Research Process

Consider sharing the Model of the Information Search Process chart found at <http://wp.comminfo.rutgers.edu/ckuhlthau/information-search-process/> with your students as a helpful guide. The model is based on Kuhlthau’s 1991 Information Search Process.

When brainstorming with your students, you already have great resources a few pages away. In both *Trapped* and *Rising Water*, Dr. Aronson describes his research process and maps out how he approached quickly compiling and organizing the disparate topics and massive amount of information needed for a book. In the notes and bibliography sections, he also tells readers where he found all his information. These tools can be used as models for a basic, annotated search process. Dr. Aronson used the following steps once he had his topic:

- Brainstormed format and method.
- Outlined what he thought he needed in detail.
- Employed time and energy to procure multimedia data, some of which worked its way into the final book and some of which did not. Take this opportunity to teach students that it’s perfectly fine not to include all data in the final product; it is always more fruitful to collect more than they will use.
- Organized the data into connected sections.
- Separated the useful data from the irrelevant data.
- Wrote and rewrote based on an outline that he had been revising and expanding during the entire research project, since things will change during research.

You can adjust Dr. Aronson's steps based on your students' needs and project timeline, integrating elements from the author's notes that are most helpful. Then move on to these six detailed activities with your students as you continue the process.

1. **Initiation:** Brainstorm topics in class, discussing some of the specific issues involved with these topics. Ask students to start thinking about what topic and issue sound most interesting to them.

2. **Selection of a topic:** This is often the most difficult step because the possibilities are seemingly endless; some students get caught up and become overwhelmed. You may want to provide a list of suggested topics without necessarily limiting students to the list. For instance, go to the sources sections of Dr. Aronson's books and start from a broad category like mining, diving, drilling, caving, or copper. Then ask your students to narrow down the topic by asking questions of interest using the five W's (Who, What, Where, When, Why). Why is copper so important that people are willing to risk death to mine it? How much does a gigantic drill like the Strata 950 cost? What is it made of? How are the dangers of cave diving similar to those for all types of diving? How are they different? Hopefully, having students ask these questions will result in a researchable topic of interest.

3. **Explore the topic:** This is a good time to hit the encyclopedias, books, magazines, and online databases. Have your students build a background in their topics. Let them learn the lingo, understand the important concepts, and be able to develop the questions they want to answer. Facilitate as needed, but they will own the project much more if you allow them freedom of choice (as long as the choice is reasonable). Let them also decide if this is the topic for them; if they want to change, now is the time.

4. **Formulate the topic:** This is a perfect time to introduce outlining, either formal or bulleted. Students start to create a logical timeline or progression of points for their papers. Students can simply start with a list of questions, and then answer them through their research. Their outline is their list. Outlining is another self-reflective activity that forces students to question their topics and to begin to see the sense in their arguments; for instance, they learn that copper is essential in electronics, discover that cave diving is a popular activity when they visit <https://www.madacaves.com/>, or realize that poorly maintained mines are connected to socioeconomic conditions near the mines, etc.

5. **Collect the data.** Students have already decided on a topic and outlined it; now is the time to collect the information that will be used in the research paper. Remember that the best way to get students thinking about sourcing is to require justifications, as described above, for using that particular source over a database or print item. Reasons will often include timeliness of the data; for example, students may not find many books about the Thai cave rescue because this may be the first. Remind students that lots of data provides lots of choices; limited data provides limited choices. At this point, more is more; during editing, less will be more.

6. **Present the data/Write the paper.** This is the time to teach students how to write a thesis statement and a research paragraph. Once they know how to do that, all they will need is an introduction and conclusion.

A thesis statement is the engine of the paper, and should be either the first or last sentence of the introduction. It provides significance and power to all the points being made within. It usually provides setting or context to the issue, and a brief statement of the problem within that issue. For example, “In Chilean mining, the 2010 accident caused repercussions in the mining industry that are still felt today” or “The Thai cave rescue operation of 2018 demonstrated the extreme dangers of cave diving.”

Think of a research paragraph like a sandwich. The top bun is the introduction of the data, where students situate the data, place it in context, and/or prepare the reader for it. The middle is the meat, the data itself; it can be raw, like cheese (primary citation), or cooked by the author, like hamburger (secondary citation). The bottom bun is the explanation of why the data is significant, what makes it align to the thesis statement, what makes it indispensable to this paper. Try not to ask for extremely long paragraphs; at this level, students are better off making one or two points well than four points poorly. Once students have research paragraphs, introductions, and conclusions, then you are ready to rock. Good luck!

Bonus Activity: Work with students to compile a list of people in the book or other experts in cave diving or mining that they’d like to contact, or consider reaching out to professional organizations with which they are associated. Request information and/or interviews for students to use in their research projects. Primary sources are always strongly recommended, and often interesting to track down; feel free to contact them via social media as well, or read another book that they’ve written.

Projects/Extension Activities

Offering extension activities enables and empowers students to think outside of the box, to let their creativity flow, and to allow them more control and autonomy over their assignments, generating more self-driven interest. Research on interest theory shows that student engagement depends on several factors like purposeful assignments, authentic topics, and the autonomy to achieve ownership of the material. Writing and researching are reflective and reflexive activities, and projects are most successful with eager engagement from students.

1. Have students work together to create a map of either the Chilean mine or the Thai cave. Can you make it in three dimensions? What are some of the challenges in making a map? Remember, the accuracy of a mine map could mean the difference between life and death for someone trapped inside.
2. Have each student choose one of the Wild Boars or one of miners and write his narrative, making sure to use lots of details from the experience to make it sound authentic. Remember that the more imagery and descriptive language that writers use, the more alive the experience becomes. Students can also consider writing from the perspective of one of the rescuers, politicians, or family members instead.
3. Have students create a comparison/contrast between the rescues in these two books, or between one of the books and another true rescue effort. How do the people being rescued react

as compared with the rescuers? What physical or natural obstacles prevent an easy rescue? Are there differences in how viral the event becomes? Do people in different parts of the world respond differently to disaster? Do they react similarly?

4. Using some construction paper, pens, pencils, and markers, ask students to create a board game based on the book they've read. Cards can contain questions to be answered or facts to be used to complete the game. The board can even look like a cave. Students can also download maps of the country, the region, and the cave itself to use in the game; perhaps surrounding towns are stops in the game.

5. Help students see that in both books, tent cities instantly appeared as family members of the miners and soccer players gathered for information and comfort. Have them take a look at Hooverville, the name for every tent city that appeared during the Great Depression. Although they came into being in very different ways for very different reasons, are they also similar in what they provide and do not provide? What other qualities do tent cities have? Are they homes for the stateless?

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