

NTX Future City Junior, 2025

PART 1

RESEARCH ESSAY: ABOVE THE CURRENT (FLOATING CITIES)

Research Essay Assignment

Students write a 1,000-word essay that introduces their city and provides a solution to this year's challenge—Above the Current: design a floating city 100 years in the future and provide examples of technologies and innovations that are used your city and how they work to keep the citizens and the environment healthy and safe.

Floating Cities Background

It's predicted that by the end of this century more than 500 coastal cities around the world will be underwater because of sea level rise. Massive storms fueled by climate change will further threaten flooded coasts. With 40% of the world's population living in coastal areas, what will happen to the people when the waters rise? Will the shrinking land mass be able to handle the increasing density of humans (and other animal life)?

Scientists and engineers have already been studying the problem and building prototypes of floating cities that can rise along with sea levels and ride the waves of big storms. Built with sustainable materials and clean energy, they are designed to help heal the damage already done to the oceans and planet in general.

Research Essay Requirements

- In their essay, students will present their future city – at least 100 years in the future, describe its location, and share its innovative features.
- The students will explain what their city was like in the past (before it became a floating city), the impact of sea-level rise on the city infrastructure and the citizens.
- They will describe the overall design and innovative technology that allows their future city to float.
- They will discuss how these technologies both protect the citizens from environmental impacts and protect the environment from the effects of floating civilization.
- The essay cannot exceed 1,000 words and should be free of grammatical and spelling errors.
- The essay can include a maximum of four graphics.
- The essay must cite at least three sources of information used during the idea development process. MLA style is preferred (see Research Strategies for more detail).
- Students should use a variety of sources of information, such as interviews with experts, reference books, periodicals, and websites. (Note: Wikipedia is not accepted as a source of research.)

Suggestions and Resources for Completing the Essay Assignments

See the Research Essay Outline (attached). Go over the outline with the students and have them list what they want to say in each section. Then suggest that they divide the sections so that everyone writes at least one part of the draft. When it's time to write the final version, they'll have plenty of material to work with. Also remind students that they can include up to four (4) graphics in their essay.

Research Essay Resources:

- Floating City Research Questions: This resource provides background information and questions for guiding student research (attached).
- Future City Design: Questions to Consider: Students in the Junior Competition are not required to design a complete city – just focus on the solution to the floating city problem. The questions in

this handout cover a wide range of city issues but will help guide students to consider all the related aspects of their city solution (attached).

- Floating Cities: Real World Case Studies: Students will find these real-life examples of technological advances both inspiring and instructive (attached).
- City Essay Suggested Outline: This outline explains what students should include in each section of their essay and how to organize their essay (attached).
- Research Resources: pre-selected set of references and resources (attached).
- Review the Research Essay Rubric (attached) to make sure you understand what the judges will be looking for in your paper. Note: the Junior Essay Rubric is different from the one in the handbook.
- Analyze Essays from past NTX Junior winners to give the students a strong sense of what they are aiming for in their own essays. Go to Junior Team Center (http://www.dfwfuturecity.org/team_junior.html).

Research Essay Deliverable

- The essay must be submitted as a Word document (not .pdf) via the NTX Junior Team Center (http://www.dfwfuturecity.org/team_junior.html).

Competition Scoring

Teams can earn up to 60 points for their Research Essay. Make sure they have thoroughly covered these categories in the rubric to maximize points:

- Introduce City 15 points
- Problem and Solution 18 points
- Judge Assessment of Solution 15 points
- Writing Skills 12 points

Total 60 points

Scoring Deductions

5 points – Late submissions are accepted with a small point deduction (see online schedule)

10 points – For essays that exceed the 1,000-word limit.

SUGGESTED ESSAY OUTLINE

In the Research Essay, you will share your vision of your future city and your futuristic and innovative solution to floating the city.

You can use the following outline as a guide to help you organize and draft your essay.

Introduction

Briefly describe your future city. Include the location, geographic features, climate, population, etc. Include any unique, futuristic features of your city.

Floating City

Define the Problem:

- Describe what your city was like in the past (before it became a floating city), the impact of sea-level rise on the city infrastructure and the citizens.

Describe the Solution:

- Describe the overall design and the innovative technologies employed to implement a successful floating city solution.
- Describe how these technologies:
 - Work to reduce health and environmental impacts on city and citizens
 - Protect the environment from the impacts of floating city
 - Address and solve the major issues from the past (before floating)
 - Highlight the futuristic and innovative aspects of this technology and solution.
 - Describe some of the benefits, risks and tradeoffs associated with the technology.
 - Explain what types of engineering were involved and what types of engineers or technicians were most helpful.

Conclusion

Share why people want to live in your city. Summarize how your solution to floating the city will make it a healthy, safe and satisfying place to live.

Above the Current: Research Questions

Imagine a city that floats 100 years in the future. What problems does a floating city solve? What new problems does it present? How would your floating city look, feel, smell, and sound different from today's cities?

For the competition, your team will design a floating city and provide two innovative examples of how your floating city keeps its citizens healthy and safe.

Use the question below and in the **Future City Design Questions to Consider** handout as you start your research and brainstorming. And be sure to read and discuss the **City Essay Suggested Outline** and the **City Essay Rubric** with your teammates, as it provides a clear and detailed picture of what you'll need to include.

Sea Level Rise and Its Impact

Before you start designing your floating city, it is important to learn about sea level rise and its impact on today's cities. For example, you might be thinking sea level rise only affects coastal cities and cities located far inland are safe. But when you consider that 40% of the world's population lives near the coast, the next question becomes where will those people live when coastal cities disappear or become uninhabitable? What impact will that have on inland cities and rural areas?

Start your research by choosing a coastal city. Investigate all of the different ways sea level rise is impacting this city:

- What's happening to the city's coastline?
- Is this city experiencing flooding? What impact is that having on the city's infrastructure and people's homes?
- How is sea level rise affecting the water table?
- How is the city's water supply affected?
- What industries are dependent on coastal infrastructure? How does sea level rise affect these industries? Consider tourism, shipping, and fishing.
- How is sea level rise affecting the city's underground infrastructure such as sewer lines, electrical cables, subways, tunnels, and the foundations of buildings, homes, and bridges?
- How is this city managing sea level rise today?
- What plans do they have to manage sea rise in the coming years? What innovative approaches are they pursuing?

Floating City Design Considerations

A floating city will need to provide everything a land-based city does. It also has additional factors that will need to be addressed. Answering these questions, along with the **City Design: Questions to Consider**, will help you design an innovative and futuristic floating city.

- Why build a floating city? What problem(s) does it address?
- Where would you locate your floating city? What do you need to consider when deciding where to locate your floating city?
- What impact does the local climate have on your floating city? How might it affect the design and location of your city?
- What risks are involved in building and maintaining a floating city?
- What impact will weather (from mild rainstorms to powerful hurricanes or earthquakes) have on your floating city?
- How does your floating city protect against or mitigate storm damage?
- Is your floating city a self-sustaining independent city or is it an extension of an existing city?
- Is your floating city connected to the mainland? Why or why not?
- What shape and size is your floating city?
 - Which shapes would best ride waves and weather storms?
 - Would it be expandable or retractable?
 - Is your city modular, with sections that can be moved or enlarged? How do they connect together?
- How does your floating city accommodate growth? For example an increase in population, new industry requirements, or expanding agricultural needs?
- What kind of cost is involved in building and maintaining a floating city and how will your city pay for it?
- How stable is your floating city? Does it rock with the waves like a boat or is it solid like being on land?
 - What design elements can you put in place to dampen the impact of waves?
- What are the environmental impacts of a floating city?
 - Are there positive impacts that you can take advantage of?
 - How can you mitigate any negative impacts?
- What effects might a floating city have on marine ecosystems?

City Design: Questions to Consider

Your challenge is to design a floating city that is set 100 years in the future. You will also provide two innovative examples of how your city keeps its citizens healthy and safe as it floats.

Why did your city leaders build a floating city? What problems did it solve? What makes your floating city innovative and futuristic? How does your future floating city sustain itself?

As you and your teammates begin to design your future city, use the topics and questions below to guide your research, brainstorming, and design decisions. Remember that no city can provide everything. What are the most important elements in your city? What tradeoffs do you have to make?

City Features

- Where is your future city located?
- Who lives in your city?
- What is the climate like in your city?
- What is special that your city offers for entertainment, recreation, and/or culture?
- What makes your city futuristic and innovative?

Infrastructure

- What innovative and futuristic materials will you use to construct the base of your floating city?
- Is your floating city secured to the seabed or anchored? Why or why not?
- How does it withstand wave action, the pressures of storms, and water?
- Is your city connected to the mainland? Why or why not?

Structures & Housing

- Where do your residents live, work, and go to school?
- How do construction practices, material choices, and design differ on a floating city?
- What are the buildings, walkways, and roads made of?
- Are there any special features in your city's housing options?
- How will the building codes differ in your floating city than on a land-based city? Will your city need to limit building height or size?

Zoning, Government & Budget

- How is your city zoned? Are the zones separate or are there mixed-use zones (e.g., commercial and residential or commercial and industrial) in your floating city?
- How does your city fund its operations (i.e., utilities, infrastructure, and public services)?
- How is your city governed? Who makes the laws and regulations?

Industry, Manufacturing & Jobs

- What drives the economy in your city (e.g., tourism, manufacturing, agriculture, education)?
- What types of jobs are available to your residents?
- How have businesses and manufacturers adapted to the floating city?
- What innovative approaches and industry practices are being used to keep products or resources in use?
- Are there products or resources your floating city can't produce? What are they and how does your city provide these?

Food and Agriculture

- How has your floating city impacted agricultural practices?
- What foods does your floating city cultivate aboveground? For example, has your city invested in urban gardens, hydroponic gardens, and lab-grown protein sources?
- Are there foods your floating city cultivates underwater?
- What foods would you need to procure from the mainland?



Environment and Energy

- What energy source(s) power your future city?
- How does your floating city generate electricity? How is power stored and transmitted?
- How will your city optimize energy efficiency in buildings, transportation, and other infrastructure systems?
- What are the environmental impacts of your floating city? How does your city mitigate these impacts?
- What features of your city are designed to keep it from contributing to climate change?

Utilities & Services

- How does your floating city produce fresh water?
- How does your floating city manage, reduce, and reuse waste? What recycling capabilities does it have?
- What systems will your city have for managing human waste? What about waste from livestock?
- What services does your future city provide its residents (e.g., medical, education)?
- How does your city address the needs of vulnerable populations, including the poor, the sick, the unhoused, and the elderly?

Transportation

- How are goods and materials moved around your city?
- What transportation options are available to your residents? Is there more than one way to get around?
- Is your city accessible for citizens with mobility issues related to aging or a physical disability?
- How do people travel to the mainland or farther distances?
- How does life on a floating city affect moving people and goods around your city?
- How will your city encourage the use of sustainable transportation modes, such as electric vehicles, bicycles, or public transit systems?

Health & Recreation

- How does your city help support a healthy lifestyle for its residents?
- How does your city design ensure equal access and opportunities for people with disabilities or older citizens?
- How will your city incorporate green spaces, parks, and urban forests to enhance biodiversity and improve the overall quality of life?

Floating City Case Studies

Biorock: A Construction Material Superstar

Imagine building a city that grows and repairs itself like a living organism! Meet Biorock, the perfect substance for building a floating city. Developed specifically for marine construction, it is a form of limestone that becomes stronger with age—compared with concrete that weakens over time and needs regular repair and replacing. Biorock, like a living thing, grows and repairs itself. And because biorock structures require no maintenance or replacing, they are cheaper to build than rock or concrete structures. They can also be added onto or changed to accommodate new needs.

Biorock quickly regenerates coastal ecosystems—salt marshes, mangroves, oyster beds, seagrasses, fisheries, and coral reefs—that have not been able to recover naturally. It does so in part by filtering and cleaning pollution out of the water. It provides a sanctuary for marine life and protection from stresses such as the rising temperatures of climate change.

Restoring systems like mangrove and salt marsh wetlands benefits all of us, not just the creatures that depend on them, because they are more than 40 times more capable of fixing carbon than forests--and seagrasses are 25 times better at it! These ecosystems are also important coastal buffers against storms and sea level rise.

The Best Shapes for Floating City Modules

The first floating cities being built today have a modular design, meaning that they are made of similarly shaped floating pieces that can be moved, enlarged, and linked together. Engineers have determined that smaller modules attached together are more resilient than one big floating platform. They are better able to move with the powerful waves and strong winds of storms.

The modules of a floating city need to stay on the surface without turning over in rough seas. So, it's important to determine which shapes work best to ride the action of waves. How do different shapes affect ballast, or stability, especially during storms? Architects, engineers, and scientists are experimenting to find the shapes that answer these questions.

In a model floating city being built in the Maldives, the modules link together in the shape of brain coral. They are surrounded by coral reefs which buffer them from waves and storms. In a different project, the modules of Oceanix City near Busan are triangular, with hexagonal structures built on them. Modular triangle shapes can be linked together and more easily handle waves than the traditional squares and rectangles of buildings on land. Triangles flex with waves from any direction. If the center of the floating city is made of larger triangles, it is more rigid and will help with overall stability.

Naval engineers have tested this theory. They subjected a platform made out of a grid of triangles to the equivalent of 82-foot waves in a vast indoor pool. The platform rode the waves with ease, the crests of the waves did not crash over the island, and the front, wave-facing end of the triangle flexed with the motion.

Oceanix City: A Model Floating City

The United Nations proposed the development of Oceanix City, the world's first carbon neutral floating city that is self-sufficient in energy, water, food, and waste management. In 2021, the city of Busan, South Korea accepted the invitation to construct the model for this project with an expected completion date of 2025.

Three interconnected triangular platforms form the basis of the city, which is linked to the mainland via bridges. One platform will be for visitors; the second will be residences and public spaces; and the third will be a research facility. At first, 12,000 people will live here; eventually, 100,000 people on 20 platforms will be able to call Oceanix City home. Even at that size, sunlight will be able to reach the ocean floor because of the space between the modules; otherwise the huge modules would cast permanent shadows and kill marine life.

Oceanix City will achieve net-zero energy by using clean, renewable solar, wind, and wave sources. For transportation, people will walk or bike. For food, cages beneath the platforms will provide scallops, fish, kelp, and other seafood; fish waste will fertilize plants grown hydroponically, meaning they will grow in a water-based solution rather than soil.

To manage waste, Oceanix City will have a washing center, anaerobic digester, community composting garden, a collection system, an exchange hub, and algae filtration. All disposable products will be replaced with reusable ones and even water will be recycled. This closed-loop waste management system will convert waste into energy, agricultural feedstock, and recycled materials.

Oceanix City is designed to survive Category 5 hurricanes. Biorock will be used to form the floating platforms of Oceanix City. It will also be placed on the ocean floor to create sturdy anchor points for the city above and reefs for the marine life living beneath the floating city.

AI and Floating Cities

An international team of architects has used AI to help them design a floating city that is fully self-sustaining and creates no waste or pollution. Not only was AI used to help the architects envision this futuristic city of curves and loops, it will also keep the city running by incorporating Smart Cities technologies.

AI pulls massive amounts of data together that architects use to inform their designs. For this floating city, AI in the form of modeling software gave architects the ability to make drawings of entirely new shapes and forms that were also accurate and feasible if constructed using specific, sustainable materials. AI makes it easy to create alternative design scenarios without starting over.

Engineers and architects are using AI to create predictive data models that help with planning building layouts as well as the location of roads and public spaces in the most efficient way. AI helps pinpoint ways the floating city can be waste-free and run entirely on clean energy.



Research Strategies

Many students are not aware of the time and effort that effective research requires. Similar to the engineering design process, researching is an iterative process with many steps involved. Teaching your students effective research strategies is a worthwhile endeavor that will benefit your students throughout their academic and professional lives.

Research Tips and Strategies

- **Be sure that students are aware of the purpose of their research.** It helps if they form a focused question related to their research. For example, “What is infrastructure?” or “What types of crops can grow in dry, arid climates?”
- **Stress the importance of drawing information from multiple resources** and formats (books, brochures, journals, interviews, surveys, magazines, newspapers, and electronic sources). Although the Internet may be the most convenient place for students to begin their research, they should not overlook their school or local library.
- **Encourage students to use a process for finding and recording data** so they aren’t overwhelmed by information. For example, they could use a Read-Think-Select process when finding information. Students should read the information presented, think about the important points presented, sort the data, and then select key facts. Have students repeat this process until they find the answer to their questions.
- **Have students make a plan for how they will collect and organize their notes.** Will they keep all of their notes on index cards, in their Learning Log, or will they use an online tool or app? How will they divide up the task of researching? Who will be responsible for finding what information?
- **Encourage students to share their findings** with others.
- **Make sure that every quote and fact is connected to its source.** Students must always write the full bibliographic reference for information that they draw from.



Internet-Specific Research Strategies

Although the Internet is wonderful tool, students may need help using it effectively. Share the following steps with students as they begin their Internet research process.

1. Make sure that students understand exactly what information they are searching for.
2. Work with your students to create a list of key words and search terms. If they are not finding what they want, alter the key words to make a more (or less) specific search. Point out that sometimes it is a matter of trial and error to discover what keyword combination yields the best results.
3. Preview websites that may be helpful and prepare a list of sites students can start their research with. Have students use search engines like Google, Bing, and/or Sweet Search (a search engine that searches sites that have been found appropriate for students) to test out their key words.
4. Teach students how to evaluate sources. (Choose a site to evaluate and model what you mean by answering the following questions.)
 - Look at the actual URL address? Is it a well-known site? Is it an educational, government, commercial, or opinion-based site?
 - Who published the source?
 - Is the information current?
 - What is the purpose of the source and who wrote it? (Why was it written and whom was it written for?)
 - Is the information supported by evidence?
 - In what ways is the information relevant to your topic?
 - Whose perspective is represented in the source?



Works Cited

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General Tips

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- Dates are written as: Day Month Year. For example: 14 May 2004 and 22 Feb. 2010
- Abbreviate all months except for May, June, and July.

The information below shows how to format commonly used sources in MLA style.

Book by One Author

Author (Last name, First name MI). *Title*. City of Publication: Publisher, Year of Publication. ^[1]_[2]Print.

Book by Two or More Authors

Author (Last name, First name and First Name Last Name). *Title*. City of Publication: Publisher, Year of Publication. Print.

Encyclopedia Article

Author of Specific Article (Last name, First name MI). “Title of Article.” *Title of Encyclopedia*. Edition. Year of Publication. Print.

Note: If there is no author listed, begin the entry with the article title.



Magazine Article

Author (Last name, First name MI). "Title of the Article." *Title of the Magazine* Date of Issue (Day Month Year): Page Numbers (XX – XX). Print.

Note: If there is no author listed, begin the entry with the article title.

Newspaper Article

Author (Last, First MI). "Title of Article." *Title of Newspaper* Date of Publication (Day Month Year): Page Numbers (XX – XX): Section Number. Print.

Interview Conducted by Researcher

Name of person (Last name, First name MI). Personal interview. Date of interview (Day Month Year).

Article on a Website

Author (Last name, First name MI). "Title of Internet Article." *Title of Website*, Year posted or last updated. Web. Date viewed (Day Month Year). <Web address (optional)>

Online Encyclopedia Article

Author (Last name, First name MI). "Article Title." *Title of Encyclopedia*. Publisher, Date of publication. Web. Date viewed (Day Month Year).

Personal E-mail

Author (Last name, First name MI) of e-mail. "Subject line from posting." Message to recipient. Date of message (Day Month Year). E-mail.

Text Generated by an AI Model

AI Model/Platform. (Year). Title of the generated text [Description of the content]. Retrieved Month Day, Year, from URL

Image generated by an AI Model

AI Model/Platform. (Year). Title of the generated image [Description of the content]. Retrieved Month Day, Year, from URL

Music Generated by an AI Model

AI Model/Platform. (Year). Title of the generated music [Description of the content]. Retrieved Month Day, Year, from URL

References:

Modern Language Association of America. *MLA Handbook for Writers of Research Papers*. 7th ed. New York: Modern Language Association of America, 2009. Print.

The Purdue Online Writing Lab Website. The Writing Lab and OWL at Purdue and Purdue University, 2015. Web. 7 July 2015. < <https://owl.english.purdue.edu> >



Above the Current Research Resources

General

- [Can Engineers Build Floating Cities to Save Island Nations? - ASME](#) - French Polynesia, a collection of 118 islands and atolls, faces threats from erosion, land subsidence, and sea level rise. To address this, Marc Collins Chen proposed floating cities, leading to the founding of Oceanix, which envisions sustainable, self-sufficient ocean communities.
- [Fast Forward: 'Floating City' offers urban solution to rising sea levels | ASCE](#) - Luca Curci Architects proposes the Floating City concept, showcased at Biennale Architettura 2023, featuring 25 acres of interconnected platforms for 50,000 people, expandable to 200,000, leveraging renewable energy and resilient design to adapt to rising waters and environmental challenges.
- http://www.seasteading.org/wp-content/uploads/2015/12/Floating-City-Project-Report-4_25_2014.pdf - The Floating City Project research by The Seasteading Institute. The main goal of the Floating City Project was to find a way to create a seasteading community that is appealing and affordable for potential full-time and part-time residents.
- https://digitalcommons.uri.edu/cgi/viewcontent.cgi?article=1148&context=ma_etds - Artificial Floating Islands: Cities of the Future by Earl A. Proetzel at University of Rhode Island. The report explores the feasibility of large-scale artificial floating islands as a solution to overpopulation and environmental burdens in coastal areas. It examines historical, technical, practical, and legal aspects, demonstrating the concept's viability based on its successful use in the petroleum industry and its potential applications for offshore cities, power generation, and military bases.
- Seasteading - a book written by Joe Quirk and Patri Friedman, the authors explore the concept of seasteading—creating sustainable, ocean-based cities—as a solution to environmental, technological, and civic challenges.

Videos

- https://youtu.be/YX_r87wQKPk - Repurpose Plastic with Pete Abrams March 2024 Social. Innovator Pete Abrams presents his plan to use waste plastic to build floating sustainable shelter systems.
- <https://youtu.be/PA9qNKsl1Ro> - Joe Quirk (The Seasteading Institute) | Morgan Meets the Eye Ep. 19 - Joe Quirk from the Seasteading Institute discusses the future of floating cities on the Morgan Meets the Eye podcast.
- <https://youtu.be/pAqQJNqbowl> - Prototype with Ben Silone - Ben Silone, with a notable career in real estate, project management, and global humanitarian efforts, will discuss Arktide's ocean-based technologies, including their eco-friendly Coquina House prototype. The Coquina House is a floating, modular home designed for sustainable living, offering solutions for housing, rentals, and resort accommodations while minimizing environmental impact.
- <https://odysee.com/seacities-urban-aquatic-innovations-and:c65a94b19c82ab8c1d69ad48e42a49ec66e7e665?src=embed&t=2.38584> - SeaCities: Urban Aquatic Innovations and Research - The SeaCities research group will showcase their latest projects, emphasizing innovations and opportunities for sustainable future aquatic developments.

Real Word Examples

- <https://maldivesfloatingcity.com/>. - Dutch architecture firm Waterstudio specializes in building on water. They are the architects of the city in the Maldives.
- [UN-Habitat and partners unveil OCEANIX Busan, the world's first prototype floating city | UN-Habitat \(unhabitat.org\)](#) - UN-Habitat and partners unveil OCEANIX Busan, the world's first prototype floating city- UN-Habitat, Busan Metropolitan City, and OCEANIX unveiled the design for OCEANIX Busan, the world's first sustainable floating city prototype, aimed at addressing land shortages and climatic threats faced by coastal cities.
- <https://www.seasteading.org/active-projects/> - Active projects making floating cities a reality.
- <https://wgno.com/us-world-news/tiny-homes-suitable-for-living-on-the-water-built-in-bay-county/> - Tiny homes suitable for living on the water built in Bay County



Works Cited Format Suggestions

A “Works Cited” page, or bibliography, is a list of works that you used for researching your essay. It is useful for two reasons: (1) to give proper credit to your sources and (2) to help your reader to find your sources.

The list below shows how to format commonly used sources in MLA (Modern Language Association) style. You can also use free programs, such as **NoodleBib Express** (<http://www.noodletools.com>) and **EasyBib** (<http://www.easybib.com/>), to create an entry in MLA format and paste it into your document.

General Tips

- The Works Cited is always the last page of your essay.
- Type the title “Works Cited” and center it on the page.
- List sources alphabetically by the first word or name of the source.
- If an entry goes beyond one line, always indent the next line(s) five spaces or one-half inch.
- Dates are written as: Day Month Year. For example: 14 May 2004 and 22 Feb. 2010
- Abbreviate all months except for May, June, and July. (e.g., Dec. and Feb.)

Sample Works Cited Page

Works Cited

Devitt, Terry. “Flying High.” *The Why Files*, 1999. Web. 16 Mar. 2010.

Enz, Tammy. *Build Your Own Fort, Igloo and Other Hangouts*. Mankato: Capstone Press, 2011.

Print.

Thompson, Lucas R. “Electricity.” Message to the author. 12 Dec. 2009. E-mail.

Sample Citations*

Book by One Author

Format:

Author (Last name, First name MI). *Title*. City of Publication: Publisher, Year of Publication.

Print.

Example:

Enz, Tammy. *Build Your Own Fort, Igloo and Other Hangouts*. Mankato: Capstone Press, 2011. Print.

Book by Two or More Authors

Format:

Author (Last name, First name and First Name Last Name). *Title*. City of Publication: Publisher, Year of Publication. Print.

Example:

Woods, Mark and Ruth Owen. *Ace!: Tennis Facts and Stats*. New York: Gareth Stevens, 2011. Print.

Encyclopedia Article

Format:

Author of Specific Article (Last name, First name MI). "Title of Article." *Title of Encyclopedia*. Year published or edition. Print.

Note: If there is no author listed, begin the entry with the article title.

Example:

Pettingill, Olin S., Jr. "Falcon and Falconry." *World Book Encyclopedia*. 1980 ed. Print.

Magazine Article

Format:

Author (Last name, First name MI). "Title of the Article." *Title of the Magazine* Date of Issue (Day Month Year): page #s. Print.

Note: If there is no author listed, begin the entry with the article title.

Example:

DeAngelis, Gina. "Countdown to Yorktown: A Timeline." *Cobblestone* Oct. 2006: 4-7. Print.

Newspaper Article

Format:

Author (Last, First MI). "Title of Article." *Title of Newspaper* Date of Publication (Day Month Year): Page Numbers. Print.

Example:

Ratti, Carlo. "Phone-Call Cartography." *New York Times* 3 July 2011: SR4. Print.

Interview Conducted by Researcher

Format:

Name of person (Last name, First name MI) interviewed. Type of interview. Date of interview (Day Month Year).

Notes: Type of interview can include Personal interview (if it was face-to-face), Telephone interview, or E-mail interview.

Example:

Lee, Emily. Personal Interview. 15 Oct. 2011.

Article on a Website

Format:

Author (Last name, First name MI). "Title of Internet Article." Title of Website, Year posted or last updated. Web. Date viewed (Day Month Year).

Example:

Devitt, Terry. "Flying High." *The Why Files*, 1999. Web. 16 Mar. 2010.

Online Encyclopedia Article

Format:

Author (Last name, First name MI). "Article Title." *Title of Encyclopedia*. Publisher, Date of publication. Web. Date viewed (Day Month Year).

Example:

Maier, Pauline. "Boston Tea Party." *World Book Student*. World Book, 2010. Web. 16 March 2010.

Personal E-mail

Format:

Author (Last name, First name MI) of e-mail. "Subject line from posting." Message to recipient. Date of message (Day Month Year). E-mail.

Example:

Thompson, Lucas R. "Electricity." Message to the author. 12 Dec. 2010. E-mail.

*Source: Modern Language Association of America. *MLA Handbook for Writers of Research Papers*. 7th ed. New York: Modern Language Association of America, 2009. Print.

Essay Rubric (FC Jr.)

	0 No Points Requirements missing	1 POOR Poor-Fair quality. Fulfills less than 50% of requirements.	2 GOOD Average-Above average quality. Fulfills at least 90% of requirements.	3 EXCELLENT Excellent quality. Fulfills 100% of requirements with additional distinctive features.
I. INTRODUCE CITY (15 points)				
1. City overview <ul style="list-style-type: none"> Introduce city and basic features Location, geography, climate, development, etc. 	No description of city	Underdeveloped description of city.	Clear and developed description of the city and unique features.	Clear and thoroughly developed description of city and unique features.
2. Features and innovations <ul style="list-style-type: none"> Attributes that make this city unique. 	No description of unique features.	Underdeveloped description of unique features.	Clear and developed description of unique features.	Clear and thoroughly developed description of unique features.
3. City innovation and futuristic elements	No description of innovative or futuristic elements.	Underdeveloped description of futuristic elements.	Clear and developed description of innovative and futuristic elements.	Clear and thoroughly developed description of futuristic elements.
4. Describe what the city was like in the past (before it became floating)	No description of former city	Underdeveloped description of city	Clear and developed description of former city	Clear and thoroughly developed description of former city
5. Describe the past problems that lead to the floating city solution <ul style="list-style-type: none"> Impact on the city (infrastructure, economy, environment, etc.) Impact on health of citizens 	No description of impact on city, and citizens	Underdeveloped description of effects on city, citizens	Clear and developed description of effects on city, citizens, environment	Clear and thoroughly developed description of effects on city, citizens, environment
II. PROBLEM AND SOLUTION (21 points)				
6. Describe overall solution to float the city <ul style="list-style-type: none"> Description of how solution works Technology involved Innovative and futuristic 	No description of solution or technology.	Underdeveloped description of solution and technology.	Clearly outlines the solution and somewhat futuristic technology involved. Could be more detailed.	Clear and thorough description of solution. Innovative and futuristic technology.
7. Describe how solution deals with environment impacts. <ul style="list-style-type: none"> Environmental impacts on city and infrastructure. Storm protection. City and technology impacts on environment Health and safety impacts 	No description of solution.	Underdeveloped description of solution and attributes.	Clearly describes solution and attributes. Could be more detailed.	Clear and thorough description of solution and its attributes and impacts.
8. Describe how solution addresses and resolves problems from past	No description resolution of past problems	Underdeveloped description of resolution of past problems.	Clearly outlines the resolution of past problems. Could be more detailed.	Clear and thorough description of resolution of issue. Effective solution.
9. Discuss risks, tradeoffs, and compromises of solution <ul style="list-style-type: none"> Benefits, drawbacks, risks Tradeoffs & compromises 	No discussion of benefits, risks or tradeoffs	Description of one risk and/or tradeoff.	Description of more than one benefit, risk, or tradeoffs.	Description of more than two benefits, risks, or tradeoffs.
10. Describe benefits to citizens <ul style="list-style-type: none"> How the floating city benefit the health and safety of the citizens. 	No description	Underdeveloped description	Clear and developed description of benefits	Clear and thoroughly developed description of benefits

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II. PROBLEM AND SOLUTION (Cont'd)				
11. Engineering disciplines involved	Engineering disciplines are not identified or not relevant to solution	Discusses one relevant Engineering discipline.	Clear description of more than one relevant engineering discipline	Clear and detailed description of more than one relevant engineering discipline.
12. Role of 1-2 engineers	Role of engineers are not identified	Underdeveloped discussion of role of one engineer	Clear description of role of 1-2 engineers involved in system and solution	Clear and detailed description of role of 1-2 engineers involved in system and solution
III. JUDGE ASSESSMENT OF SOLUTION (12 points)				
13. Effectiveness and Quality of solution to floating the city <ul style="list-style-type: none"> • Effective strategy to floating a city • Successfully addresses stated problems of past 	Not effective	Solution is somewhat effective. Solves a few of past problems.	Solution is effective, and solves most of past problems.	Solution is a highly effective, with addresses all of the problems of past.
14. Effectiveness of solution to create a viable, growing future floating city <ul style="list-style-type: none"> • Effective of solution for long-term growth and success of city. 	Not effective	Solution is somewhat effective for the long-term. Technology and design need improvement.	Solution is effective, but technology and design could be improved.	Excellent design. Solution is highly effective for long-term city growth.
15. Innovative & futuristic technologies <ul style="list-style-type: none"> • Appropriate design and application of technology • Futuristic, but reasonable extrapolation of technology 	Not innovative or original	Overall concept is somewhat original or innovative. Not futuristic.	Good technology design. Overall concept is moderately innovative, original or futuristic.	Excellent technology design and application. Overall concept is highly innovative, original and futuristic.
16. Plausibility of solution <ul style="list-style-type: none"> • Plausible. Based on sound scientific principles. 	Implausible or not scientifically sound	Solution is not very plausible (science fiction)	Solution is plausible	Solution is highly plausible and scientifically sound
IV. WRITING SKILLS (12 points)				
17. Organization	Poorly organized	Fair organization	Good organization	
18. Writing skills	Poor writing	Fair writing	Good writing	
19. Grammar & spelling	Many errors	Some errors	Few, if any, errors	
20. Maximum number of Graphics <ul style="list-style-type: none"> • If used, max of 4 (does not include tables) 	Exceeds maximum of 4 graphics, illustrations		Does not exceed maximum of 4 graphics and/or illustrations	
21. List of references <ul style="list-style-type: none"> • At least three acceptable references • Wikipedia not recognized as an acceptable reference 	No references	Less than three acceptable references	At least three acceptable references	
22. Word count <ul style="list-style-type: none"> • Does not include title, references • Includes all captions and words in graphics, illustrations and tables. 	No word count at end of document or inaccurate count		Accurate word count at end of document	