



The VJAS Voice

October 2019

A Publication of the Virginia Junior Academy of Sciences



Fall Issue

Following the Symposium at Old Dominion University



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VJAS Announces Changes to Paper Submission Process

Written by Claire Morton and Christopher Marotta

This year, The Virginia Junior Academy of Science [VJAS] is attempting to become more environmentally friendly by using less paper in its submission process. As most VJAS school mentors will tell you, preparing to submit the scientific research papers can quickly become a logistical nightmare. We recognize this concern and are currently working on finding a solution to this problem which is both more economical and eco-friendly. So you might ask, “How do we plan on doing this?”

VJAS has an incredibly rich history, with its first meeting occurring in 1941. Over the last 78 years VJAS has made innovations and changes which have led to it being ranked among the top three Junior Academies by the American Junior Academies of Science Association. VJAS was also among the first junior academies to integrate technology, in the form of PowerPoints, into the presentation process for its meetings!

As you will soon notice in the updated Handbook, there are quite a few big changes being made! Proposed changes such as double-sided printing for both the forms and papers, line spacing within the range of 1.5 to 2.0, and a 14 page limit (seven pages for double-sided prints) will all help decrease the use of paper required for a VJAS research submission! These changes are significant and the entire VJAS team is excited to see how this will help address concerns about the high paper use that was previously required.

Experiencing the American Junior Academy of Science (AJAS)

Sabrina Ye, the first place winner at VJAS attends AJAS.

Last February, Sabrina Ye attended the American Junior Academy of Science (AJAS) symposium in Washington, DC. “Before going to the symposium, I didn’t really know what to expect. Only one other person from my school had been to AJAS before, and all I knew about it was that the top winners from VJAS were selected to attend. I was pleasantly surprised and excited that I was selected to go to DC along with my friend Unmesha,” she recalled.



AJAS is not a competition. The whole purpose of the symposium is to model a formal science conference. Instead of presenting to judges, students share their work with various distinguished scientists, and colleagues. “I could tell that the scientists who listened to my presentation were truly interested and curious about my work. When I listened to some of the other high schoolers present, I could tell that they were extremely invested and passionate about their



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research,” says Sabrina. During her week in DC, Sabrina attended many interesting events. She chose to go on a tour of the National Institutes of Health, where she learned a lot about the Human Genome Project. Another highlight of the symposium was the breakfast with scientists, where students got to sit at a table and listen to accomplished researchers talk about their work and background. She even got to attend a formal banquet held at a botanical garden.

At AJAS, Sabrina also learned the value of keeping an open mind. Several scientists shared their career goals were not known in high school. Many had a non-linear path in college and through life and encouraged the students to try new things. Sabrina says that she learned the value of seizing new opportunities and making the most of everything she does.

“My time at AJAS flew by too quickly. I met a lot of new friends from around the country and I had a great time at the symposium. I’d like to thank VJAS for sponsoring my trip to DC and for allowing me to participate in this experience, and I’d like to thank my wonderful teacher Mrs. Delano for attending the conference with me. I think AJAS was a once in a lifetime experience that helped me grow as a student, a researcher, and a learner. I hope that the next students selected to go to AJAS will have a delightful time at the symposium!” - Sabrina Ye

Featured Speaker: Dr. Adam of Old Dominion University

Summary written by Noah Portner



“Three Worlds” August 1st, 2006



“Pigeon Lake Wave Clouds” July 16 2006

During the 2019 VJAS symposium, we had the honor of listening to a lecture by Dr John Adam of Old Dominion University. Dr Adam is a professor in the department of Mathematics and Statistics and has an extensive background in this field. Dr Adam received his bachelor's degree from University of London in Theoretical Physics. He also has a Ph.D. from University College London in Theoretical Astrophysics/ Applied Mathematics.

In the lecture, Dr Adam used many slides illustrating different aspects of nature. Some of the underlying mathematical patterns were described in qualitative terms, including many from the field of meteorological optics. Examples of the latter included rainbows, ice crystal halos, glories, sundogs, and other exotic features. Dr. Adam talked extensively about mathematical modeling, the Theory of Waves and much more. His explanations of patterns in nature were fascinating. They demonstrated his undeniable expertise



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in the field. In fact, Dr Adam recently published a book in this field titled Rays, Waves and Scattering: Topics in Classical Mathematical Physics.

Finally, Dr Adam talked about an extensive community of like-minded scientists that contribute to large databases involving nature and the science associated with it. One such community is “Earth Science Picture of the Day” (EPOD). Dr Adam has contributed many times to EPOD, the two images here are examples of these contributions. Explanations of these images and many more like them can be found at epod.usra.edu. Dr. Adam inspires future scientists with his words, “Of course there are many patterns not only visible in the sky; the Fibonacci numbers are very prevalent in the arrangement of leaves and seeds in plants. The structure and behavior of waves on the surface of ponds, puddles and oceans can be described in mathematical terms. Clouds exhibit many features of waves in water. there are many patents available for those of us who take the trouble to look and see!”

VJAS Grants and Special Awards

For Teachers - Many times, the costs are a huge obstacle to conducting what would have been a winning research project. VJAS understands this problem, so we have given you an opportunity to apply for grants. Eligibility guidelines and application forms can be found in Appendix D, which you can download at this link: <http://vjas.org/handbook.html>. Any researcher in grades 7 through 12, whether they attend public or private school, or they are homeschooled, can apply for a grant.




For Students - Special awards are a great opportunity to be recognized for your original research in more than just one way. There are many types of special awards, and they can be found in Appendix D, which you can download from this link: <http://vjas.org/handbook.html>. Special awards cover a wide range of fields, and students should be able to find at least one award for which their project is eligible. Still, students are encouraged to expand or tweak the scope of their project so that they can apply for more awards. Please see the VJAS Handbook: <http://vjas.org/handbook.html>

If you have any comments or suggestions about this announcement please feel free to contact VJAS Director Susan Booth [director@vjas.org] and she will forward the message to the appropriate officer. We would also love to hear about any online platforms, or other ideas, for future VJAS submissions!

VJAS Leadership

The VJAS Officers would like to thank all attendees of the 2019 symposium at Old Dominion University. You all made this symposium a successful and memorable one. Here’s to more students, more science, and more memories at the 2020 Symposium which will be held at James Madison University.

Who's Who in the VJAS Leadership?

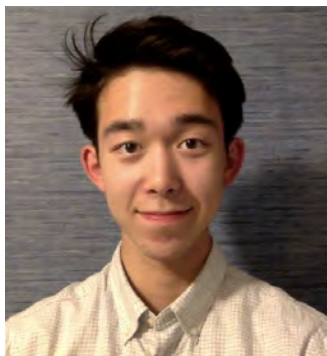
<p>President, Shan Lateef</p> 	<ul style="list-style-type: none"> ● Thomas Jefferson High School for Science and Technology, Rising 11th grader ● Participated in VJAS since 8th grade ● He looks forward to serving VJAS in the office of President and making this a great experience for his fellow student scientists. ● Loves science because it is in search of the truth, and being even a small part of this search is a tremendous honor. ● Besides his passion for neuroscience, he is an avid chef and food blogger. ● Participates in Spanish Honor Society and TEKNOS (school science journal)
<p>Vice President, Claire Morton</p> 	<ul style="list-style-type: none"> ● Blacksburg High School, 12th grader ● Participated in VJAS since 11th grade ● She helps the President with his duties and makes sure everything is running smoothly. ● Loves science because it allows us to make discoveries in order to help society. ● She can juggle.
<p>Secretary, Abhi Kulkarni</p> 	<ul style="list-style-type: none"> ● Mills E Godwin High School, 11th grader ● Participated in VJAS since 7th grade ● He is excited about making sure that the officers are keeping up on tasks and helping anybody out when they need help. ● Loves science because there is the possibility to challenge even the most basic of concepts and be correct, and there is always newer information that leads to enhancements and corrections in the way that science is viewed. ● He is going to Alaska this year and will be comparing the relative size and density of icebergs by comparing it to the original measurements and rising temperatures. ● He loves biking and singing.

Co-Editor in Chief, Karly Ramnani



- Mills E. Godwin High School, 11th grader
- Participated in VJAS since 7th grade
- Together with Noah, she writes and promotes the VJAS Voice.
- Loves science because even the smallest advances can save many lives.
- She is obsessed with Taylor Swift
- Outside of school, she loves dancing and singing

Co-Editor in Chief, Noah Portner



- Washington Lee High School, 11th Grader
- Participated in VJAS since 7th grade
- Together with Karly, he writes and promotes the VJAS Voice.
- He loves that science is a mix between focused research and being able to share your discoveries with a community
- His birthday is on Christmas
- Outside of school, he loves band and rock climbing

Communications Liasion, Christopher Marotta



- Central Virginia Governor's School/E.C. Glass High School, 12th grader
- Participated in VJAS since 11th grade
- One of his favorite parts of this role is that he gets to run the VJAS Twitter account. His main focus is keeping people in touch with the whole VJAS process, especially any changes that occur, along with making sure everyone is informed about any changes throughout the duration of the event.
- Loves science because it has not only helped us to better understand the world around us but also improve the lives of humans on a global scale in so many different ways!
- Last year his family adopted a dog named Eve from the local animal shelter, and for whatever reason she really loves to steal and chew on his pencils. Literally just his pencils, he has no idea why...



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VJAS Paper Secrets: APA Format

(Yes, I Saw You Groaning at the Title, but Fear Not)

The time-consuming, confusing, and sometimes tedious process of preparing a research paper is often the main factor that discourages students from scientific research. We all know that feeling when the science teacher assigns us a fascinating experiment - but our excitement fades when we learn that we must write a lab report as part of the grade. Worse yet is when part of the rubric includes “APA Format.”

Students often struggle to understand how to properly write an APA format paper, but your VJAS Leadership has got you covered. We’ve included simple ways to prevent your paper from being disqualified, as well as some ways that principles of APA format make your paper stand out. We focused in on the abstract and citations.

The Abstract (Paper length-one page only)

Just because the abstract comes first, that doesn’t mean you have to write it first! Once you have written the rest of your paper, then print it out, and highlight some key sentences. The sentences you choose, when put in the right order, should effectively summarize your project. Once you’ve highlighted all your sentences, paraphrase them and put them in a paragraph. You might still want to add transition words, and improve the flow of the paragraph.

Here is a simple formula I like to follow:

- 1-2 sentences describing the statement of problem/background
- 1 sentence explaining the purpose of the experiment
- 1 sentence identifying the independent and dependent variables as well as control
- 1 sentence covering the procedure
- 1 sentence telling how data was collected
- 1 sentence stating the research hypothesis
- 1 sentence identifying what results were seen (and whether they supported the hypothesis)
- 1 sentence about the results of the inferential stats test and what they mean
- 1 concluding sentence about real-world value of the project

Of course, you can make slight changes based on the nature of your project. For example, mathematical projects rely more heavily on statistical analysis so you would need more sentences in that area. Remember that the judges should read your abstract and gain a fundamental understanding of what you did in your project and how it can benefit the scientific community.

The Citations And Formatting

Easybib.com is a website that can help you generate APA citations for journal articles. The proper format, taken from Purdue Owl, is:

Last, F. M., & Last, F. M. (Year Published). Article title. *Journal Name*, Volume(Issue), Starting Page-Ending Page. doi: DOI Number.





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The citations must be listed in alphabetical order, and they must be referenced in the body of the paper at least once as an in-text citation. Students often make the mistake of adding the in-text citations at the end of a paragraph, especially in the introduction. In-text citations are required to be at the end of every sentence that has information from a source, but sometimes they are best placed in the middle of a sentence. For example, consider these two sentences:

- 1) In the past ten years, leukemia incidence has risen by 30%, and melanoma incidence has risen by 50% (Smith et al., 2018) (Jones et al., 2018).
- 2) In the past ten years, leukemia incidence has risen by 30% (Smith et al., 2018), and melanoma incidence has risen by 50% (Jones et al., 2018).

In the first example, it is ambiguous which statistic came from which source. But in the second example, it is more obvious which statistic came from which source. The second example is correct.

One last little reminder - choose sources that are more recent. Especially if a source contains a statistic regarding “the last few years,” it is important that the article is as current as possible. Aim for sources written within the past three years. However, be sure to cite some historic articles, such as the Hallmarks of Cancer, or Watson and Crick’s paper. Look at the papers written by the forefathers of your chosen area of science. These papers are generally harder to read, but the information in their findings can serve as the basis for your experiment. For example, if your procedure takes advantage of the double helical shape of DNA, then cite Watson and Crick’s paper, as they were the first scientists to identify this shape.

Need Ideas: Don’t know what to do for your project? Still confused about what to expect at the symposium? Look at last year’s program - it contains details about the events at the symposium, keynote speakers, and accepted papers in each category! <http://vjas.org/program.html>

**Remember the 2020 VJAS Symposium is:
May 27-29, 2020
James Madison University
The VJAS Committee looks forward to seeing you.**