**Journal Article Writing Sessions - Article Preparation and Avenues for Publication;** (Speaker: Dr. Ted Fowler, Co-director, Southwest Hub of the Ohio STEM Learning Network (OSLN); Dates and Times for Three Sessions: June 27 at 3:30 to 6:00 PM, July 9 at 10:30 AM to 12:00 PM, and July 22 at 10:45 AM to12:00 PM)

Dr. Fowler Presented a three sessions in this workshop series. He earned his graduate degrees from Rensselaer Polytechnic Institute, Harvard University, and the University of Houston. He has been a physics and chemistry teacher, professor of instructional methods and curriculum development courses, and served as programs coordinator with many school districts. Dr. Fowler has been a consultant to engineering and pharmaceutical companies to develop their in-house training programs and prepare publications to document engineering design processes. For several years he served as a curriculum developer and researcher at the Centers for Disease Control & Prevention, National Institute for Occupational Safety and Health. He is focused on working with industry to establish real-life applications for science and mathematics for students and teachers.

***Session 1 - Presentation Preparation with Power Poin*t** (Date: June 30, Time: 10:30 AM-12:00 PM): Dr. Fowler opened the first of three sessions by introducing himself and asking the teachers to jot down two things they felt they were good at. The RET teachers introduced themselves and revealed what those two things about themselves were. Dr. Fowler made a note that this program allows teachers to gain insight. It is important that the RET teachers share this insight, coupled with a personal part of that teacher.

Dr. Fowler asked if anyone in the room has every published an educator article or has done a presentation in front of other educators. Some of the audience had previous experience with thesis papers, assisting students with science fair reports, writing informational articles to the school principal, and in-service presentations. Dr. Fowler warned the audience that article writing and presentation preparations can be “cumbersome,” but there are ways to get started to make the process easier. One of the purposes of the RET program, in fact, is to push and support the RET teachers to publish and present.

In order to give a sense of format and genre, Dr. Fowler distributed a variety of articles to each of the teachers. One was a clipping from a local community newspaper. Another was from a practitioner journal. The last one came from an education research journal. Asked how each differed, the teachers offered many answers: The author of the local paper article was a contributing writer. The article from the practitioner journal used the first person narrative. In addition, this journal did not reach as many points as the research journal article did, but there were insights in it not found in the research journal. There was also a shared authorship in the practitioner journal (of a teacher and professor). The education research article had much more, “heavy-duty” research and references. Dr. Fowler noted that these types of articles are bound to university rules and regulations as well as institutional review boards. He also noted that the local papers are very informal, yet popular and that “people eat this stuff up,” and that businesses and industry both get “turned on” by them.

Finally, the speaker brought up the idea of different conferences available to teachers, such as the ITIP conference in Columbus, NSTA, SECO meetings, and NCTM. He encouraged the RET teachers to consider one as a venue for a presentation, as it is “less risky than internal professional development” presentations. Dr. Fowler detailed the RET teachers’ assignment for the next meeting, a) to go through the conceptualization process and b) begin assembling the content into an article or presentation. To accomplish this, the assignment was to prepare a minimum of five, a maximum of ten slides with no more than five lines each.

***Session 2- Feedback on PowerPoint Outline and Outlining a Journal Article*** (Date: July 9; Time: 10:30 AM-12:00 PM): Dr. Fowler started the session by stating that the purpose for today’s workshop was to guide the audience into publishing something quickly, with the implication of over the summer. He passed out one of the same articles from last week, this time it was printed in color and with photos and graphs. The RET teachers reviewed the article with these new features in sight.

He then went online and showed the teachers how to access more teacher journals through the University of Cincinnati library website. He noted that most of the engineering related articles would be found in the middle school, rather than high school educational journals. However, these articles could still be modified for a high school classroom.

Dr. Fowler then posed the question asking what percentage of students coming from a two year degree program are barred from a regular university math course, and therefore channeled to a remedial course. The answer was 80 %. He then asked the audience if they knew how many successfully negotiated a remedial math course and then registered for a regular math course. The answer was 20%. The audience was then shocked to learn that only 10% of the students with a two year degree actually graduated from a university. He attributed this to the struggles they faced, specifically their skills and attitude towards mathematics. He gave examples of a positive attitude being, “This is hard, I must be learning” versus the more prevailing negative attitude of self-doubt, “I don’t belong.”

Going back on line, he brought up the resources he recommended that the teachers access. One was the University of Cincinnati library engineering advanced search site. Another one was the nsdl.org, the National Science Digital Library. He clicked on the science literacy maps, highlighting the topics and backgrounds and how they are organized from kindergarten level to high school.

Dr. Fowler then had each of the participants reveal his or her PowerPoint slide outline. He gave numerous recommendations after hearing them all: The RET program itself is worth mentioning in a paragraph, as it lends the author tremendous credibility since he or she was able to work in a real research facility. He emphasized that the teachers make their research define the challenge to what they are doing and answer how they can take hardcore research back into the classroom. He also recommended that the teachers take time in their article to compare their classroom before and after challenge-based learning implementation. In addition he advised the teachers to keep the Math and Science Practices in mind when writing. He added that,” illustrations and diagrams were well-worth having.”

The speaker ended this second session by reminding the participants to also eventually include all that went wrong with the implementation. This might address time issues, materials, cost, and classroom management. He looked forward to seeing the RET teachers’ article writing plan and power point presentation soon. He closed with the Benjamin Franklin adage, “A job started is a job half done.”

***Session 3- Feedback and Discussion of Revisions Leading to a Final Draft*** (Date: July 22; Time: 10:45 AM-12:00 PM): Dr. Fowler entered the workshop room, expressing a bit of concern that he may have placed too much of an assignment for the busy RET teachers. They responded that they were able to come up with an outline, some of the teachers had even written three paragraphs. Dr. Fowler recommended that they are at the point where they need to do the actual classroom activity in order to finish the article. Once that point is reached, the teachers will need to go to different journals and get each journal’s specific guidelines for submission. The preparation work may be “intimidating,” but with patience publication can be achieved.

Some of the requirements a journal might have are limited formatting, submitting a certain number of individual copies of the article, or sending a PDF with no name. He cautioned that editors may write marginal notes in bright red with comments such as “How can this be adapted for different grades?” or have feedback on photographs such as, “Are higher resolution photos available? Are permission slips available?” To sum it up, Dr. Fowler indicated that, “it’s a process, not just something you write and drop in the mail. Keep with it and respond, or the process ends.”

Concerning the process ending, the speaker suggested that a rejection allowed the writer to send the article somewhere else. Since it is not allowed to send out two articles at the same to different journals, one way to get around it is by modifying the article. For example, the content overall would be the same, but in one article the focus might be on Challenge-based learning, whereas the other article would focus on STEM careers. This is the most efficient route a writer can take. He warned that once the article is published, the same article can no longer be sent to another journal.

Dr. Fowler then began asking the audience for their general questions and frustrations concerning the article outline. From the questions, he was able to provide more advice, such as: The articles are not lesson plans, the purpose of the article is to convince the reader to try out the lesson. The teacher will have to work it out for himself/herself. He reminded the teachers to indicate the NSF funding and the grant number in the article. He also agreed with one of the teachers who observed that the current trend is for writers to write in first person rather than third. This allows the writer to make the article more personable and throw in more insights. When asked for a list of journals the teachers should try to contact for submission, he named the previously mentioned publications, adding that it is a very limited list.

The third and final workshop continued with, our facilitator, Dr. Fowler, sitting with each RET teacher, reviewing his/her outlines and article paragraphs, and offering advice and more inspiration.



**Figure 1: RET Teachers Share with Dr. Fowler Their Observations of Different Journal Articles**