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Science Fair Time: Learning to Use Informed Sources

It is in the Fall that teens start to think about participating in the Pittsburgh Regional Science & Engineering Fair (PRSEF). Their projects usually get reviewed and approved by January of the next year by a Carnegie Science Center Review Committee. The target this year is PRSEF's April 2, 2024 competition.

All the discussion now in the news about artificial intelligence or AI adds to an ongoing concern about students being able to distinguish between informed and uninformed sources of information, to be expressed in the required minimum of five acceptable resource citations.

As a Review Committee member and category judge, that distinction is in my mind as the one most important learning takeaway that should come from participation in the PRSEF. And the PRSEF has made the quality of resource citations a point of focus in recent years. It has done so with help from the WLN, in the form of on-line and paper handout guidance to the use of Power Library as an informed and multifaceted resource (<https://www.wlnonline.org/prsef>).

However, consider that even scientific resources can become suspect these days. There is evidence that misinformation and fraud, even in supposedly peer-reviewed scientific papers, is becoming a bigger issue than it was in previous years. Chemical & Engineering News, published by the American Chemical Society, speaks to its concerns in the November 20, 2023 issue.

From Interim Editor-in-chief Michael McCoy: "Retractions—both high profile and mundane—are a growing phenomenon in scientific publishing. The Retraction Watch Database logged nearly 5,000 scientific paper retractions in 2022. In 2002, scientific journals collectively retracted only 119 papers. The total number of retractions in the database now exceeds 43,000."

And he adds this observation, which is discussed more fully in a feature article of this issue by Dalmeet Singh Chawla: "A different but equally sobering trend is occurring far from the limelight of prestigious publishing outlets like 'Science' and 'Nature': the rise of predatory journals and so-called paper mills that often feed them content." One predator that was cited seemed to have machine-written text amongst legitimate papers. There was evidence for this journal of papers copied against copyright from legitimate journals, as well as scientists' names being used in authorship without the knowledge of the supposed author. There are as well names being used by for-profit paper mills or "organizations that sell authorship slots on scholarly papers."

All of this can be characterized as pollution of one of the most revered and disciplined worlds of publication. It is difficult to police, even by the scientific community that is so well trained to the scientific method, and failure to stop it in the customary peer-reviewing process leads only to retraction after the fact, perhaps even after having a fake innocently cited elsewhere as reference.

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So what is a Science Fair teen to do, who is only at a formative state of her/his education in respect to scientific research and proper use of resources? That is a big problem for the PRSEF and all of us.

I submit that it is an educational role that the public Library should take on, daunting though it may seem. This is surely a subject on which public Libraries can make their voices heard.

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