

Introducing the Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal



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URNCST Journal
"Research in Earnest"

Abstract: Despite the increase in popularity of undergraduate research, many students are either unaware or unable to publish their work formally, and therefore miss a key component of the research process. Undergraduate researchers often only spend 3 to 4 months on a research project and rarely have enough and/or sufficiently impactful data to publish their work in a professional-level journal. While a number of undergraduate research journals aim to provide students with the opportunity to receive peer-reviewed feedback and publish, the vast majority of these publications are lacking for a myriad of reasons. This editorial serves to introduce the Undergraduate Research in Natural and Clinical Science and Technology (URNCST) Journal, a new and innovative publication that remedies what is lacking in most undergraduate research journals that exist today. The URNCST Journal possesses 8 key characteristics making it the ideal research journal for undergraduate students to publish their work: open-access; peer-reviewed; rapid turnaround time; international; broad and multidisciplinary; indexed; innovative; and social media promoted. It is our hope that graduate students and principal investigators will also benefit from the URNCST Journal through serving as an editorial board member and/or peer-reviewer, and helping to open up discussions about the importance of the peer-review and publication process in research with undergraduate mentees. The journal is currently making its first call for submissions as of August 2017 and looks forward to showcasing the best contributions earnest undergraduate researchers have to offer.

Keywords: undergraduate publishing; undergraduate research; URNCST Journal

What is Undergraduate Research?

The popularization of undergraduate research can be traced back to the establishment of the Undergraduate Research Opportunities Program in 1969 at the Massachusetts Institute of Technology [1]. Though the idea of undergraduate research – an undergraduate student’s exploration of a topic which makes an original contribution to a specific field – has been a concept that has existed since the nineteenth century, its popularity has perhaps never been greater than it is today. Globally, academic institutions have increasingly regarded the importance of undergraduate research, evidenced by the fact that a quick Google search of “undergraduate research” will show academic institution after institution offering programs allowing undergraduates the opportunity to involve themselves in research.

The benefits associated with undergraduate research are undoubtedly numerous and invaluable. Such experiences afford the undergraduate student the opportunity to work on a project outside the traditional environment of a lecture hall or classroom, as they are allowed to actively participate in one or more steps in the scientific process [2-3]. Undergraduate research has also been shown to enhance the educational experience of participants, and improve their ability to navigate the research process, solve scientific problems, and

hone lab techniques. Furthermore, the evidence would also suggest that undergraduate research can improve a student’s personal development such as through increasing their tolerance for obstacles and working independently [3].

Most Undergraduate Researchers Miss a Key Component of the Research Process: Publishing

Yet, despite the fact that many thousands of undergraduate students across the world engage in research each year, many young researchers, sometimes unknowingly, fail to realize that they have missed a key component of the research experience: publishing. While it is very difficult to estimate how many undergraduate researchers successfully publish their findings each year, I believe that most research mentors and undergraduate researchers alike would agree that it is the exception, as opposed to the norm, for an undergraduate student to publish their work in even an undergraduate-level research journal, let alone a professional-level one. The reasons for this vary and can often be attributed to the fact that many undergraduates are simply unaware of where they can publish their work, or due to an oversight on the mentor’s part in informing them of the importance of this final step of the research process. However, there are also many reasons

that can be attributed to the failure of an undergraduate researcher to publish their work, even if they are aware of research journals and desire to publish in them. For example, it is commonly the case that an undergraduate researcher has only spent 3 or 4 months working on a summer project, and thus, their work is likely to be rejected from a professional-level journal. While time is usually the limiting factor that prevents the undergraduate researcher from publishing, many devoted undergraduates also encounter setbacks such as unanticipated findings, which may mean that their work, even if of high quality, may not be impactful enough to be published in a professional-level journal.

While it is completely understandable that an undergraduate researcher may not be able to achieve the necessary data required to publish their work in a professional-level journal until they are at least a graduate student, I would argue that it is invaluable for them to have an appropriate platform to experience this final stage of the research process. Provided that the undergraduate researcher worked with a research mentor on an original project that has a suitable study design, rigorous methodology, appropriately collected, analysed and interpreted data, and is able to describe each of these adequately in a well-written manuscript, it is only fair that they also experience the opportunity to receive peer-reviewed feedback on their work and have a platform to formally publish it.

While a number of undergraduate research journals seek to provide this opportunity, the vast majority are lacking for a myriad of reasons. A simple Google search for undergraduate research journals will reveal that many are institution-specific, and therefore, submissions to any of these journals can only be made by undergraduates conducting research and/or attending said institution. Many undergraduate journals allow non-research submissions to also be published (i.e. opinions on campus life, etc.) thus outside readers may not recognize the publication as a journal devoted to true research. Perhaps the greatest issue faced by most undergraduate research journals, however, is their ability to maintain the visibility of their publications through proper indexing.

Key Characteristics of the URNCST Journal

To remedy the aforementioned issues, we wish to now introduce the Undergraduate Research in Natural and Clinical Science and Technology (URNCST) [pronounced “earnest”] Journal! Upon carefully examining what key characteristics are currently lacking in existing undergraduate research journals, the URNCST Journal was established with the mission to provide dedicated undergraduate researchers with a cost-effective and meaningful platform to showcase their research findings with an international audience that includes their peers and mentors, not to mention graduate and professional program admissions committees.

The URNCST Journal possesses 8 key characteristics making it the ideal research journal for undergraduate students to publish their work:

1. Open Access – Over the last few years, open access publishing has taken the academic community by storm, and affords readers all over the world to access research articles regardless of whether they belong to an academic institution that pays subscription-fees to academic publishers. All research articles accepted for publication in the URNCST Journal will remain fully accessible and will be able to be downloaded, read and cited by any fellow academic in the world with an internet connection.

2. Peer-Reviewed – Though many undergraduate research journals are peer-reviewed, it is sometimes the case that the peer-review process is conducted intra-institutionally, and sometimes even intra-departmentally, which can prevent the undergraduate researcher from receiving feedback containing diverse and international perspectives and worldviews. Instead of relying on local experts or a single academic institution, the journal’s editors will call upon peer-reviewers comprised of principal investigators and graduate students around the world who are experts in each manuscript’s specific topic area.

3. Rapid Turnaround Time – For even the most disciplined and fortunate undergraduate researchers who successfully publish their work in a research journal, this accomplishment sometimes occurs months or even years after they drafted their manuscript. This is a major disadvantage, given the fact that undergraduate students are continuously looking forward at every point in their degree program. Whether the author is hoping to share their published research with a potential research placement or thesis advisor or a graduate or professional school committee, the journal’s editors will endeavour to reach a peer-reviewed decision on manuscripts and publish accepted articles all within a single month. Furthermore, all articles are published on a continuous basis, thus the publication of any given article will never be delayed as issues are based on time (i.e. monthly) as opposed to number of articles.

4. International – As mentioned before, many undergraduate research journals are based out of/only accept submissions from a single university. In addition, many of these same journals are peer-reviewed intra-institutionally and only attract a local readership. In contrast, we will accept submissions from undergraduate students internationally, calls on peer-reviewers internationally, and all published articles are available for an international audience.

5. Broad and Multidisciplinary – It is well-accepted that many undergraduate students may change their research interests or even their research discipline throughout their time as an undergraduate student. The URNCST Journal was specifically established with this fact in mind and will therefore publish research articles spanning any discipline within the natural and clinical sciences and technology. Commonly, undergraduate students may choose to pursue a second and/or professional-undergraduate degree and the URNCST Journal serves as a platform to showcase all of your research conducted during this time as well.

6. Indexed – Nearly every undergraduate research journal that currently exists suffers from a lack of indexing in one way or another. Part of the reason many undergraduate researchers are unaware of publication opportunities is simply because most journals are difficult to find, lack proper archiving methods, and lack indexing. Our team strives to place additional importance on the indexing of each and every article published in the URNCST Journal. As a new journal, we have already taken key steps to ensure this goal is achieved, which include: improving visibility through SEO optimization, archiving articles securely on Open Journal Systems servers, and indexing all articles to Google Scholar once published. Furthermore, currently plans are underway to have all articles deposited to CrossRef and receive their own DOI. As a newly launched publication, long-term plans are underway to also index articles in other academic databases including PubMed, Web of Science, and Scopus among others, which would be unprecedented among undergraduate research journals, especially because article indexing to these databases are not immediately available to newly established research journals.

7. Innovative – The URNCST Journal team values the opinions of authors, reviewers and researchers, and always welcomes any feedback on how to improve the publication, but more importantly we welcome any thoughts that involve introducing initiatives that support undergraduate research endeavours worldwide. For example, it is hoped that we will be able to offer undergraduate research competitions, conferences and/or awards in the future, something highly unique for any research journal.

8. Social Media Promoted – It is becoming increasingly common for many research journals – professional and undergraduate – to have a presence on various social media platforms. We take this a step further and will write a message promoting each and every article on the day it is published on our Facebook, Twitter and LinkedIn accounts to maximize the visibility of authors' work.

Graduate Students, Researchers and Principal Investigators

While the primary (first) author on each manuscript submission to the URNCST Journal must be an undergraduate student, we require one supervising (last) author who can vet the content and quality of the undergraduate student's manuscript, and encourage any other researchers of any level who were involved in the study to also be a non-primary author on submitted manuscripts. Beyond serving as an excellent platform for undergraduate researchers to publish their work, it is hoped that graduate students, researchers, and principal investigators will also find value in the URNCST Journal.

As a newly launched research journal, we welcome any post-undergraduate researchers who are committed to supporting undergraduate research to apply to join the journal's editorial board or serve as a peer-reviewer. In particular,

many young post-undergraduate researchers, such as graduate students, rarely have the opportunity to peer-review the work of others, yet this important skill is required for the large proportion of them seeking to become a faculty member. While many professional-level research journals may be reluctant to assign a less experienced post-undergraduate researcher as a peer-reviewer, it is hoped that such researchers will be able to contribute to the URNCST Journal, thus reaping the benefits of supporting undergraduate researchers, while honing their peer-reviewing skills simultaneously. It should be noted that all editors and peer-reviewers are acknowledged on the manuscripts they edit or peer-review respectively.

For research professors and principal investigators supervising undergraduate researchers, it is hoped that the URNCST Journal will become a platform that facilitates discussion about the peer-review and publication process, as well as the importance of making one's research highly visible and widely-disseminated to the peers within one's field of study. Furthermore, the journal accommodates principal investigators in the case where an undergraduate student is working on a part of a larger research study, by publishing all articles under a Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>) allowing the authors to own the copyright to their article, thus enabling the principal investigator to re-publish the undergraduate researcher's work in a professional-level journal as part of a larger study. In contrast, the journal also provides an advantage for principal investigators supporting students researching smaller projects that perhaps they had no plans of continuing in the future due to a lack of "impactful" results or funding. Beyond serving on the editorial board or as a peer-reviewer, it is hoped that principal investigators will also benefit from reading articles published in the URNCST Journal, by allowing them to gain a first-hand glimpse into new studies that other researchers are working on, but also allowing them to connect with the most dedicated of undergraduate researchers who may potentially become their future summer research, research placement, senior thesis, and/or even graduate students.

A Call for Papers

We are now making our first call for submissions to the URNCST Journal as of August 2017. Though by no means an exhaustive list, the journal welcomes articles from the following subject areas: biology; biotechnology; chemistry; physics; earth and environmental sciences; psychology; medical science; clinical science; health science; clinical medicine; and health biotechnology.

The URNCST Journal current accepts four types of article submissions as follows: primary research, reviews, research protocols, and conference abstract books. Primary research articles should contain original research conducted within the scope of the journal. Review articles can be of the literature, scoping, or systematic variety and should comprehensively summarize and evaluate a specific topic area

within the scope of the journal. Research protocols allow the undergraduate researcher to present an outline of work which may take longer to publish, and allows for the opportunity to receive early feedback on the feasibility and/or improvement of a proposed research study. Lastly, conference abstract books are reserved for undergraduate research conference planning committees. While the committee does not necessarily have to be comprised of undergraduates, the research conference should exclusively feature the abstracts and work of undergraduate researchers and the conference's subject area should fall within the scope of the journal.

We are very excited to be launching the ideal undergraduate research journal, and we greatly look forward to showcasing the best contributions earnest undergraduate researchers have to offer.

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URNCST Journal

List of Abbreviations

URNCST: Undergraduate Research in Natural and Clinical Science and Technology

Conflicts of Interest

The author(s) declare that they have no conflicts of interest.

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