

Transforming the Journal of Engineering Education Transformations

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Abstract

Context

A reputable and reliable outlet for publication is an important component of building a research ecosystem. Currently, the Engineering Education Research community in India is at a nascent stage, and lacks a world-renowned outlet for publication. The Journal of Engineering Education Transformations (JEET), was established in 1985 to serve as an outlet for sharing narratives of educational transformations at engineering institutions in western India. For the past six years, the journal has itself undergone a transformation, from publishing a small set of case studies, to publishing peer-reviewed articles that range from engineering education research, to practice and even policy. As a result of this transformation, the number of submissions to the journal have skyrocketed over the last few years indicating the EER community's faith in the journal's quality and practices. This article aims to describe JEET's transformation and provides details of its inner workings including training programs such as a mentored reviewer program. The journal and the EER ecosystem in India, have a long way to go, and a discussion on JEET is necessary to engage the EER community.

Purpose or Goal

The goal behind submitting this article is to have a frank and open conversation on how operating procedures could be improved at the journal, how the EER community in India can benefit from adopting the journal and enabling its success, and to solicit innovative ideas on how the journal can best serve the needs of a growing ecosystem of engineering education researchers and scholarly teachers in India. A secondary goal is to involve the global EER community at large to help JEET in having an impact and presence beyond India.

Methods

The paper takes a simple narrative approach, with the journal editors presenting the history and growth of the journal, supported by statistics on number of submissions, time to review, time to publish etc.

Outcomes

The paper will showcase the journey of the journal from being a repository for the occasional case study to a Scopus-indexed journal that accepts papers on the scholarship of teaching and learning.

Conclusion

JEET has established strong practices for peer review and quality control. It seeks more engagement from budding engineering education researchers in India for participating in peer-reviews. It will also benefit from international engagement. Having become a Scopus-indexed journal, JEET serves to elevate the EER community in India and needs participation from all stakeholders to take it to the next level.

Keywords—journal; capability-building; peer-review; publication outlet.

I. INTRODUCTION

ONE of the goals of the research in engineering education is the transformation of engineering education through a variety of experiments in teaching-learning and related areas. The Journal of Engineering Education Transformations (JEET) is a scholarly journal committed to the advancement of theory, research, and practice in the field of engineering education. Published from India, the world's largest hub of engineering education, JEET was identified for a critical role in the capability building for EER in India (Sohoni et al., 2017). Although based out of India, it is international in its scope, inviting scholars and experts from across the globe to share their theoretical insights and innovative practices for the enhancement and transformation of engineering education. JEET is a peer-reviewed journal made available in both print and online versions. A double-blind peer-review process performed by experts in the field ensures that the highest standards in scholarship are maintained.

The Objectives of JEET are:

- To provide a world-class platform for publishing original research in engineering education.
- To provide a forum for sharing innovative practices for imparting engineering education.

- To provide a forum for sharing innovative strategies for combating issues unique to engineering education in India and abroad.
- To foster international collaboration and discourse for the betterment of different aspects of engineering education.

In 2017, JEET has embarked on a transformation from a journal that published a handful of case studies to a Scopus-indexed journal that publishes research in engineering education, including the scholarship of teaching and learning (Sohoni, 2018). Through a targeted campaign with the support of the Indo-Universal Collaboration for Engineering Education (IUCEE), aided by the fact that it became Scopus indexed, the journal saw a tremendous surge in the number of articles submitted per year as shown in Table 1.

TABLE I
TREND IN NUMBER OF SUBMISSIONS RECEIVED PER YEAR

Year	Submissions
2017	23
2018	200
2019	300
2020	Unknown due to change in platform
2021	Unknown due to change in platform
2022	401
2023	519 (as of November)

As expected, the editorial team was overwhelmed by the deluge of submissions and has been expanding the number of associate editors as shown in Table 2 (JEET, 2023) as well as the number of reviewers over the past several years (Sohoni, 2021).

TABLE II
SCALING OF TOTAL NUMBER OF AEs

Year	Number of Associate Editors
2017	4
2018	5
2019	9
2020	15
2021	26
2022	30
2023	27

In this article, the operating procedure of the Journal of Engineering Education Transformations (JEET) and initiatives taken by the journal to improve its operations, relevance and ranking are discussed in detail. The performance indicators of the journal, the factors affecting the performance indicators and improvement in the performance of the journal over the past six years are also discussed.

II. STANDARD OPERATING PROCEDURE FOR PEER REVIEW

JEET follows the double-blind peer review process. To ensure the quality of peer review and quality of the manuscripts

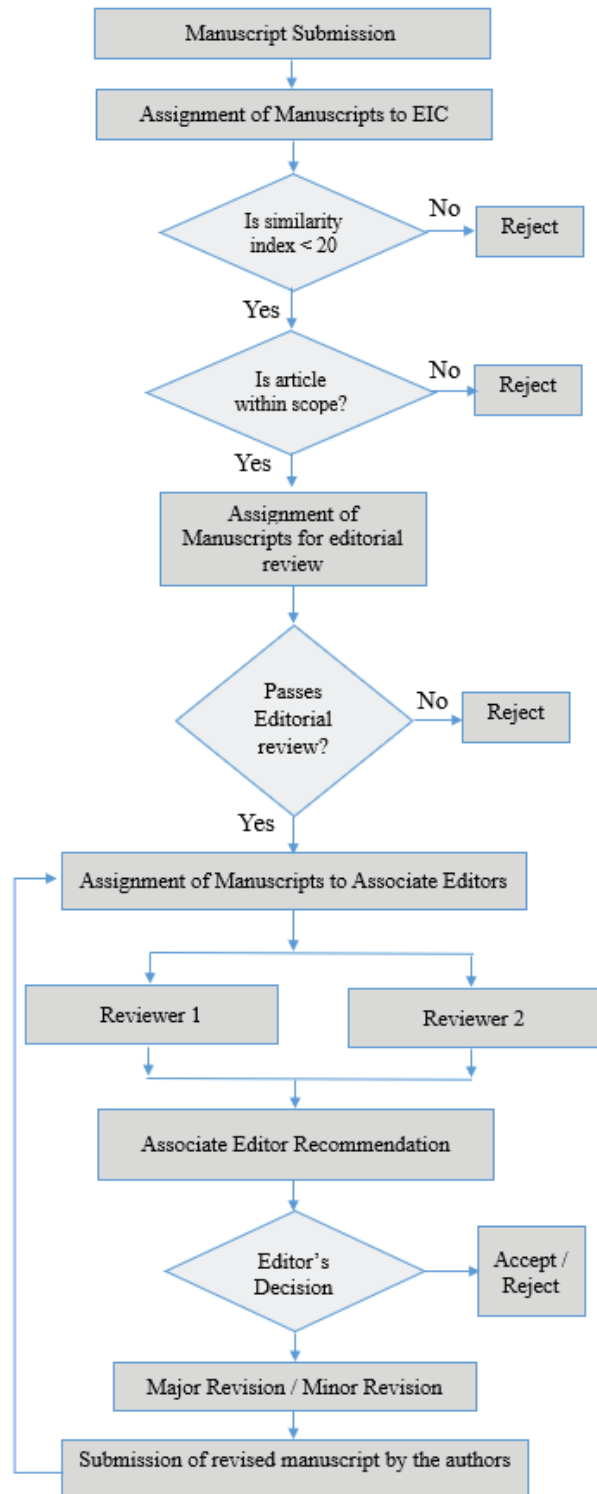


Fig. 1. Peer-review process.

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published in the JEET, the rigorous peer review process is designed and implemented. Figure 1 shows the flow chart to indicate the journey of the manuscripts from its submission to final decision. An online peer review tool (Manuscript Communicator) is used as the editorial management system. The manuscripts undergo a plagiarism check and only those manuscripts having similarity less than or equal to 20% are considered for the editorial review. Technical (non-EER) manuscripts or the manuscripts beyond the scope of the journal and the manuscripts having unacceptable similarity are rejected before review. Over the past few years, the large volume of out-of-scope submissions have been a significant challenge and have required additional efforts on the editorial team's part. The manuscripts recommended by the editorial review team are further assigned to the Associate Editors to assign them to at least two reviewers for peer review. The reviewers after accepting the invitation to review are expected to submit the review reports and review recommendation within two months. After at least two reviews are received, Associate Editors send their recommendation to Editor-In-Chief. The Editor-In-Chief reviews the review reports and Associate Editor's recommendation and communicates the decision to the authors. The decision would be accept / reject / major revision / minor revision. The accepted manuscripts are sent to the production team and they are considered ready for publication after proof reading. In case of the manuscripts with a revision decision, authors are asked to send the revised manuscripts and rebuttal within one month. The revised manuscripts submitted by the authors again undergo the plagiarism check and are then assigned to the respective Associate Editors and reviewers for the revision review. The same peer review process is repeated till manuscript reaches the final decision.

III. PERFORMANCE OF THE JOURNAL

A. Performance Evaluation Parameters

The performance of a journal is evaluated on the basis of the performance indicators such as h index, Scopus indexing, impact score, Best Quartile, Overall Ranking etc. The performance is evaluated using quantitative data as well as using qualitative measures. The achievement of the performance indicators for any Journal depends on evaluating the stakeholders such as reviewers, Associate Editors and Editorial Board members. The performance of a journal also depends on impact of the articles published on society, time to first decision, time to final decision, acceptance rate etc. (O'Rourke, 2015). Gangan Prathap (2012) discussed various indicators that are used as the basis to rank Journals. He discussed various quality and quantity indicators such h-index, g-index, p-index, eigen factor score and article influence and their relationships. This section provides data on these metrics for JEET.

B. Initiatives to Elevate Journal Performance

The Editors and Editorial Board members are responsible to ensure achievement of the target time for the first decision, target time for the final decision, quality of the publication, controlling acceptance rate, declining the manuscripts before review to ensure that the journal is not overloaded with unsuitable submissions, increasing database of the reviewers, increasing number of Associate Editors, and effective communication with the authors, reviewers, Associate Editors, administrator and staff, online peer review management team, and production team. Since its inception, the Journal of Engineering Education Transformations (JEET) has taken variety of initiatives to improve the Journal's performance. As a result, JEET has achieved steady and gradual improvement in the performance over the period of time in terms of quality of reviews, quality of publication, indexing, and impact score etc. Following are the initiative taken to control the factors affecting the performance of the Journal.

1) Mentored Reviewer Program

Inspired by the success (Benson et al 2021, Jensen et al, 2022) of the mentored reviewer program conducted by the Journal of Engineering Education (JEE) (Journal of Engineering Education Mentored Reviewer Program, 2019), JEET embarked on its own version of it in May of 2020 (Hattingh et al. 2021). Given the volume of submissions received by JEET and the corresponding scaling up of Associate Editors, the program was modified to provide additional mentoring for AE's prior to the start of the program. This mentoring was done in the form of two one-hour workshops on consecutive weekends. This helped greatly in building a community of practice (Wenger, 1998) for the AEs themselves. Each AE was then asked to pick a reviewer for whom the AE would serve as a mentor. Each mentor-mentee pair was then tasked with collaboratively reviewing two papers with sessions held in between reviews to facilitate discussion and reflection on the review process. Overall, the program has had a positive effect on the quality of reviews, but challenges exist in terms of scaling it to the needs of JEET. An unanticipated positive outcome of this program was the realization of how lonely the peer-review process is, and how important it is to create some social interaction around it. However, the initial enthusiasm around wanting to continue the mentored reviewer program and providing opportunities for interaction has unfortunately faded at this point. A follow-up study to gather more detailed data from participants is currently underway.

2) Increase in number of Associate Editors

The number of Associate Editors that were 4 in 2017 are now 30 (Table 2), to take care of increased submissions. The

involvement of Associate Editors from within and outside India has helped the journal to reach to authors and reviewers at international level.

3) Involvement of Global EER Community

In an effort to bring in global perspectives and international standards to JEET, 7 Associate Editors from outside of India were added between 2017 and 2022. The goal is to continue to grow this number with the help of Research in Engineering Education Network (REEN). In 2021, the journal was also added to the list of EER journal maintained by REEN on its website (REEN 2023). The journal has also become available on the SCI list, an internationally recognized listing.

4) Increase in Database of Reviewers

There has been significant increase in number of reviewers over the last few years and contribution from the reviewers outside India has also been increased in the recent past. The involvement of increased number of reviewers has helped to strengthen the peer review process and reach the final decision within expected time. However, the journal still faces a tremendous challenge in terms of responsiveness of reviewers and review quality.

5) Evaluation and Change in the Online Peer Review System

An effective and efficient peer review tool plays an important role in ensuring that the standard operating procedure is in place for manuscript submission, peer review and publication. The performance evaluation of the online peer review tool was done and recommendations were given to improve the submission and peer review process. The revised version of online peer review tool was installed to help the authors, editors, associate editors, reviewers and production managers. Based on the user experience, several enhancements were suggested to the system, many of which were included in a new version of the system.

C. Achieved Performance Indicators

The Journal was indexed in Scopus in the year 2018 and since then the Journal has been indexed in Scopus continuously. The best quartile for this journal is Q3 and this journal has an h-index of 9. The best quartile Q3 indicates the middle-low position, next 25% Journal title after Q2 fall under this category (between 50% to 75%). The ISSN of Journal of Engineering Education Transformations journal is 23941707, 23492473. The overall rank of Journal of Engineering Education Transformations is 18694. According to SCImago Journal Rank (SJR), this journal is ranked 0.210. SCImago Journal Rank is an indicator, which measures the scientific influence of journals. It considers the number of citations received by a journal and the importance of the journals from where these citations come. SJR acts as an alternative to the Journal Impact Factor (or an average number of citations received in last 2 years). Figure 2 shows improvement in SCImago Journal Ranking (SJR) of the Journal for the past four years.

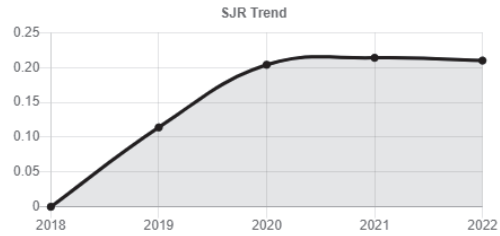


Fig. 2. Improvement in SCImago Journal Ranking since 2018.

The impact score (IS), also denoted as Journal impact score (JIS), of an academic journal is a measure of the yearly average number of citations to recent articles published in that journal. It is based on Scopus data. The impact score (IS) 2022 (which is computed in 2023 as per its definition) of Journal of Engineering Education Transformations is 0.79 and has increased by 0.3, an approximate percentage improvement of 61.22% when compared to the preceding year 2021. The highest and the lowest impact index or impact score of this journal are 0.79 (2022) and 0.00 (2018), respectively, in the last 5 years. Moreover, its average IS is 0.39 in the previous 5 years. Figure 3 shows improvement in Impact Score (IS) of the Journal for the past four years. Although the trend is in the right direction, the absolute numbers are low, and efforts are underway to increase these numbers, including training faculty in India in EER and promoting the journal to a worldwide

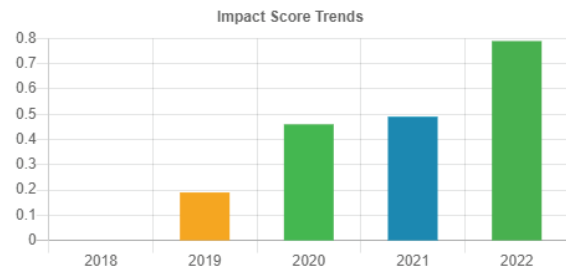


Fig. 3. Improvement in SCImago Journal Impact Score.

audience.

Figure 4 shows trend of overall ranking for the Journal of Engineering Education Transformations (JEET).

D. Reviewer and Associate Editor Grading System

The role of the reviewers is crucial to ensure quality of the manuscripts published by the Journal. The evaluation of reviewers is necessary to achieve the target time of final decision and publication as well as to ensure quality of publication through quality of reviews. The number of reviews completed in a year, number of times the reviewers declined the review, quality of the review report submitted by the reviewers,

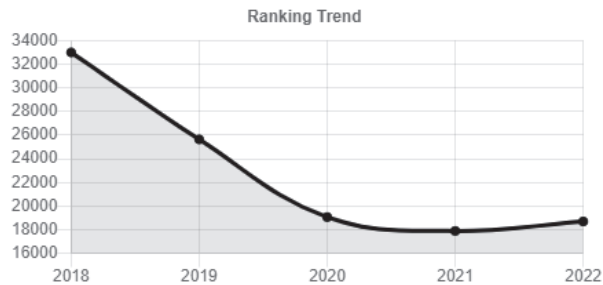


Fig. 4. Improvement in journal ranking.

timely submission of the review, contribution of the reviewers for number of years and acceptance rate are the parameters considered for evaluating the reviewers.

The Journal of Engineering Education Transformations (JEET), as a future step, has planned to design and implement reviewer grading system to evaluate the performance of the reviewers and to award them based on their contribution and rating. The objective of such an initiative is to further increase the reviewer database by motivating best reviewers to join JEET reviewers' team. The initiative to further increase reviewers' database and quality of reviews will help to reduce the time to decision as well as quality of the manuscripts published in JEET.

Similarly, Associate Editors will be evaluated on the basis of the number of manuscripts completed, follow up with the reviewers, timely submission of the AE's recommendation and attempts to ensure quality of the reviews assigned to them.

IV. CONCLUSIONS

The goal of this paper was to discuss the operating procedures of JEET, describe how the EER community in India can benefit from adopting the journal and enabling its success, and to solicit innovative ideas on how the journal can best serve the needs of a growing ecosystem of engineering education researchers and scholarly teachers in India. JEET has established strong practices for peer review and quality control. However, the journal can greatly benefit from the involvement of the international EER community on all fronts- article submission, peer-review process as well as readership. Thus, this paper may well be viewed as a call to the global EER community for participation in JEET.

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