Exploration and practice of building a youth editorial board for scientific and technological journals: A case study in Journal of Materials Science & Technology

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ABSTRACT
To meet the demand for the high-quality development of English scientific journals, Journal of Materials Science & Technology (JMST) established the youth editorial board which has greatly improved the efficiency of the journal’s work, optimized the quality of manuscripts, and enhanced the international influence of the journal. This study introduces the specific methods adopted by JMST in forming and assessing its youth editorial board. Through a literature review, qualitative analysis, and quantitative analysis, the role of the youth editorial board in journal development is examined. The results show that the construction of a youth editorial board, gradual improvement of its management mechanisms, and maximization of the role of youth editorial board members can promote the synergistic development of scientific journals and young editorial teams. This helps enhance the international influence of the journal, accelerate the process of internationalization, and facilitate high-quality development. Finally, the future development directions of the youth editorial board are discussed.

Key words: construction of youth editorial board, selection of youth editorial board members, English scientific and technological journals, journal development, young editors

INTRODUCTION
In May 2021, the Publicity Department of the Communist Party of China’s Central Committee, the Ministry of Education, and the Ministry of Science and Technology jointly issued the “Opinions on Promoting the Prosperous Development of Academic Journals”, which outlined that academic journals should include excellent scholars and researchers in their editorial teams and support the two-way flow of roles between teaching and research personnel of educational and research units and editorial staff. Years of experience in journal development have shown that researchers, especially high-level researchers, play a crucial role in the development of journals. Therefore, absorbing outstanding young scientists into the reserve team of the editorial board—the youth editorial board—and having them actively participate in journal design and management, is a “key move” to achieve the development of high-quality English scientific journals. Many scientific journals successfully established youth editorial boards as an effective approach for young scientists to play a role in scientific journals, for example, Nonferrous Metals Science and Engineering, Engineering Reports, and Advances in Geo-Energy Research (AGER) established youth editorial boards in 2020, 2022, and 2023, respectively. Since its establishment, the Journal of Materials Science & Technology (JMST) has always adhered to the editorial purpose of “relying on scientists, serving scientists”. Therefore, recruiting excellent young talent who can meet the development needs of the journal to form a high-level youth editorial board and can fully utilize their role in the operation of the journal.
is an exploration and practice that the JMST editorial department must carry out.

Over the past decade, many scientific journals have conducted extensive research on the construction of youth editorial boards. Cai et al. discussed the selection mechanism of youth editorial board members (youth members) and the role youth members play in the review process of journals. Ye et al. used the analytic hierarchy process to construct an evaluation system suitable for youth members, and Guo et al. reported the situations pertaining to and problems encountered in the process of establishing a youth editorial board, pointing out that its development must be adapted to the local conditions and people, to carve out a unique path for the journal. This study introduces the experiences and methods of forming a youth editorial board from various perspectives. However, few reports have introduced and analyzed the entire process of formation, management, and development of youth editorial boards. At the same time, to meet the needs of journal development, the JMST editorial department began recruiting and building a youth editorial board in 2022 by adopting a novel strategy of having the youth editorial board run primarily by young editors, over a year ago. During this process, many problems have emerged and been resolved, and a certain amount of experience has been accumulated.

In summary, this article revolves around the explorations and practices of the JMST editorial department in the construction of a youth editorial board, focusing on insights into the selection of youth members, the construction of a youth editorial board, and the synergistic development of scientific journals and youth members.

FORMATION OF THE YOUNG EDITORIAL BOARD

Recruitment and selection of youth members

To adapt to the rapid development of the journal and better serve the majority of scientists, JMST began to recruit youth members worldwide in 2022, using the method of “long-term recruitment, free application, expert review, and merit-based admission” to form a youth editorial board. Two batches of youth members have thus far been recruited.

Selecting youth members who can adapt to the development of a journal from a large number of excellent young scientists is a problem that every editorial department encounters. Based on the needs of high-level journal design and international developments in the field, the JMST editorial board and the expert committee finally established the following selection criteria for youth members. (1) Age requirement: in principle, not exceeding 45 years old. (2) Academic influence: published no less than five high-level SCI papers as the first author or corresponding author. (3) To be able to smoothly participate in the development of the journal, youth members need to be familiar with the development and editorial publishing process of domestic and foreign SCI journals. (4) Have made significant contributions to the development of JMST, including but not limited to submitting excellent papers, reviewing manuscripts, promoting the journal, and promoting papers. (5) Preferably, those with overseas study/work experience. These conditions aim to select young scientists who are able to adapt to further improve the manuscript quality of JMST, accelerate the internationalization process, and meet other development needs.

The selection process is as follows: the applicant completes the “Youth Editorial Board Member Application Form” and sends it to the editorial department via email for registration; the expert committee reviews and evaluates the applicants every quarter (four times a year) and publishes a list of new youth members; subsequently, the editor-in-chief of the journal issues an appointment letter to the respective applicants. The recruitment direction includes advanced metallic materials, low-dimensional materials, high-entropy materials, energy storage materials, electromagnetic materials, optical materials, information materials, catalytic materials, new energy materials, intelligent materials, biomedical materials, composite materials, and other materials in all disciplines to meet the development needs of JMST to expand the discipline category from “metallurgy and metal materials” to “mainly structural materials, and other new material directions”.

Composition of the youth members

JMST recruited two batches of youth members in September 2022 and March 2023, with 81 selected from a total of over 300 applicants. Among them were 19 young overseas editors, accounting for 23.5%, covering eight countries, including Australia, Singapore, and the UK. Figure 1 shows the distribution map of overseas youth members. It can be seen from Figure 1 that JMST’s overseas youth members are spread across Asia, Australia, America, and Europe, which will help enhance JMST’s international reputation. There were 28 youth members with academic titles, such as national high-level talents, accounting for 34.6%, indicating that the JMST young editor team’s strength lies in scientific research, which will significantly improve the level of the journal. The maximum age (selected age) of youth members did not exceed 45 years, with an average of 37 years. Research has shown that this age group has the highest
number of indexed papers per capita and is the golden age for the development of researchers’ scientific capabilities.\textsuperscript{[18]} This to some extent ensures that the youth editorial board formed by the \textit{JMST} has a high academic ability and activity level and can fully adapt to the needs of the journal’s rapid development.

The research directions of the youth members of \textit{JMST} cover 21 materials science fields (Figure 2), including additive manufacturing; Al-based alloys, including machine learning; energy-storage materials; and biomaterials, which are all currently cutting-edge and popular functional materials fields. This indicates that the research field composition of the \textit{JMST} youth editorial board is comprehensive and appropriate, and will effectively promote the construction of high-quality comprehensive materials journals. Figure 3 compares the proportion of youth members in different research fields and the proportion of articles published by \textit{JMST} in 2023. Overall, the two lines show a consistent trend, indicating that the research field composition of the \textit{JMST} youth editorial board is adapted to the development of the journal and is scientific and valuable. However, there are also some inconsistencies. For example, in the field of Ti-based alloys, there are more youth members but fewer articles published. In the subsequent “old for new” work of the youth editorial board, \textit{JMST} will fully consider the development direction of the journal, reasonably absorb young talent from various fields, and achieve a dynamic balance and sustainable development of the youth editorial board. Figure 4 shows the distribution of the H-index for youth members (data from Scopus and Google Scholar), with an average H-index of 25.8. Among them, five have an H-index greater than 50, accounting for 6.2% of all youth members. Youth members in this segment are generally older and stronger in scientific research and can play a leading role in the young editor team; there are 32 people with an H-index between 26 and 50, accounting for 39.5%; they form the backbone of the young editor team. Next, 44 have an H-index of less than 25, accounting for 54.3%. The number of youth members in this segment is the largest; they are generally young scientists who are mentally active and energetic and have more free time. Their enthusiasm and creativity are strong, and they can provide a continuous source of inspiration for the development of the journal.

**MANAGEMENT OF THE YOUNG EDITORIAL BOARD**

**Establishing management systems to fully utilize youth members**

To improve the activity of youth members, clarify their responsibilities, and allow them to work effectively, the \textit{JMST} editorial department uses quantitative assessment to evaluate youth members and selects outstanding youth members based on the results. At the same time, the editorial department has plans to establish a constraint mechanism based on the quantitative evaluation results to “slim down” the youth editorial board, retaining excellent youth members who contribute to the journal and dismissing “nominal” youth members who do not participate in journal work and repeatedly fail to attend journal editorial activities.

In June 2023, to better understand the contributions of each member of the youth editorial board to the journal after joining the board and to provide a basis for the youth editorial board to initiate incentive and constraint mechanisms, the \textit{JMST} editorial department developed the “\textit{JMST} Young Editor Work Survey Form” and conducted the first survey of the work situation of youth members, quantitatively evaluating it from multiple dimensions such as manuscript submission (and acceptance), solicitation, review, special issue formation, and journal promotion. The survey was conducted by sending questionnaires via email, 81 questionnaires were sent and 71 were returned, representing a recovery rate of 87.65%. By analyzing the importance of each indicator, the editorial department weighted and scored each indicator established an evaluation standard with \textit{JMST} characteristics, and developed plans to evaluate the work of youth members according to this standard in the long term.

At the same time, to ensure the objectivity and fairness of this work, the \textit{JMST} editorial department announced the assessment results in an open and transparent manner. At the \textit{JMST} Xi’an Editorial Board Meeting in November 2023, the \textit{JMST} editorial department reported the results of the first quantitative evaluation of
all youth members, including not only the overall contribution of the youth editorial board and the list of youth members who performed outstandingly in various respects but also the list of youth members who did not submit reports in the first survey and the list of youth members who were absent from this editorial board meeting without reason. This open and transparent approach will help motivate youth members to participate in journal work more actively and will also serve as a warning to youth members who are not highly involved or enthusiastic.

Youth members participating in the construction of the youth editorial board of scientific SJMST tried the novel strategy of having young editors run the young editorial board, because young editors of the SJMST editorial department have a significant natural advantage in building a youth editorial board for scientific journals. In terms of age, young editors are similar in age to youth members, allowing for more efficient and smooth communication. Both groups are vibrant and creative and have strong initiative and high work enthusiasm. In their work, the young editors of the SJMST editorial department maintain smooth communication and close contact with youth members and have established good relationships. The advantages of young editors participating in the construction of the youth editorial board are mainly reflected in two aspects: on the one hand, because the communication between the two is more relaxed, it can effectively bridge the distance between youth members and the journal, enhance the sense of belonging of young editors to the journal, help to further increase their enthusiasm, and enable them to provide opinions and suggestions for the construction of the journal in a more timely and effective manner and contribute to the healthy development of the journal; on the other hand, as the two groups largely represent the future of the journal, the establishment of good relationships allows them to cooperate closely for a long period in the future, fosters a “1 + 1 > 2” role, and is beneficial to the sustainable development of the journal.

Award youth member
Youth members who have made outstanding contributions can be rated as excellent youth members and awarded honor certificates by the editorial department to affirm their contributions to the journal and enhance their sense of honor; in addition, the editorial department has opened a promotion channel for youth members, and youth members who have made outstanding contributions can be preferentially employed as journal editors when the editorial board is
SYNERGISTIC DEVELOPMENT OF SCIENTIFIC JOURNALS AND YOUTH MEMBERS

Youth members boost the development of scientific journals

Provide high-quality manuscripts

High-quality manuscripts are key to building high-quality journals. Youth members who are selected through a strict selection process generally have strong research capabilities and can generate many innovative results. The research papers derived from these results will be an important source of high-quality manuscripts for JMST. Since the establishment of the youth editorial board more than a year ago, many youth members have actively submitted and published excellent original papers in JMST. According to 2023 statistics, 37 youth members submitted a total of 68 papers, and 40 papers...
were accepted from 25 of them. Among them, according to the data in November 2023, a total of four papers were selected as “ESI Highly Cited Papers.” The publication of the academic achievements of youth members in JMST helps to enhance the sense of belonging of youth members to JMST, thereby further mobilizing their endogenous motivation to serve the journal and promote it.

**Recommend and promote journals**

Figure 5 shows the youth members' journal promotion work. The youth members have promoted the journal more than 120 times at academic conferences. Therein, 21 times were abroad as shown in Figure 6. At materials science conferences all over the world, young JMST editors promote the journal, which effectively enhances its influence globally and helps JMST surmount the common problem of the lagging internationalization of domestic scientific and technological journals. At the same time, against the background of “Internet +”, compared with the editors, the youth members can participate more actively in various community activities of JMST and share the information and dynamics of the journal through various channels such as WeChat Moments, QQ group chats, and short video websites. These will become core competitive resources for JMST to conform to development trends and lead the development of the discipline.\[20–23\]

![Figure 6. The country distribution of conference locations abroad where youth members promoted the Journal of Materials Science & Technology.](image)

**Organize special issues**

Two youth members have actively participated in the planning of JMST special issues, serving as guest editors, and plan to organize two hot-topic special issues for JMST: one is the Hebei University of Technology Anniversary Special Issue, devoted to high-quality manuscripts from Hebei University of Technology; the other is a special issue on “Flame retardant polymeric materials” prepared by overseas youth members, which is intended to include excellent papers presented at the European Flame Retardant Polymer Materials Conference (FRPM23). The two special issues are currently being prepared, and it is expected that they will further enhance the quality of the journal’s manuscripts and its international influence.

**Participate in editorial meetings and organize various academic activities**

A young editor’s forum was added at the JMST editorial meeting in 2023. During the 2-hour forum, many youth members spoke freely and had heated discussions about the future direction of journal development and the challenges they faced. At the same time, several youth members spontaneously held regional editorial meetings in collaboration with other editors to contribute ideas for the development and promotion of JMST.

Because of the limited time of the forum, many youth members did not have the opportunity to speak. Therefore, the editorial department plans to adopt various activities in the next editorial meeting to increase the interaction between the editorial department and youth members, and between editorial board members and youth members to give youth members more opportunities to contribute valuable opinions to the construction of the journal.

**Participate in review work**

Reviewing is an important part of the publication of scientific papers. The editorial department needs researchers with rich research experience and superb research levels to evaluate the manuscripts, in order to select high-quality manuscripts that meet the high
requirements of the journal.[24–27] According to the 2023 statistics, 23 youth members participated in the journal’s review work, reviewing more than 100 papers. Compared with general reviewers, youth members are enthusiastic and more responsible when dealing with review work. At the same time, JMST, as a semimonthly, has a shorter publication cycle and a larger volume. In recent years, the annual submission volume has exceeded 6000, and the annual publication volume is nearly 1000. Therefore, the participation of youth members can effectively alleviate the pressure of reviews and shorten the review cycle.

Scientific journals assist the growth of youth members

Provide priority rights and academic resources

The JMST provides a “fast track” for youth members, that is, articles submitted by youth members as the first author or corresponding author can be published preferentially after peer review. This greatly enhances the enthusiasm of youth members to provide high-quality manuscripts for JMST, and earlier publication also helps youth members seize the commanding heights of science and technology. As “deeply buried gold cannot shine”, JMST plans to open a special column for youth members and promote the excellent academic achievements of youth members through WeChat groups, Moments, and foreign social software, among others, to expand their academic influence.

Build an academic exchange platform

The JMST editorial department plans to hold small academic salons for youth members in different research fields in a combination of online and offline forms, providing them with a more convenient academic exchange space and opportunities to display academic achievements and express academic views, thereby promoting their academic progress.[28] In addition, when youth members participate in academic activities as JMST editors, it is equivalent to the journal adding social duties to youth members, and the influence of the journal in the academic world can endorse the academic strength of youth members to a certain extent.

In summary, youth members actively participate in journal work and are committed to promoting the journal, which can effectively optimize the quality of journal manuscripts and improve the academic prestige and international image of the journal. As the journal’s influence grows, it will provide a higher-level platform for youth members, which will help improve their academic status and academic prestige. Through the synergistic development of scientific journals and youth members, a win-win situation of mutual promotion and achievement can be achieved.

REVIEW AND FUTURE PLANS

The JMST youth editorial board is in its early stages and there are still many areas that are not perfect. Only by summarizing, thinking, and constantly reviewing matters in a timely manner can one face existing problems and find effective coping strategies to ensure efficient long-term development.

First, in the subsequent recruitment of youth members, the focus should be on the needs of the journal’s development, continuously absorbing youth members from different fields, especially young talent at the forefront of disciplines and interdisciplinary fields.

Second, quantitative assessment mechanisms are not yet fully scientific. For example, although JMST is a comprehensive journal in the field of materials, there are large differences in the number of manuscripts and publications in each research field. For youth members involved in “niche” field research, the pressure of reviewing, publishing, and inviting manuscripts is relatively high. The use of the same scoring standards is thus not fair. Therefore, the JMST editorial department believes that it should not be restricted by the establishment of broad and unified evaluation standards but should classify youth members according to research fields, environmental characteristics, and so on, and tailor a more scientific scoring mechanism for them. Furthermore, attention should be paid for the widespread adoption of the opinions of experts and youth members to adjust the scoring mechanism in a timely manner. In the future, it is planned to establish a scientific promotion and retirement system for youth members based on a more comprehensive, sufficient, fair, and just evaluation mechanism.[30] At the same time, the editorial department plans to conduct a more detailed and comprehensive analysis of youth members, track their personal growth trajectory after joining JMST, and provide more opportunities for their personal growth while building the journal.

Third, although most overseas youth members actively contribute to the development of the journal, owing to
time and space constraints, communication with them cannot be as comprehensive as communication with domestic youth members. Only one overseas young editor was able to attend the editorial meeting in Xi’an in 2023. Subsequently, the JMST editorial department has planned to strengthen its communication and interaction with overseas youth members through a variety of online activities. For example, regional young editor meetings organized according to subject classification or regional distribution should be held frequently, preferably quarterly; these meetings can combine online and offline methods, gather overseas youth members by country, and connect them with the editorial department.[3]

CONCLUSION

Thus far, with the joint efforts of the expert committee and editorial department, the construction of the JMST youth editorial board has achieved results. The first two batches of youth members have played an important role in improving the academic quality and visibility of the journal. The team of young JMST editors will continue to grow, and further explorations and practices regarding the construction of the youth editorial board will be carried out in earnest.

In the future, JMST will continue to explore practice based on its own development, commit to the construction of the youth editorial board, gradually improve the system of the youth editorial board, continuously track the role of the youth editorial board in the process of journal construction, and build more platforms conducive to the promotion of youth members’ academic influence so as to promote the coordinated development of scientific and technological journals and youth members. We look forward to learning more about the JMST’s experience that facilitates the construction of youth editorial board in domestic scientific and technological journals.

DECLARATION

Author contributions
Li X: Conceptualization, Writing—Original draft. Wang H: Writing—Review and Editing. Li Y: Writing—Review and Editing. Wang H: Investigation. Luo D: Conceptualization, Writing—Review and Editing. All authors have read and approve the final version.

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