

*Invited lecture*

## **Where does quality come from?**

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Where quality in science publishing comes from depends on how quality is defined. This lecture briefly described different types of editorial quality and how they could be evaluated.

Most journals aim to disseminate high-quality information efficiently to experts and patients who can use it to make progress toward new discoveries or make decisions about patient care. The main dimension of quality can be considered the degree to which a journal satisfies the needs of its readers: clinicians, researchers and patients. These needs can be summarized as information that is rigorous, up-to-date and easily accessible.

Surrogate and indirect measures of editorial quality focus on administrative processes (manuscript management, time to first decision, time from acceptance to publication) and popularity indicators (citation measures such as the impact factor) because these are quantitative things that are easily measured. In contrast, the quality and usefulness of the content, and a journal's actual impact on knowledge creation and health care, are very hard to measure because they are hard to define, and because evidence of this type of influence may not appear until years after publication.

The scientific quality of the content can be considered from different aspects. One is usefulness to the target community of readers. Their perceptions of usefulness can be influenced by the aims and scope, the topics covered, and the timeliness or currency of the material chosen for publication. Usefulness can be inferred from citation trends and maps, and from bibliometric indexes. However, the impact factor and other citation-based or network-based statistics are indirect measures of quality and may be affected by systematic biases. To know what readers really think about the journal, they need to be surveyed in a systematic fashion.

Reporting quality is another aspect of journal quality. Publishing material of high scientific and technical quality requires high-quality peer review, excellent statistical and methodological review, and competent, careful technical editing. Post-publication peer review and readers' reactions to published articles can identify strengths and weaknesses in this area. Audits of published articles by specialists in methodology and statistics can also be helpful. If reviewers use the reporting checklists made available by the Equator Network (<http://www.equator-network.org/>) for different types of study designs, they can more easily identify information that the article should contain to allow readers to judge how valid or reliable the results are.

Other aspects of content quality are readability, consistency in technical style, and navigability. Good readability requires good language editing to clarify things that readers could misunderstand, to remove redundant words and data, and to make the article as easy to follow as possible so that readers will not become frustrated or distracted by language or graphic design issues. This aspect of text quality can be evaluated by technical editors or experts in science communication, and by reader surveys.

Consistency in technical style requires high-quality copyediting or technical editing by professionals who are familiar with style rules and conventions. Technical style can be evaluated by experienced technical editors or by obtaining authoritative style manuals and reviewing how well published articles comply with the guidance they provide. Usability and navigability for both print and electronic publications are influenced by page layout, typefaces and fonts, and website design. Because readers use different scanning, browsing and reading strategies and have different preferences for elements of graphic design, it is probably best to evaluate this aspect of content quality with user surveys.

Much research is time-sensitive, so readers appreciate prompt access to novel information. The efficiency of publication is an element of quality that is affected by editorial and publishing processes. How long each step in the decision-making and production process lasts can be investigated to identify "time leaks", i.e., opportunities where processes can be simplified to save time. Process audits and in-house management reviews can identify opportunities to make each step in the manuscript management, review and publication process as efficient as possible.

Accessibility has a key impact on a journal's influence, and is affected by indexing, compliance with international standards for information retrieval,

and online access policies. The journal's contents need to be findable by internet search engines and accessible with a minimum number of mouse clicks. Open access is important: the most rigorously-reviewed and meticulously edited content is of limited use if it is only available to those scientists who can afford to buy it.

Ways to identify opportunities to improve online access include quantifying website traffic (for example, the number of site visits and downloads from different web browsers), auditing compliance with bibliographic and information retrieval standards, and reviewing the journal's access policies. It is useful to remember that issues with telecoms capacity (bandwidth, speed of internet connections, downtime) in developing countries where many researchers work will affect accessibility. The fewer megabytes or gigabytes that need to be transferred to the researcher's computer, the easier it will be for colleagues in developing countries to access online content.