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Scholarly Peer Review Versus Impact Factors

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Scholarly Peer Review Versus Impact Factors

Regular readers of my editorials may recognize my ongoing concern over recent trends in how we evaluate scholarly papers and the scholarly journals in which they are published. In particular, I am concerned about a rush to quantify journals, and thus by implication, the papers contained within. Many academic institutions have begun requiring their faculty to identify such scores as rejection rates, citation indices, and impact factors for the journals in which they publish. As I wrote in the previous issue of *IJARE*, composite measures such as impact factors are notoriously invalid and unreliable, especially when the means by which they are calculated are not shared transparently by the commercial agencies that formulate and disseminate the calculations. To reiterate, a composite score typically is a single quantity based on a collection of weighted or un-weighted sub-scores. Even if each of the subscores possesses strong validity and reliability, the composite score rarely shares the same level of validity and reliability.

So, what is my specific gripe with this state of rating journals quantitatively? Based on my professional and measurement experience, the quality of research studies and the manuscripts that disseminate research information is highly individualized. While the summed quality of individual papers may reflect on the general quality of the journal itself, a journal ought to be and certainly is greater than the sum of its individual papers. A relatively new and specialized niche journal such as the *International Journal of Aquatic Research and Education* with a mission to publish both research and professional/educational articles ought not be rated and quantified in the same fashion or with the same algorithm as journals with longer histories that represent broader or more, well-regarded disciplines of study. And conversely, the quality of individual papers appearing in a scholarly journal cannot be adequately assessed simply by a journal's impact factor or rejection rate. In fact, it has long been recognized that even the most reputable journals tend to have a bias toward papers reporting statistically significant differences (Rosenthal, 1979). The implication is that the existing literature likely is skewed away from studies and papers that failed to find statistical differences even if their results are accurate.

Diagnostic Rating of Scholarly Work

I would like to propose that a superior, albeit somewhat more challenging, method for rating scholarly work is to evaluate articles directly and qualitatively rather than rating the journals in which the work is published. In particular, the quality of scholarly papers can be directly assessed using a set of criteria originally proposed by the late Ernest Boyer and subsequently published by the Carnegie Foundation in *Scholarship Assessed* (Glassick, Huber, & Maeroff, 1996). Boyer argued convincingly that *all* scholarly work including research, teaching, and service activities ought to be evaluated using six common assessment criteria. I have

summarized these criteria in Table 1. As you can see, Boyer proposed that any kind of scholarly activity should be evaluated according to the quality of its goals, use of appropriate background information, application of appropriate methodology, rigorous evaluation of results, effective means of communication, and presence of a reflective critique. I find these criteria to be particularly appealing means for evaluating scholarly work including research papers.

I would argue that rather than rating journals with a flawed composite score such as an impact factor, scholarly papers would be much better served by being evaluated directly using the Boyer/Carnegie assessment criteria in the form of a checklist or a developmental rubric such as that which I propose in Table 2. I have used forms similar to this rubric in the past for evaluating the scholarship of teaching and research activity. Of course, it is simpler but not nearly so effective to apply an impact factor. Another significant challenge with impact factors is that their scores cannot provide diagnostic feedback to individual authors about how or what they need to improve with their studies or papers. An impact factor is associated with the journal, not the paper. In contrast, these six criteria provide direct diagnostic information to authors as well as a means for making editorial decisions on potential manuscripts for publication.

Impact Factor for *IJARE*

Despite my misgivings and concerns expressed in this editorial about impact factors for journals, they are a “fact of life” for many potential faculty and authors. As a consequence I wanted to report to our readers that we have made inquiries to Thomson Reuters about acquiring an ISI impact factor. Like other ratings and indices, the process of assigning impact factors is not particularly transparent, unfortunately. According to email communications I have received, Thomson Reuters only assigns impact factors to journals once a year. We have been told we

Table 1 Proposed Criteria for Evaluating Scholarly Activity

Clear and significant goals	To what degree has scholar stated clear hypotheses or goals that are significant?
Adequate preparation	Has scholar demonstrated adequate background/review of literature?
Appropriate methods for conditions	Is the method appropriate to goals or modified appropriately for conditions?
Significant results	Has the scholar conducted a rigorous analysis to show goal achievement? Has paper been rigorously and blind peer reviewed?
Effective presentation	Is the style and organization of communication suitable and effective?
Reflective critique	Has scholar critically evaluated work with sufficient breadth of evidence?

From Glassick, Huber, and Maeroff, 1996.

Table 2 Proposed Rubric to Evaluate Boyer's Standards for Scholarship

Standards	Advanced	Good	Average	Poor
Clear Goals	Clear, realistic, achievable, significant goals identified	Hypotheses/goals may lack clarity or significance	Implicit hypotheses or goals, not explicitly stated	No hypotheses or goals stated
Adequate Preparation	Literature, skills, and resources all brought to bear	Literature searched, but skills missing	Existing literature incompletely explored	Little or no evidence of background
Appropriate Methods	Effective method modified to meet goal and conditions	Single effective method for goal	Method may allow addressing goal	Method doesn't match goal or is ineffective
Significant Results	Goals evaluated and consequential + future questions	Appropriate evaluation without consequences	Non-rigorous or minimal evaluation used	Results are not evaluated; no achievement
Effective Presentation	Message communicated to intended audience clearly and highly effectively	Suitable and effective presentation	Presentation somewhat suitable; partially effective	Ineffective or inadequate presentation
Reflective Critique	Effective critique used to improve quality of work	Critique uses breadth of evidence	Critique limited or only partially reflective	No critique conducted or presented

may hear something by the end of the calendar year (i.e., December). If I learn anything else about how impact factors are calculated, specifically related to *IJARE*, I will report it to readers as soon as I know.

Steve Langendorfer, Editor
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