



ALAN H. SCHOENFELD  
Elizabeth and Edward Conner Professor of Education  
School of Education, EMST, Tolman Hall #1670  
University of California at Berkeley  
Berkeley, California 94720-1670

October 26, 2012

Professor Pietro Di Martino  
Professor Maria Alessandra Mariotti  
Professor Samuele Antonini

Dear Colleagues:

I write in response to your request for a commentary on the document “Instruments for evaluating the research in the field of Mathematics Education for the National Scientific Qualification” promoted by the Associazione Italiana di Ricerca in Didattica della Matematica.

To put things simply, the document has my strongest support. I can tell you in addition that the concerns raised in the document are shared by the highest levels of the international mathematics education community. The topic of citation indexes, and their distortion of research in mathematics education, were a major topic of conversation with the leadership of the International Commission on Mathematics Instruction (ICMI, the group that coordinates the International Congress on Mathematics Education) this past July in Seoul.

Here is why citation indexes are such a problem. For many years, the ONLY mathematics education journal on one citation list was the *Journal for Research in Mathematics Education*. That is a fine journal – but, since the citation index only “counts” citations of articles on its list, the vast majority of high quality journal articles – those published in fine international journals such as *Educational Studies in Mathematics*, *the Journal of Mathematical Behavior*, *Mathematical Thinking and Learning*, *Recherche en didactique des Mathematique* and *ZDM*, to name just a few – were ignored. The result is a complete distortion of the field. Research areas that have large numbers of journals on the index get many citations, while research areas that have few journals on an index get few citation. In other words, the problem is self-perpetuating: the well-represented are over-represented by this process, and the under-represented are further under-represented. The system is grossly inaccurate, and does significant harm to mathematics education.

In fact, the problem is worse; I will illustrate the problem with regard to my own work. As you know, I was awarded the Felix Klein medal for lifetime achievement this past year by the International Commission on Mathematics Instruction. The foundation of my work, and the work for which I am best known, can be found in two publications: my 1985 book *Mathematical Problem Solving*, and my 1992 article, “Learning to think mathematically: Problem solving, metacognition, and sense-making in mathematics,” which appeared in the *Handbook for*

*Research on Mathematics Teaching and Learning*. If you go to Google Scholar, you will find that (as of today) *Mathematical Problem Solving* has been cited by 2802 papers, and “Learning to think mathematically” has been cited by 1885 papers. This is major impact – as noted, these two works shaped the field. But, because they appeared in books, they are almost invisible to citation indices. The same is true, more generally, of the major handbooks in the field, which are considered the definitive statements regarding the “state of the art” in mathematics education.

In sum, the citation indexes and/or reference data bases distort and diminish the field of mathematics education; they do not, in any way, represent the quantity or quality of work being done in the field. As I noted above, this is not just a personal concern: leaders in the field, worldwide, are concerned with the pernicious mis-representation of the field by citation indexes. Thus I completely support the document “Instruments for evaluating the research in the field of Mathematics Education for the National Scientific Qualification” promoted by the Associazione Italiana di Ricerca in Didattica della Matematica.

Sincerely,



Alan H. Schoenfeld