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DETERMINANTS AND FINALITIES IN THE CHOICE OF REVIEWING PROCEDURES: THE CASE OF RDST, A FRENCH SCIENCE EDUCATION RESEARCH JOURNAL

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Abstract: The merging of two French journals both publishing articles on research in science and technology education has made it necessary for them to compare the different reviewing procedures used by each. This comparison highlights two points: first, there are extrinsic and intrinsic determinants which affect the choice of reviewing modalities; and secondly, there are two finalities which could lead to the two journals converging, namely, the equity (fairness) or the equality of the different reviewing procedures.

Keywords: reviewing procedures ; journals ; science and technology education ; researcher ; community.

THE QUESTIONS RAISED BY THE MERGING OF THE TWO JOURNALS

Recherches en Didactique des Sciences et des Technologies is a very recent journal. The first issue was published in June 2010. This new francophone journal was the result of merging two French journals *Aster* and *Didaskalia*. These journals differed in several ways.

First, they did not have the same sections. *Aster* is a thematic journal, whereas *Didaskalia* is essentially non-thematic, even though some issues do contain articles on the same theme. *Aster* only contained research articles, whereas *Didaskalia* had other sections (such as points of view, reports on innovations, and reading notes). Thematic articles were reviewed at fixed dates, whereas the times at which non-thematic articles were reviewed could vary considerably.

Reviewers were not selected in the same way. The selection of the reviewers is an important phase of the reviewing procedure (Street et al, 1998). *Aster* systematically asked for two reviews, and a third if there was disagreement. However, *Didaskalia* always had three. For *Aster*, reviewers were selected by an editorial committee, which was made up of about 10 researchers from different French laboratories. One of the members of this committee was appointed specifically to supervise corrections to the article. For *Didaskalia*, it was the chief editor who selected the three reviewers.

Reviewing procedures also were different. For *Didaskalia*, it was the reviewers who studied the revised version of the article and decided whether the author had followed their recommendations. For *Aster*, it was the member of the committee who had been appointed to supervise the modifications who decided, together with the editorial committee, on the quality of the second version, and whether the author had followed the recommendations. For *Didaskalia*, the journals themselves were sent to the authors. For *Aster*, the committee member supervising the work wrote a summary of the journal, and sent it to the author.

The grids designed for reviewing also differed. The *Aster* reviewers were sent a text describing the reviewing procedure, which provided some general indications (such as the intrinsic coherence, the logical organization of the arguments, validity of the method, theoretical references). The *Didaskalia* reviewers were sent a grid to be filled in with different sections (the presentation of the arguments, the theoretical framework, methodology, findings, discussion and conclusion, and the coherence between the different parts...).

To sum up, we can thus see that even if the two journals both published articles on research in science and technology education, even if they use the double blind peer review process (Baker, 2002), they did not use the same reviewing procedures. The new journal, RDST, kept all the sections from both *Didaskalia* and *Aster*. When the two journals merged, it was decided that, to begin with, the two reviewing systems would coexist, so that the first issue of RDST could be brought out on time. Afterwards, the editorial committee began studying ways in which the two reviewing procedures could converge. This discussion took place in a specific context.

THE RESEARCHERS' PROFESSIONAL MILIEU

The pressure of evaluation on university researchers was increasing considerably in France at the time of the merger of the two journals. The main criterion for evaluating research activity became publishing articles in international journals with an editorial board. Because of this, the need for all authors to have equal chances has become much greater.

The fact that it is now more important to consider this equality of opportunity has several consequences. For example it calls into question the idea that the complementarity of articles on a given theme (which is a criterion determined in the readers' interest) should be one of the criteria for choosing an article in the thematic section. It also calls into question the fact that the themes should be defined by the editorial committee alone. This also makes it necessary to harmonize reviewing procedures for the new journal, whether the articles are submitted for the thematic or the non-thematic sections.

HARMONIZING REVIEWING PROCEDURES

The ways in which harmonization has already been achieved

Two reviewers are selected for each article submitted to RDST. A third reviewer can be called on if there is any disagreement. This compromise has been established so that the procedure is not too far from international standards (3 reviewers), whilst taking into account the fact that there are fewer French-speaking reviewers than English-speaking ones.

The second way in which reviewing procedures have been harmonized concerns the supervision of modifications (the selection of reviewers, analysis of the reports, and expression of an opinion concerning possible publication of the article). While this work was done only by the chief editor for *Didaskalia*, it seemed preferable for there to be different points of view on these three points which are so crucial in reviewing.

For the non-thematic articles in RDST, supervision is carried out now by a chief editor who is in charge of the non-thematic section, and also by a member of the editorial committee. As for the thematic articles this task is given, as it was for *Aster*, to a member of the editorial committee who takes into account the opinions of all the members of the editorial committee. Thus, as far as these three crucial points are concerned, articles in the thematic and non-thematic sections are treated more fairly, but not in the same way.

The harmonizing yet to be done

For the time being, the tools used for reviewing are not at all similar. For the articles in the thematic section of RDST, the reviewing tool could be seen simply as a guide for reviewers. For the articles in the non-thematic section, there is a reviewing grid. These tools have totally different characteristics. The grid makes it easier to compare different reviews with each other. On the contrary, the guide is less clear, and leaves more room for reviewers' personal expression (Castro et al. 2003), which makes it harder to compare reviews.

But on the other hand, it is harder to adapt the grid to different types of article, (e.g., for qualitative or quantitative research) (Santiago-Delefosse, 2003). In other words, the guide is an egalitarian tool (as the same guide is used for any research article), but it may cause the reviews to be less equitable as they tend to be based on more personal criteria. However, the reviewing grid, which needs to be different in order for it to be adapted to different types of article, is not an egalitarian tool, but means that reviews are more equitable.

If new reviewers are to be trained, and also if the reviewing procedure is to be more transparent, it would seem preferable to give all the reviews to each reviewer. Although several members of the editorial committee agree to this, there is not enough time for it to be done. This systematic exchanging of reviews (Piolat et Vaclair, 2004) would only be possible if an electronic system were used for the submission and management of articles.

The principle of authors remaining anonymous is respected in both the thematic and non-thematic sections. If it is not possible to consider doing away with this (as is the case in "Education Research in Mathematics") because of the limited number of French-speaking reviewers, anonymity could be reinforced by asking authors to replace their names by the word 'author' in the quotations and bibliographical references.

Finally, the difference in the way reviewing is processed (either sending the writer the actual reviews or sending them a summary of the reviews written by a member of the editorial committee) has not yet been tackled, and the two systems co-exist. What is at stake here is the participation of the editorial committee in the reviewing procedure.

CONCLUSIONS

The reviewing modalities for RDST are evolving towards a more equitable treatment of research articles (thematic or not), yet without these being identical. The analysis that has been carried out in this article has enabled us to determine three extrinsic factors which influence the choice of reviewing procedures for RDST: the authors' professional milieu (in this case, the way their research is evaluated), the number of French-speaking researchers, and lastly, the readers). The times at which reviewing is done (strict deadlines for thematic articles whereas this is not the case for non-thematic articles) is a factor which is intrinsic to the way a review functions, and has a considerable impact on reviewing procedures. In order for reviewing procedures to become identical in this review, the times at which reviewing is carried out will have to be changed.

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