Advances in Health Sciences Education
Theory and Practice

Standards for an Acceptable Manuscript

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Overview

At Advances in Health Sciences Education (AHSE), we receive far more manuscripts than we can publish and as a result we currently accept no more than 5% of the articles submitted to us. We reject about more than two thirds of manuscripts after an initial screen by a deputy editor, and less than a third are sent out for formal peer review. We acknowledge that this represents a lot of effort for authors, reviewers, and editors, and we would like to reduce the number of submissions that do not meet our standards or do not reflect the focus of the Journal. To this end, this document specifies the general requirements for a successful submission to AHSE. It is important to emphasize however that the acceptance rate is driven by quality standards and there is no quota. Our perspective is that if an article; 1) represents a useful contribution to the field, 2) has no serious methodological or conceptual flaws, and 3) is in scope for AHSE then it should be published. Unfortunately, at the time of writing, 19 out of every 20 submitted manuscripts do not meet these three criteria. The criteria we describe here are guides rather than rules. We still depend on the judgment of our editorial team and our reviewers in adjudicating the suitability of submissions to the Journal.

General Criteria

The following points apply to all submissions. Authors are encouraged to follow them as best they can in whatever paradigm they are working in:

- Authors should place their study in a theoretical context. Although theory is conceptualized differently according to scientific paradigm, AHSE does have a particular theoretical focus. If an educational intervention is theory-based (rather than theory-testing or theory-generating) then what does it add? A study that is designed to test the predictions of a theory potentially represents a real contribution to advancing the knowledge of a field, as does one that robustly extends or develops new theoretical perspectives. Conversely, a study that elaborates a theory simply to justify their findings is likely to add little. Authors are encouraged to explore their study from multiple analytical perspectives, and to include multiple converging studies if possible. At AHSE, we encourage such strategic approaches to research through having no word limit on submissions. Note too that we deprecate the publication of a study in many separate chunks - see the section on ‘salami slicing’ below.

- Although AHSE is a journal focused on theory, papers should also have some practical relevance for health professions education or educational scholarship. This should be made explicit and not left for readers (and editors and reviewers) to infer from what is said.

- The focus of any scientific paper is the research question. Ideally the literature review should lead naturally to the research question and the question in turn sets the agenda for the research methods and

results. We are not at all concerned whether it is called a research question, goal, or hypothesis; we view this as a matter of etiquette, not substance. Frequently the study design more naturally lends itself to be framed as a question or hypothesis. For qualitative or mixed methods research the authors should clearly state whether the goal is to describe a particular situation (case study), to explain it (what mechanisms are involved), to evaluate it (is it of any use or importance), or to test a particular hypothesis (does this have an impact on that), or whatever combination of goals was involved. What *does* matter is that the question is answerable by the study design. This is what characterizes scientific questions. Having posed questions or hypotheses etc. Authors should also describe how their study has answered them; studies that do not answer their questions will likely be rejected.

- Empirical papers (including those reporting on reviews) should provide: 1) a rationale for their methodological orientation, 2) a clear description of the methodology they used, and 3) a clear description of the study design and the steps within. For hybrid methodologies, not only should each methodology be described and justified, the reasons for using a combination of approaches must be provided along with a clear rationale and process for synthesizing findings across different approaches. There are clear differences between efficacy and effectiveness studies. We are interested in both kinds of studies, but the type of study should be clearly articulated, and its methods, contributions and implications selected and critiqued accordingly.

- We are also concerned to ensure that the work we publish has relevance: How well does a manuscript relate to the existing scientific discussions? For example, extoling the benefits of PBL may be of interest to the authors of a paper, but perhaps nothing particularly new. Similarly, we frequently receive papers that report on solutions to a local problem, either in a particular health profession or, a single country, or a single program or school. AHSE is an international journal that is read by researchers and educators in a broad range of health disciplines in many countries. It is incumbent on the author to explicitly demonstrate that the study findings are generalizable or transferable to other disciplines, educational contexts, and countries. If this is not possible, even if it has merit in a particular system or country context, the article will likely not be accepted for publication at AHSE. Note that replication studies (those that seek to reproduce findings from other studies in novel contexts need to make a strong case for how their work contributes to the field.

- Authors should place their knowledge claims in an empirical context. This means that any claims should either be based on authors' own empirical findings or on credible literature sources. Unsubstantiated knowledge claims significantly weaken a paper

- It is critically important that the article provides sufficient background that the reviewer can judge how the work relates to current knowledge and thinking, and what the article adds. Not every study question tests a theory, and not every study relies on conceptual frameworks. But unless the author can make it clear

that the study question has not been previously addressed and is important for the field, we will not consider it for publication.

- AHSE has no page limit, in order that each paper can be accompanied by a critical review of related research, and the discussion can highlight how the study findings add to knowledge. Although we set no page limit on articles, writing is expected to be concise and measured.

- The editors will not consider studies where the only outcome is a person's opinion or perception of the extent to which they believe they have learned something or improved their skills. The reason is simply that the evidence is consistent that people are not capable of accurate self-assessment, so any form of self-assessed improvement cannot be used as an outcome. Self-assessed measures of confidence or competence may well appear to show large differences in response to an educational intervention but are themselves weak surrogates for actual achievement or other measure of importance.

- From the perspective of educational importance, studies of a single course or program with weak evidence of effectiveness, such as student ratings, are discouraged as they are unlikely to add to generalizable knowledge, unless the study permits empirical test of theoretical predictions. Further, evaluations of any technology, without consideration of the mechanisms that lead to an observed change, are of limited value. Similarly, proving that some education is better than no education, an educational "placebo-controlled trial;" has very limited value. We will not consider such studies for publication.

- We are not particularly interested in studies that demonstrate that some educational intervention or invention "works", whether it is a simulation, a curriculum, an assessment method. Instead, we want to identify the underlying variables that may contribute to success or failure, and to systematically explore these factors individually and in combination.

- There are some areas in medical education that persist, despite substantial evidence that they are not scientifically defensible. Accordingly, we will not consider any original studies or reviews of topics such as learning styles or critical thinking skills. The literature on these domains is conclusive. We will consider studies of personality, practical intelligence, emotional intelligence only if they are correlated with measures of behaviour or performance, and not with other self-reported measures, even if they are pre-existing or nominally 'validated'.

- While AHSE does not require the use of reporting frameworks and guidelines, they are recommended (where available and appropriate to the work presented) for relatively inexperienced authors and as a checklist to ensure no important details have been omitted. If a reporting framework is used it should be followed. If a paper presents work and claims to be using, for example, PRISMA or COREQ and then patently does not follow the framework then it most likely will be rejected.

We now turn to guidance on particular approaches to scientific inquiry:

Quantitative Studies

One mainstay of educational research is the experimental intervention study. This may arise in validating a new curriculum approach like Team Based Learning, a simulator for instruction in motor skills, different processes of learning (e.g., student-led vs. instructor led tutorials) and so on. Please note that we do not view the RCT as the only or the most legitimate design. It is useful for studying interventions, but interventions are only one class of educational research. Moreover, educational research has specific affordances and constraints that must be recognized in designing experiments.

- The most common design to examine interventions is the one-group pre-test/post-test design. You measure something, do an intervention, and then measure it again. However, if there is no control for all the other things that may have happened to the subjects during the intervention then it is not possible to draw any conclusion about effectiveness from such a design. A better design is a two-group design, such as an RCT. Although in clinical medicine it may make sense to conduct a 'placebo-controlled' trial, this is no longer defensible in education. We have ample evidence that time spent learning something will result in more learning than no time spent learning something.

- True randomization always works; the finding that there is a statistically significant difference on some baseline variable is not evidence that it failed. Five percent of all randomizations will "fail" by this criterion.

- Practically, pretests are not learning neutral. They provide the participants with foreknowledge of the post-test, so are part of the intervention and may be as powerful as anything that is manipulated experimentally.

- Randomization is a means to an end. If students end up in groups by some mechanism (e.g., clerkship assignment to various hospitals) unrelated to the intervention and outcome (e.g., learning auscultation) that is good enough.

- The outcome measure should be sufficiently proximal to the intervention that it is likely to be sensitive to the differences between interventions while also being sufficiently related to performance to have credibility. Practically, this effectively rules out any outcome based on some satisfaction, confidence, or self-rated ability measure. As discussed earlier, self-assessment is not valid, so an outcome based on self-assessment is not credible.

Studies of assessment methods are the most common type of research in health sciences education. To some extent these are more straightforward than other areas, in that there are well-defined terminologies described in

the Standards for Educational and Psychological Testing (AERA, APA, NCME 2014) and other sources. Nevertheless, some practices are unacceptable. As a preamble, we remind the reader again that self-report measures are highly suspect and cannot be accepted as the only outcome measure.

Validity studies should make use of a contemporary validity framework (for example, Kane or Messick). The validity evidence for using assessment instruments should be described according to a contemporary validity framework. Validation studies that merely attempt to 're-validate' or adjust assessments to local conditions, or studies that aim to correlate scores on inventories without any use of theory can be problematic. This is an example of “me too” research and is rarely of general interest to the broader readership of the journal.

Surveys may be used in different methodologies in different ways. However, if a survey is being used as a source of psychometric ‘proof’ or otherwise as the primary or only instrument in a study then evidence of its reliability and validity should be provided. However, all too often, surveys tend to be ‘purpose-built’ with minimal evidence of reliability and validity. Moreover, there are well-described principles of questionnaire design, and these should be followed. For instance, response scales should typically use between 5 to 7 steps. Generally, surveys should, wherever possible summarize individual items into scores and sub-scores to improve validity and to minimize the number of possible analyses. Analysis at an item level is discouraged, unless specific hypotheses are identified a priori, and researcher takes steps to minimize Type I errors. Authors seeking to use surveys could usefully refer to Phillips et al. (2021).

Typically, results sections fail on one simple criterion; they do NOT provide sufficient information for the reader to understand what the data actually look like. A p-value should NEVER appear in a text without the data (means, SDs, frequencies) on which it is calculated. All it says is that a difference is unlikely to arise by chance – no more, no less. And in large studies small effects can be significant; in small studies large effects can be non-significant.

It is a MINIMUM expectation that the author will provide the appropriate descriptive statistics – means, standard deviations, or frequencies. That does not mean providing all the raw data; the goal is transparency. Springer does encourage authors to provide study data along with a submission, but this is optional and should be evaluated on a case-by-case basis. This can be provided in tabular or graph form, as long as the meaning is clear.

Qualitative Studies

There are many branches to qualitative research, each of which has particular methodological and reporting standards. Studies should clearly articulate their theoretical stance and the basis for their work including appropriate methods and data collection. It is insufficient to simply declare that a study is qualitative. For instance, there can be a significant difference between adopting a particular methodological stance, such as grounded theory, and using some of its techniques.

Patton (1999) identified three key requirements for high quality qualitative research. Firstly, there needs to be a clear description of what was done, step by step, who did it, and the basis of these actions in established qualitative research methods (including relevant markers of rigour). Secondly there needs to be a clear articulation of the researchers' backgrounds and skills (including their reflexive positioning with respect to the research), and thirdly a clear articulation of the philosophical and theoretical bases of the study and how they translate into the methods used. If new methods have been developed, then they need to be robustly described and grounded in theory and related approaches. Indicators of quality should refer to the particular qualitative paradigm or tradition that is being employed (and should be clearly articulated as such). Each step in the analysis should be described and grounded and there should be a clear articulation of how findings were derived, the possibility of alternatives, and the means by which credibility/trustworthiness and other aspects of rigour were established and maintained. Finally, the results presented should not merely be a list of codes or themes but should form a coherent analytic whole.

Mixed and Multiple Methods Studies

Not only should quantitative and qualitative components follow good practice in their respective domains, methods should be selected and pursued in ways that address the question or topic of the study and yield meaningful data that can be correlated, triangulated or otherwise integrated to create a meaningful whole. To that end, a clear rationale for why different methods were selected, how they relate to each other, and how data from different streams was synthesized must be provided. Authors working in mixed methods are referred to the recent AHSE editorial on this matter (Ellaway 2020).

Reviews

Critical and Scoping Reviews

AHSE publishes many critical reviews of issues in education. There is good reason for this: we are convinced that the critical review by someone steeped in the field can offer real insight into the area – what is known, where it is heading, and what are the unanswered questions. Such a review can only emerge from deep understanding of the field. Of course, the possibility exists for author bias to emerge, as the reviewer inevitably has some personal investment in the way the area is portrayed. We believe this is of relatively little concern as the peer review process is hopefully capable of sorting this out. Nevertheless, as a minimum, the critical reviewer must specify the search strategy to some degree, although it may not be as systematic or exhaustive as those of systematic reviews. We are more interested in the quality of the synthesis than the exhaustiveness of the search. We expect real synthesis, not a recounting of "this study did this and found that. The next study did that and found the other thing" It is on the synthesis that the critical review stands or falls. The difference between a critical and a scoping

review is that the former synthesizes and critiques understanding of an established subject or issue while the latter explores or sets out new ground for subsequent inquiry. The purpose of a review should be clearly stated, and its execution reflect this purpose.

Systematic Reviews and Meta Analyses

We publish relatively few full systematic reviews. We have seen too many examples of systematic reviews that had very limited value. There are several reasons for this, which should be borne in mind by authors. Systematic reviews of quantitative research are most useful for studies of effectiveness, and less useful for other studies. Historically, Glass, an educational researcher, did the first systematic meta-analysis of psychotherapy effectiveness. However, systematic reviews are now commonplace in medicine. There are good reasons for this: in medical interventions, the population is relatively homogeneous, and the outcome can be standard and objective. Such circumstances are relatively absent in education. If questions are well chosen, systematic reviews can be informative (e.g., predictive validity of medical licensing examinations, effectiveness of technology enhanced simulations). However, because of the lack of standardization of questions, therapies and outcomes, systematic reviews in our field tend to be inconclusive. Moreover, because the outcomes are so far ranging and heterogeneous, many quantitative reviews abandon any attempt at meta-analysis and end up bean counting, which is not helpful.

In short, a credible systematic review must have:

1) A well-defined question, of broad interest.

2) Sufficient numbers of studies on which to base an analysis.

3) Clarity on how studies were identified, what inclusion and exclusion criteria were used and how they were applied, and how data extraction and synthesis were carried out.

4) Sufficient richness of data on which to draw quantitative conclusions about what is and is not effective.

Systematic reviews may also pursue qualitative evidence and employ qualitative methods or combine qualitative and quantitative materials and methods. Although the nature of synthesis may differ from purely quantitative reviews there are standards for qualitative reviews, and these should be followed where at all possible. To be credible qualitative systematic reviews must have:

1) A well-defined question, of broad interest, with a theoretical grounding and methods that match the question.

2) A systematic execution of the review.

3) Sufficient numbers of studies on which to base an analysis.

4) Clarity on how studies were identified, what inclusion and exclusion criteria were used and how they were applied, and how qualitative data extraction and synthesis were carried out.

5) Sufficient richness of data on which to respond to the review question.

It is recommended that all reviews are reported using an appropriate guideline or framework – PRISMA and its various profiles are the standard in this regard.

Evaluation Studies

While studies may have an evaluative component, studies that are purely evaluative in nature, i.e., that seek to select the best or better, or the more/most valuable approach from among alternatives are primarily a matter for decision makers rather than contributions to a scientific discourse. Evaluation study papers submitted to AHSE should be scholarly and represent a material contribution to the literature and the field as a whole, and should be generalizable beyond their immediate study context and the specific alternatives considered.

Reflections Papers

AHSE is happy to consider papers submitted as 'Reflections'. However, we will not consider papers that are personal narratives, manifestos, polemics, or promotional pieces. Reflections papers should provide a critical analysis of a particular topic that is well-grounded in the literature and balanced even if a particular point of view or argument is advanced. Reflections papers should be scholarly and represent a material contribution to the literature and the field as a whole.

Conceptual Studies

Some of the work submitted to AHSE is purely conceptual in nature, for instance deductively developing a theoretical framework or considering issues in the philosophy of science. While the empirical standards will not apply, we do expect to see robustly argued pieces that are well-grounded in the literature and that make substantive contributions to the field. Note that papers focusing on theoretical matters may be submitted to the 'Theory Matters' stream, and papers focusing on methodological matters may be submitted to the 'Methodologists Corner' stream – see below for details.

Theory Matters

Papers explaining, developing, critiquing, or otherwise working with theory as their central focus may be suitable for publication but only if they also meet the general criteria for submissions to the Journal: relevant, significant, evidenced, balanced, and so on.

Methodologists Corner

Papers explaining, developing, critiquing, or otherwise working with methodology as their central focus may be suitable for publication but only if they also meet the general criteria for submissions to the Journal: relevant, significant, evidenced, balanced, and so on.

Commentaries

AHSE does not have a letters format. Those who have something of substance to say about work or ideas published in AHSE can submit a commentary paper however commentaries should be commenting on something in the Journal, and they need to meet the general criteria for submissions to the Journal: relevant, significant, evidenced, balanced, and so on.

Research Ethics

Salami-Slicing

AHSE was the first journal in the field to abandon a word limit. In doing so, we emulated journals in experimental psychology, where a single article may have as many as 10 or 12 studies in a carefully designed research program, so that, by the end, the phenomenon is well understood. This is unlikely to arise in education for several reasons, which are not relevant here. But we retain the lack of word limit to encourage authors to publish results in a single, comprehensive paper. There are exceptions of course. Large databases frequently yield valuable insights into multiple questions as can secondary analyses, say of qualitative data. Even though the study design is the same multiple papers require different questions, different aspects of the dataset being outlined, and different findings, discussions, and conclusions. We also note that research programs may result in multiple studies that provide more insight, while each study still stands on its own as a contribution. We acknowledge that there is a grey zone between multiple publications that are too repetitive and a legitimate research program.

Authors are required to disclose any and all related publications (including those published in languages other than English) at submission and to clearly outline and justify how the submitted work differs from their previous work.

Plagiarism

Directly copying any portion of a previous manuscript, even a single paragraph, without proper attribution and, where required, permission from the publisher (e.g., figures or tables) constitutes copyright infringement (where the publisher owns the copyright, not the author) and is absolutely forbidden. This includes authors' own work published in languages other than English. Self-plagiarism (quoting one's earlier work) is also covered in this; all material, whether others' or one's own needs to be clearly identified as such and cited and referenced properly.

Preprints

As a Springer journal AHSE permits preprints of papers submitted to the Journal. However, the manuscript submitted to AHSE must be at least 90% the same as the preprint, and the authors need to declare the existence of a preprint and how it differs (if it differs) from the submitted version.

Springer Nature's policy on preprints: https://www.springer.com/gp/editorial-policies/preprint-sharing

Theses and Dissertations

Although we will consider work based on publicly published theses and dissertations:

1) the manuscript cannot be identical to the published work,
2) where there is directly copied text from a thesis or dissertation, it should be clearly identified, cited, and referenced as such, and
3) the authors need to provide a clear outline of how the submitted paper develops on or otherwise differs from the thesis in their covering letter.

Reflexivity

The makeup and background of the team conducting the research should be provided for all studies and discussed in relation to how the research was carried out. A reflexive statement must be provided for all qualitative studies and linked to methodological choices as appropriate. For example, the reflexive statement should clarify the skills, experience, and positionality of researchers, the potential affordances this position offered the authors for sampling, analyzing and making sense of the data and/or the potential biases it created. Authors should outline how biases were addressed or mitigated, and the implications for generalizability or transferability of the findings.

Ethics

"When reporting a study that involved human participants, their data or biological material, authors should include a statement that confirms that the study was approved (or granted exemption) by the appropriate institutional and/or national research ethics committee (including the name of the ethics committee) and certify that the study was performed in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments or comparable ethical standards. If doubt exists whether the research was conducted in accordance with the 1964 Helsinki Declaration or comparable standards, the authors must explain the reasons for their approach, and demonstrate that an independent ethics committee or institutional review board explicitly approved the doubtful aspects of the study. If a study was granted exemption from requiring ethics approval, this should also be detailed in the manuscript (including the reasons for the exemption)." [Springer Nature]

Springer Nature's policy on research ethics: https://www.springer.com/gp/editorial-policies/research-involving-human-and-or-animal-participants

Data Provision

Springer does encourage authors to provide study data along with a submission, but this is optional and should be evaluated on a case-by-case basis. AHSE does not support supplementary data for an article but we do not have a word limit, we allow data to be linked to an article, and we allow links to off-site material. Note it is the authors' responsible to maintain links and availability for off-site materials. Data management standards may also be used (such as FAIR - https://www.go-fair.org/fair-principles/) but they are not mandatory.

Springer Nature policy on data availability statements: https://www.springernature.com/gp/authors/research-data-policy/data-availability-statements/12330880

Equity, Diversity, and Inclusion

As an editorial board we note the many equality, diversity, and inclusion challenges authors, editors, and reviewers may face, and we recognize that social justice is necessary for the advancement of knowledge. We are committed to this principle in all the Journal's activities. In the context of this guide, authors are asked to clearly outline relevant equity, diversity, and inclusion issues in their work, and to account for examples of non-representation or non-inclusion in their study designs or their findings.

Springer Nature is a signatory to the 2020 Joint Commitment for Action on Inclusion and Diversity in Publishing: https://www.rsc.org/new-perspectives/talent/joint-commitment-for-action-inclusion-and-diversity-in-publishing/

Authorship

AHSE subscribes to the ICMJE recommendations on academic authorship: http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html

Springer Nature's policy on authorship: https://www.springer.com/gp/editorial-policies/authorship-principles

Concluding Remarks

This guide was developed to help those considering submitting their work for consideration at AHSE. As noted earlier, this is a guide, and we rely on our editors' and reviewers' judgments in making final adjudications on the work submitted to the Journal. However, we do expect all contributing authors to have read these guidelines and to ensure that their work reflects the standards we have set out.

Rachel Ellaway, Editor in Chief AHSE, on behalf of the AHSE Editorial Team, January 2022.

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