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Fostering an Impactful Field of Learning Analytics

Simon Knight, Alyssa Wise, Xavier Ochoa
Editors-in-Chief — Journal of Learning Analytics — jla.editorial@gmail.com

Over 2019, the breadth of articles published in the *Journal of Learning Analytics* reflects the diversity of contributions to the field, including quantitative, qualitative, and design-based studies and contributions through the different submission types (Research, Practical, Data and Tools, and Book Review). This year, we have also published two special sections. The first is a set of empirical papers related to the emerging area of human-centred learning analytics (HCLA). In this section, five sets of authors each address the core challenge of how to design and implement learning analytics in ways that are people-centric rather than technology-centric to achieve impact in the field. The second is a new format for the journal, an invited dialogue around a critical community issue. In this section, Neil Selwyn asks the intentionally provocative question, "What's the problem with learning analytics?," which is engaged with by four respondents from the community, representing a variety of perspectives. Both of these special sections tackle, in their own way, a central issue for the learning analytics community: how we ensure that the work we do has a positive impact in the world.

1. Impact and Rigour in Learning Analytics

For the field of learning analytics (LA) to achieve positive societal impact, we need high-quality research and communication of that research. But what does that look like in the interdisciplinary field of LA? Can we characterize "quality" in LA work with reference to the confluence of other domains that make up the field, or are there features that are distinctive to LA?

As editors of the *Journal of Learning Analytics*, we are well aware of our role in reifying the community's values regarding what it means to make an impactful contribution in LA through the standards by which articles are reviewed and selected for publication. Impact — in the narrow sense measured by citations — is often taken as the currency of the scientific community; however, impact in a broader sense should also be measured by the relevance a field has to the overall body of knowledge in a domain and its practice in the world. As we discussed in our previous editorial (Wise, Knight, & Ochoa, 2018), LA both traverses multiple disciplines and bridges the traditional division between research and practice. As such, ongoing conversation is needed to establish and maintain a nuanced consensus around what impact means for the diverse LA community.

Our dialogue around impact is situated in a wider scholarly discourse around the merits of open science; the suitability of analysis and reporting standards in statistical learning and machine learning; and of course most important the impacts of our work, including the societal influence of LA as a sociotechnical field. Impact has several components, including relation to existing work and practice; rigour in study design, execution, and reporting; coherence between research questions and the methods used to answer them; an ethical approach to conducting the work; the tackling of topics that are relevant and timely and address pressing societal concerns; and the significance of the contribution to research and practice. To ground this larger discourse in the concerns of our community, we have held recent consultation with our editorial board.

As editors, we are frequently faced with challenging decisions. We decide whether to accept or decline papers, and we guide prospective authors, as well as both new and established reviewers and reviewers from across multiple disciplines, in evaluating these contributions. For example, a category of papers that we frequently decline to send for review use data from a learning context but do not have a clear connection to learning, either in a practical way by "completing the loop" (feedback to teachers or students) or through contributing to our understanding of learning (building better theories and concepts). In the case of papers that are sent out for review, it is not uncommon for the journal to receive conflicting recommendations that reflect disciplinary differences regarding the significance of a contribution, which as editors we must navigate and reconcile to come to a decision. For example, different traditions value differentially: the role of theory in generating a priori hypotheses versus engaging in exploratory pattern discovery, controlling factors to make a study replicable versus conducting work in authentic (and partially uncontrollable) learning settings, the detail accorded to justify analytic decisions versus interpret findings contextually, and finally the extent to which researchers should employ critical and consequential lenses on their work. These examples demonstrate the lack of clarity and consensus in the community about what does and does not constitute impactful work (via positions on what work should be published). While each submitted manuscript is unique and requires a particular evaluation, the overarching principles by which we navigate such differences should be consistent. Furthermore, these principles should be part of the community dialogue, which this editorial seeks to further.

One point about the differences in disciplinary standards for quality is worth elaborating further. Consultation with our editorial board members made clear that drawing on a reviewer pool from across multiple disciplines is seen as an attractive strategy both to "ensure the quality of the published papers, and to provide authors with a multi-perspective feedback on their work." From an editor's perspective, it is true that if reviewers from distinct traditions see a paper as rigorous, this would indicate a consensus around quality that merits publication. However, there is a balance to be had between papers for which such consensus can be found and work that makes important contributions to specialist audiences. To publish *only* papers that fall in the narrow region of the Venn diagram where disciplinary standards align would overly restrict the nature of contributions in the field and do a disservice to the multivoicedness that is, in fact, one of our strengths. Looking only for consensus may also be a quixotic (foolishly impractical) quest. An as another editorial board member noted, "I have very great doubt everyone will agree on features that every published paper must exhibit. Scholarship is, in part, a commitment to critique (hopefully, constructive critique)." Thus, beyond the inclusion of different perspectives, it is a constructive dialogue across them that we must aim for. Clearly there is common ground to be had across fields: "Terminology may differ, but the core ideas are the same across disciplines, having to do with trust in conclusions, rigour in argument, suitability of method, validity of findings, exploration of alternate interpretations, connection with the previous work in the field, etc."; the challenge is understanding how this is expressed and addressed to the diverse community and doing so in a way that is neither overly prescriptive nor so general as to be vacuous.

In our 2018 editorial, we focused on the importance of LA that makes contributions to both theory and practice and the potential of design-based approaches for rigorous contributions to both areas. We also described some concrete steps we were taking as a journal to foster such contributions, including the introduction of new submission types, a move to double-blind peer review, the addition of notes for research and practice to support dialogue across the community, and the inclusion of best practice guidance for authors and reviewers to fulfill their respective roles. We now expand this conversation to engage the larger community in discussing and defining our collective standards for rigour. We do so by hosting the first of what we hope will be an ongoing series of special sessions at the International Conference on Learning Analytics and Knowledge (LAK) in which we focus explicit attention on the different aspects of what makes up an impactful contribution in LA. In this first session, our focus will be on *rigour* in LA research.

2. LAK '20 Special Session on Rigour in Learning Analytics

Foundational to all forms of impact is rigour. Without work that is rigorous in nature, impact cannot be achieved, because the claims made are not sufficiently grounded in evidence generated through accepted norms of inquiry. Beyond simply applying rigorous methods, transparency in reporting sufficient details about data sources, collection, and analysis procedures is also important in both documenting the rigorous procedures undertaken and providing a shared base of resources that can be leveraged for future work and impact on practice. Transparency in reporting is a corollary to rigour, in making explicit what was done, how it was done, and the warrants for claims made.

The journal is a place to coalesce dialogue among the diverse intellectual communities and display the community's standards for rigour. A key challenge is in guiding authors and reviewers who come from different fields in shaping contributions for the interdisciplinary LA audience. In doing so, we must ensure that the work aligns with accepted norms of quality in the domains from which it draws and indeed contributes to them. For example, as noted by several members of the editorial board, what is considered high quality in one discipline might not be in another. For example, "15 interviews conducted 3 times in a period of 3 months might [be robust in one discipline but] in another discipline just be regarded as anecdotal evidence"; similarly, a sophisticated analysis of several large data sets might be considered strong work in one discipline but be strongly critiqued in another for providing limited new insight by addressing trivial questions. Thus, while ensuring work maintains rigour, in valuing multidisciplinary and innovative approaches we must also acknowledge that authors need to operate in areas that may not be core to their primary expertise and that indicators of quality may differ across the different disciplines from which they draw.

Concretely, as editors we have had recent discussions both with members of the community and among the editorial team regarding reporting of *p* values in statistical work (also see, for example, Hurlbert, Levine, & Utts, 2018), ensuring inductive analyses would pass muster from those in established qualitative research traditions (also see, for example, Tracy, 2010) and tradeoffs between model goodness-of-fit and usefulness in machine-learning approaches (see, for example, Kitto, Buckingham Shum, & Gibson 2018; Wise, Knight, & Ochoa, 2018). Many of these conversations mirror those taking place more broadly through the open science movement, initiatives such as the Committee on Publication Ethics (COPE), analyses of the peer review system (see, for example, Tennant et al., 2017), and in other journals (see, for example, the excellent Brain and Behavior Editorial, Prager et al., 2019). As the conversations move us toward some elements of common ground (even if provisional), the range of levers we have available to instantiate these values include modifications to reviewer guidance, forms, and

selection; author submission requirements, including requirements for supplementary files such as code notebooks and data; changes to the way the review process is conducted (for example, having a period of open comment on papers); or even modifying the publication format, perhaps to make transparent where reviewer disagreements have occurred.

To progress the conversation, we will host a series of sessions, the first of which will be held at LAK '20 on the topic of rigour. Understanding rigour is a complex concern, particularly in a highly interdisciplinary field. The papers submitted to and published by the journal are diverse, which is an enormous asset to the field. In fostering these diverse contributions, we also seek to uphold standards of rigour drawing on both disciplinary norms and the needs and practices of the LA community. Adjudicating across these expectations is at times challenging, as discussed above. Thus, at LAK '20, a participatory session will be run, led by members of the editorial team and the community, to discuss the question of what makes a "rigorous paper" in the field, including indicators of quality that are significant in particular research traditions, indicators of quality that are common across them, and any indicators of quality that are distinctive to the field of LA as a confluence of research traditions. In particular, the session will aim to draw out discussion of rigour in LA that encompasses the traditions of statistical analysis, qualitative approaches, and approaches that make use of machine-learning techniques.

3. Looking to the Future

We intend this first special session to be the first in a series, focusing on what it means to make an impactful contribution in LA. Part of the grounding for the potential of LA is the diversity of research approaches and stakeholders involved. For this diversity to flourish productively, however, we must continue to develop and maintain our spaces for dialogue — including the journal — as places in which different kinds of valuable contributions can be made and respectful disagreement and critique aired. To further that end, we anticipate some of the topics to be covered in future sessions to include the following:

- role(s) and requirements for theory in LA;
- ethical questions and responsible LA;
- research-practice integration, including translational research and implementation science work;
- scope and relevance of literature to draw on in LA work;
- potential of and challenges for open science in the design and development of LA; and
- classes of research designs in LA (experimental, design based, post hoc).

4. A Call to the Learning Analytics Community

This editorial acts as an invitation to attend the special session to be held at LAK '20. We welcome the participation of a broad spectrum of community members, whether you have already been an author or reviewer for LAK or you plan to be in the future. Moreover, we invite the community to continue this larger conversation in the different interactions they have about LA throughout the year. We periodically receive comments and suggestions from community members on a range of issues. We take these seriously and consider them carefully as stewards of the journal. We welcome your input and continued thinking on the areas to which our focus should turn and concrete steps to take to foster LA as an impactful field. As always, we want to thank the many scholars who have provided service to JLA throughout the year, acting as reviewers, taking on the editorial duties of special section editors, and sitting on the editorial board. We also encourage all readers to consider submitting their work to the journal, across the range of submission types.

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