

Bringing together writing tool design, writing analytics and writing pedagogy

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ABSTRACT: The evolution of digital technologies and the writing tools that have subsequently been developed from them opened the way for the emergence of writing analytics as a field of academic research. Within digital writing tools, writing analytics are used to gather and analyze data for research, and to provide automated feedback for writers and insights for instructors. Writing analytics methods and tools can help improve our understanding of writing processes and products. Current reviews of digital writing tools show that much of what writing analytics has to offer has been garnered for the purposes of automating evaluation and scoring, leaving an application gap for writing tools that support pedagogies aiming to develop effective writing strategies. Building upon the development of writing analytics methods and tools can help future tool designs to better support effective writing pedagogy and practice, and suggest future foci for writing analytics advancement. This proposed workshop aims to bring together writing pedagogy researchers, writing instructors, writing tool developers, and writing analytics specialists in order to explore the potential contributions of their respective fields in the development of effective digital writing environments, and also to provide a forum for the planning of future collaborative works.

Keywords: writing analytics, learning analytics, collaborative writing, writing theories, writing tool development

1 BACKGROUND

Recent years have seen a mushrooming of digital tools supporting writing and its instruction, with new additions appearing at an increasing pace. A review of computer-based writing instruction identified automated essay scoring and automated essay evaluation systems that assess and provide feedback on student essays, with progress made toward adaptive and personalized writing tools such as Intelligent Tutoring Systems (ITS) (Allen, Jacovina, & McNamara, 2015). Recently, Strobl, et al. (2019) identified 89 academic writing tools supporting writing in secondary and higher education. One finding related to this workshop is existing classifications failing to grasp not only the increasing breadth of functionality, but also overlooking pedagogies and practices within which they are being used. One way to better understand tool development in the context of writing pedagogies is through writing analytics. While still an emerging field of research, we suggest that writing analytics, in a broader definition, can support writing tool development and vice versa to the mutual benefit of both areas.

“Writing analytics” was defined by Buckingham Shum et al. (2016) as “involv[ing] the measurement and analysis of written texts for the purpose of understanding writing processes and products, in their educational contexts. Writing analytics are ultimately aimed at improving the educational contexts in which writing is most prominent” (p. 481). This emerging field “equally invokes methodological processes and the theory and content of writing instruction” as it applies a variety of data-driven lenses to writing instruction processes and products (Lang, Aull, & Marcellino, in press). In doing so, writing analytics supports the ongoing development of various writing tools, both through analysis of artifacts produced using such tools, and in guiding the development of tools that focus on assessment and measurement of individual and aggregated data. Writing analytics projects can examine the features of tools and the artifacts produced through additional features. Writing analytics significantly extends traditional human computer Interaction writing tool analysis. Writing analytics and data from writing tool usage can furthermore be visualized and fed back to learners, instructors, tool developers, and researchers (Rapp & Ott, 2017; Vieira, Parsons, & Byrd, 2018).

In learning analytics, text features have been studied using linguistic tools to understand language better. Tools like Coh-Metrix and WAT identified indices of text based on cohesion, language, complexity, and readability, which were used to study various writing dimensions (Crossley, Allen, Snow, & McNamara, 2015). In addition, writing processes like drafting and revision are studied using fine-grained data from the trace logs from individual and collaborative writing settings (e.g., Shibani, Knight, & Buckingham Shum, 2018). Writing analytics tools providing automated feedback have much improved, e.g., with contextualizing feedback for disciplinary contexts (in AcaWriter) by co-designing tool and instructor feedback, and then integrating within curricula (Shibani, Knight, & Buckingham Shum, 2019). Along with research tools, proprietary software providing automated feedback on writing, e.g., Revision Assistant by Turnitin (Woods, Adamson, Miel, & Mayfield, 2017) and Writing Mentor Google add-on by ETS (Madnani et al., 2018), advances writing tool capabilities. Consequently, tools need to align to established pedagogy for effective usage, referring to writing instruction studies by incorporating writing pedagogies within writing analytics (Graham & Perin, 2007).

2 WORKSHOP FOCUS

This workshop was inspired by the 8th International Conference on Writing Analytics, Winterthur, Switzerland (<https://writinganalytics.zhaw.ch/>). Diverse tools developed by European and North American scholars were presented, with most implemented as a Software-as-a-Service, and therefore collected large amounts of usage data. While tools concentrate on writing data collection (e.g., keylogging by Inputlog) or automated feedback provision for written text (e.g., Writing Aid Dutch/Academic Writing Assistant), others (e.g., Thesis Writer, Research Writing Tutor, C-SAW, AcaWriter) combined facilitated system support logging (e.g., tutorials or phrasebooks) with text production and revision, allowing inquiry into the uses and effects of support functions on subsequent text production (or revisions). However, it is far from clear what data should be collected, how it should be analyzed (and potentially displayed), for what purpose, and for what audiences.

The aim of this proposed LAK Writing Analytics Workshop is to draw upon the results of previously held meetings, as well as the most recent research, and to bring together writing tool developers,

writing analytics specialists, and writing pedagogy instructors and researchers in order to discuss (1) current practices in their respective fields, (2) opportunities, research questions and corresponding designs for collaborative works, and (3) resulting design choices for future tool development and/or writing analytics research agendas that could be informed by current and prospective developments.

The workshop will focus on the following questions: (1) Which tools collect data suitable for writing analytics? What data is collected and for what purposes, how it is analyzed, and for whom? (2) Which writing analytics methods are currently being employed, for which audiences, and for what purposes? (3) Concerning the linkage between theory and practice, writing theorists (e.g., Graham & Perin, 2007) have proposed ways to foster the learning of academic writing. In what ways can Writing Analytics support this, and what are the implications for writing tool developers? (4) How can we create better synergies among writing tool developers, writing analytics specialists and practitioners, and writing pedagogy researchers? Are there any lessons for writing analytics common to secondary and higher educational writing contexts, and that are also appropriate across different geographical contexts?

3 SUBMISSIONS AND WORKSHOP FORMAT

Workshop activities and schedule

To achieve the goals of this half-day workshop as articulated, we propose the following design:

Welcome: Short introduction(s) of participants (5 minutes. 0900-0905)

Overview: Short overview of the field (15 minutes. 0905-0920)

Input-phase: Short statements of accepted papers along three lines: (60 minutes. 0920-1020)

1. Perspective – writing tool developers/ users.
2. Perspective – writing practice/ pedagogy.
3. Perspective – writing analytics.

Working phase: Discussion within the three groups along the suggested following questions (What are good current practices? Where do we want to be in 2-3 years? What do we need from the other groups to get there?) (60 minutes. 1030-1100)

Results: Presentations from all three groups (10 minutes per group, 30 minutes in total. 1100-1130)

Discussion/ synthesis: All three groups to take part in a discussion plenum (30 minutes. 1130-1200)

Future steps: Discussion of the future developments of WA, its application, and the wider WA community. (30 minutes. 1200-1230)

Participation and Dissemination

The workshop will be of interest to a wide range of LAK delegates including students and researchers engaged in writing research and the use of writing tools; educators in schools, universities and businesses; data analysts; and companies active or potentially active in the field. An open call will be made for submissions via a website. Workshop organizers will make use of listservs and their own personal networks to advertise the workshop. The European location of LAK20 provides an opportunity to strengthen the European community in writing analytics and writing tool developments and to link with colleagues across continents. The workshop was announced at the 8th International Writing Analytics Conference (Winterthur Switzerland) and will be held prior to the next European Writing Analytics Conference (Fall, 2020). At least one board member of the European

Association for Teaching Academic Writing will participate. Selected participants will be invited to work with the editors of *The Journal of Writing Analytics* in order to propose and develop brief manuscripts for publication in Volume 4.

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