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Article

Informing Automated Writing Evaluation Using the Lens of Genre: Two Studies

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Abstract

Genre serves as a useful lens to investigate the range of evidence derived from automated writing evaluation (AWE). To support construct-relevant systems used for writing instruction and assessment, two investigations were conducted that focused on postsecondary writing requirements and faculty perceptions of student writing proficiency. Survey research is described from a national study and a second site study at American University, a 4-year private university in Washington, DC, to illustrate writing requirements and perceptions of writing proficiency in school and workplace settings. A mixed-methods analysis of faculty focus groups in the site study afforded more detailed discussions that were used to understand student writing support needs. Through the lens of genre, study results illustrated how the role of AWE might be expanded and aligned with instruction in four-year postsecondary institutions.

KEYWORDS: AUTOMATED WRITING EVALUATION; NATURAL LANGUAGE PROCESSING; WRITING RESEARCH

1. Introduction

Automated writing evaluation (AWE) systems are used for writing assessment to provide scores in high-stakes contexts and for instructional applications to support writing improvement (Shermis, Burstein, Elliot, Miel & Foltz, 2016). AWE research has focused on the genre of the academic essay; therefore, the technology has been constrained to subconstructs related to writing fluency, including English conventions, vocabulary use and discourse structure.

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Building on this capacity, more recent AWE systems use computational methods to analyze a broader set of writing subconstructs that may be applied to genres beyond the academic essay, such as discourse coherence (Somasundaran, Burstein, & Chodorow, 2014), source use and integration (Beigman Klebanov, Madnani, Burstein & Somasundaran, 2014), and topicality (Beigman Klebanov & Flor, 2013b). Consistent with these developments, the working assumption in this article is that as AWE systems continue to develop, they should address construct-relevant information across genres (beyond the academic essay) that are developed in K-12 settings and can be mastered in postsecondary contexts. AWE can then be used to support score interpretation and use inferences (Kane, 2013) associated with foundational principles of fairness, validation, and reliability/precision in educational testing (American Educational Research Association, American Psychological Association, & National Council on Measurement in Education, 2014; Shermis, Burstein, Elliot, Miel, & Foltz, 2016).

We use the following as a working definition of genre. Miller (1984: 163) defines genre as 'a rhetorical means for mediating private intention and social exigence; it motivates by connecting the private with the public, the singular with the recurrent'. This definition is distinct from the association of genre with a particular form (e.g., the academic essay or the corporate proposal). The mediating function of genre is responsive to cultural practice, thus shaping linguistic processes (Miller, 1994), and allows detailed examination of the writing construct. When executed, genre thus becomes a form of social action. When analyzed, genre is a window into linguistic processes within discourse communities. As Gere, Aull, Escudero, Lancaster, and Lei (2013: 612) have observed, analysis of genre provides evidence of a writer's abilities at the 'meso-level' of rhetorical actions (textual features beyond the sentence revealing organization) and the 'micro-level' of linguistic resources (recurring lexical and grammatical choices).

Genre is an important lens for AWE research for two key reasons. First, the lens of genre can provide a specific way to classify writing expectations (Gardner & Nesi, 2013), commonalities (Melzer, 2014), and disjuncture (Wardle, 2009) in writing curricula along a continuum from school (National Governor's Association, 2014) to college (Council of Writing Program Administrators, 2014) to workplace (Pimentel, 2013). Second, analysis of the relationship between genre and the writing construct yields analysis of variation according to writing forms. Disaggregation of information according to genre allows us to learn more about student writing in naturalistic settings (i.e., coursework in the disciplines) that is relevant to broad academic and specific disciplinary practices. Especially relevant to AWE, genre analysis allows detailed investigation of coverage in areas of conventions, coherence, organization, source integration, and topicality (Burstein *et al.*, 2014).

The work presented here finds its origin in surveys conducted in the mid-1970s to the late 1980s that examined genre exposure in university contexts.

Our work builds on the earlier work with an eye toward informing AWE research. Earlier surveys regarding forms of writing were conducted in secondary schools in Great Britain (Britton *et al.*, 1975); in the US (Applebee, Lehr, & Austen, 1981); in private and public postsecondary institutions (Bridgeman & Carlson, 1984; Harris & Hult, 1985); in basic writing classes (Rose, 1983); in English as a Second Language classes (Horowitz, 1986); and in institutions with writing across the curriculum programs (Eblen, 1983). Informed by these studies, the research presented in the remainder of this paper was conducted through three studies (Studies 1, 2A, and 2B) as follows. Study 1 is a national survey study. Studies 2A and 2B comprise a mixed-methods analysis (respectively, a site survey study followed by faculty focus group discussions to collect more detailed information about course writing requirements and faculty perceptions of student writing support needs).

2. Study 1

2.1. Survey Instrument and Target Populations

In Study 1, a survey instrument was developed that contained questions about exposure to writing genres, perceptions of writing proficiency, and self-reported confidence regarding writing proficiency (Burstein *et al.*, 2014). The survey targeted (1) K-12 teachers, (2) college faculty,[1] and (3) workplace representatives consisting of (a) college students who had participated in workplace internships and (b) workforce members who were non-educators. Three subsurveys were developed to accommodate the three different target subpopulations: K-12 and college educators; college students who completed internships in the workplace; and non-educators in the workplace. The Educator subsurvey contained 16 questions, and the Intern and Workplace subsurveys contained 12 questions related to the main topics presented above.

Key to the survey was the inclusion of 74 genres of writing derived from previous studies (Bazerman & Paradis, 1991; Elliot & Kilduff, 1991; Herrington, 1985; Jenkins, Jordan, & Weiland, 1993; Melzer, 2009). Inclusion of genres allowed questions regarding task assignment regularity in K-12, college, and workplace settings, comparison of task regularity, and perceptions regarding student preparedness. While some genres (e.g., essays) are associated with lengthy written communication, others are not (e.g. spreadsheets). However, the extent of writing associated with a given genre was not the determining factor for inclusion in the survey. As Thrift (2005) has argued, spreadsheets are part of a system of graphical forms that provide analytic power resulting in heuristics, idea formation, and persuasive logic – each important aspects of the cognitive domain of writing. Viewed from this perspective, charts, spreadsheets, and tables are best understood as part of the rhetorical contexts, genres, and discourse communities that constitute sociocognitive views of writing.

2.2. Dissemination

The survey was disseminated over three weeks during spring 2013 using various posting mechanisms to reach K-12 and college educators, the general workforce,[2] and college students who had completed internships in the workplace. Dissemination mechanisms included listservs and discussion forums in the professional writing community, ETS internal and external websites, the National Writing Project, the Understanding Language Initiative, *Education Week*, university Greek life organizations, Facebook, LinkedIn, Twitter, and two of the authors' personal contacts. The majority of educator respondents were collected through the National Writing Project outreach, the Writing Program Administrators (WPA-L), listerv,[3] and LinkedIn groups; the majority of workplace respondents were collected through ETS internal outreach disseminated by ETS, which also solicited friends and family of ETS employees; and, the majority of internship respondents were collected by a female college sophomore who volunteered to disseminate the survey through Greek life social media forums and Facebook.

Seven hundred and sixty-eight individuals responded to the survey. Background information indicated the following. Four hundred and fifty-one *educator respondents* included K-12 (n=291) and college educators (n=160). In the K-12 population, 92% were female, and 8% were male; in the college population, 74% were female, and 26% were male. The majority of the respondents in both populations had been teaching for over ten years. The majority of K-12 teacher respondents (55%) had master's degrees; the majority of college educators (70%) held doctoral degrees. In the K-12 population, teacher respondents spanned elementary, middle school, and high school. In the college educator population, the majority (over 50%) of respondents taught in four-year colleges, and a smaller percentage taught at two-year colleges. Among all educators, 86% reported teaching between 11% and 25% English language learners. The K-12 respondents reported that they taught English language arts (73%), mathematics (29%), social studies (27%), and science (22%); others taught English as a second language, special education, arts, music, computer science, and physical education. Approximately 92% of the college educators reported teaching in non-STEM disciplines (e.g., communications, education, literature), and about 8% reported teaching in STEM (Science, Technology, Engineering, and Mathematics) disciplines (e.g., biology, computer science, mathematics).

Of the 266 *workplace respondents*, approximately 76% were female and 24% were male. Respondents reported being employed in one of the following sectors: business, education, government, healthcare, or arts/entertainment. Most respondents (approximately 60%) reported working in business or education. The majority of respondents (over 60%) reported working in their current

profession for over six years; the majority of respondents (over 60%) reported working in their current job between one and ten years. Approximately 50% of respondents reported working in STEM professions (e.g., biology, chemistry, computer science, and engineering); approximately 50% of respondents reported working in non-STEM professions (e.g., business, communications, and education). Of the 51 *intern respondents*, 76% were female,[4] and 24% were male. Of the five workplace sectors (business, education, government, healthcare, and arts/entertainment), 53% reported having completed their internship in the business sector, followed by arts/entertainment with about 21%. All respondents were enrolled in four-year colleges. Ninety-four percent reported being sophomores (24%), juniors (31%), or seniors (39%). Six percent of the respondents reported being first-year students. Most respondents reported two academic majors: 43% reported being communication majors, and 11% business majors. Seventy-seven percent reported that their internship was in the field of their academic major.

2.3. Results

This section presents the results of data analysis for questions in the national survey related to required writing task assignments in K-12, college, and the workplace. This section also reports on perceived preparedness for writing tasks in those settings.

Tables 1–4 illustrate participant responses related to the genre exposure comparisons across a 'setting pair' (e.g., K-12 and college) based on the list of 74 genres provided in the survey. To provide relevant information while adhering to the space constraints of this article, we include tables reporting on genre exposure that include a subset of the genres for which a raw proportion of at least 20% was reported for one of the groups in a setting pair (e.g., K-12 and college). The tables are intended to provide the reader with a sample of the variety of genres included in the surveys, and of students' relative exposure to these genres in K-12, college, and the workplace, based on our survey results. Additional results about faculty perceptions of student proficiency and self-reported competency will be presented as a discussion in reference to each of the six research questions below. Analyses use inferential methods to identify comparisons of required writing tasks, and preparedness for those tasks. As shown in the tables, a two-proportion Z-test was used to evaluate statistically significant differences between writing tasks reported as being required in K-12 and college. In the tables and discussion below, results reported were statistically significant where $p <= 0.01$. The results help us to understand how survey findings might inform curricular mapping to better prepare – in concurrent fashion – students for both four-year postsecondary and workplace settings.

Table 1: Writing tasks required *more often in K-12* than college

Writing Genre	Raw Proportion		Z-Statistic	*p*-value
	K-12	College		
Book Review	0.49	0.17	−6.646	0.000
Cartoons and Comics	0.29	0.04	−6.117	0.000
Charts	0.29	0.19	−2.338	0.010
Creative Writing	0.65	0.14	−10.403	0.000
Instructions	0.28	0.21	−1.656	0.049
Letters to the Editor	0.20	0.11	−2.227	0.013
Note-taking	0.66	0.25	−8.434	0.000
Outlines	0.29	0.20	−2.110	0.017
Poetry	0.60	0.10	−10.215	0.000
Science Writing	0.24	0.15	−2.316	0.010
Short Story	0.51	0.07	−9.249	0.000
Song Lyrics	0.21	0.01	−5.808	0.000
Storyboards	0.33	0.15	−4.049	0.000
Summaries	0.61	0.38	−4.654	0.000

Survey analyses are used to answer six research questions (RQ) regarding the continuum of writing from school to workplace environments:

- RQ #1 ('K-12 Genre Exposure'): *What genres do students have exposure to in the K-12 curriculum*?
- RQ #2 ('Postsecondary Genre Exposure'): *Which genres do students have exposure to in the postsecondary curriculum*?
- RQ #3 ('Workplace Genre'): *Which genres are most commonly used in workplace settings*?
- RQ #4 ('K-12, College, and Workplace Alignment'): *What is the nature of the alignment between, practice of, and exposure to genres in K-12, college, and the workplace writing*?
- (RQ #5) ('Preparedness Perceptions'): *What are the perceptions of preparedness in school, college, and the workplace?*
- (RQ #6) ('Least and Most Aligned'): *According to patterns of comfort and competency, which genres appear to be least and most aligned across school and workplace settings*?

RQ #1 ('K-12 Genre Exposure'). Table 1 reveals that in K-12, there is a mix of *transactional* and *poetic* writing (Britton, *et al.*, 1975). In transactional writing, the aim is 'to get things done' in the world through information, advisement, persuasion, and instruction (p. 88). Conversely, the writer who uses language poetically – playfully and expressively – aims to use language

that 'exists for its own sake and not as a means of achieving something else' (p. 91). Britton's classification is a helpful categorization system. Among the most required writing genres, summaries (61%) and poetry (60%) are classified as transactional and poetic discourse functions, respectively. Study results indicate that a large number of writing assignments required more often in K-12 than college reflect genres related more to poetic writing as opposed to transactional tasks that involve critical analysis of text or research.

Table 2: Writing tasks required *more often in college* than K-12

Writing Genre	**Raw Proportion**		**Z Statistic**	***p*-value**
	K-12	College		
Abstracts	0.04	0.32	8.230	0.000
Academic E-mail	0.09	0.28	5.448	0.000
Annotated Bibliography	0.17	0.50	7.416	0.000
Blogs	0.16	0.28	2.981	0.001
Business Communication E-mail	0.03	0.20	6.138	0.000
Citing Sources	0.51	0.65	2.903	0.002
Cover Letter	0.12	0.36	6.137	0.000
Digital Portfolios	0.09	0.30	5.732	0.000
Executive Summary	0.01	0.20	7.033	0.000
Evaluating Sources	0.17	0.44	6.068	0.000
Integrating Sources	0.13	0.35	5.559	0.000
Job Search Documents	0.03	0.21	5.919	0.000
Lesson Plan	0.04	0.22	5.874	0.000
Memos	0.06	0.26	5.973	0.000
Peer Review	0.40	0.59	3.790	0.000
Presentations, such as PowerPoint	0.50	0.59	1.954	0.025
Research Proposals	0.06	0.55	11.550	0.000
Resume	0.15	0.24	2.237	0.013

This finding is consistent with that of Applebee and Langer (2009). In their study of long-term surveys (1988–2004) from the National Assessment of Educational Progress (NAEP), they found that there was an increase from 21% to 30% for 17-year-olds in frequency of poetry they had written. As Applebee and Langer conclude, these results suggest that through the 1990s English teachers were gradually increasing the amount of writing requested in class. As such, imaginative writing benefited from this increase in emphasis. Significantly, the emphasis on genres of expressive writing has been maintained in the first NAEP computer-based assessment in writing with the inclusion of a

journal excerpt that may use narration and description (National Center for Education Statistics, 2012). While the performance of students on the NAEP is troubling, as we indicated in the Discussion section below, the inclusion of expressive writing in 'the nation's report card' is significant.

RQ #2 ('Postsecondary Genre Exposure'). If expressive discourse is, as Crusius (1989: 67) defined it, 'the trunk from which the various branches' of mature writing grows, then postsecondary writing might be understood as favoring more transactional genre forms. As Table 2 shows, this emphasis on transactional writing is indeed the case. Writing assignments required more often in college involved little in the way of creative writing, with more focus on genres related to getting things done in the world.

Table 3: Writing tasks required *more often in college* than in the workplace

Writing Genre	**Raw Proportion**		**Z-Statistic**	***p*-value**
	College	Workplace		
Abstracts	0.33	0.10	−5.538	0.000
Academic E-mail	0.28	0.12	−3.964	0.000
Annotated Bibliography	0.50	0.09	−9.059	0.000
Autobiographical Reflection	0.34	0.00	−9.292	0.000
Bibliographies	0.24	0.10	−3.811	0.000
Blogs	0.28	0.07	−5.809	0.000
Brochures	0.21	0.12	−2.534	0.006
Citing Sources	0.65	0.19	−9.070	0.000
Collaborative Writing	0.55	0.33	−4.401	0.000
Cover Letter	0.36	0.19	−3.756	0.000
Digital Portfolios	0.30	0.02	−7.956	0.000
Essays	0.65	0.07	−12.339	0.000
Evaluating Sources	0.44	0.15	−6.356	0.000
Integrating Sources	0.35	0.10	−6.035	0.000
Job Search Documents	0.21	0.05	−4.677	0.000
Lesson Plan	0.22	0.08	−3.974	0.000
Literature Reviews	0.35	0.16	−4.175	0.000
Multimedia	0.31	0.05	−6.909	0.000
Outlines	0.20	0.13	−1.684	0.046
Peer Review	0.59	0.14	−9.422	0.000
Personal Statement	0.26	0.07	−5.260	0.000
Presentations, such as Power Point	0.59	0.50	−1.770	0.038
Research Proposals	0.54	0.16	−7.983	0.000
Research Reports	0.44	0.22	−4.624	0.000
Summaries	0.38	0.24	−3.109	0.001

RQ #3 ('Workplace Genre'). While Table 3 documents the importance of writing from sources and the significance of the essay in academic writing, Table 4 indicates that workplace writing represented fairly straightforward transactional writing tasks. Survey analyses indicated that business communication e-mail (56%), spreadsheets (40%), instructions (36%), memos (34%), executive summaries (28%), tables (27%), and charts (27%) were among the most prevalent writing genres in the workplace. Interestingly, despite growing attention to digital media in the workplace, multimedia genres such as online help (5%) were reported with infrequent use.

Table 4: Writing tasks required *more often in the workplace* than in college

Writing Genre	**Raw Proportion**		**Z Statistic**	***p*-value**
	College	Workplace		
Business Letter	0.25	0.34	1.953	0.025
Business Communication E-mail	0.20	0.56	6.999	0.000
Charts	0.19	0.27	1.800	0.036
Executive Summary	0.20	0.28	1.836	0.033
Forms	0.04	0.24	5.405	0.000
Instructions	0.21	0.36	3.306	0.000
Memos	0.26	0.34	1.679	0.047
Note-taking	0.25	0.39	2.984	0.001
Performance Reviews	0.06	0.37	7.063	0.000
Proofreading Technical Documents	0.19	0.28	1.985	0.024
Technical Requirements/Specifications	0.09	0.20	2.755	0.003
Spreadsheets	0.15	0.40	8.622	0.000
Surveys/Questionnaires	0.16	0.28	2.750	0.003
Tables	0.18	0.27	1.951	0.026
User Manuals	0.13	0.20	1.853	0.032

RQ #4 ('K-12, College, and Workplace Alignment'). The lens of workplace readiness allows a distinctly useful way to examine the survey results. Genre alignment should be a result of attention to standards in K-12, resulting in a range of exposure for students at the time of high school graduation. Full exposure would be achieved through self-expression focused on an array of genres requiring (a) reflective expression (e.g., autobiographical reflection), and (b) transactional writing (e.g., research papers). Ideally, attention would also be given to workplace writing. Exposure to genres requiring both reflective expression and transactional writing across disciplines offered in K-12 supports the goals of college writing (Melzer, 2014).

Survey findings exposed two areas of disjuncture between college and the workplace and between K-12 and college. First, findings reflected an extraordinary and equal prevalence of the essay in K-12 (67%) and college (65%) that is not maintained in the workplace. When asked what writing assignments are required in their current job, only 7% of respondents reported that their job involved essay writing (Table 3), while 56% reported the prevalence of business communication e-mail (Table 4). Second, there was less variety of writing genres reported in the workplace than in school or college, as reported by our workplace respondents. In summary, of 74 different genres, 20 were reported as being required more often in college as compared to the workplace. Fifteen writing tasks were reported as being required more often in the workplace, each of which represented a transactional genre.

RQ #5 ('Preparedness Perceptions'). Responses indicated lack of genre alignment across school and workplace settings (Tables 1–4). Educators reported students' general lack of preparedness for required writing assignments. Overall results indicated that 53% and 57% of K-12 and college faculty, respectively, reported that they *disagreed* that students were well-prepared for required writing assignments. Fifty-nine percent of high school teachers disagreed that their students were well-prepared for required writing assignments which would seem to be a red flag regarding the question of college-readiness. Since students are still gaining their initial exposures to the breadth of writing across genres during K-12 education, this finding is more worrisome coming from college educators. Further, in the K-12 and college surveys, there was a question that specifically asked educators about their students' preparedness for writing tasks required in their instruction. In responses from K-12 educators, 46% strongly (8%) or moderately (38%) agreed that their students were well-prepared for required writing assignments, while 53% strongly (12%) or moderately (41%) disagreed that students were well-prepared for required writing assignments. For college faculty, 43% strongly (3%) or moderately (40%) agreed that their students were well-prepared for required writing assignments, while 57% strongly (13%) or moderately (44%) disagreed that students were well-prepared for required writing assignments.

RQ #6 ('Least and Most Aligned'). To understand the issue of college-readiness after completing high school, we examined the writing assignments for which college educators reported that students were most and least prepared. For the assignments that they reported as required, educators were asked to indicate those for which they believed their students were most and least prepared. Respondents indicated that K-12 students were *most prepared* for creative writing (31%), essays (26%), and note-taking (22%), and college students were most prepared for autobiographical reflection (15%),

essays (23%), and PowerPoint presentations (20%). K-12 educators reported that students were *least prepared* for citing sources (27%), essays (27%), and research reports (28%); college faculty reported that college students were *least prepared* for annotated bibliographies (23%), multimedia (15%), and research proposals (23%). In terms of *least preparedness*, there is a trend that K-12 and college students lack the skills relevant for writing in research genres.

For the questions related to most- and least-preparedness in the workplace, respondents were instructed to select all tasks that applied. Workplace respondents reported they were *most prepared* to write business communication e-mails (43%), memos (27%), and PowerPoint presentations (31%). With regard to *least preparedness,* workplace respondents reported feeling least prepared for genres associated with entertainment and the arts, including cartoons and comics (5%), comedy writing (4%), restaurant reviews (3%), song lyrics (4%), and spreadsheets (6%). These responses aided our understanding of workplace-readiness after completing college.

3. Study 2A

3.1. Survey Instrument

In Study 2A, a second site survey was developed for faculty at American University – a private, four-year postsecondary institution in Washington, DC. This survey contained the same questions as in Study 1, eliciting responses about professional background, instructional population (e.g., first years, sophomores, juniors, seniors, English language learners), field of expertise and disciplines taught, and perceptions of student preparedness for writing assignments for the 74 genres. This survey contained additional questions about perceptions of student proficiency across a set of core writing competencies, and elicited beliefs about technological writing support. Faculty respondents were also asked about their interest in participating in a follow-up interview that formed the basis of the focus group study in Study 2B.

3.2. Dissemination

The survey was disseminated to approximately 725 faculty members through a formal memorandum from the Office of the Provost via e-mail directly to faculty. Two-hundred and five faculty members responded. Participants represented approximately 30 STEM (e.g., physics) and non-STEM (e.g., psychology) disciplines across all university schools: the College of Arts and Sciences (CAS, n= 99), the Kogod School of Business (KSB, n=20), the School of International Studies (SIS, n=17), the School of Communications (SOC, n=32), the School of Public Affairs (SPA, n=14), and other units related to the schools (n=23).

3.3. Results

Results from the survey further address RQ #5: *What are the perceptions of preparedness in school, college, and the workplace?*. Table 5 indicates that, similar to the findings in Study 1, the annotated bibliography and the research proposal were among the prevalent writing genres that faculty indicated that students were *least prepared* to undertake. Table 5 also identifies genres that are primarily transactional, another finding consistent with Study 1 findings.[5]

Table 5: Percentage of participating American University faculty (by school) who perceive a lack of preparedness for a particular writing task

Perceived students least prepared for …	CAS	KSB	SIS	SOC	SPA
Analytic Exposition	18	14	12	24	7
Annotated Bibliography	14	10	3	24	14
Citing Sources	10	14	9	12	21
Collaborative Writing	1	29	9	6	7
Essays	32	5	22	12	21
Literature Reviews	8	5	16	24	7
Memos	1	0	6	12	14
Press Releases	0	0	0	18	0
Research Proposals	11	0	25	12	0
Thesis	7	0	0	0	14

Table 6 represents a subset of the set of core writing competencies used in our study. Of particular importance, the set of competencies shown in Table 6 supports the present study's aim to guide expansion of the writing construct for AWE development beyond the academic essay genre. To do this, a set of competencies was developed in four stages; it serves as a reference for a competency framework that informs AWE development. Identification of the set of competencies proceeded as follows. First, a comprehensive literature review was undertaken, with special attention to genre research and its relationship to writing expectations in school, college, and workplace contexts. Second, attention was paid to what the National Research Council (2012) describes as consensus opinions – the identification of variables related to a designated construct through committee reports and expert opinion. Especially relevant to the identification of twenty-first century skills, a continuum of consensus opinions on writing competencies in school, college, and workplace were identified in the CCSSI (National Governors Association, 2014), the WPA Outcomes Statement Version 3.0 (Council of Writing Program Administrators, 2014), the Society for Technical Communication Body of Knowledge (Coppola, 2010), and the College and Career Readiness Standards for Adult Education (Pimentel, 2013). Third, elements of the model were then integrated into

the survey questions in the survey. Fourth, as described in Study 2B, the model was then shown to focus group participants at American University for their comment. The complete list of 11 core competencies included the survey was as follows: audience analysis; use of discipline-specific forms of writing; framing content; presentation of argument; developing, linking, and organizing ideas; identification of possible problems and solutions; source integration; presentation and analysis of quantitative information; visual design; multimedia use; and knowledge of conventions.

Table 6: Proportion of participating American University faculty (by school) who *agree that students have significant command of the writing construct,* and proportion of faculty who *perceive students seek support for a specific core writing competency*

Question topic	CAS	KSB	SIS	SOC	SPA
'Agreed' students have 'significant command of constructs entering class'	30	33	3	31	38
Writing competencies for which students seek support					
Content issues	64	47	56	59	64
Presenting an argument	64	43	84	59	64
Developing a thesis statement	57	19	72	41	57
Linking ideas	53	28	72	41	57
Organization	59	67	66	41	36
Integrating sources	53	33	84	53	54
Conforming to the expected assignment structure	34	29	56	47	29
Grammar/usage/mechanics	51	38	75	71	50

Table 6 illustrates a subset of the eight core competencies for which faculty indicated their students sought help the most. A majority proportion of the faculty from at least one school reported that students sought help in all of the core competencies included on the survey. This suggests that students may need additional writing support in these areas.

4. Study 2B

4.1. Design

In Study 2B, five faculty focus groups were conducted. Design for the group interviews followed the guidelines of Kruger and Casey (2000). With three to six participants per group, representatives were drawn from faculty who participated in Study 2A from the five schools. Focus groups were scheduled for 1.5 hours (a suggested average time). The actual focus group time was targeted for one hour with an additional 30 minutes built in for participants to arrive, get settled, make introductions, and allow time to collect faculty materials[6] (e.g., writing assignment descriptions and scoring rubrics). Two researchers

lead the focus group discussion.[7] One of the authors recorded notes of the group discussion in a template designed to facilitate the collection of question responses and discussion.

4.2. Focus group composition

Twenty-two faculty members participated in the focus groups. Groups were composed of four to six faculty members representing the following academic discipline families:[8] (1) Writing and Literature (*n*=4); (2) Non-STEM disciplines (psychology, sociology, philosophy, and teacher education (*n*=4); (3) STEM (*n*=4); (4) Economics (*n*=4); and (5) Government, Politics, and Communication (*n*=6).

4.3. Focus group delivery

Each focus group began with a presentation that briefly summarized the results of Study 1 and Study 2A in order to contextualize the four focus group questions (FGQ) (below) discussed with each group.

- FGQ #1 ('Support Needs'): *Based on syllabus assignments which competencies require the most and least support*?[9];
- FGQ #2 ('Marking Up Papers'): *What kinds of feedback do you provide for the set of core competencies*?;
- FGQ #3 ('Genre Switching'): *How well do you believe students perform across genres*?;
- FGQ #4 ('Credentialing/Graduating Seniors'): *Which of the core competencies do you believe undergraduates in your discipline should possess upon graduation*?

4.4. Results

The comments from focus group participants provided detailed information about genre exposure, faculty perceptions of student support and feedback needs, and perceived writing proficiency for the credentialing of graduating seniors. Through the discussion, we were able to collect substantial information related to FGQ #1, #2, and #4. Following Kruger and Casey (2000), the focus group notes were examined with the intention of finding the 'big ideas' that might help us learn more about the genres to which students are exposed in a university setting across the discipline families and what kinds of feedback could support students.

Regarding *genre exposure*, the range of task types reflected the disciplines represented. In the context of FGQ #1 ('Support Needs'), faculty discussed their required writing assignments. For faculty in writing and literature, source-based persuasive essays and critical analysis assignments were of most concern; for those in STEM and non-STEM, social science disciplines, writing

assignments directed toward discipline-specific journal articles had a strong presence; for those in Economics, and Politics, Government, and Communication, business case studies, and source-based writing were prominent. Regarding specific kinds of support, faculty indicated that students needed help across each of the 11 core competencies. Across all five focus groups, faculty made comments indicating that students needed support with the ability to frame content, integrate sources, present arguments, and organize text; focus groups 1 and 2 indicated that students struggled in their ability to address audience; focus groups 1, 2, and 5 asserted that students needed support with identifying problems and solutions; focus group 5 also believed students had trouble with qualitative and quantitative information; and focus groups 2, 3, 4, and 5 expressed concern about students' knowledge of English conventions.

Regarding *feedback*, meta-analyses that have reviewed empirical studies about the effectiveness of feedback have struggled to find conclusive evidence supporting the effectiveness of any particular feedback practice or type of feedback (Biber, Nekrasova, & Horn, 2011; Graham & Perin, 2007). Ferris (2014) conducted a mixed-methods analysis similar to Studies 2A and 2B, focusing on the broader set of feedback practices of university faculty. Findings suggested that faculty feedback centered on different text characteristics as the needs of the text or student dictated; yet, the results also suggested that content (ideas) was important, and related feedback comments tended to be longer than those about conventions. Ferris' (2014) findings apply generally to our focus groups. In the context of FGQ #2 ('Marking Up Papers'), focus group 1 reported attending to feedback on all writing outcomes with the exception of English conventions, indicating that correctness was the least important. Focus groups 2–5, conversely, reported providing feedback on conventions. In addition to conventions, focus group 2 indicated providing feedback on organizing text; focus group 3 on integrating sources and presenting an argument; focus group 4 on framing content and organizing text; and focus group 5 on presenting an argument. Consistent with Ferris' (2014) findings, our focus group participants may also be responding to text characteristics and student needs; yet, across focus groups, we do see the full range of feedback being addressed. It is worth noting that in the case of focus groups 2–5, the feedback that faculty report providing is typically a subset of what they reported with regard to actual student support needs. This is a pivotal observation suggesting that AWE could support a broader set of feedback, increasing feedback types, while reducing the time commitment required for faculty response.

Regarding *credentialing*, and in the context of FGQ #4 ('Credentialing/Graduating Seniors'), participants noted that each of the core competencies were important. However, only the Writing and Literature faculty reported

observations about each; faculty from other disciplines focused on selected objectives. STEM representatives centered on source integration, identifying problems and solutions, presenting qualitative and quantitative information, and demonstrating knowledge of conventions. Participants also provided core competencies that we had not identified, including the need for information literacy (such as information seeking and finding/evaluating sources) in STEM professions (Association for Colleges and Research Libraries, 2014).

5. Discussion: Study 1, Study 2A, Study 2B

Notable consistency is found in the series of studies of academic writing tasks beginning with Bridgeman and Carlson (1984) and extending to the present. Many of the results of the present study are indeed consistent with Bridgeman and Carlson's (1984) findings, which indicated that writing features of importance reported by faculty included quality of content, topic focus, development of ideas, and organization. Features identified as important in the Bridgeman and Carlson (1984) study were also similar to those reported by faculty in Studies 1, 2A, and 2B. In addition, responses indicated a majority perception by faculty that students were lacking significant command of core competencies entering their classes. As concurrent validation of our findings, a recent large-scale study of 2,101 writing assignments collected across disciplines in 100 US postsecondary institutions yields similar results (Melzer, 2014). Thirty-one years of research has led to four identifiable patterns replicated in our study that are important to the development of a preliminary theory of AWE development.

First, both poetic and expressive writing all but disappear in the post-secondary classroom. In the post-secondary assignments collected by Melzer (2014), only nine had a dominant poetic aim. As he concludes, 'What was true of British and American secondary school writing in the research of Britton *et al*. (1975) and Applebee (1984) over thirty years ago appears to be true of college writing in the US today: instructors rarely assign creative or personal writing' (p. 105). In workplace settings, as expected, transactional genres are uniformly encountered. Despite its pragmatic appeal – as students mature they turn to using writing to accomplish tasks in the world – this situation is far from optimal. Challenges remain in bridging the gap between high school and college writing (Appleman & Greene, 1993; Beck & Jeffrey, 2009; Graham & Perin, 2007; Kiuhara *et al*., 2009). Only 27% of 12th grade US students scored at or above 'proficient' on the writing portion of the most recent administration of NAEP, which includes narrative, persuasive, and informational writing tasks (National Center for Education

Statistics, 2012). Similarly, findings by ACT indicate that approximately one-third of high school students who are planning to attend college do not meet readiness standards for college-level writing (ACT, 2005). At the workforce level, a survey of 400 employers found that the majority of high school graduates seeking entry to the workforce are deficient in written communication, a skill understood as very important to success in the workforce (Casner-Lotto & Barrington, 2006).

It is important to note that the strict emphasis on transactional genres may have a deleterious impact on student learning. As Britton (1992) found in his study of writing abilities of London school children, expressive writing held the best approach for the inexperienced writer. With strong heuristic potential, expressive writing may indeed yield aspects of cognitive, intrapersonal, and interpersonal domains identified as important to student learning (National Research Council, 2012). In a study examining students underprepared for college writing, it was demonstrated that poetic discourse contributes to the identity formation that is important for college success (Relles & Tierney, 2014). Because the affective factors in transactional writing may differ from those in expressive or poetic writing, the truncation of those two discourse categories may limit the writing construct and college success.

Second, part of the answer to the college-readiness performance dilemma may be found in attention to interdependent genres. For example, annotated bibliographies and research proposals are a means to building students' skill sets and better preparing them for college writing requirements. In the Studies 1 and 2A, these are genres for which college students appear least prepared. Consistently, Cotos (2011) found that graduate school students, especially English language learners, struggle with genres that require discussion of research.

A solution to this pattern of disjuncture may be found in attention to interdependent genres (such as annotated bibliographies needed for developing literature reviews for research proposals). To develop useful annotated bibliographies, students must be able to identify, read, and evaluate the relevance of texts toward the development of the research proposal narrative. From a writing perspective, the student must be able to appropriately summarize the article, extracting critical details that are relevant to the research topic. The student also must be able to integrate information from the existing literature sources to support the research hypothesis, perhaps analyzing previous research on which this new topic builds. To explain the significance on interdependent genres, Relles and Tierney (2014: 483) introduce the concept of hybridity – 'a set of presentation strategies that subsume presentation mode'. It

is quite possible that skill in interdependent genres may be related to a core set of competencies that interweave genres.

Third, the predominant requirement of the genre of the essay remains a problematic barrier to students becoming effective writers across many genres. Melzer (2014) found that the majority (66%) of the writing assignments he examined required essay-like tasks that presented students with a limited range of purposes. 'Writing to inform' was the dominant purpose. Melzer (2014) also found that 61% of writing in upper-division courses positioned the instructor as the audience. As Faigley and Romano (1995) have observed, the ability to write an essay has narrowly determined writing practices in academic environments (see also Banks, 2015). Such a restricted vision of genre and audience may limit students' ability to understand the professional discourse communities and rhetorical situations that will govern their professional lives.

Attention to genres that support sociocognitive views of writing, such as the research proposal and the varied audiences involved in its design, provide a way forward in establishing a continuum of learning. Results from the present study suggested that the research proposal was a required genre in post-secondary education that extends to the workplace, especially in the form of grant proposals. Yet, the research proposal is also reported by college educators as a genre for which students are least prepared. Shifting from nearly exclusive use of the essay – often opaque to students (Heath, 1993) – to the proposal would therefore be a pragmatic place to begin. More than an alternate form of expression, research proposals require a unique form of discourse, language use, and attention to audience.

Fourth, although results suggest that there are writing tasks for which workplace respondents felt *most prepared*, the source of that learning during college is unknown. Ninety-five percent of the workplace respondents in the survey moderately or strongly agreed that they were well-prepared for the writing tasks required by their current job. Considering the disjuncture between academic and non-academic writing in college and workplace settings, the finding raises the question of where, exactly, that preparation took place. Perhaps it is the case that the traditional academic first-year writing curriculum, with its often sole attention to the genre of the essay, is not advancing meaningful pedagogy concerning the span of the writing construct; instead, instruction involving writing in the disciplines may be truly advancing student experiences with the construct and preparing them for workplace communication. Other possibilities are that students may be learning in the context of workplace internships, or simply learning on the

job. Further research would need to be conducted to support more conclusive findings.

6. Toward Next-Generation AWE Development

Sparks, Song, Brantley, and Liu (2014) have proposed that next-generation writing assessments should focus on social and rhetorical knowledge, domain knowledge and conceptual strategies, the writing process, and language use and conventions. Further, next-generation assessments should balance authenticity and psychometric quality. Findings from the set of studies presented in this paper provided critical information about the different types of writing assignments that are required in a college setting, faculty perceptions about the aspects of the construct where students appear to be struggling across disciplinary boundaries, and the kinds of feedback that faculty provided. Information collected from the surveys and the focus groups provided a window that could be a helpful guide toward the development of next-generation AWE applications for use in writing instruction and assessment contexts, where AWE capabilities would evaluate features related to the foci suggested in Sparks *et al*. (2014).

Conceptualizing writing genres by breaking them down into their component subconstructs offers a helpful illustration of how AWE capabilities can support the evaluation of quality for genres beyond the essay. If *new* AWE is built to represent key subconstruct elements aligned with major core competencies, then AWE can be used to evaluate a wider range of genres. New tools might include: detection of structure of argumentation (Song, Heilman, Beigman Klebanov & Deane, 2014), detection of discourse coherence quality (Burstein, Tetreault & Chodorow, 2013; Somasundaran *et al*., 2014b), and detection of thematic or topical elements (Beigman Klebanov & Flor, 2013a). A promising AWE taxonomy must address the full spectrum of writing across genres with attention to knowledge of conventions (spelling and grammar), coherence (topic development, section development, unity of ideas, persuasion), and source use and integration (sufficiency, citation integration, topic integration, and selection). In building this new taxonomy, the more we can learn about genre, the more we can determine the future development of the AWE body of knowledge.

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Notes

1. Note that we will use the term 'college' to refer to 4-year postsecondary colleges and universities.
2. The authors are aware of the enormity of the workplace. Given the resources and time for this study, the authors thought that ETS employees as well as friends of family of employees were likely to represent diverse range job types. At ETS alone, jobs might include building maintenance staff, security officers, administrative support staff, customer service, sales and marketing, test developers, and researchers.
3. See wpacouncil.org/wpa-l.
4. Note that the greater proportion of females could be attributed to the outreach by a female student and also through Greek life sorority forums.
5. The reader should be aware that for cells containing 0 or 1 that the assignment was reported by 3 or fewer faculty members as a standard writing assignment.
6. Focus group participants were invited to bring sample writing assignments, rubrics, and graded student writing samples to lend specificity to the discussion and to elicit tacit knowledge about the genres assigned (Odell, Goswami, & Herrington, 1983).
7. The first two authors served as the moderators. We also thank Jane Shore for supporting the focus group facilitation.
8. Resources limited the researchers to a two-day window to conduct all of the focus groups. The authors and the university collaborated to make the best effort to group faculty by school or discipline given faculty schedules.
9. Faculty members were provided with a list of the 11 core competencies for purposes of the discussion.

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