Learning from New Literacies
The Changing Face of College English Among English Major ELL Learners

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ABSTRACT
To address the academic and new literacies divide, this study examines the practices and perceived effects of new literacies on academic learning, specific to Asian English major undergraduate language learners. This mixed-methods study reports particularly on the statistical results of a longitudinal survey concerning students’ increasingly digital lives and positive perceptual change ($p < 0.05$). These results inform how “efficacious learning” mediated by new literacies can transform the academic literacies important for academic success. Their pedagogical implications are discussed.

Keywords
New literacies, academic literacies, ELL learners, college English

INTRODUCTION
In a rapidly globalizing world based on active communication, texts and images are increasingly mediated by the booming internet and digital-media technologies, including online social networks or OSNs (hereinafter referred to as “digital-media technologies”). Not only do we experience drastic changes in our communication, education, work, culture and daily lives (Giddens, 2003), but we also observe the divide between formal and everyday literacies in different learning and cultural settings (Alvermann & Hinchman, 2012).

Despite concerted research efforts made in a variety of ways in order to bridge the evident gap – conducted mostly in North American and European cultures, or hereinafter referred as “the western studies” – few studies have explored the leverage potential of new literacies for enhancing discipline-based academic literacies; even fewer assess their effects with Asian English language learners (ELLs) in formal university settings within the digital humanities. Digital humanities is an emergent field of study that integrates new forms of digital scholarship across different disciplines involving networks of people in humanities (Kirschenbaum, 2010). Investigating university students’ literacies is a growing field of inquiry around the world. Given the widespread reconsideration of literacies as multiple
strategies for making meaning, there is an urgent need for greater understanding of the evolving concepts of and practices in higher education literacies. This is especially true of digitally mediated contexts in which young learners, including university students not so well-equipped with the necessary “sophisticated literacy” skills (Buck, 2012, p. 35), need to evaluate the credibility of online information popularized on social networking sites (Wineburg & McGrew, 2016).

This study provides insight to narrow the divide between academic and everyday literacies by examining the practices and perceived effects of new literacies on academic learning, such as discipline-based academic literacies, including English language proficiency among college students in the digital humanities—in this case, English. It mainly reports the empirical results of a longitudinal survey conducted with college English students in an Asian English language learning (ELL) setting over two years. In this context, “college English students” refers to English major undergraduate students at university level. Statistical analyses were triangulated with supplemental qualitative data as corroboration. Although this study was conducted within blended learning classes, it is not intended to measure any effects of pedagogical applications on participants’ new literacy practices and/or their attitudes toward new literacies. These important topics warrant further examination.

ASPECTS OF LITERACIES

Literacy customarily refers to the ability to understand and use language to read, write, listen and speak (literacy), and communicate (literacy practice). Some scholars have emphasized the contexts in which literacy practices may take place—formal literacies being more systematically organized and valued than non-formal literacies (Eaton, 2010). Other scholars have discussed the social fabrics of literacy practices—“autonomous literacies” as being independent of the social contexts, and “ideological literacies” as being inseparable from social structures (Street, 1995, p. 161).

Academic literacies are generally defined as an understanding and use of a variety of linguistic resources and language skills for making rich meaning and purposeful communication between academic and cultural settings (Lea & Street, 2006). Enhanced by digital-media technologies, contemporary models of academic literacies, from a western perspective, often reflect both conventional (i.e., cognitive, linguistic and pragmatic) and new (digital, collaborative and innovative) aspects (Heritage, 2013; Kiili, Makinen, & Coiro, 2013), together with the discipline-based contents (Kiili et al., 2013; Tarsa, 2015). A typical exemplar of academic literacies for undergraduate academic English in an Asian cultural setting includes skills and proficiency such as gathering information, note-taking, establishing stance, synthesizing information from multiple sources, structuring academic texts and editing written texts (Chan, Chan, Legg, & Tsang, 2012).

New literacies are a relatively new construct first coined by Buckingham (1993) in response to some phenomenal changes in literacy research. Various terms have been used in the literature to describe these new forms of literacies—“digital literacies,” “multiliteracies,” “21st century literacies” and “(new) media literacies.” Scholars arguing from a multimodal perspective advocate non-linguistic modes of representation (e.g., visual) and the
distinctive role each mode plays in making meaning (Jewitt, 2008), through careful “design” (Nelson & Kern, 2012, pp. 53–54; The New London Group, 1996). In ELL contexts, multiliteracies have influenced the pragmatic use of digital texts for social functions (Chun, Smith & Kern, 2016). Compared to the more conventional approach to literacies, new kinds of literacies tend to be integrated rather than being distinct modes of communication (Knobel & Lankshear, 2014).

Against this background, this study is guided by Lankshear and Knobel’s (2011) conception of new literacies concerning the “new technical stuff” (p. 55), referring to the technical and digital aspects of technologies and electronics, and the “new ethos stuff” (p. 67), referring to the participatory, collaborative and distributive expertise nature of making meaning through new literacy practices. New literacy practices are principally socially constitutive of a vast array of goal-directed communicative activities and purposive actions mediated by, but not exclusive to, digital-media technologies within networked communities. Examples include, but are not restricted to, activities such as microblogging (e.g., posting and reading messages on Twitter), instant messaging (e.g., communicating using a messaging app called WeChat), online social networking (e.g., posting on Facebook), fan-fiction writing, podcasting, video gaming, running a paper-based (magazine), and reading literary or popular novels.

These characteristics will be taken as points of departure for conceptualizing literacies in this study. Echoing Moje’s (2009) orientation, this study situates literacy practices, both conventional and/or new, on an evolving, overlapping dual “continuum” (p. 359) rather than suggesting a techno-deterministic approach to literacy research. Nor does this study suggest that conventional models of literacies do not entail aspects of collaboration, participation and/or innovation.

RELATED LITERATURE

The prevalent digital-media phenomenon in the 21st century popularized with new forms of literacies has instigated a gradual paradigm shift involving the following literacy moves. Firstly, new literacies foster a new form of literacy that reads/views and writes/produces not just the words/images but also the world-views (Sefton-Green, 1995). Secondly, they transform learners from individual and passive consumers of monologic text to collaborative and creative producers, and also collective readers, writers and feedback-givers in a post-typographic web community (Lankshear & Knobel, 2007; Lapp, Fisher, Frey, & Gonzalez, 2014). Thirdly, this digital phenomenon not only reformulates literacies in our increasingly globalized society; it also creates disparities between conventional and new forms of literacies, and literacy practices in formal and non-formal settings at both university (Woods & Skrebels, 2011) and other education levels (Simpson, Walsh, & Rowsell, 2013).

These literacy shifts call for the redefinition of the conventional print-based typographic literacy developed from a predominantly psycholinguistic perspective, to facilitate new opportunities for creative production, innovative collaboration and critical literacy skills (Burke & Rowsell, 2008). In the digital humanities, calls have been made to reconceptualize “college English” as being “the network” (Rice, 2006, p. 133) where “multiple writers engaging within multiple ideas in multiple media at multiple moments function” (p. 130)
when building thoughts, knowledge and social relationships. Rice’s networked English is particularly relevant to new literacies in this study.

The need to fill the academic and new literacies gap is urgent. Such a gap is likely to hinder the development of “ efficacious learning ” (Lankshear & Knobel, 2011, p. 190), critical in our globalized world of English and communication across disciplines, contexts and cultures of global citizens. To address the literacy gap, Lankshear and Knobel (2011) appropriate the notion of social learning to argue for the importance of highly participatory and socially situated learning to enable “ deep learning, fluent mastery of concepts, tools and skills, and creative and productive applications of knowledge and understanding” (p. 253); this is termed “ efficacious learning ” (p. 252).

New literacies studies can be broadly described based on three major approaches (Lankshear & Knobel, 2011): the cognitivist group developed during the 1980s and 1990s (Leu, 2001); the new literacy studies group (Barton, 1994; Gee, 1996); and the new types of literacy group seeing literacies as multiple, social practices for specific goals, which in turn have dialectical impacts on ways of doing, thinking, believing and becoming (Coiro, Knobel, Lankshear, & Leu, 2008). This study is guided mainly by the third approach.

Effectual appropriation of digital-media technologies can scaffold transformative learning and teaching through their high portability, connectivity, widespread ownership and ubiquity (Joseph & Uther, 2009). New literacies offer the following potential benefits: (1) enhancing the co-production of new creative forms of literacies, practices and circulations with broader communities (Jenkins, Clinton, Purushotma, Robison, & Weigel, 2009); (2) engaging students’ desire and passion in the building of knowledge and beliefs, or “epistemic cognition” (Chan, Li, & Hui, 2014, p. 3289), through the learner-centered demand-pull dynamics and social interactions; and (3) helping learners/players develop competence through trial and error, feedback, guided practice and simulations via the “learning before competence” strategy (Gee, 2007, p. 27) informed by game design.

Research studies have also shown the strong communicative nature of new literacy practices, such as the reader-writer relationship and composition of a coherent and genre-appropriate multimodal discourse within a given social context, helping to address concerns about students’ difficulties with academic literacies at university (Lea & Street, 1998) and other education levels (Snow & Uccelli, 2009). New literacies are particularly relevant to the domain of college English in this study.

Broadly speaking, the effects of new literacies enhanced by digital-media technologies, including OSNs, are measured in terms of: (1) academic achievements, such as self-reported GPAs (Kirschner & Karpinski, 2010) and examination results (Karpinski, Kirschner, Ozer, Mellott, & Ochwo, 2013); and (2) additional academic learning related attributes, such as an increased level of engagement (Junco, Heiberger, & Loken, 2010), weekly study hours, and attention span (Paul, Baker & Cockran, 2012).

Research findings have revealed both the negative and positive effects of new literacies. It is noteworthy that the findings of these studies’ denote some cultural variations. The western studies often demonstrated a negative association between the perceived effects of new literacies, and academic learning and achievements—for example, decreased academic learning and attention span (Paul et al., 2012), the lack of perceived improvement in engagement and/or understanding (Donlan, 2012), and lower GPA results (Skiera, Hinz, & Spann,
Positive results, however, were noted in studies mainly conducted at school levels (Warhol, 2014). Recent studies in Norway have demonstrated the positive mediated effects of portable tablet computers on enhanced learning experiences and internet access in various educational contexts (Kongsgård & Krumsvik, 2016; Mathisen & Bjørndal, 2016).

By contrast, the findings of most studies in the Asia-Pacific and west Asia regions (hereinafter referred to as “the Asian studies”) have habitually reported favorably the positive effects of new literacies on academic learning. These include: (1) more satisfaction with Facebook use in academic settings (Wang, Woo, Quek, Yang, & Liu, 2011) and a perceived improvement in learning outcomes in Singapore (Lee & Sing, 2013); (2) the enrichment of both subject matter learning and innovative collaboration, in addition to improved motivation in Malaysia (Rasiah, 2014); (3) useful social networking access and usage for university teaching in Indonesia (Falahah & Rosmala, 2012); (4) keen involvement in critical thinking, collaboration, creativity and communication in Australia (Kivunja, 2015); (5) active participation in west Asia, such as Israel (Kurtz, 2014); and (6) “better grades, higher engagement and greater satisfaction with the university learning experiences” in Taiwan (Wang, 2013, p. 180). As regards the case in Hong Kong, new literacies have only recently begun to assume importance in the secondary English language curriculum (CDC & HKEAA, 2007). Thus far, only one project has been conducted by a local university, promoting new literacies in 12 primary and secondary schools in 2011. Despite some promising outcomes, setbacks were also expressed by students, including decreased learning outcomes (Lee & Sing, 2013), structural limitations and privacy issues (Wang et al., 2011), and anxiety using social media for academic work (Kivunja, 2015).

One commonality among the western and Asian studies is that university students are generally comfortable with Facebook as a “much more natural social learning environment than the real one [institutional learning environment]” in academic settings (Grosseck, Bran, & Tiru, 2011, p. 1428; Wang et al., 2011). Therefore, calls for further studies that explore directly the effects of new literacies on discipline-based academic learning (Alvermann et al., 2012) and in universities (Tess, 2013), together with a systematic theoretical and methodological approach that goes beyond a course-based framework (Wilber, 2008) in a range of cultural contexts, remain warranted.

THEORETICAL PERSPECTIVES

This study is conceptualized principally through Lankshear and Knobel’s (2011) notion of new literacies discussed in the “Aspects of literacies” section. It draws on social learning and sociocultural perspectives in viewing new literacies as situated practice.

Additional principal perspectives are also referenced, including sociocultural dialogicality (Bakhtin, 1981; Wertsch, 1991) and computer-mediated engagement through social interactions (Hui, 2015) for mediating transformative and reflective processes when building discipline knowledge (Scardamalia & Bereiter, 2006) in networked English (Rice, 2006).

The study argues that principle-based (cf. procedure-based) acculturation and reflection, based upon disciplinary engagement and skills transfer leveraged by new literacies, has the potential to bridge the academic/everyday literacies gap across formal/non-formal settings.
METHODOLOGY

As part of a larger-scale study investigating the leverage points of new literacies for academic literacies, this study aims to configure the efficacious learning leveraged by new literacies to foster the requisite academic literacies for academic success. Accomplishing this will better prepare university students to become full participants and responsible media producers for transforming the literacies that are critical in our globalized world of networked English, to bolster their digital futures.

Research Questions

This study addresses two research questions:

1. What are the practices in new literacies enhanced by digital-media technologies used by university students, more specifically by English students, in formal Asian cultural settings?

2. What are the students’ perceptions of the effects of new literacies on discipline-based academic learning, including academic literacies within blended learning classes over time?

Data and Context

A longitudinal survey was conducted with a self-selecting convenience sample of 66 college English students over two years (Fall 2013 to Spring 2015) at a small-scale liberal arts university in Hong Kong that emphasizes student-centered learning experiences enhanced by small class teaching. To address the potential biased results of convenience sampling, the longitudinal scope and data triangulation were orchestrated with supplemental qualitative data to corroborate statistical interpretations (Bogdan & Biklen, 2007). These data included the post-course interviews with 38 voluntary course participants, pre-and-post course-based surveys (132 surveys), participants’ work samples and researchers’ observation notes. All qualitative responses were transcribed for analysis.

Participants, Pedagogical Approach and Activities, and Grading

The participants were mostly undergraduate ELLs who were completing a bachelor degree of Arts in English. They were characterized by complex biliteracy (written English and Chinese) and trilingualism (spoken English, Cantonese and Putonghua). The majority of the participants (93%, 61 students) majored in English in their first to final years of studies, with 56 local students and 10 international students. The average age of the students was 22. They represented 3% of the total student body (approximately 2,500 students) at the university. By no means were they representative of the student population in the region, although they did embody some range of cultural backgrounds.

Each survey participant completed one of the four English courses taught by the author between Fall 2013 and Spring 2015, with one required course, namely Critical Literacies, and two elective courses viz., New Literacies in the Digital Age and Intercultural Communi-
The latter course was offered twice. The literacy pedagogy adopted a multifaceted approach blended with both conventional and new literacies, including multiliteracies enhanced by the use of OSNs (e.g., Facebook). The multiliteracy pedagogy considers literacies as being inextricably multimodal and more integral to the literacy practices in broader sociocultural contexts. The conventional literacy practices included formal lectures, and asking and answering questions (taking up 60% of the course time). New literacy practices were characterized by multimodality, multiliteracies, discussions, reflections, collaboration and active participation typically found in a new literacy classroom (Kist, 2000). In the study, they comprised student-centered discussions via Facebook and in class, group presentations and written work supported by a social networking e-portfolio system called Mahara, in-class written examinations with the use of computer terminals, communication through email, Facebook, and a learning management system called Moodle (using 40% of the course time).

Questionnaire Design
The survey design (Dörnyei, 2003), especially regarding the major attributes of new literacies, was mainly guided by Lankshear and Knobel’s (2011) key principles of new literacies concerning the new technical and new ethos stuff (see also Warschauer’s, 1997 framework for understanding computer-mediated ELL). Additional references were also made to Lea and Street’s (2006) concept of academic literacies across contexts and within social practices. With a retrospective post-then-pre design, participants provided responses to given topics ‘then’ (pre-test) and ‘now’ (post-test) simultaneously. This redesign ensures consistent and valid data by minimizing the potential response shift bias due to limited knowledge in the pre-test.

The content of the new literacy questionnaire was developed based on a questionnaire concerning students’ experience with technology in academic studies (Kennedy, 2014). After the validation review, some questions were revised and used in a pilot study exploring the technology-enhanced assessment practice (Hui, 2012). The questionnaire consisted of 70 questions in four sections (see Appendix A for the overall key themes and exemplar questions in each section): (A) participants background (Appendix A/Item 1); (B) new literacy practices (Item 2); (C) perceptions of new literacy effects on academic learning measured for five main attributes—including “academic literacies,” “collaboration,” “creativity,” “learning in coursework and assessment” and “communication and socializing,” together with their “overall learning experiences” (Item 3); and (D) specific examples (Items 4a-c).

Each question in Section C (Appendix B) was rated on a five-point Likert scale (1 = not at all useful; 5 = extremely useful). They were tested for internal consistency and confirmed as satisfactory with the Cronbach’s alpha value higher than 0.6 (ranging from 0.683 to 0.84).

Using web-based survey software called Qualtrics, the questionnaire was administered four times between Fall 2013 and Spring 2015, once at the end of each semester (approximately 25–30 minutes each).
Methods of Analysis
Quantitative survey responses regarding the two key themes (Sections B and C mentioned earlier) were analyzed using the statistical analysis software program SPSS 19.0.0. To compare the pre-and-post categorical data in percentage regarding digital device ownership and use, the Marginal Homogeneity test was used. As the survey data (C.1-47) were not normally distributed and had a highly skewed distribution, they were expressed by the median (the 25th–75th percentiles) and thus analyzed by the Wilcoxon signed-rank test to compare the pre-and-post perceptual change. The median for each test was calculated by putting the aggregate score of the questions of a particular attribute for each participant in numerical order.

Qualitative data such as the responses to the eight open-ended survey questions (D.1-8) were coded using a content analysis method with the use of a qualitative analytic software called NVivo 10 based on the same two key themes mentioned in the previous paragraph. For example, the verbatim response, “I am able to do the discussion about academic topics on the social networking platform with my classmates” was coded the theme node, “perceived effects of new literacies on academic literacies/collaboration.” Inter-rater reliability checks among researchers reached 85% for codings of qualitative open-ended responses. Micro-linguistic analysis was also employed to analyze the qualitative data at a word level (e.g., word choice) for in-depth information.

RESULTS AND ANALYSIS
The results of the survey responses, including the qualitative analysis of responses to the eight open-ended questions, are reported in two parts.

Firstly, descriptive statistics illustrated that the college English students use a range of portable digital devices. For instance, the majority of the study’s participants (95.5%) owned two (51.5%) to three (43.9%) different types of digital devices. Smart phones, notebook/netbook and tablet computers (in that order) are the three most commonly owned portable digital devices. Moreover, the number of owners owning three digital devices has shown a sharp increase over two years (from 19% to 56.3%).

Table 1 shows that the participants engaged actively in a range of new literacy practices, in terms of frequency of use, with their preference of portable digital tools. The recurrent practices, in descending order, include social networking, communication, email writing, viewing multimodal materials, social collaboration and game-play. It is noteworthy that participants’ engagement in email writing, viewing multimodal materials and social collaboration has shown a significantly marked increase over time ($p < 0.05$). More specifically, the participants preferred using smart phones for communicative (9.2% increase) and collaborative (16.9% increase) purposes, and tablet computers for viewing multimodal materials (8.5% increase).
Focused analysis of participants’ qualitative responses to the open-ended survey questions provides three points of alignment. To begin with, the college English students show positive awareness concerning their possession of a variety of digital tools and abilities to use relevant applications, including OSNs (e-dictionaries, Dropbox, Google+, Facebook, etc.), to accomplish a range of academic-related activities that go beyond personal use. These involve: (a) enhanced communication (42 code counts from 34 participants); (b) collaborative learning within a community of learners by means of exchanging ideas and feedback for new ideas and coursework refinement (29 code counts from 23 participants); and (c) searching and sharing of information on the internet individually and with their course mates (19 code counts from 14 participants). In textual terms, some participants reported on the use of social communication apps for socializing with “friends” and “foreign friends on Facebook.” Other respondents reported that they could “brainstorm” ideas and “use Facebook for group projects,” “communicate with [the] professors through Facebook and WhatsApp” and “know more about the world.”

Table 1: Participants’ Changing Engagement in New Literacy Practices Over Time (N = 66)

<table>
<thead>
<tr>
<th>Descending order</th>
<th>New literacy practice</th>
<th>Preference of portable digital tools (in descending order)</th>
<th>Pre (%)</th>
<th>Post (%)</th>
<th>Change (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Social networking activities through Facebook, Google+, blogs, etc.</td>
<td>1. Smart phone</td>
<td>100</td>
<td>100</td>
<td>0</td>
<td>0.665</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Notebook/laptop/netbook</td>
<td>90.8</td>
<td>95.4</td>
<td>4.6</td>
<td>0.157</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Tablet</td>
<td>45.8</td>
<td>61</td>
<td>15.2</td>
<td>*0.006</td>
</tr>
<tr>
<td>2</td>
<td>Communication through Skype, WhatsApp, etc.</td>
<td>1. Smart phones</td>
<td>96.9</td>
<td>97</td>
<td>0.1</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Notebook/laptop/netbook</td>
<td>67.7</td>
<td>70.8</td>
<td>3.1</td>
<td>0.317</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Tablet computers</td>
<td>39</td>
<td>42.3</td>
<td>3.3</td>
<td>0.248</td>
</tr>
<tr>
<td>3</td>
<td>Email writing</td>
<td>1. Notebook/laptop/netbook</td>
<td>89.2</td>
<td>96.9</td>
<td>7.7</td>
<td>*0.002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Smart phone</td>
<td>86.2</td>
<td>95.4</td>
<td>9.2</td>
<td>*0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Tablet</td>
<td>40.7</td>
<td>49.2</td>
<td>8.5</td>
<td>*0.005</td>
</tr>
<tr>
<td>4</td>
<td>Viewing audio and video clips</td>
<td>1. Smart phones</td>
<td>80</td>
<td>84.6</td>
<td>4.6</td>
<td>*0.014</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Notebook/laptop/netbook</td>
<td>53.8</td>
<td>61.5</td>
<td>7.7</td>
<td>*0.033</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Tablet</td>
<td>37.2</td>
<td>45.7</td>
<td>8.5</td>
<td>*0.005</td>
</tr>
<tr>
<td>5</td>
<td>Social collaboration through Google Drive, Office 365, Wiki, etc.</td>
<td>1. Notebook/laptop/netbook</td>
<td>73.9</td>
<td>84.6</td>
<td>10.7</td>
<td>*0.011</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Smart phone</td>
<td>66.2</td>
<td>83.1</td>
<td>16.9</td>
<td>*&lt;0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Tablet</td>
<td>38.9</td>
<td>44</td>
<td>5.1</td>
<td>*0.011</td>
</tr>
<tr>
<td>6</td>
<td>Game-play</td>
<td>1. Smart phone</td>
<td>46.2</td>
<td>47.7</td>
<td>1.5</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Notebook/laptop/netbook</td>
<td>27.7</td>
<td>29.2</td>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Tablet</td>
<td>20.3</td>
<td>23.7</td>
<td>3.4</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Descriptive statistical data are shown in percentage (%) based on the “daily” and “weekly” response options. Categorical data are analyzed by Marginal Homogeneity test for pre-and-post data comparison.
*p < 0.05
Secondly, Table 2 shows that participants’ perceived effects of new literacy practices on academic learning in terms of the relevant attributes—including academic literacies, collaboration, creativity, performance in coursework and assessment, communication and socializing, and their overall learning experiences—were significantly different before and after taking the courses ($p < 0.05$). Effect size values suggested a high practical significance between the pre-and-post responses for each attribute, particularly academic literacies and communication and socializing ($r = 0.53$), where $r = 0.1$ indicates small effect size, $r = 0.3$ medium effect size, and $r = 0.5$ large effect size (Cohen, 1988).

### Table 2 Participants’ Perceptual Change Concerning the Effects of New Literacies on Academic Learning (5 Attributes) and Overall Learning Experiences (N = 66)

<table>
<thead>
<tr>
<th>Categories</th>
<th>Pre-then</th>
<th>Post</th>
<th>$p$-value</th>
<th>Effect size ($r$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic literacies (C.1-8)</td>
<td>28.50$^a$</td>
<td>32.00</td>
<td>*&lt;0.001</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>(25.00$^b$–30.17$^c$)</td>
<td>(30.00–34.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration (C.9-16)</td>
<td>26.00</td>
<td>29.00</td>
<td>*&lt;0.001</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>(24.00–28.00)</td>
<td>(26.00–31.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creativity or new ways of thinking (C.17-21)</td>
<td>17.50</td>
<td>20.00</td>
<td>*&lt;0.001</td>
<td>0.46</td>
</tr>
<tr>
<td></td>
<td>(15.00–20.00)</td>
<td>(17.00–21.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance in coursework and assessment (C.22-30)</td>
<td>30.00</td>
<td>34.44</td>
<td>*&lt;0.001</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td>(27.00–32.00)</td>
<td>(30.84–36.00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication and socializing (C.31-40)</td>
<td>36.00</td>
<td>41.00</td>
<td>*&lt;0.001</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>(32.75–40.00)</td>
<td>(38.00–43.25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improvement and overall learning experiences enhanced by new literacies with the use of portable digital tools (C.41-47)</td>
<td>24.00</td>
<td>28.00</td>
<td>*&lt;0.001</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>(21.00–27.25)</td>
<td>(26.00–30.00)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continuous data are expressed by the median$^a$ (the 25th$^b$–75th$^c$ percentiles) and analyzed by the Wilcoxon signed-rank test, if the data are not normally distributed. *$p < 0.05$.

The median$^a$ for each test was calculated by putting the aggregate score of the questions of a particular attribute for each participant in numerical order.

Qualitative analysis of responses to the open-ended survey questions illustrates that all participants associated new literacy effects with the improvement of English language proficiency through a range of academic literacy activities, such as writing posts in English with specific attention to grammatical and orthographic accuracy in their posts, and information-searching, to cite the major examples. More specifically, the codings of participants’ “perceived effects of new literacies on academic learning” (a code name) showed a range of effects, including “creativity and multimodality” (53 code counts from 37 participants), “academic literacies” (47 code counts from 30 participants), “communication” (42 code counts from 32 participants), “collaboration” (33 code counts from 26 participants), and the “sharing and exchange” of academic-related information (19 code counts from 12 participants).

However, micro-linguistic analysis of the participants’ word choices reveals some differences in their perceptions of the effects of new literacy practices. For example, in textual
terms, some participants clearly reflected more tactical awareness, and a better use of tools and activities for productive literacy moves, thus leading to improved academic learning (e.g., “searching information online really enhanced my learning efficiency,” “frequent expression of my opinion[s] through Facebook discussions] in English really improves my [English] language proficiency.” Other participants regularly expressed concerns about potential negative effects of new literacy practices on academic learning, chiefly involving the social and communication aspects. Their new literacy practices seem to resemble more those of typical consumers of information and knowledge (e.g., “to receive knowledge,” “encountered a wide range of sources”). In codings, participants’ references to new literacy effects on academic work were more positive than negative (221 code counts from around 60 participants vs. 74 code counts from about 33 participants).

**DISCUSSION**

The two key empirical results are discussed in triangulation with supplemental qualitative data mentioned in the “Data” subsection, in two parts.

In response to question one, the first key result showed that participants’ engagement of new literacy practices in academic work has increased due to their changing digital life, through changing ownership of cultural tools. The evolving trends of widespread digital device ownership and use reflect that university student life is becoming increasingly digital in the typical ELL academic setting in the Asia-Pacific region. These are supported by the technological affordances of high portability, connectivity, and ubiquity as reported by Joseph and Uther (2009), as well as practicality (found in the study). This interpretation aligns with the digital trajectory observed in other cultures such as Britain (Statista, 2016) and North America (Anderson, 2015). The revelation echoes Giddens’s (2003) discussions concerning the transformative impact of globalization on our everyday lives in the “runaway world” (p. 31) filled with rapid changes. The result also extends the findings of the studies in Norway (Kongsgården & Krumsvik, 2016; Mathisen & Bjørndal, 2016) regarding the positive mediated effects of portable tablet computers on enhanced learning experiences by providing novel insights into the leverage points of new literacies in disciplinary learning with Asian English major undergraduate ELLs. Students’ digital behaviors continue to evolve in class activities and assignments. The changes resonate with the researchers’ observations in recent classes. For example, on September 18, 2015, the researchers’ observation notes in the *New Literacies in the Digital Age* course recorded that “Larry, Lance and Aaron (smart phones), and Candy (tablet) used their portable digital devices as note[cards] to tell their jokes [an activity] in class” (all pseudonyms), unlike what had been observed previously in Fall 2013. The new literacy practices of college English students in this particular Asian context are mediated primarily through social interactions (Hui, 2015; Scardamalia & Bereiter, 2006). For example, a general observation reveals that more college English students used email to communicate with the course facilitators, and also responded more quickly than ever before. This behavioral change may be attributable to the ease of navigation due to the recent institutional adoption of a web-based version of *Microsoft Office 365* with its single sign-on page design and integrative multi-functional capabilities.
In response to question two, the second result indicated participants’ strong association between perceived effects of new literacies and discipline-based academic learning, particularly academic literacies, in blended learning classes. Undoubtedly, the courses may have influenced the students’ literacy orientations. However, they did not appear to be the only source of influence, for the following reasons. Firstly, the blended learning design of the courses assigned more time to conventional literacies (60%) than to new literacies (40%) and an approximately equal number of assessment tasks involving both conventional and new literacy practices (five vs. four). Moreover, exploratory statistical analysis conducted with data from the four courses revealed similar significant results at the course level (Table 3), although non-significant results were also noted concerning collaboration and creativity in the *New Literacies in the Digital Age* course (N = 9). Furthermore, other reasons, such as peer and media influence, natural increased awareness and curiosity, as well as trial and error, may also have influenced participants’ new literacy practices. Thus, the statistical findings would seem to be credible based on the consistent choices made by the majority of the participants and the prolonged scope of the present study.

**Table 3** A Pre-post Comparison of Perceived Effects Among Participants of New Literacy Practices on Academic Learning (5 Attributes) and Overall Learning Experiences at the Course Level

<table>
<thead>
<tr>
<th>Categories</th>
<th>Intercultural Communication I (N = 21)</th>
<th>Critical Literacies (N = 20)</th>
<th>New Literacies in the Digital Age (N = 9)</th>
<th>Intercultural Communication II (N = 16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Academic literacies (C.1-8)</td>
<td>*0.002</td>
<td>*&lt;0.001</td>
<td>*0.011</td>
<td>*0.005</td>
</tr>
<tr>
<td>Collaboration (C.9-16)</td>
<td>*0.003</td>
<td>*&lt;0.001</td>
<td>0.161</td>
<td>*0.001</td>
</tr>
<tr>
<td>Creativity or new ways of thinking (C.17-21)</td>
<td>*0.007</td>
<td>*&lt;0.001</td>
<td>0.176</td>
<td>*0.002</td>
</tr>
<tr>
<td>Performance in coursework and assessment (C.22-30)</td>
<td>*0.010</td>
<td>*&lt;0.001</td>
<td>*0.012</td>
<td>*0.002</td>
</tr>
<tr>
<td>Communication and socializing (C.31-40)</td>
<td>*0.001</td>
<td>*0.001</td>
<td>*0.011</td>
<td>*0.002</td>
</tr>
<tr>
<td>Improvement and overall learning experiences (C.41-47)</td>
<td>*0.002</td>
<td>*0.001</td>
<td>0.058</td>
<td>*0.010</td>
</tr>
</tbody>
</table>

Data is analyzed by the Wilcoxon signed-rank test. Only the p-values were shown in the table. *p < 0.05.

Exploratory analysis of participants’ reflections gathered from additional sources of data about their new literacy practices mirrors richer and more complex connotations pertinent to academic literacies. These included “reading, understanding, critically evaluating, responding to the digital texts” (extracted from the post course-based surveys), and “analyze[ing], evaluat[ing] and synthesiz[ing] the information, and eventually shar[ing] and...”
creating ideas through the Internet and Information and Communication Technologies” (extracted from the final test). These responses largely resemble Lankshear and Knobel’s (2011) notions of new technical and new ethos stuff, with an additional reference to some critical aspects of academic literacies (Burke & Rowsell, 2008). Contrary to the claims made by Wineburg and McGrew (2016), the English major ELLs in Asia demonstrated capabilities of becoming critically literate. Moreover, they commented that active participation, collaborative learning and learner autonomy are key criteria for characterizing efficacious learning conducive to academic success. It appears that the college English students demonstrated heightened awareness and functional competence in appropriating new literacies to enhance academic literacies.

In a nutshell, these results may be broadly explained by the nature of the discipline (i.e., English) in which academic literacies play an important role for discipline-based academic success. Together with a recent pedagogical paradigm shift toward an increasing number of collaborative group projects in problem-based activities and assessment, this in turn may lead to some positive reinforcement following increased personal engagement, heightened awareness and improved competence.

These results seem congruent with the concept of networked English (Rice, 2006). Interestingly, they bear a closer resemblance to the findings of the majority of the studies in the Asia-Pacific region that the new literacy practices of college English students are mediated primarily through social interactions and collaboration (Falahah & Rosmala, 2012; Kivunja, 2015; Lee & Sing, 2013; Wang et al, 2011). As Lapp et al. (2014) have pointed out: “our students are no longer simply consuming information online, they are now producers of information” (p. 187). However, they seem to be in marked contrast to the perceived negative effects of new literacies in the studies conducted mostly in the west—Skiera, Hinz and Spann (2015) in Germany, Junco (2012) and Kirschner and Karpinski (2010) in the United States and Europe.

While cultural difference might play a role in explaining the contrastive orientation, more importantly, the methodological approaches between the various studies are noticeably different. For example, the research design of the western studies was mostly quasi-experimental, involving mainly the GPAs, whereas the current study focuses also on the reflections of the situated aspects regarding contexts and situations within the cultural environment. Moreover, the Asian ELLs tend to be more outcome-oriented and readily engaged in new literacies than is probably the case with first language speakers in the North American and European cultures.

Echoing the findings found in some studies (Donlan, 2012; Junco, 2012; Kirschner & Karpinski, 2010; Kivunja, 2015; Lee & Sing, 2013; Skiera, Hinz, & Spann, 2015), concerns were also noted from participants’ survey responses (i.e., information overload, imbalance between online and real-life time, high cost, computer eye strain, risk of addictive behavior, technical problems, uniqueness of human contacts and sociability), and supplemental qualitative data such as the course-based surveys and interviews (i.e., rumor spreading, cyber-bullying, addiction to social networking activities leading to decline in academic performance, and inconsistent connectivity between Facebook and academic discourses).
CONCLUSION AND IMPLICATIONS

Despite the satisfactory content validity and internal consistency of the survey questions, the study's statistical results are by no means sufficient to make generalizations about the behaviors of the student population in the region. Nonetheless, these results have provided novel insights to bridge the gap between academic and everyday literacies (Alvermann & Hinchman, 2012), especially through the key concept of efficacious learning from an Asia-Pacific cultural perspective. The study's results provide a fuller picture about leveraging academic literacies through the efficacious learning of new literacies. Two key results are summarized: (1) In alignment with global trends, academic life as a college English student is becoming increasingly digital in the Asian ELL setting. (2) New literacies are progressively perceived as providing fruitful leverage to transform the academic literacies essential for academic success.

Efficacious learning in the present study thus comes to designate exemplary knowledge-building aspects that reflect a strong participatory culture, involving active participation, collaboration, distributed expertise and learner autonomy. It promotes the collective building of discipline-based academic literacies in English within networked communities. This corresponds to the central argument of the study that principle-based (cf. procedure-based) acculturation, as founded upon disciplinary engagement and skills transfer leveraged by new literacy practices, has the potential to bridge the gap between academic and new literacy practices across formal and non-formal settings.

The longitudinal mixed-methods structure of this study within the disciplinary engagement (i.e., English) in the Hong Kong cultural and linguistic environment offers novel and rich contextual evidence to construct meaningful interpretations in new literacies research. In addition, it is interesting to observe that participants’ positive perceptions of new literacy effects bear a closer resemblance to the findings in the Asian studies, while their negative perceptions of new literacy effects relate more to the results in the western studies.

Practical Implications

The study’s results have useful implications for learning and teaching involving Asian ELL students of English in tertiary English education, including: (1) Appropriation of the learning principles and procedures related to new literacies common to students’ lifestyle habits as a way to advance academic literacies, which are deemed essential for academic success, will help bridge the literacy gap between formal and everyday settings (Brown, 2005), and in an ELL environment (Thorne, 2008). This, in turn, will enhance efficacious learning beneficial to all learners to become more critically and academically literate and responsible participants in the digital humanities. (2) Active engagement of reflective practices of new literacies through domain-specific knowledge, enhanced by innovative digital-media technologies between formal and non-formal learning environments, will offer deeper insights into the specific ways in which students can become more independent and engaged in performative and cultural curricular areas for networked English (Rice, 2006). (3) Curriculum development in the areas of pedagogy (e.g., intended learning outcomes) and assessment (e.g., task design) would need to accommodate student expectations and the diversity of digital trends and styles in learning and teaching, which are becoming
increasingly digitalized, distributed and negotiable in the co-construction of meaning involving learning artifacts, social relationships and collaborative processes (Merchant, 2007).

Methodological Limitations and Future Directions
Some methodological constraints can be addressed in future extended studies: (1) The sampling method and sample size can be improved and enlarged also to include the random sampling of university students in additional academic disciplines and cultures in order to enhance critical analysis in the region. This would address some possibly contrastive attitudinal and instructional aspects such as learning and teaching styles and course design, including assessments. (2) The short retrospective response time-frame of the post-then-pre survey response design may run the risk of incurring unreliable or biased memory recall over a span of time. (3) Self-reporting responses are always subject to bias. However, subsequent survey administration experiences affirmed some benefits of the post-then-pre survey redesign. Furthermore, follow-up exploratory analyses based on supplemental qualitative data gathered through the mixed-methods research design have facilitated valuable triangulation of the empirical interpretations.

Last but not least, the study’s results indicate a need for further studies concerning the complex relationships between the effects of new literacies and academic achievements, involving discipline-based academic grades (e.g., Hui, in press), and in-depth analysis based on the qualitative engagement of English students with new literacy practices, in order to shed additional light on their experiences and practices. This will inform a richer descriptive and explanatory framework for orchestrating the potentially transformative synergies in bridging the new and academic literacies gap urgently needed, both in the college English context and beyond.

ACKNOWLEDGMENTS
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### APPENDIX A

Key Themes and Exemplar Questions of the Questionnaire

<table>
<thead>
<tr>
<th>Key theme</th>
<th>Question type and example</th>
</tr>
</thead>
</table>
**Background information**  
A.9. Please check the box(es) indicating the devices you own (check ALL that apply)  
a. ☐ Smart phone (iPhone, Android phone or similar)  
b. ☐ Tablet computer (Nexus, Android tablet, Surface Pro, iPad or similar)  
c. ☐ Notebook/laptop/netbook computer |
| 2. Beliefs and practices of new literacies enhanced by portable digital tools in study and daily life (i.e., smart phones — including iPhones, Android phones or similar models — tablet and notebook/laptop/netbook computers). | **Questions B.1 – B.8 (Choice-type responses)**  
**New Literacy Practices**  
How often do you use the following features of your mobile devices?  
A = Smart phone, B = Tablet, C = Notebook/Laptop/Netbook  
PRE = Before the course/project  
POST = After the course/project  
B. 3A. Social collaboration (O365, Google Drive, Wiki, etc.)  
PRE: ☐ Daily ☐ Weekly ☐ Monthly ☐ Never  
POST: ☐ Daily ☐ Weekly ☐ Monthly ☐ Never  
B. 3B. Social collaboration (O365, Google Drive, Wiki, etc.)  
PRE: ☐ Daily ☐ Weekly ☐ Monthly ☐ Never  
POST: ☐ Daily ☐ Weekly ☐ Monthly ☐ Never  
B. 3C. Social collaboration (O365, Google Drive, Wiki, etc.)  
PRE: ☐ Daily ☐ Weekly ☐ Monthly ☐ Never  
POST: ☐ Daily ☐ Weekly ☐ Monthly ☐ Never |
| 3. The perception of the effects of new literacy practices on academic learning — including “academic literacies,” “collaboration,” “creativity,” “learning in coursework and assessment,” “communication and socializing” (5 attributes) — and their “overall learning experiences.” | **Questions C.1 – C.47 (Choice-type responses)**  
**Usefulness of New Literacies in Formal and Social Learning**  
Please rate how useful each of the following new literacy practices currently is or would be in your studies.  
**Academic literacies**  
C.1 Check different e-dictionaries installed in my mobile device to improve my academic literacies.  
PRE: ☐ Not at all useful ☐ Not useful ☐ Neutral ☐ Useful ☐ Extremely useful  
POST: ☐ Not at all useful ☐ Not useful ☐ Neutral ☐ Useful ☐ Extremely useful |
| 4a. Specific examples of changes encountered in literacy practices. | **Questions D.1 – D.6 (Open-ended responses)**  
D.1. With reference to your responses provided in question C.41 (i.e., about English language and academic literacies), please specify the new learning experiences or changes you have encountered. If not, why not? |
| 4b. Factors affecting literacy practices for academic learning. | **Question D.7 (Open-ended responses)**  
D. 7. What reasons, do you think, might facilitate, or hinder, your new literacy practices as enhanced by mobile learning tools in your academic learning and development of your current university education? |
| 4c. Supports needed for effective new literacy practices in higher learning and beyond. | **Question D.8 (Open-ended responses)**  
D. 8. What would you like your university to do to better equip you with new literacies (e.g., blogging, online collaborative writing/reading/viewing, digital story-telling, etc.) which you might need in the enhancement of your academic literacies critical in the 21st century education and future world of work? |
APPENDIX B

The Questions for Section C on the Questionnaire

Academic Literacies
- Check different e-dictionaries installed in my mobile device to improve my academic literacies.
- Access news websites/apps (e.g., SCMP, The Standard, etc.) to enhance academic literacies.
- Video/Audio record my own performance through mobile device to improve my reflection and presentation of academic literacies.
- Access online audio/video sharing sites (e.g., Last fm, Youtube, TED talks, etc.) to enhance my academic literacies.
- Access social networking platforms (e.g., O365, Facebook, Whatsapp, etc.) to discuss academic topics.
- Use the apps (e.g., easybib, sparknotes, etc.) downloaded to the mobile device to help with my study skills and strategies for academic literacies.
- Access information search or encyclopedia sites (e.g., Google, Encarta, etc.) to enhance knowledge and academic literacies.
- Read e-books in my mobile device to enhance academic literacies.

Collaboration
- Access the internet during face-to-face class meetings and discussions to enhance learning and understanding.
- Access social network platforms or instant messaging software (e.g., Facebook, Whatsapp, O365, Lync, Skype, Hangout, etc.) for discussion or meetings about coursework.
- Write or update web-based collaboration sites (e.g., Wikipedia or Wiki command-based encyclopaedia websites).
- Co-write and share my materials (e.g., working files, photos, videos, etc.) through cloud services, e.g., O365, Google Drive, Dropbox, etc.
- Use virtual learning environment (e.g., Second Life, etc.) to study with others in the virtual space.
- Use blogs to create online journals.
- Use social networking sites or forums (e.g., Facebook, HK Discuss, Uwants, etc.) to have a discussion with classmates or friends/people outside campus.
- Play online games with my classmates or friends/people outside campus.

Creativity or New Ways of Thinking
- Search for new (print, non-print) information that helps me enhance the quality and creativity of my assignments.
- Produce creative multimedia work (e.g., audios, videos, etc.).
- Produce creative graphic designs (e.g., drawings, etc.).
• Produce creative presentation and work while using my mobile devices to do my coursework.
• Enhance my creative thoughts after using my mobile devices in assessment.

Performance in Coursework and Assessment
• Contribute writing through Word Online, Wikis, forums for assessment, e.g., through O365, Moodle, etc.
• Contribute writing to social networking sites for assessment, e.g., through Moodle, Facebook, etc.
• Create multimedia presentations for assessment (e.g., Powerpoint, Prezi, etc.).
• Carry out, record and reflect on my presentations for assessment, e.g., using mobile tools.
• Give feedback to course-mates about their work for assessment through Mahara, Moodle, etc.
• Design and build e-portfolio pages for assessment.
• Include learning archives (e.g., video records of my presentations, printed materials, etc.) in my course assessments.
• Create and edit audio/videos for my assignments.
• Upload audio/videos to online audio/video sharing sites (e.g., Youtube, Last fm, TED talks, etc.).

Communication and Socializing
• Access web-based University services (e.g. enrolment, sign up for tutorials, extra-curricular activities, seminars, etc.).
• Use social network platforms or instant messaging software (e.g., Facebook, Whatsapp, LINE, WeChat, Lync, Skype, Hangout, etc.) to communicate with other students.
• Use social network platforms or instant messaging software (e.g., Facebook, Whatsapp, O365, LINE, WeChat, Lync, Skype, Hangout, etc.) to communicate with professors, or other campus staff.
• Receive information about the course via social network platforms or instant messaging software through mobile phones.
• Use social networking sites (e.g., Facebook, Instagram, Google+, etc.) to communicate with classmates or friends/people outside campus.
• Use instant messaging softwares (e.g., Skype, Whatsapp, LINE, WeChat, etc.) to communicate with classmates or friends/people outside campus.
• Schedule my appointments, meetings or gatherings.
• Cater my personal needs, e.g., alarm clock, diaries, personal data, etc.
• Join social, recreational, commercial groups to access information (e.g., Deal of the Day, etc.).
• Check maps through GPS.
Improvement and Overall Learning Experiences

- My English language and academic literacies have improved.
- My collaborative skills have improved.
- My ways of thinking and creativity have improved.
- My performance in coursework and assessment has improved.
- My communication and social skills have improved.
- My online life and identities have been enriched.
- My overall learning experiences have improved.