

A Newcomer's Lens: A Look at K-12 Online and Blended Learning in the Journal of Online Learning Research

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In this study, the authors analyzed 51 articles published between 2015 and 2018 inclusive in the *Journal of Online Learning Research* (JOLR). The purpose of this study was to examine the trends regarding article topics, geography, research methods and article types, authorship, and citation frequency. The results indicated that JOLR gave additional attention to K-12 blended learning; compared to the field overall. Another common topic was professional development, with one special issue and the majority of top-cited articles related to this topic. Most of the studies were conducted in the United States, by researchers also located in the US. Finally, more than half of the studies employed inferential and interpretive methods. Future research is needed to examine if the trends from this study continue over a more extended period and if these results reflect the development of and change in the field of K-12 online and blended learning.

Keywords: journal analysis, K-12 distance learning, K-12 online learning, K-12 blended learning

INTRODUCTION

In 2011, Dr. Richard West introduced a new series called “Journal Analysis Series,” which was published in the magazine *Educational Technology*. At the time, West (2011) wrote that to better understand the field of educational technology it was “helpful to review some of the journals that publish work in this area to see what conversations are being held, research being conducted, tools being developed, and theories being accepted” (p. 60). Later West (2016) reported that he and graduate students from his department had published 23 articles in *Educational Technology* over a period of five years, “each analyzing a decade of scholarship in that journal” (p. 41). These articles were from journals such as *Computers and Education*, *Journal of Research on Technology in Education*, and *Instructional Science* to name a few, with each analysis providing a meta-discourse of insights.

As a part of this series several distance/online learning journals were analyzed (e.g., *American Journal of Distance Education*; *Distance Education*; *International Review of Research in Open and Distance Learning*; and *Journal of Distance Education*). However, as Barbour (2011) reported, only a small percentage of articles in these more general distance/online learning journals – such as those listed above – focused on the K-12 environment. In 2015 the *Journal of Online Learning Research* (JOLR) was established to publish articles related “to the theoretical, empirical, and pragmatic understanding of technologies and their impact on pedagogy and policy in primary and secondary (K-12) online and blended environments” (Association for the Advancement of Computing in Education, 2018, ¶ 1). Four years later, Arnesen, Hveem, Short, West, and Barbour (2019) confirmed that JOLR was responsible for approximately 7.0% of the 356 K-12 online learning journal articles they reviewed, and responsible for 41% of the articles published between 2015-17.

Given the growing importance of JOLR as a publication outlet for scholars of and research into K-12 online and blended learning, it is important to begin to understand the topics, types of articles, authors, and top-cited articles of this journal in an effort to provide insight into the larger context of the field. As such, the purpose of this study was to conduct an analysis of JOLR with respect to article topics, research methods and article types, authors, and citations, using procedures similar to those used in the “Journal Analysis Series.”

LITERATURE REVIEW

The practice of K-12 online learning traces its roots to around 1991 (Barbour, 2013; Clark, 2013). However, as Arnesen et al. (2019) reported, the first journal article focused on K-12 online learning was not published until 1996. Much of the literature and research that was initially published in the field came in the form of documents from private research centers and think tanks, individual program evaluation reports, and Master's theses and doctoral dissertations (Barbour & Reeves, 2009; Cavanaugh, Barbour, & Clark, 2009). In fact, it wasn't until 2006 that the number of journal articles related to K-12 online learning began to grow in larger numbers (Arnesen et al., 2019).

To date, there have been four comprehensive literature reviews that have been published in the field of K-12 online learning (Barbour & Reeves, 2009; Cavanaugh et al., 2009; Hasler Waters, Barbour, & Menchaca, 2014; Rice, 2006). Overall, the themes in each of these articles have been fairly consistent. For example, the dominant theme in each of the four literature reviews has been that the majority of research into K-12 online learning has been focused on comparing how students performed based on the delivery model of their learning (i.e., distance/online vs. brick-and-mortar). The remaining literature has tended to focus on: 1) components of teaching and learning online (Barbour & Reeves, 2009; Cavanaugh et al., 2009; Rice, 2006) or 2) online learning policy, particularly as it relates to full-time K-12 online learning (Barbour & Reeves, 2009; Hasler Waters et al., 2014; Rice, 2006).

In addition to these thematic literature reviews, there have also been several different analyses of the state of the field of K-12 online learning. For example, Barbour (2007) examined the backgrounds of various researchers who had published in the field and found that many of these early scholars in K-12 distance/online learning came from varied backgrounds, had very different professional training, and were working in a wide variety of disciplines. More recently, Lowes (2014) briefly examined the research methods used in select journal articles from 2004 to 2014 in online teaching and learning. She reported that initial research in the field utilized experimental or quasi-experimental methods, and then transitioned to small scale case studies and survey-style research.

In their contribution to the second edition of the *Handbook on K-12 Online and Blended Learning*, Lokey-Vega, Jorrín-Abellán, and Pourreau (2018) studied the 'Research Clearinghouse for K-12 Blended and Online Learning' to determine if any learning theories were included in the title, abstract, or keywords of the research contributed to that database. Lokey-Vega and her colleagues concluded that while "the relatively young field

of research in K-12 online learning has achieved much in establishing ourselves as a distinct and definable group” (p. 85), the body of research had just started to “stretch [the] field to seek and understand instances of success and test well-supported historically-important distance learning theories” (p. 85). Later in the same handbook, Lowes and Lin (2018) found that “much of the early research on online learning at the K-12 level focused on comparing online supplemental courses with their face-to-face counterparts... [while] the rest of the research falls under the broad heading of studies of particular cases” (p. 92). Finally, Barbour (2018a) explored the geographic focus of articles published in JOLR from 2015 to 2017 and found that only two of the 38 articles reported on research conducted in countries other than the United States.

As a complete volume, the second edition of the *Handbook on K-12 Online and Blended Learning* would suggest to readers that the field was largely atheoretical, focused on comparing student performance in online and brick-and-mortar environments or conducting case studies on a variety of aspects in K-12 online and blended learning, and primarily concerned with the United States. This is not inconsistent with the findings of Barbour (2018b), who reported that to date researchers in the field of K-12 distance, online, and blended learning rarely used theoretical or conceptual frameworks to guide their research, did not use validated instruments as a part of the research tools, and – in many instances – failed to define the characteristics of what was being researched. This final point is important, as the nature of the K-12 distance, online, or blended learning contexts can vary significantly from one setting to another. Without adequately describing the characteristics of that setting, it renders meaningful comparisons with future research difficult to impossible.

It should be noted that all of the literature discussed thus far has focused on K-12 distance/online learning. However, the field is generally viewed in broader terms as the field of K-12 distance, online, and blended learning (Ferdig & Kennedy, 2014; Kennedy & Ferdig, 2018). Reasons for the lack of coverage of K-12 blended learning include the general lack of literature and, in particular, research on the topic. For example, Drysdale, Graham, Halverson, and Spring (2013) examined theses and dissertations in the *ProQuest Dissertation and Thesis Database* related to blended learning and found that only 8% focused on K-12 environments. More recently, Molnar, Miron, Gulosino, Shank, Davidson, and colleagues (2017) concluded that beyond literature published by proponents of blended learning (and more broadly those favoring educational reform initiatives), there was little empirical research into the use of blended learning in the K-12 environment.

There have even been some that have argued that the focus on K-12 blended learning by those in the larger field of K-12 distance, online, and blended learning is based on ideological or political motivations (Barbour, 2014); arguing that outside of the United States blended learning is seen as

a form of technology integration at the K-12 level. However, the Association for the Advancement of Computing in Education, the organization that publishes JOLR, is based in the United States. Additionally, according to the founding editors, the purpose of JOLR was to “address online learning... [and] educators who have chosen to blend online learning tools and strategies in their face-to-face classroom” (Kennedy & Archambault, 2015, p. 6). As such, our analysis of JOLR will focus on the complete field of distance, online, and blended learning.

METHODOLOGY

To complete our analysis, we reviewed all 51 articles published in JOLR between 2015 and 2018, excluding editorials and book reviews. This study analyzed those articles for trends in topics, article types, authorship, geography, and citations, using procedures consistent with the Journal Analysis Series (West, 2011, 2016).

Article Topics and Geography Analysis

The website for JOLR (see <https://www.aace.org/pubs/JOLR/>) provided abstracts for all of the articles that we analyzed. We entered the 51 abstracts into *Textalyser* (see <http://textalyser.net/>), an online text analysis tool, which extracted the top relevant two- and three-word phrases to determine the journal’s central topics. We combined the singular and plural forms of the word phrase in some cases, such as “online teacher(s),” “online course(s),” and “learning environment(s).” Also, we excluded the phrases containing prepositions and connector words such as “to,” “of,” and “and.” Additionally, we reviewed the abstract and methodology portions of each article to determine whether they had a specific focus on school level, such as high school and elementary school, or had no focus. It should be noted that throughout JOLR’s history there have been several special issues (see Table 1.)

Table 1
JOLR Special Issues

Year	Volume	Issue	Special Issue Topic
2015	1	1	*
2016	2	2	Professional development
2016	2	4	Student support
2017	3	1	Blended learning
2018	4	2	Diverse learners
2018	4	3	Online course design

* While not a special issue, the inaugural issue featured invited works from several of the scholars who helped to create the journal (Kennedy & Archambault, 2015).

We mention these special issues, as well as the invited inaugural issue, to allow readers to better understand some of the topical trends, as the inclusion of a special issue on a particular topic has the ability to skew the number of articles focused on that topic in the overall data.

We also examined each of the articles to determine either the geographic location of the study being reported or the geographic focus of the article itself (in the case where the article did not report on a specific study). Generally, the geographic focus was referenced in the abstract and/or methodology portions of the article, although the entire article was reviewed to determine the geographic focus.

Article Types and Methodologies Analysis

We used a similar coding methodology that West and his colleagues used in the Journal Analysis Series (see West, 2011, 2016). Each article was coded according to six possible categories to identify the methodological trends. First, one of the authors who had coded the articles in Arnesen et al. (2019) trained the lead author in how to use the code book to identify the articles, using all four articles in volume 1, issue 1. Next, each author coded the remaining articles independently. Then the two authors compared and discussed the coding results. Where disagreement occurred, the two authors discussed the differences until reaching consensus. If these two authors could not reach consensus, a third author verified the disputed articles until all authors reached complete consensus. We used the following coding definitions:

- **Descriptive:** The research primarily relies on data collected from surveys and reports where the statistics are descriptive in nature, such as means, averages, and percentages.
- **Inferential:** The research includes studies that are quasi-experimental, experimental, or correlational, or that validated a survey instrument using factor analysis or item response. They report inferential statistics that test hypotheses or report differences between groups.
- **Interpretative:** These studies include case studies, ethnographies, interview studies, observation studies, and document analysis studies. These articles often focus on interpreting data to develop theory and are more substantial than categorizing simple answers to a one- or two-question open-ended survey.
- **Theoretical:** The research is not data-based, but includes discussions of new theories, models, instructional approaches, designs, and reviews of literature.
- **Content analysis:** The research presents discrete categories and labels data according to deductively categorize data.

- Combined methods: The research uses any two combinations of methods, most commonly interpretive and inferential methods.

We assigned each article to a single category, and those articles with elements of more than one category were assigned according to their primary characteristics.

Authorship Analysis

We conducted the analysis of authorship by extracting the frequency of each author's contributions (i.e., the number of articles that they authored or co-authored). We then employed a point scale, giving first authors three points; second authors, two points; and third authors and beyond, one point.

We also examined each of the articles to determine the geographic location of the author based on their institutional location. The JOLR website provides the authors' names, each author's institutional affiliation, and the country where each institutional affiliation is located. We reviewed this information and categorized the authors according to the country of their institutional affiliations.

Citation Analysis

We analyzed *Google Scholar*, using the *Publish or Perish* software (Harzing, 2010), to examine the number of citations for each article as of 31 December 2018. We analyzed all 51 articles published between 2015 and 2018 to identify the 11 top-cited articles, each of which was cited seven or more times.

RESULTS

This study analyzed 51 articles published in JOLR from 2015 to 2018. The findings below will identify trends regarding article topics, article types and research methods, authors, and citations, using procedures like those used in the Journal Analysis Series (see West, 2011, 2016). In addition, this study added two new domains: the article geography analysis and author geography analysis.

Article Topics and Geography

Table 2 indicates the most frequent three- and two-word phrases appearing in the article abstracts. Those phrases referenced fewer than three times for three-word phrases and fewer than 15 times for two-word phrases are not listed in this table.

Table 2
Frequency of phrases in abstracts

3-word phrases	Number of articles	Phrase count
Face-to-face	8	9
Online and blended	5	7
Online course design	5	6
Blended learning environment(s)	4	6
Online learning environment(s)	4	5
Students with disabilities	3	6
Community of engagement	2	4
2-word phrases	Number of articles	Phrase count
Blended learning	14	29 ¹
Online teacher(s)	13	29
Online course(s)	12	25 ²
Professional development	12	23
High school	9	19
Online learning	8	9 ³
Learning environment(s)	5	8

¹ This number excludes incidences of the phrase used in “blended learning environment(s).”

² This number excludes incidences of the phrase used in “online course design.”

³ This number excludes incidences of the phrase used in “online learning environments.”

“Blended learning” and “online teacher(s)” were the most frequent topic phrases. Both had 29 instances within the abstracts, with 14 and 13 articles, respectively. The phrase “blended learning” was also found in “blended learning environment(s),” which added another six instances in four articles. Additionally, in many instances the phrase “blended learning” was preceded by “online and” (i.e., “online and blended learning”). As we did not conduct a four-word phrase analysis, this finding was not formally captured and we could not determine how many times the phrase “blended learning” appeared on its own and how frequently it appeared as a part of the phrase “online and blended learning” or “online and/or blended learning.”

Joining “online teacher(s)” in the “online” context were “online courses,” “online learning,” “online course design,” and “online learning environment(s),” adding an additional 45 instances of the word “online” in 29 articles. The other topics – “face to face,” “online and blended,” “students with disabilities,” “communities of engagement,” “professional development,” and “high school” – were all included in articles that focused on some aspect of online and/or blended learning. Of particular note is the topic of professional development, which was the topic of 13 articles, just over a quarter (i.e., 26%) of the articles we sampled for this study. The four articles that did not contain direct references to online or blended learning in the abstracts did, nevertheless, discuss some aspect of online or blended learning. One was a theoretical article that recommended modifying the current approach to digital learning, one discussed the use of data to evaluate the effectiveness of open education resources use in science, technology, engineering, and mathematics classes, another evaluated an online charter school, and the last discussed using a flipped learning model (i.e., a blended learning approach) with secondary English language learners.

Table 3 shows the specific focus on school level of each article. The number of articles that have no school level focus is also listed at the bottom of the table.

Table 3
Specific focus on school level

Specific levels	Number of articles
High school/Secondary school	23
K-12	17
Middle school	7
Elementary school	2
K-8	1
No focus on level	1

Fifty of the 51 articles in this study discussed different aspects or levels of K-12 contexts. Twenty-three articles focused on high schools or secondary schools, 17 articles focused on K-12 generally, seven articles focused on middle schools, two articles focused on elementary schools, and one article focused on K-8. The one article that had no specific school level focus, the study conducted by Evmenova (2018), focused on professional development regardless of specific school levels by exploring how educators could learn about Universal Design for Learning (UDL) from an online course designed using UDL principles.

Table 4 reports the geographic location of the study or the geographic focus of the article itself. The number of articles that have no focus on geography is also listed at the bottom of the table.

Table 4
Location where the study took place or where the article was focused

Geography	No. of Studies
United States	42
Turkey	1
Brazil	1
India	1
Multiple countries	1
No focus/Unable to determine	5

There were five articles that had no specific geographic focus or we were unable to determine the location. For example, the study by Pulham, Graham, and Short (2018) entitled “Generic vs. Modality-Specific Competencies for K-12 Online and Blended Teaching” was a review and analysis of documents on K-12 online and blended teaching competencies, and geography was irrelevant to their study. With the exception of these five articles, the vast majority (i.e., 91%) of articles with a geographic focus published by JOLR focused on the United States. There was one article focused on each of the following: Turkey, Brazil, and India. All but one of the studies were conducted in the country of the author’s institution. However, it is worth mentioning that the one study that did not follow this trend involved authors from multiple countries.

Article Types and Methodologies

Table 5 lists the different research method categories and the number of articles for each category. Additionally, this table describes the overall proportion of each methodology.

Table 5
Categorization of all articles published

Method	Total Number	Total Percentage
Interpretive	16	31%
Inferential	15	29%
Combined	11	22%
Theoretical	6	12%
Content Analysis	2	4%
Descriptive	1	2%

The most common methodological category was interpretive. There were 16 interpretive studies, accounting for 31% of all articles. However, there was only one fewer inferential studies than interpretive studies. Content analysis and descriptive methods made up only a small proportion of the articles.

Table 6 indicates both the number of articles per methodological category for each year and the yearly average for each category. To ensure the precision, the number of yearly average was rounded to the nearest two decimal places.

Table 6
Number of articles published each year according to category

Method	2015	2016	2017	2018	Yearly Average
Interpretive	4	7	2	3	4.99
Inferential	3	6	3	3	3.75
Combined	5	3	2	1	2.75
Theoretical	1	1	0	4	1.50
Content Analysis	0	0	1	1	0.50
Descriptive	0	0	1	0	0.25

Similar to Table 5, Table 6 shows that an interpretive approach was the most frequently used methodology, in terms of the yearly average. It is worth noting that the number of theoretical articles increased abruptly in 2018. There was only one theoretical article in the years 2015 and 2016, and none in 2017; while there were four theoretical articles in 2018. Although two of these four theoretical articles focused on the special issue topic of online course design, indicating that this topic may have been simply more aligned to this category. Additionally, the number of articles that applied combined methods tended to decrease gradually year by year.

Authorship

Table 7 lists all the authors who published two articles or more, ranked according to the medal system. Authors with three points or fewer (i.e., only one article) were only listed according to the number of articles each published.

Table 7
Overall authorship by number of articles and point

Author name	No. of articles	No. of points
Jered Borup	4	9
Mark Stevens	3	7
Charles Graham	3	6
David Adelstein	2	6
Leanna Archambault	2	6
Anissa Lokey-Vega	2	5
Michael Barbour	2	4
Mary Rice	2	4
43 authors	1	3
33 authors	1	2
39 authors	1	1

The 51 articles had a total of 123 authors. Jered Borup was a top author in this journal with the most number of publications and the highest author rank. Jered Borup, David Adelstein, and Leanna Archambault each published two articles as the first author. Of these listed authors, it should be noted that Jered Borup and Leanna Archambault are current editors of JOLR (although none of the articles published by Jered Borup were during the period of time he has been an editor). Interestingly, although 86% of the articles (i.e., 44 of 51) had two or more authors, most of the authors, approximately 93% of the authors (i.e., 115 of 123,) published only one article.

Table 8 shows the countries where the authors' institutional affiliation were located. It also counts the total number of authors from each country.

Table 8
Geographical location of authors

Geography	No. of authors
United States	115
United Kingdom	5
Turkey	3
Brazil	2
Canada	1
India	1

Similar to the results shown in Table 4 that the majority of the studies occurred in or were focused on the United States, 93% of authors' institutional affiliations were located in the United States, which indicated that the geographic focus of the study was almost always aligned with the geographic location of the authors' institutional affiliations. One of the exceptions to this pattern was when two authors from Brazil, together with one author from Canada, conducted a study set in Brazil.

Citations

Table 9 reports the top cited articles. Only articles with more than five citations are listed in this table.

Table 9
Frequency of article citation

Title	Authors	Type	Citations	Year
Learning to learn online: Using locus of control to help students become successful online learners	Susan Lowes, Peiyi Lin	Inferential	22	2015
Documenting and sharing the work of successful on-site mentors	Joseph Freidhoff, Jered Borup, Rebecca Stimson, Kristen DeBruler	Interpretive	18	2015
Pioneering the digital age of instruction: Learning from and about K-12 online teachers	Leanna Archambault, Jean Larson	Combined Methods	13	2015
Incremental progress: Re-examining field experiences in K-12 online learning contexts in the United States	Leanna Archambault, Kathryn Kennedy, Catharyn Shelton, Medha Dalal, Laura McAllister, Sabrina Huyett	Combined Methods	11	2016
Building better courses: Examining the construct validity of the iNACOL national standards for quality online courses	David Adelstein, Michael Barbour	Theoretical	10	2016
A call to action for research in digital learning: Learning without limits of time, place, path, pace...or evidence	Cathy Cavanaugh, Christopher Sessums, Wendy Drexler	Theoretical	8	2015
Credit recovery in a virtual school: Affordances of online learning for the at-risk student	Kevin Oliver, Shaun Kellogg	Inferential	8	2015
The status of middle and high school instruction: Examining professional development, social desirability, and teacher readiness for blended pedagogy in the Southeastern United States	Rebecca A. Parks, Wendy Oliver, Elaine Carson	Inferential	8	2016
Listening to the teachers: Using weekly online teacher logs for ROPD to identify teachers' persistent challenges when implementing a blended learning curriculum	Jeremy Riel, Kimberly A. Lawless, Scott W. Brown	Interpretive	8	2016
Adapting the curriculum: How K-12 teachers perceive the role of open educational resources	Beatriz de los Arcos, Robert Farrow, Rebecca Pitt, Martin Weller, Patrick McAndrew	Inferential	7	2016
An analysis of the curriculum requirements for K-12 online teaching endorsements in the U.S.	Laura McAllister, Charles Graham	Content Analysis	7	2016
Fostering student success and engagement in a K-12 online school	Heidi Curtis, Loredana Werth	Interpretive	7	2015

The citations listed in the table are reflective of those provided by *Google Scholar* as of December 31, 2018. As would be expected, the articles from 2017 and 2018 were too recent to have any meaningful citation counts, which was likely why there were no articles included from those years in the table. Similarly, Jered Borup, who had published the most articles and received the highest author rank in Table 7, was also one of the most cited authors. In addition, David Adelstein, Leanna Archambault, Michael Barbour, and Charles Graham were among the most cited list. Interestingly, the top two most frequently cited articles, both published in 2015, also had the highest average citations per year, with Lowes and Lin having an average of 5.5 citations per year and Friedhoff, Borup, Stimson, and DeBruler having an average of 4.5. Of these top cited articles, four were inferential, three were interpretative, two used combined methods, two were theoretical, and one was a content analysis; which covered all methodological categories except the descriptive category. Finally, with the exception of Beatriz de los Arcos and her co-authors, whose institutional affiliation was in the United Kingdom, all other authors' geographic locations were the United States.

DISCUSSION

In this study we analyzed 51 articles in the JOLR from the years 2015 through 2018 (i.e., the first four years of the journal). Although this journal is a new participant in the field of K-12 online and blended learning, it is already having an impact. A survey of articles about online learning since 1994, showed JOLR publishing more articles focused on K-12 online and blended learning (i.e., 7%) than any other journal (Arnesen et al., 2019), in spite of its relative newness in the field. As such, noting the topics, types of articles, authors, and top-cited articles of this journal may provide insight into the larger context of K-12 online and blended learning.

The results of the topic analysis indicated that both online and blended learning were important topics in JOLR, with blended learning heading the list, which on its face value would suggest that articles published in JOLR gave comparable – even preferential – attention to blended learning. The interest in blended learning is inconsistent with previous literature that primarily focused on K-12 distance/online learning (Molnar et al., 2017). Although, as we noted above, many of the instances of “blended learning” were used as a part of the phrases “online and blended learning” or “online and/or blended learning,” 34% (n=17) of the total articles focused primarily or exclusively on blended contexts. This focus was facilitated by the fact that one of the five special issues that JOLR hosted focused on blended learning (see Mohammed, 2017). Additionally, “Volume 3, Issue 2” was comprised of four articles focused solely on blended learning (see Archambault & Borup, 2017); thus, all eight articles published in 2017 were

focused on blended learning. The efforts JOLR has made to bring blended learning prominently into the discussion of distant and online learning reflects their stated purpose to publish articles about both online and blended contexts.

After blended learning, online teacher(s) was the other most frequent topic phrase. This phrase primarily appeared in the context of teacher preparation or professional development, which might indicate the critical role of the teacher, as well as the need for teacher preparation programs and professional development within K-12 online and blended learning environments. This result was consistent with Arnesen et al. (2019), which found teacher education was the most frequent two-word phrase and teacher education programs the most frequent three-word phrase. The results also revealed trends in course design for K-12 online and blended learning, as well as professional development for teachers in those same contexts. Incidentally, course design was the focus of a special issue in 2018 (see Rozitis, Tomaselli, & Gyabak, 2018), while professional development was the focus of a special issue in 2016 (see Parks, & Oliver, 2016).

As might be expected from a journal that focuses on K-12 online and blended learning, all but one of the 51 articles in this study discussed different aspects or levels of K-12 contexts. Of these articles 23 focused specifically on high schools or secondary schools, seven on middle schools, two on elementary schools, and one on K-8. The higher attention paid to high school contexts is consistent with the findings of Rice (2006), who noted that elementary schools received less scholarly attention than high schools. Also, in their review of the literature on virtual schools, Barbour and Reeves (2009) revealed a similar pattern. They cited specifics of large growth in virtual high schools and in high school students' participation in online learning, but cited elementary schools only in the larger context of K-12 learning. Similarly, 17 of the 51 articles did not focus on specific grade levels, but rather on the broader context of K-12 learning, suggesting that elementary and middle school contexts are still an important part of the overall concerns and interests of K-12 learning. It is also interesting to note that 12 (or 24%) of the articles focused on some aspect of online and/or blended teachers' training and experience.

The article geographic analysis showed that 82% (i.e., 42 of 51) studies occurred or were conducted in the United States, which was consistent with the literature in general. For example, Barbour's (2018a) own cursory analysis of the JOLR found that the vast majority of articles had focused on the United States. Similarly, in his analysis of K-12 online learning scholarship in major distance education journals (i.e., *American Journal of Distance Education* – United States; *Distance Education* – Australia; *Journal of Distance Education* – Canada; *Journal of Distance Learning* – New Zealand), Barbour (2011) reported that over half of the K-12-focused

articles were based on the United States. As might be expected, the results also indicated that the geographic focus of the study was almost always aligned with the geographic location of the authors' institutional affiliations. Since most of the studies occurred or were conducted in the United States, not surprisingly, most authors' institutional affiliations were in the United States. One exception to this pattern in our data was an instance where five authors from the same institution whose geographic location was the United Kingdom, contributed a single study. There was an additional article with a geographic location of Turkey that followed a similar pattern. However, as Barbour (2014) noted the vast majority of English-language researchers in the field right now are based in the United States. These results suggest that JOLR might benefit from a more global focus to achieve its commitment to being an international journal, and we note that the journal has recently added an "international section" to encourage these kinds of submissions (see <http://www.aace.org/pubs/jolr/>).

We found interpretive articles accounted for 31% of all methodological categories, followed by inferential articles (i.e., 29%). However, there was no noticeable difference in the number of the two methodologies. The results generally aligned with Lowes' (2014) study, in which she reported that the research in the field had transitioned from experimental or quasi-experimental methods to small-scale case studies and survey-style research. Further, according to Arnesen et al. (2019), theoretical methods were the most common type of K-12 online learning articles through 1994 to 2016, but the authors also reported that the number of interpretive and inferential articles was increasing. In fact, interpretive articles were found to be more common than theoretical articles between 2012 and 2016. Similarly, Barbour (2018b) underscored the importance of interpretive and inferential methods, and suggested scholars should continue to focus on interpretive and inferential research in K-12 online and/or blended settings. However, Lokey-Vega, Jorín-Abellán, and Pourreau (2018) claimed that theory played a pivotal role in the field of K-12 online and blended learning and advocated for an increase in the use of theory in the field.

Most of the top authors identified in this study, such as Michael Barbour, Charles Graham, Jered Borup, and Leanna Archambault, were also in the list of the top 20 authors in the recent study of Arnesen et al. (2019). This result supports the assessment by Arnesen and her colleagues that the field of K-12 online education is a 'small research community,' or at least those authors who were the most active represent a small field. Additionally, in accordance with Barbour's (2007) study, these results also displayed a shift in that most of the top authors were from post-secondary institutions, as opposed to non-profit research organizations. The results also suggested that more new scholars were beginning to join the field, given the fact that 113

of the authors contributed only a single article. These results were consistent with Arnesen et al. (2019), who reported that 276 of the 384 K-12 online learning journal authors published a single article. The key for the future growth of the field will be to ensure that these authors continue to contribute to the field. Interestingly, only one of the JOLR top authors also appeared as a top author in other educational technology and distance education journals covered by the Journal Article Series (West, 2011, 2016). Michael Barbour was listed as one of top authors in the analysis of *Journal of Distance Education* from 2003-2012 (Young, Griffiths, Luke, & West, 2014). While not part of West's (2011, 2016) series, Charles Graham was also listed as a top scholar in Halverson, Graham, Spring, Drysdale, and Henrie's (2014) analysis of highly cited blended learning scholarship. These results provide additional support to the idea that many of the authors who publish in the JOLR are relatively new to the field of K-12 online and blended learning.

The top-cited articles focused on K-12 online and blended education, as did 92% of the entire body of articles as seen in the abstract analysis, both of which reflected the general aim and scope of JOLR. Specifically, the fact that six of 11 top-cited articles (i.e., 55%) were related to teacher education programs or teachers' professional development in online and/or blended settings indicated a field trend in professional development for online and blended teachers. This finding was also consistent with a trend in the broader distance education literature that recent studies put an increasing emphasis on the issue of professional development (Lee, Driscoll, & Nelson, 2007). Similar to the findings of Arnesen et al. (2019) that many top authors were also among those whose articles were cited more frequently, the top authors including Jered Borup, Charles Graham, David Adelstein, Leanna Archambault, and Michael Barbour were also the most cited authors. This result further supported the comment by Arnesen and her colleagues that the studies conducted by the most productive authors were also the most significant – at least from a citation perspective. Additionally, more than half of the most cited articles used inferential or interpretive methods, while only two of 12 articles were theoretical articles. This result was consistent with what was found in some of the articles produced from the Journal Analysis Series (West 2011, 2016). For example, in their reviews of the *International Review of Research in Open and Distance Learning* from 2002-2011 (Olsen, Spring, Young, & West, 2013) and *Australasian Journal of Educational Technology* from 2003-2012 (Hadlock, Clegg, Hickman, Huyett, Jensen, & West, 2014) the authors found that theoretical articles made up a half to a third of the articles published in the early 2000s, but had only made up a much smaller percentage of the articles since 2005. Interestingly, in his summary of the formal project, West (2016) remarked that “some journals seem to have discouraged or even disallowed theoretical work, including literature syntheses, in an effort to focus only on empirical work.

However, we consistently found theoretical/literature-based articles to be among the most cited in a journal” (p. 44). This inconsistency might indicate that a shift has emerged from the early preference in theoretical methods – consistent with other educational technology disciplines – to data-based methods, especially inferential and interpretive, within the field of K-12 online and blended learning.

It should be noted that there are several limitations in this study. First, we excluded the keyword analysis because only 16 out of 51 articles (i.e., 31%) had keywords, which was not a large enough sample to generalize the primary topics for the whole journal. Second, since JOLR is a very young journal, there were only 51 articles over the four-year period that could be analyzed. In contrast, in the Journal Analysis Series, West (2011) indicated that the goal for the series was to examine a decade of scholarship from each of the selected journals. However, it is important to note that Lokey-Vega (2018) felt that the establishment of JOLR was one of several steps that “scholarly leaders [had undertaken to] establish critical community infrastructure for networking and knowledge building that would benefit any current or new scholar in the field” (p. 4). In fact, in their preface to the first edition of the *Handbook of Research in K-12 Online and Blended Learning*, Ferdig and Kennedy (2014) commented on the fact that scholars in the field published in a wide variety of journals as a part of their rationale for the need for the handbook – which also served as a rationale for the need for a dedicated journal for the field of K-12 online and blended learning.

CONCLUSIONS AND IMPLICATIONS

In general, JOLR complies with its aims to publish articles related “to the theoretical, empirical, and pragmatic understanding of technologies and their impact on pedagogy and policy in primary and secondary (K-12) online and blended environments” (Association for the Advancement of Computing in Education, 2018, ¶ 1). Specifically, according to our analysis, the additional attention JOLR has given to blended contexts sets it apart from previous literature that focused primarily only on K-12 online learning. JOLR also raises awareness of the importance of teachers’ professional development in online and blended environments. Second, we found that most of the studies on K-12 online and blended learning occurred or were conducted in the United States. Similarly, most of the researchers’ institutional affiliations were in the United States. Third, the fact that 115 of 123 authors in our study had published only one article may indicate that the field is attracting new scholars or that scholars who have other research agendas are finding that their interests overlap with issues in the K-12 context. Finally, JOLR favored inferential and interpretive articles, with 58% of the 51 articles using those methods.

As the only journal that primarily publishes articles specializing in K-12 online and/or blended learning, JOLR provides a unique platform for researchers, especially new researchers to this field, to present their studies on K-12 online and/or blended learning in a journal focused on the subject rather than present them scattered among a variety of journals. However, given that the field is still a relatively new research area, future research can continue to examine the trend analysis over a more extended period to reflect the development of and change in the field of K-12 online and blended education. Further, researchers outside of the United States should be encouraged to conduct research that focuses on other countries in addition to the United States, thus facilitating comparisons between the implementation and use of online and blended approaches in different countries and cultures, as well as encouraging diversification of the field.

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