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Trends and Priorities of Educational Technology Research: A Delphi Study

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ABSTRACT

As journal editors play an important role in defining and shaping academic discourse, knowing their opinions could likely prove beneficial for both current and future academic journal stakeholders. Within this vein, this study used the Delphi method to help build a profile on the trends and priorities within educational technology, from the unique perspective of the journals' editors-in-chief. This expert panel—initially built from 117 national and international research journals—concluded with 25 editors-in-chief who finished all three rounds of the survey. Results indicated five emerging themes for trends and priorities: computer-focused, teaching and learning, online and digital education, societal, and research and theory. By exploring these current trends and priorities within educational technology, this study may provide meaningful insights to better understand the field as a whole and may also help scholars in their goal of publishing relevant, high-quality academic scholarship.

Keywords: educational technology research, trends, priorities, research journal editors, Delphi

INTRODUCTION

Since before the first use of a digital computer in an educational setting, educational technology researchers have committed to investigating the field and disseminating its findings to researchers, teachers, and other important academic policymakers (Pollard & Pollard, 2004). To help disseminate these important findings, researchers often opt to publish in academic research journals, which play an important role in defining and helping shape academic discourse in educational technology (Wellington & Nixon, 2005). However, despite the corpus of high-quality educational technology research studies published by these academic journals (Jubb, 2016), few studies have attempted to target the key players who shape this discourse–the editors of these academic journals. The editors-in-chief, who—along with peer-reviewers—often directly decide which articles are fit for publication, revision, or rejection in an academic journal. Via this decision-making process, the editor-in-chief plays a key role in establishing the current trends (i.e., what topics are being seen) and priorities (i.e., what kind of subjects they want more of) in their respective journals. As other scholars have called upon the need for more studies investigating the educational technology research agenda (Latchem, 2014; Reeves & Oh, 2017; Pollard & Pollard, 2004), this study attempts to fill this potential research gap by utilizing the Delphi method to anonymously survey educational technology journal editors-in-chief about their journal's respective trends and priorities. We hope this study will not only help to shed

light on the current trends and priorities of the educational technology field as a whole, but also to help inform the educational technology researchers in their goal of publishing relevant, high-quality academic scholarship.

REVIEW OF RELEVANT LITERATURE

In this section, we review several interconnected components that relate to our study, including:

1. the importance of academic scholarship via research journals,
2. educational technology research journals and previous investigations into current trends and priorities,
3. the contribution of editors to academic journals, including specifically within the field of educational technology, and
4. the history and use cases for the Delphi method.

Academic Scholarship via Research Journals

Although teaching and service are two major indicators of an academic scholar's success, for many academic institutions around the world, publishing via peer-reviewed academic research journals is considered the "golden standard" (Lasker, 2018, p. 14) for worldwide dissemination of information (Fyfe et al., 2017), career advancement, and future success (Davies & Felappi, 2017; Hyland, 2016). In fact, for many academics, the specific quantity of peer-reviewed journal publications one has acquired can have an enormous impact on their future promotion and tenure decisions (Fyfe et al., 2017; Hyland, 2016; Schimanski & Alperin, 2018), even if they are employed at more teaching-centered, less research-focused tier universities (Schimanski & Alperin, 2018). This hypercompetitive environment (Woolston, 2018) to "publish or perish" (Davies & Felapppi, 2017, p.745) can place enormous pressure on academics and may even contribute to increased depression and anxiety (Woolston, 2018).

Although academic journals are meant to greatly contribute to the expansion of academic knowledge and facilitate the dissemination of new findings to their respective communities (Fyfe et al., 2017), these journals may have several misconceptions that could prevent many academics from publication success, such as the belief of:

1. manuscript acceptance or denial occurring in a "black box," (Starfield & Paltridge, 2019) where academics lack explicit knowledge of a journal's publication procedures, or
2. publishers acting as a "middleman," (McGuigan & Russell, 2008), where the "business" of academic scholarship—i.e., publishing studies that improve the journal's public profile, via impact factor or media exposure—may take precedence in publication decisions (Dołowy-Rybińska, 2021).

Given these misconceptions—and the necessity for many academics to publish their content in a limited number of available peer-reviewed journals (Hyland, 2016)—it is vitally important for all scholars to be aware of the current trends—e.g., what topics are being seen—and priorities—e.g., what kind of subjects the journals say they want more of—within their specific field, so that they can make better informed decisions about publishing their scholarship.

Research Journals in Educational Technology

Within the field of educational technology, it has never been easy to identify the full scope of the field, given its multidisciplinary nature and evolving frameworks. However, the Association for Educational Communications and Technologies (AECT), the "oldest professional and academic body of educational technologist in the world" (Hlynka & Jacobsen, 2010, p. 1), has maintained a formal definition of educational technology since 1963 (Ely, 1983). The original definition focused on the theory and practice of "audiovisual communications" that "control the learning process" (Januszewski & Molenda, 2013, p. 1). Since this earliest conception of educational technology, this definition has greatly evolved, as the latest AECT definition reads:

> "Educational technology is the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources" (Januszewski & Molenda, 2013, p. 1).

According to this definition, educational technology is a field that involves both research scholars and practitioners with the purpose of "facilitating learning and improving performance," (Mishra et al., 2009, p. 48), which covers a wide scope of research work. As a result, the range of the potential journals that educational technology scholars can publish their work in is likewise broad and spans multiple disciplines.

To discover the trends and priorities within the field of educational technology, many scholars have opted to analyze the content of the journal articles from a wide range of journals. For example, Kimmons (2020) analyzed titles and abstracts of published research articles from prominent journals to help identify the

1. topics that researchers were studying and
2. the tools that practitioners were using.

The information Kimmons (2020) extracted from these journal articles provided a summary of the attention different topics and trends received and how these have changed over time. Beyond examining large data sets from different journals, researchers also reviewed published articles from a single journal to explore the trends of the educational technology field. For example, Bond et al. (2019) used text-mining tools to analyze research articles titles and abstracts published in the British Journal of Educational Technology (BJET), which is considered one of the most established journals in the educational technology field (Bond et al., 2019), from 1970 to 2018. They summarized how the research trends evolved during the last half century specifically "through the lens of an established and highly prestigious journal" (Bond et al., 2019, p. 39).

Given these previous studies and investigations, which analyzed journal trends through previously published content, our current study differentiates itself by specifically examining the trends and priorities of educational technology research through the unique perspective of educational technology research journal editors. As previous research suggests, editors are likely to play key roles in publication decisions for their respective journals (Matias-Guiu, 2020; McGinty, 1999; Starfield & Paltridge, 2019); thus, their unique insight could help further elucidate the current trends and priorities within the educational technology field.

Research Journal Editors

Often viewed as the "gatekeepers," "mediators," or "shepherds" to knowledge (McGinty, 1999, p. 1; Starfield & Paltridge, 2019)—and even by some as "demi-gods" (Pereira, 2017)—journal editors are crucially important in the journal decision making process (Matias-Guiu, 2020) and command an authoritative role in the academic communities in which they serve. These individuals help shape the scholarly discourse in our communities by deciding who can participate in academic conversations, how frequently, and in which specific research area. These editors may also help decide which articles are rejected or sent out for peer review and eventually published. Being at a position typically held in high regard (Wellington & Nixon, 2005), editors must also seek to publish studies that objectively improve academic discourse, while also positively contributing to a journal's public profile (Pereira, 2017; Ray, 2002). Although there is typically no official guide for being an editor, nevertheless, they are expected to act as negotiators between several parties, such as authors, reviewers, and other journal stakeholders (Pereira, 2017). Thus, their perspectives and decisions can potentially help shape the research discourse in any specific field.

Conducting research and sharing the views or opinions of research journal editors is not a novel concept, as there are ample cases from a wide range of disciplines in which research journal editors serve as their own unit of analysis, including subject areas such as veterinary medicine (Grindlay et al., 2014), educational psychology (Lounds et al., 2002), medicine (Cals et al., 2013), management (Rynes & Gephart, 2004), and more. These research studies use a wide range of methods, typically employing interviews or surveys to elicit the perspectives of research journal editors.

Within the broader domain of education, there have been several studies that examined research journal editors' views and opinions on a wide range of relevant topics, like the infamous culture of "publish or perish" (Noble, 1989, p. 97), or the role editors play in shaping the field (Wellington & Nixon, 2005). However, specific research that examines the views or opinions of journal editors within the field of educational technology could not be located. Additionally, many of the prior studies conducted on journal editors have focused on the visible outcomes of their role, such as the influence of the journal's published works to the field. Yet, we contend that there are many invisible issues and challenges facing these editors that have remain largely unexplored, such as specifically examining—from the editor's unique point of view—the trends and priorities

of their journal. Given the large number of academic journals within educational technology (Bodily et al., 2019), a particular research method was needed that would enable us to not only examine the range of issues across the multidisciplinary field of educational technology—with the goal of identifying the trends and priorities—but also to achieve a consensus amongst all editors. These specific requirements led us to purposefully select the classical Delphi method.

Delphi Method

The Delphi method was first developed at RAND, a nonprofit institution, in the early 1960s for the purpose of addressing forecast issues in the context of the military (Glenn & Gordon, 2009). This method gets its name from Greek oracle of Delphi, whose role was to predict future. As such, it was described as a method for solicitation and collection of expert opinions (Helmer-Hirschberg, 1966), with the primary goal being the development of consensus amongst the experts—defined here as subject-matter experts or other important stakeholders within the discipline (Loo, 2002). This consensus is made possible through multiple anonymous rounds of surveys, with summarized anonymous survey results at the end of each round being directly shared with the experts (Glenn & Gordon, 2009; Loo, 2002). Although a plethora of other methods exist for the collection of participants opinions, such as surveys, interviews, or focus groups, each has its own shortcomings that would have made it inappropriate for this study—e.g., lack of consensus building, non-anonymity, etc. Compared to these other methods, the Delphi method helps to eliminate irrelevant factors that would unduly influence the discussion and information collection process, such as keeping all communication and interaction anonymous amongst the experts.

Since the introduction of the Delphi method, it has been broadly employed in multiple fields, including engineering (e.g., Xia & Chan, 2012), medicine (e.g., Green et al.,1999; Loughlin & Moore, 1979), tourism (e.g., Chim-Miki & Bastista-Canino, 2018), and education (Arthur et al., 2013; Helmer-Hirschberg, 1966), etc. Additionally, this method is used not only for forecasting trends but also for "policy formation and decision making" (Rowe & Wright, 1999, p. 355). Specifically, within the field of educational technology, the application of Delphi method can be observed in many research topics. For example, Ritchie and Earnest (1999) employed the Delphi method to identify trends in the field of instructional design. Two groups of experts were included in the study, the academic faculties, and the practitioners. Each group's opinions were studied separately using Delphi method and a consensus within each group was developed. The researchers then compared and discussed the difference in perceptions between the two groups. Continuing, Zawacki-Richter (2009) conducted a Delphi study that identified the most important and most neglected research topics in the field of distance education by recruiting 19 participants with over ten years of experience in the field. Other examples of using Delphi method within this field exist (e.g., Aharony & Bronstein, 2013; Lopez-Catalan, & Bañuls, 2017).

The Delphi method has also been used to investigate the priorities of the field of educational technology. For instance, Pollard and Pollard (2004) identified and ranked nine priorities by specifically targeting grant directors as experts. Researchers have also used the Delphi method to examine priorities of the field from multiple perspectives, which required them to include experts from different professional areas. For example, Rice (2009) conducted a Delphi study to investigate the priorities in K-12 distance education from the perspectives of policy, practice, and research.

PURPOSE OF THE STUDY AND RESEARCH QUESTIONS

In this study, we used the Delphi method to explore the research trends and priorities in the field of educational technology from the point of view of editors-in-chief of academic journals across the world. We aimed to collect opinions from the educational technology research journal editors regarding the manuscript topics that were submitted most frequently to their journals and the topics that were most prioritized in the field. This research seeks to examine the following research question:

1. What research trends and priorities are identified by educational technology research journal editors?

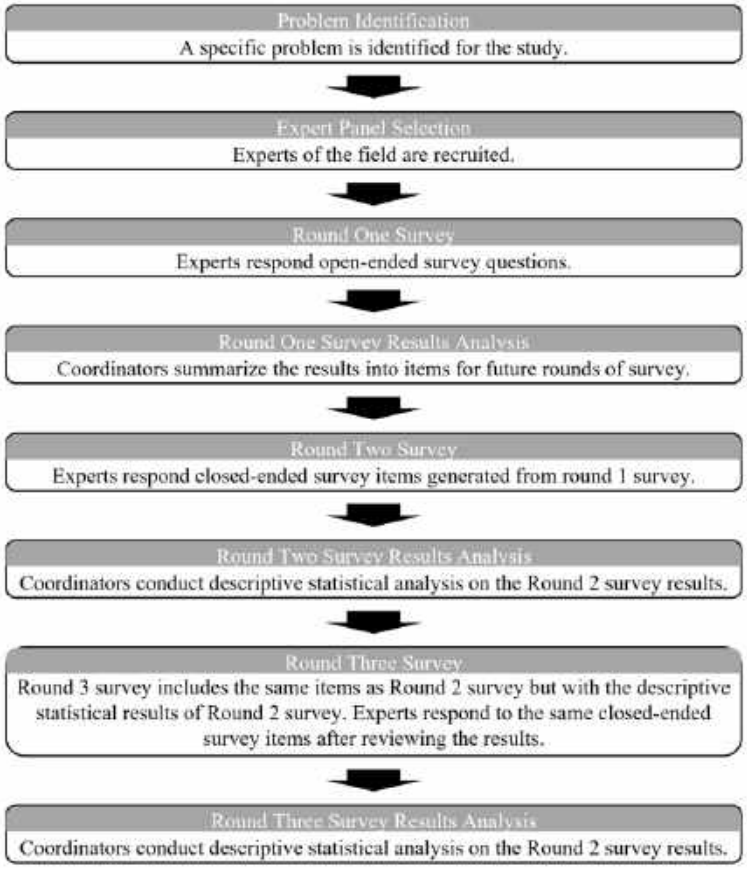

Figure 1. A typical Delphi study process

METHOD

As shown in **Figure 1**, to conduct a typical Delphi study, researchers start with identifying the problem to be studied. After the problem is established, a panel of experts who have knowledge of the topic are selected. Typically, three rounds of surveys are conducted. The researchers, often called coordinators, invite the experts to participate in the initial round of the survey and ask them to share—individually and anonymously—their opinions on open-ended questions. During this round, the panelists are free to provide an unlimited number of ideas. Once the coordinators receive the contributions from all the experts, they carefully review and analyze the survey results and generate a second-round survey, which is based on this aforementioned analysis. In the second round, the survey items are closed-ended questions, which cover the opinions provided by the expert panelists in the first round. After the responses of the second-round survey are collected, the coordinators analyze them and share the results with the experts by including them in a third-round survey. Within this third-round survey, pertinent demographic information is collected—e.g., gender, location, etc.—as well as summary statistics from the entire expert panel, such as mean, median, standard deviation, and interquartile range (Hasson et al., 2000; Rowe & Wright, 1999; Skulmoski et al., 2007).

To conduct Delphi studies properly, some key factors should be considered, including expert panel selection, anonymity, and synthesized feedback (Loo, 2002; Rowe & Wright, 1999). While selecting experts, it is crucial to include experts in the particular field being studied, as their knowledge about the questions being studied directly related to the validity of the study (Dawson & Brucker, 2001). Within a Delphi study, anonymity is achieved by each expert being unaware of who the other experts are, which ensures that all the experts are participating the survey independently. However, during the later rounds of the surveys, experts will have the chance to review the opinions of the whole panel, which have been "synthesized by the researchers" (Gordon, 1994, p. 1). This allows the expert panels' opinions to have the same weight and are less likely to be influenced by other factors (Glenn & Gordon, 2009). In the current study, we strictly and consistently followed this classical Delphi method process summarized above.

Expert Panel Selection

To begin our Delphi study, we first aimed to create a list editors-in-chief of educational technology academic journals to serve as panel experts, which would help ensure in-depth, omnibus responses. To identify editors within these targeted academic journals, we examined previously substantiated lists in peer-reviewed literature (e.g., Bodily et al., 2019). As a result of this search, we finalized a list of 117 educational technology academic journals from around the world. From each of these journals, we collected the editor(s)-in-chief's contact information from the websites of each journal. As some of the journals have multiple editors serving as the editors-in-chief, more than one editor could be recruited from a single journal for our study. In total, we invited—via email—205 editors to serve as the panel experts for our Round 1 survey, which consisted of only open-ended questions. Of these 205 editors, 59 (28.8%) agreed to participate in our study. All subsequent communications between the coordinators and the experts were conducted via email.

Round One Survey

Given their unique research experience and practice as editors, the following two questions that directly related to the trends and priorities of the educational technology field were asked:

1. What are the most frequently submitted manuscript topics to the journal?
2. What current topics are priorities for research in the field and the journal in general?

As previously stated, 205 editors from 117 research journals were invited to participate in the initial round 1 survey. We received anonymous responses from 59 editors (28.8%). These responses were analyzed by the research team using open coding procedures, which resulted in a finalized list of 41 items of trends and 23 items of priorities. The research team took great care to have all experts' ideas included and represented in these summarized items, as they would then be included in the second round of survey.

Round Two Survey

This round of survey included all the summarized items identified by the researchers from the initial round of survey. These items were then converted into 5-point Likert scale responses—e.g., 1=strongly disagree to 5=strongly agree. The 59 editors who finished the round one survey were all invited to participate the round two survey. For each item, they were asked to select to what extent they agreed that the item represented the trends or priorities of their specific educational technology-related research journal. Of the 59 editors initially invited, we received 32 anonymous responses (54.2%). For each Likert-scale response, the mean, median, standard deviation (SD) and interquartile range (IQR) were calculated, as the research team was interested in where the responses centered, how they were dispersed, and whether consensus was achieved. As IQR is a measure of dispersion for the median, it is commonly used to detect consensus; for a 5-point Likert-scale, if the IQR was ≤1, it can be considered that consensus was achieved (Birko et al., 2015; Heiko, 2012; Raskin, 1994; Rayens & Hahn, 2000). These second-round statistics were then shared with the expert panel within the round three survey.

Round Three Survey

The 32 editors who finished the round two survey were invited to participate in the round three survey. Since this was the final round of survey, we also asked the editors to provide some demographic information, including: gender, geographic location, time spent doing work related to the educational technology field, time spent as an editor of the journal, and their position in the organization in which they are currently employed. In this round, all of the individual trends and priorities items remained the same from round two. Meanwhile. the summary descriptive statistics (i.e., mean, median, SD, and IQR) for each item were provided too. Since IQR is not a universally understood statistical term, we also included specific instructions that explained to the experts that IQR can be used to examine whether consensus had been achieved across the participants in the study; that is, when the IQR ≤1, it is generally accepted that agreement was achieved for that item. Of the 32 experts who were invited, 25 (78%) finished the round three survey. After completion of this round of survey, the data were again analyzed to determine when and where agreement had been achieved in addition to the descriptive statistics for each item. The flow diagram of all the three rounds of surveys is shown in **Figure 2**.

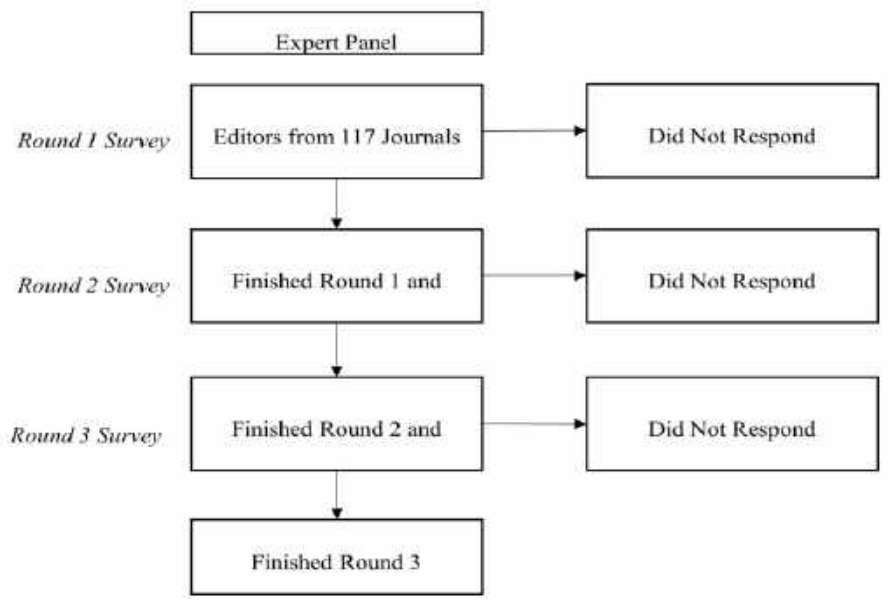

Figure 2. Delphi study process and sample sizes at each round of survey

Table 1. Demographic information of the expert panel from round three survey

Demographic item	n	%
Gender		
Female	9	36%
Male	16	64%
Country		
USA	8	32%
Australia	4	16%
Germany	3	12%
Canada	2	8%
UK	1	4%
Colombia	1	4%
Greece	1	4%
Scotland	1	4%
Singapore	1	4%
Spain	1	4%
Turkey	1	4%
Not mentioned	1	4%
Years of experience in educational technology		
5 years or less	1	4%
6-10 years	2	8%
11-15 years	1	4%
Longer than 15 years	21	84%
Years of experience serving as editor of the journal		
1-2 years	5	20%
3-4 years	3	12%
5-6 years	3	12%
7-8 years	3	12%
Longer than 8 years	11	44%

RESULTS AND DISCUSSION

In total, 25 editors finished all three rounds of survey (**Table 1**). About one third were females and two thirds were males. They were from 11 different countries and 32% of them worked in the United States. Most editors (84%) had been working in the field of educational technology for more than 15 years. Nearly half (44%) of the editors have been at the position of editors in the current journal for more than eight years. Editor(s) and journal names were confidential as we intentionally did not want to disclose identifying information, which would violate the integrity of the Delphi method.

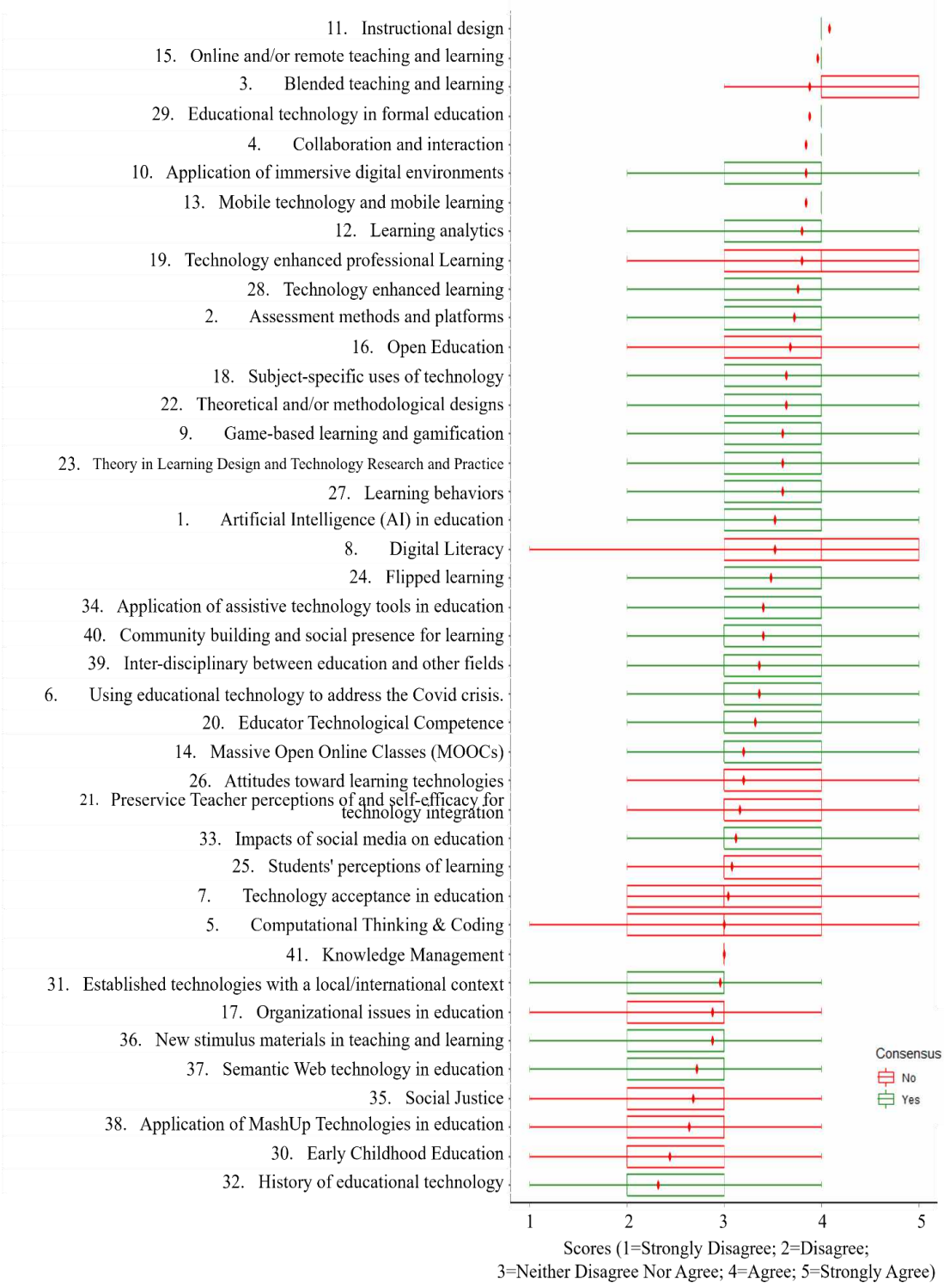

Figure 3. Boxplot of expert panel's opinion on all trends

The opinions of the expert panel on all the items of trends and priorities are summarized and analyzed separately (**Figure 3** and **Figure 4**).

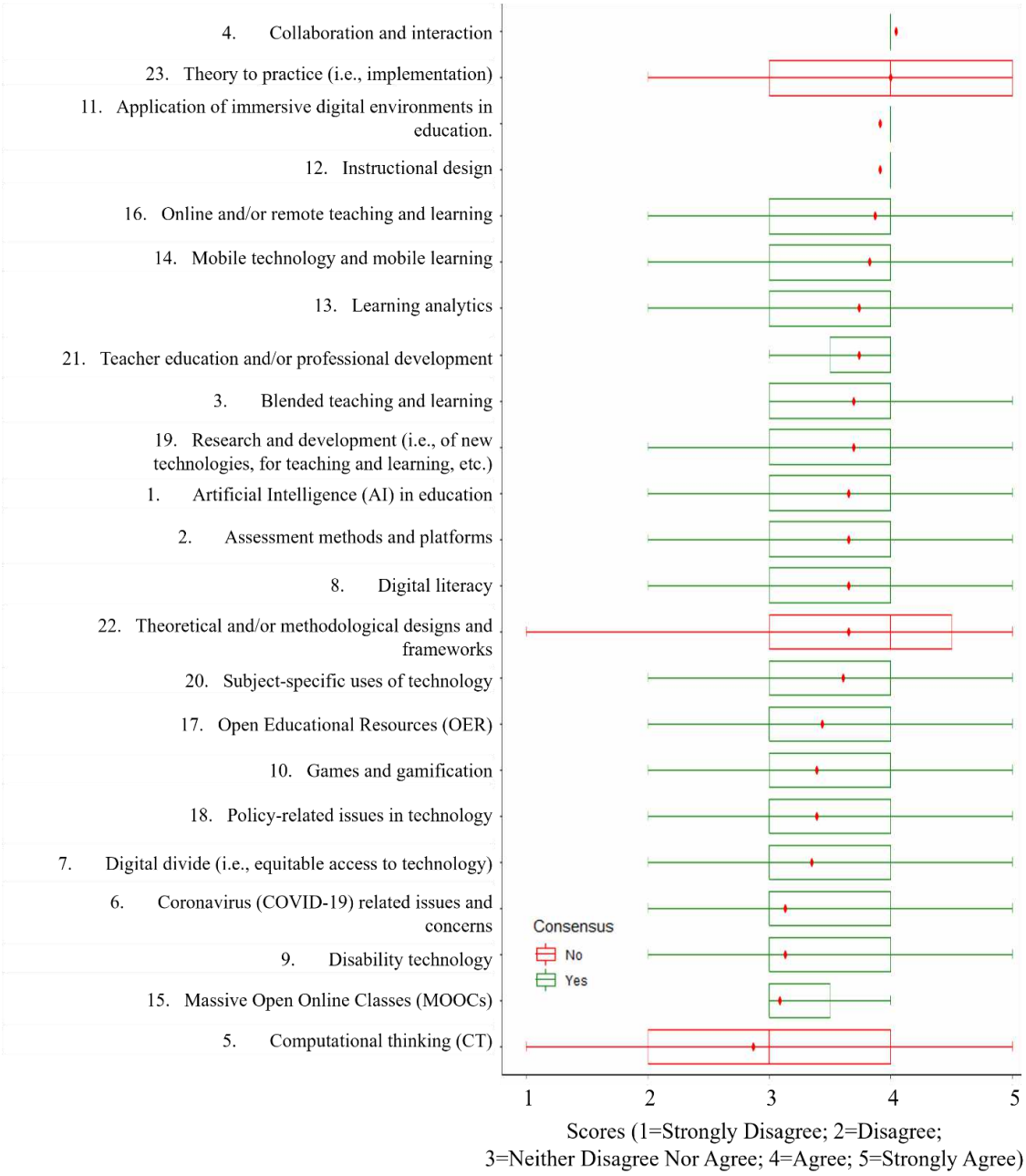

Figure 4. Boxplot of expert panel's opinion on all priorities

To better understand the trends and priorities reported by the editors, the identified items were grouped into five collective themes (**Table 2**). The detailed data analysis results will be reported by theme. Within each theme, we will review the results of both trends and priorities side by side.

Teaching and Learning

The theme of teaching and learning contains the most items in both trends and priorities. 10 out of 15 trends items of the theme teaching and learning achieved consensus with IQR ≤1 (**Table 3**). Editors agreed that within the manuscripts submitted to their journals, the most popular topics about teaching and learning are instructional design and educational technology in formal education. The topic of instructional design is also the highest rated item across all the trends items. Other items that achieved consensus were mainly focused on assessment, integration of technology in different subjects or contexts, game-based learning and gamification, and learning behaviors. Five items did not reach consensus, which were either general educational topics and not closely related to technology (i.e., early childhood education), or topics about a specific type of technology (i.e., MashUp technologies in education).

Table 2. Themes of the groups of the identified trends and priorities

Theme	Brief description of the theme	Number of items included	
		Trends	Priorities
Teaching & learning	Items that focus on the teaching and learning activities were categorized into this theme (e.g., assessment methods and platform, technology enhanced professional learning, etc.).	15	6
Online & digital education	This theme included items that emphasize online education and the interaction between online environment and education (e.g., digital literacy, open education, etc.).	8	6
Societal	Items related with social perspectives were group together (e.g., social justice, community building and social presence for learning, etc.)	7	4
Research & theory	Within this theme, items focusing on research methodologies and theories were included.	6	3
Computer focused	Items in this theme are mainly about integrating computer related technologies in education (e.g., A.I. in education).	5	4
Total		41	23

Table 3. Descriptive results for trends related to teaching and learning

Trends	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Instructional design (i.e., theories and practices for effective instruction; course design; design of instruction, etc.)	31	3.94	0.84	2	25	4.08	0.69	0.50*
Educational technology in formal education (i.e., K-12; higher education)	31	3.81	0.69	1	25	3.88	0.59	0.50*
Assessment methods and platforms	31	3.65	0.82	1	25	3.72	0.87	1.00*
Subject-specific uses of technology (i.e., in science, mathematics, language learning, etc.)	31	3.45	1.04	1	25	3.64	0.93	1.00*
Technology enhanced professional learning	31	3.55	0.94	1	24	3.79	0.76	1.00*
Educator technological competence (teacher educator, pre-service teacher)	31	3.35	1.06	1	25	3.32	0.97	1.00*
Learning behaviors (self-efficacy, self-regulation, active learning)	31	3.52	0.95	1	25	3.60	0.94	1.00*
Application of assistive technology tools (application, digital devices) in education	31	3.42	1.04	1	25	3.40	0.85	1.00*
Game-based learning and gamification	31	3.55	0.87	1	25	3.60	0.85	1.00*
Technology enhanced learning	31	3.58	1.07	1	24	3.75	0.83	1.00*
Pre-service teacher perceptions of and self-efficacy for technology integration	31	3.06	1.11	2	25	3.16	1.05	1.50
Students' perceptions of learning	31	3.26	0.95	1	25	3.08	0.89	1.50
Early childhood education	31	2.61	1.21	1	25	2.44	1.17	1.50
New stimulus materials in teaching and learning	31	3.00	1.02	2	25	2.88	0.95	1.50
Application of MashUp technologies in education	30	2.70	1.24	2.25	25	2.64	1.13	1.50

Note. *IQR≤1, consensus achieved

There are six priorities items included in the teaching and learning theme, five of which gained consensus (**Table 4**).

Editors agree that instructional design is the most prioritized topic in the field with a strong consensus (M=3.91, IQR=0). Instructional design is also the highest rated item in the trends items. Some items that reached consensus also echoed the trends that editors agreed on (i.e., assessment, subject-specific uses of technology, game-based learning and gamification, teacher education and professional development). The only item that the editors did not have agreed ratings on is theory to practice. Interestingly, this item was rated 4.00 on average and had an IQR=2, which implied that although the editors rated it high on average, some opinions were quite polarized.

Table 4. Descriptive results for priorities related to teaching and learning

Priorities	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Instructional design (i.e., theories and practices for effective instruction, etc.)	29	4.03	0.89	1.5	23	3.91	0.72	0.00*
Assessment methods and platforms	29	3.66	1.03	1	23	3.65	0.91	1.00*
Games and gamification	29	3.38	0.93	1	23	3.39	0.82	1.00*
Subject-specific uses of technology (i.e., in science, mathematics, language learning, etc.)	29	3.62	1.06	1	23	3.61	0.97	1.00*
Teacher education and/or professional development (PD)	29	3.76	0.93	2	23	3.74	0.90	1.00*
Theory to practice (i.e., implementation)	29	3.90	0.99	2	23	4.00	0.88	2.00

Note. *IQR≤1, consensus achieved

Table 5. Descriptive results for trends related to online and digital education

Trends	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Online and/or remote teaching and learning	31	3.81	0.93	2	25	3.96	0.72	0.00*
Digital literacy	31	3.55	0.87	1	25	3.52	0.81	1.00*
Flipped learning	31	3.58	1.07	1	25	3.48	1.06	1.00*
Impacts of social media on education	31	3.29	1.14	1	25	3.12	1.07	1.00*
Semantic web technology in education	31	2.81	1.00	2	25	2.72	0.96	1.00*
Blended teaching and learning	31	3.87	1.10	2	25	3.88	1.03	1.50
Massive Open Online Classes (MOOCs)	31	3.06	1.08	2	25	3.20	0.98	1.50
Online and/or remote teaching and learning	31	3.81	0.93	2	25	3.96	0.72	0.00*

Note. *IQR≤1, consensus achieved

Table 6. Descriptive results for priorities related to online and digital education

Priorities	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Blended teaching and learning	29	3.76	1.16	2	23	3.70	1.04	1.00*
Digital literacy (i.e., data literacy, 21st century digital skills, etc.)	29	3.66	0.80	1	23	3.65	0.76	1.00*
Mobile technology and mobile learning	29	4.00	0.91	2	23	3.83	0.76	1.00*
Massive Open Online Classes (MOOCs)	29	3.28	1.11	2	23	3.09	1.06	1.00*
Online and/or remote teaching and learning	29	3.97	1.00	2	23	3.87	0.80	1.00*
Open educational resources (OER)	29	3.45	1.00	1	23	3.43	0.88	1.00*

Note. *IQR≤1, consensus achieved

Online and Digital Education

Within the seven topics about online and digital education, five of them achieved consensus across the panel experts. Editors agreed that online and/or remote teaching and learning was the most frequently submitted manuscript topic (M=3.96, IQR=0). There was also a consensus that digital literacy and flipped learning were topics that were favored by the researchers. The items of Impacts of social media on education and semantic web technology in education were rated to be not popular nor rare. Blended teaching and learning and Massive Open Online Classes (MOOCs) have a lower IQR in the third round comparing with the second round, but the editors did not achieve consensus (IQR=1.5) (**Table 5**).

The editors have consensus on all the six topics of the priorities items of the theme of online and digital education. Editors agreed that MOOCs did not have a very strong priority in research (M=3.09). All the other five topics were rated to be areas that should have priorities to some extent, with mean scores ranging from 3.43 to 3.87 (**Table 6**).

Societal

There were seven trends items grouped to the theme of societal topics and editors gained consensus on five of them (**Table 7**). However, the range of the average ratings of these five items is between 2.88 and 3.4, which indicated that none of them was very frequently observed in the submitted manuscripts.

All four priorities items about societal topics achieved consensus across the panel (**Table 8**) with the average ratings ranging from 3.13 to 3.39.

Table 7. Descriptive results for trends related to societal topics

Trends	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Using educational technology system to address COVID-19 crisis	31	3.10	1.20	2	25	3.36	0.97	1.00*
Organizational issues in education	31	2.81	1.00	1	25	2.88	0.91	1.00*
Attitudes toward learning technologies	30	3.27	0.96	1	25	3.20	0.89	1.00*
Established technologies with a local context/international context	31	2.97	1.12	2	25	2.96	0.96	1.00*
Community building and social presence for learning	31	3.35	1.23	2	25	3.40	1.13	1.00*
Social justice	31	2.65	1.33	2	25	2.68	1.16	1.50
Technology acceptance in education	31	3.16	1.17	2	25	3.04	0.92	2.00

Note. *IQR≤1, consensus achieved

Table 8. Descriptive results for priorities related to societal topics

Priorities	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Coronavirus (COVID-19) related issues and concerns	29	3.07	1.34	2	23	3.13	1.19	1.00*
Digital divide (i.e., equitable access to technology)	29	3.41	0.89	1	23	3.35	0.63	1.00*
Disability technology (i.e., hardware and software resources, etc.)	29	3.14	1.07	2	23	3.13	0.95	1.00*
Policy-related issues in technology (i.e., organizational leadership and change, adoption decisions, etc.)	29	3.41	1.10	1.5	23	3.39	0.82	1.00*

Note. *IQR≤1, consensus achieved

Table 9. Descriptive results for trends related to research and theories

Trends	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Theoretical and/or methodological designs and frameworks (i.e., using specific study designs, methods of data collection, etc.)	31	3.45	1.01	1	25	3.64	0.84	1.00*
Theory in Learning Design and Technology Research and Practice. (i.e., TPACK)	31	3.35	1.03	1	25	3.60	0.89	1.00*
History of educational technology	31	2.48	1.21	2	25	2.32	1.05	1.00*
Inter-disciplinary between education and other fields	31	3.19	1.15	2	24	3.38	1.07	1.00*
Knowledge management	31	2.87	1.16	1	24	3.00	1.12	1.50
Learning analytics	31	3.58	1.01	1	25	3.80	1.02	2.00

Note. *IQR≤1, consensus achieved

Research and Theories

Editors built consensus on four out of six trends items related to research and theories (**Table 9**). Editors agreed that currently they have not observed much research about history of educational technology among the submitted manuscripts to their journals (M=2.32). Both theoretical and/or methodological designs and frameworks, and theory in learning design and technology research and practice appeared relatively frequently across the journals. Editors also agreed that the topic inter-disciplinary between educational and other fields was not rare either. The topic of learning analytics gained the highest mean rating within the theme (M=3.8) but the editors did not generally agree that manuscripts studying this topic had been submitted very frequently to the journals.

Editors built consensus on all the three priorities items related to research and theories. The topic of learning analytics again had the highest average rating (M=3.75) within the theme. Editors generally agreed that research about learning analytics should be prioritized. They also pointed out that works about research and development (R&D) were expected, too (**Table 10**).

Computer Focused

Within the five trends items that were computer focused, editors achieved consensus on three of them, which were collaboration and interaction, application of immersive digital environments, and mobile technology and mobile learning (**Table 11**). They all had an average rating at 3.84, which indicated that manuscripts discussing these three topics were often submitted to the journals. There was no agreement observed about the topics of either computational thinking and coding or artificial intelligence (AI) in education.

Table 10. Descriptive results for priorities related to research and theories

Priorities	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Learning analytics	29	3.83	0.99	2	23	3.74	0.94	1.00*
Research and development (R&D) (i.e., of new technologies for teaching and learning, etc.)	29	3.69	1.05	1.5	23	3.70	0.80	1.00*
Theoretical and/or methodological designs and frameworks (i.e., using specific study designs, methods of data collection, etc.)	29	3.83	0.91	2	23	3.65	0.81	1.00*

Note. *IQR≤1, consensus achieved

Table 11. Descriptive results for trends related to computer focused topics

Trends	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Collaboration and interaction (i.e., tools and networks for collaboration; computer-supported collaborative learning)	31	3.87	0.87	1	25	3.84	0.83	0.00*
Application of immersive digital environments (i.e., augmented reality, virtual reality, mixed reality, etc.) in education.	30	3.83	0.86	0.25	25	3.84	0.97	0.00*
Mobile technology and mobile learning	31	3.77	0.91	1	25	3.84	0.73	1.00*
Computational thinking & coding	31	3.03	1.23	2	25	3.00	1.23	2.00
Artificial intelligence (AI) in education	31	3.48	1.34	3	25	3.52	1.20	2.50

Note. *IQR≤1, consensus achieved

Table 12. Descriptive results for priorities related to computer focused topics

Priorities	Round 2 statistics				Round 3 statistics			
	n	M	SD	IQR	n	M	SD	IQR
Collaboration and interaction (i.e., tools and networks for collaboration)	28	4.07	0.88	1	23	4.04	0.81	0.00*
Application of immersive digital environments (i.e., augmented reality, virtual reality, mixed reality, etc.) in education.	29	3.90	0.92	1	23	3.91	0.78	0.00*
Artificial intelligence (AI) in education	29	3.69	1.15	2	23	3.65	1.17	2.00
Computational thinking (CT)	29	3.14	1.14	2	23	2.87	1.08	2.00

Note. *IQR≤1, consensus achieved

The editors did not mention mobile learning or mobile technology in the survey regarding priorities but the other four items about priorities related to computer focused topics overlapped with the trends items of this theme. Editors built consensus on the topics of collaboration and interaction and application of immersive digital environments (**Table 12**). They considered both topics to be priorities in the research of our field. Similarly, as the results of the trends items of the theme, editors also did not gain consensus on the topics of either computational thinking and coding or AI in education to be priorities either.

CONCLUSIONS AND CLOSING REMARKS

Scholars in the field of educational technology can use the results of this study to understand how their research agenda is aligned to the current trends and priorities of the editors at the forefront of academic publishing. While we do not claim the list of trends and priories to be conclusive, some topics were agreed to be both trends and priorities for the research journals in the field of educational technology, including:

1. Instructional design (i.e., theories and practices for effective instruction; course design; design of instruction; instructional quality; video applications; visualization; content design, etc.),
2. Assessment methods and platforms,
3. Subject-specific uses of technology (i.e., in science, mathematics, language learning, etc.),
4. Game-based learning and gamification,
5. Teacher education and/or professional development (PD),
6. Online and/or remote teaching and learning,
7. Digital literacy,
8. Coronavirus (COVID-19) related issues and concerns,

9. Theoretical and/or methodological designs and frameworks (i.e., using specific study designs, methods of data collection, etc.),
10. Collaboration and interaction (i.e., tools and networks for collaboration), and
11. Application of immersive digital environments (i.e., augmented reality, virtual reality, mixed reality, etc.) in education.

These results aligned with research findings from other scholars. Chen et al. (2020) used a structural topic model analyzing articles published on Computer & Education from 1976 to 2018 to explore the research trends in the field of educational technology. They reported 13 current trending topics, including online learning, game-based learning, assessment, etc., which overlaps the list above. Online learning and games were also recognized as trending topics from Kimmons' (2020) article title analysis from prominent journals.

Some topics were agreed by the editors to be research priorities of the field but were not observed as trending items, such as Mobile technology and mobile learning, open educational resources (OER), digital divide (i.e., equitable access to technology), and policy-related issues in technology (i.e., organizational leadership and change, adoption decisions, etc.). OER has been receiving a push from the government and been expected to improve education equity, which is closely related to policy making, too. (Choppin & Borys, 2017). As the development of technology and AI, and their integration into education, the related policy norms should be strengthened (Burbules et al., 2020). In-depth and timely research on policy related issues deserves the researchers put more effort in.

Limitations and Future Study

In our study, the Delphi method was employed to discover the trends and priorities of the field of educational technology by examining journal editors as experts. However, there are some limitations of our study. First, although we invited 205 editors from 117 journals, only 25 editors finished all three rounds of our surveys. Small sample sizes are usually considered one of the primary limitations of Delphi method, as participants within the expert panel are subject to round-to-round attrition. However, there is no clear consensus among methodologists as to the optimal size of a Delphi panel, and thus, researchers have suggested a wide range of panel sizes including, no less than seven (Dalkey & Helmer, 1963) between 10 and 15 (Turoff & Linstone, 2002) or approximately 30 (Delbecq et al., 1975).

Additionally, as our data was collected at the beginning of the COVID-19 pandemic, our participants—especially in countries greatly affected by the virus—may have had higher rates of attrition and not been able to fully complete our study due to complications brought on by the virus. Therefore, our results could be skewed towards finding trends and priorities that may have only existed at the start of the COVID-19 pandemic; in other words, our results may have been different had the COVID-19 pandemic never occurred. Given this—and the constant evolvement of the educational technology field—continuous examinations about research trends and priorities of the field should be conducted. For future studies that examine the trends and priorities of educational technology journals, our research team also recommends including experts with similar perspectives (i.e., journal editors) as well as other, non-standard perspectives (well-published authors or other journal stakeholders) to see how results may differ.

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