# The Journal of Applied Instructional Design

September 2021

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Bridging the Informal and Formal Learning Spaces with WhatsApp





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#### **About the Journal**

During the past 50 years, journals in the field of instructional design have been responsive to the changing needs of both scholars and to a lesser degree, the practitioner. We have seen an evolution of AVCR to ECTJ, the emergence of JID, and finally the merging of ECTJ and JID to form ETR&D. ETR&D is a widely recognized, scholarly journal in our field that maintains rigorous standards for publications.

During the past 50 years, we have also witnessed a change in the field due in part to the success of instructional design in business and other nonschool environments. The number of instructional designers working outside the university has dramatically increased. Of particular importance is the rise in the number of instructional designers with doctorates who consider themselves practitioners, but not necessarily scholars. This growing group of designers might be best described as reflective practitioners who can make a significant contribution to the knowledge of our field.

This growth and success in the application of instructional design has also changed the field. From the early days of the field until the mid-1980's, the theory and practice of instructional design was almost exclusively influenced by the academic community. With the growth of instructional designers, the theory and practice of the field is now defined by both academics and practitioners. There is a need for greater communication between the scholars and the practitioners in a scholarly journal that will support innovation and growth of our knowledge base.

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#### Goals

The purpose of this journal is to bridge the gap between theory and practice by providing reflective practitioners a means for publishing articles related to the field. The journal establishes and maintains a scholarly standard with the appropriate rigor for articles based on design and development projects. Articles include evaluation reports (summative and formative), lessons learned, design and development approaches, as well as applied research. The articles are based on design and development projects as opposed to pure research projects and focus on lessons learned and how to improve the instructional design process. Rigor is established through articles grounded in research and theory.

A secondary goal of this journal is to encourage and nurture the development of the reflective practitioner in the field of instructional design. This journal encourages the practitioner as well as collaborations between academics and practitioners as a means of disseminating and developing new ideas in instructional design. The resulting articles inform both the study and practice of instructional design.

#### Philosophy

This journal will provide a peer-reviewed format for the publication of scholarly articles in the field of applied instructional design. The journal recognizes the role of the practitioner in the work environment and realizes that outside constraints may limit the data collection and analysis process in applied settings. The limitations of real-world instructional design of the practitioner can still provide valuable knowledge for the field.

#### **Sponsoring Organization**

JAID is a publication of the <u>Association for Educational Communications and Technology</u> (AECT).

JAID is an online open-access journal and is offered without cost to users.

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#### **About AECT**



The <u>Association for Educational Communications and Technology</u> (AECT) is a professional association of instructional designers, educators and professionals who provide leadership and advise policy makers in order to sustain a continuous effort to enrich teaching and learning. Seizing opportunities to raise awareness and leverage technology, our members may be found around the world in colleges and universities, in the Armed Forces and industry, in museums, libraries, and hospitals, and in the many places where educational change is underway. Our research and scholarly activity contribute to the knowledge base in the field of Learning. We are on the cutting edge of new developments and innovations in research and application.

AECT is the premier organization for those actively involved in the design of instruction and a systematic approach to learning. We provide an international forum for the exchange and dissemination of ideas for our members and for target audiences. We are the national and international voice for improvement of instruction and the most recognized association of information concerning a wide range of instructional and educational technology. We have 24 state and six International Affiliates all passionate about finding better ways to help people learn.

Since 1923, AECT has been the professional home for this field of interest and has continuously maintained a central position in the field, promoting high standards, in both scholarship and practice with nine Divisions and a Graduate Student Assembly that represent the breadth and depth of the field. Other journals sponsored by AECT include *Educational Technology Research and Development* and *TechTrends*.

*The Journal of Applied Instructional Design* (JAID) is a refereed online journal designed for the publication of scholarly articles in the field of applied Instructional Design. The purpose of JAID is to provide the reflective ID scholar-practitioners and researchers a means for publishing articles on the nature and practice of ID that will support the innovation and growth of our knowledge base. The journal is for practitioners, instructors, students, and researchers of instructional design.

#### **Call for Submissions**

JAID is for reflective scholar-practitioners, who through documentation of their practice in ID, make significant contributions to the knowledge of our field. Authors are invited to submit articles documenting new or revised approaches to ID; the processes of ID including in-depth documentation of analysis, design, and development, implementation and evaluation; design-based research; as well as applied research. Articles must be based on instructional design projects as opposed to pure research projects and focus on documented processes, lessons learned, and how to improve the overall process of ID. Articles must be grounded in research and theory connecting the intellectual foundations of the ID field and how these foundations shape its practice.

The journal will establish and maintain a scholarly standard with the appropriate rigor for articles based on design and development projects. A secondary goal of this journal is to encourage and nurture the development of the reflective practitioner in the field of ID. This journal encourages the practitioner as well as collaborations between academics and practitioners as a means of disseminating and developing new ideas in ID. The resulting articles should inform both the study and practice of ID.

Submit an Article

#### **Article Types**

JAID currently accepts submissions of three article types.

#### Instructional Design Practice

This is an applied journal serving a practicing community. Our focus is on what practitioners are doing in authentic contexts and their observed results. These articles cover topics of broad concern to instructional design practitioners. The articles should represent issues of practical importance to working designers.

#### Research Studies on Applied Instructional Design

JAID is interested in publishing empirical studies exploring the application of instructional design principles in applied settings. Quantitative and qualitative studies are welcome.

#### Instructional Design/Performance Design Position Papers

JAID also accepts position papers that attempt to bridge theory and practice. Examples may include conceptual frameworks and new ideas facing the instructional design community. The paper must also provide enough information to allow the replication of the innovation or continuation of the research in other settings. Position papers must be based in the context of a theoretical framework. Efficacy data is strongly preferred, but not always required, contingent upon the potential generalizability or value of the innovation.

#### **Submission Guidelines**

The journal will focus on in-depth applications of the ID process and publish a variety of articles including case studies of the ID process; application articles that go beyond a mere how-to approach that provide implementation insights, guidance and evaluation of a process; evaluation articles that focus on the viability of a product or process; applied research resulting from evaluation of materials, studies of project implementation, articles on ways to improve the ID process from the perspective of the practitioner, and short essays that provide a scholarly debate of relevant issues related to the application of ID and relevant book reviews. When applicable, articles should include supplementary materials including examples of ID products, evaluation instruments, media files, and design artifacts.

The articles in the journal will be from the perspective of the scholar-practitioner rather than from the researcher. However, the manuscripts must demonstrate scholarly rigor appropriate to applied manuscripts.

Articles, including tables or figures, must follow APA 7th edition formatting and be submitted in a word or doc format using at least 12-point New Times Roman font. Each article must have an abstract (75-100 words) and a list of keywords. While there is some flexibility in the length of an article, 4,000 to 5,000 words is a best-guess estimate. If in doubt, contact the editor prior to submitting the article. Identifying information must only be located on the cover page including contact information for the first author.

You may contact the editors via email, if you have further questions.





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### Inclusiveness in Instructional Design & Development of Informal Learning Experiences: From Cultural Lenses

Juhong Christie Liu



This position paper focuses on inclusive instructional design and development of informal learning in online environments. The literature-based position is developed from the lenses of typology of culture, learning, and technology, universal design for learning, decolonization, and strength-based approaches. With the framework of Activity Theory, informal learning carries past and present, individual, and collective cultural and social meanings. These influence individual agency's fulfillment of various learning purposes with spaces and activities which instructional design and development can shape inclusively. This inclusiveness situates in understanding transformative needs of informal learning, is apprised by participatory cross-cultural research and inseparable from critiquing, selecting, and integrating with technologies.

#### Introduction

Informal learning, quickly merged with formal learning in the historic COVID-19 pandemic, has unveiled its potential and at the same time disclosed the insurmountable needs of recentering access, equity, and inclusion in instructional design and development. Eraut (2004) defines informal learning:

"recognizes the social significance of learning from other people, but implies greater scope for individual agency than socialization. It draws attention to the learning that takes place in the spaces surrounding activities and events with a more overt formal purpose . . . " (p. 247).

Because informal learning mostly takes place in social and cultural communities as learning spaces (vs. traditional classrooms), its access and inclusion can be affected by how learning needs are analyzed and determined, how learning activities, messages, and events are designed and developed, and what outcomes are measured as meaningful to learners. These processes invite an understanding of people, purpose, process, and power involved in the context

(Davis et al., 2010). Equitable and inclusive access to informal learning can be affected by varied interpretations of users' various cultural and social backgrounds and status as well as by technology infrastructure and related implications.

In a digital and networked time, informal learning usually is delivered and interacted with technologies, through mobile and online options (Lai et al., 2013). Technology used in learning has its cultural stamps of dominant Western patterns, which historically have had colonial and racial preferences of how the media should be captured and presented and the tools used (Dyer, 1999; Dyer, 2000). Technology use has also generated the "digital divide", which has been more visualized through the COVID-19 pandemic around the world (Lai & Widmar, 2021; Reddick et al., 2020; Tewathia et al., 2020; Watts, 2020). These historical and culture-based assumptions and experiences have been evidenced beyond the intended equal distribution of educational resources, including the delivery of and access to instructional materials (Andreotti et al., 2015). Pedagogical assumptions of technologies can also be ignited by historic moments of abrupt reliance on technologies for connection and societal operation, as during COVID-19. Therefore, inclusive design of informal learning activities is much needed for equity and access to informal learning in the changes and from diverse cultural lenses (Ley, 2020; Roberts & McCluney, 2020).

Inclusive instructional messages and materials for informal learning have also been evolving with the ever-visualized equity movements. The Black Lives Matter movements, racial violence to Asian, Asian American, and Pacific Islanders (AAPI), social inclusion of transgender people, sustainability of indigenous cultures, and other social economic and identity issues have unveiled much of previously hidden culture-based areas that have been influencing learning outside of traditional classrooms. For instance, synchronous online communication with audio, video, and text options, used to be assumed with more connectivity offering, have been found to impose a more subtle and intense impact on the social identity of people with darker skin tones (Roberts & McCluney, 2020). Social media has been used by both sides in the Black Lives Matter and AAPI anti-racism movement (Robert, 2021; Wang, 2021). These historic moments and media footprints provide digital artifacts and educational resources. More importantly, how these content and tools can be used in informal and formal learning urges inclusive instructional design with the proper understanding of cultural and historical contexts.

#### **Theories, Approaches, and Framework**

What are fundamental factors that define inclusive instructional design for informal learning? According to Carliner (2012, 2013), informal learning is driven by the learner and relates to: *How* to participate in the process and to interpret the outcome, *Where* in terms of virtual and physical learning space and location, and *What* in terms of choosing instructional or training content. Depending on workplace training or self-motivated lifelong learning, informal learners may or may not be conscious of interaction with instruction but are implicitly or explicitly affected by their workplace or community cultures. Therefore, inclusive instructional design in informal learning should incorporate a process to understand the cultures and values of informal learners (Baumgartner, 2020; Berg & Chyung, 2008; Ley, 2020).

This culture-situated understanding lays the groundwork for designing and developing other components of informal learning activities. Instructional design usually involves outcome-aligned content of instruction, instructors and learners, delivery of media and messages, and the community. Within the community, learners interact with instruction through proper delivery methods, communication, collaboration, reflection, and interpret the outcomes and perform applications in contexts. These are the components and processes of the Activity Theory (AT), which was initially implemented in instruction and programming for medical diagnosis (Engeström, 2001a, 2001b). In an informal learning system, AT can be used as a framework for:

- human individual agency as content experts and learners (Subjects),
- instruction or training message development and delivery in various formats of text, images, audio, and video with or without human instructors (Media, Tools, and Mediated Artifacts),
- process and space to fulfill the outcomes (Community, Rules, and Division of Labor).
- artifacts and effects resulted from the informal learning (Objects, Outcome)

AT acknowledges that there are cultural and historical implications to the activities by subjects and how objects generated. Engeström (2001b) states the inclusiveness with the term "multivoicedness of activity", which means taking into consideration the diverse perspectives from patients, patients' relatives, and medical personnel involved in the program and instruction. These not only include the cultural backgrounds of the personnel, but also the organizational culture where the program takes place if it's workplace-based or organized informal learning.

#### Figure 1





Picture of Activity Theory Framework to Promote Inclusive Design

As shown in Figure 1, the core components of the Activity Theory (AT) play fundamental roles in learning environment design. "Building a learning environment from an activity system perspective respects the core value of human interactivity as individuals as well as a community. More importantly, an activity system contextualizes the activities in a learning environment with the means, including tools, artifacts, rules, and roles that lead to and result in object and outcome" (Liu, 2018, p. 3). According to AT, *object* and *outcome* are embodiments of not only cognitive accomplishments but also affective fulfillment with the sense of belonging, especially for diverse populations in informal learning and workforce development (Dewsbury & Brame, 2019; Eraut, 2004). In inclusive and culturally sensitive instructional design practices, these *objects* and *outcomes* of learning are contextualized in the history and cultural background of learners and the broader life, career, and community.

Subjects in the informal learning environment include content experts and those having more or advanced knowledge and experiences in a subject area. More important in informal learning, Subjects are learners not in the traditional brickand-mortar classrooms, instead, the non-traditional college-age students detached from dedicated campus life (Eraut, 2004; Rooij, 2012). Each of these Subjects is an individual who brings with her/him the cultural and historical background of race, gender, age, ethnicity, belief, and social-economic status. These may or may not be directly related to the to-be-learned subject content, but will affect the use of tools, signs, and artifacts for learning, and expressions in instruction, discussion, feedback, and interpretation, which are important dialogues in formal and informal learning. For example, a nursing practitioner learning a telemedicine system may not feel comfortable with the trainings through video conferencing calls because of cultural beliefs. A first-year adult English language learner may need additional explanations of jargons or terminologies in the workplace training materials. These scenarios, situated in each respective cultural setting, affect how Subjects approach informal learning (Benson, 2018; Benson et al., 2008).

Media and messages in instructional design involve Tools and Signs and Mediated Artifacts. These are closely associated with the equity aspects of educational technology, hence the online informal learning space. Garcia and Lee (2020) affirm that understanding and combating the equity issues in student achievement should be the foundation of inclusive use of educational technology. Educational technologies have their functions, mostly inherited with historical euro-central and colonial intentions incorporated through manufacture and design. The inclusive use of these technologies and media also needs to be untethered from the once-popular assumption of technology as the panacea for educational effectiveness. To fulfill the educational technology potentials inclusively, there is much to be investigated in the social and cultural realms. Critiquing and selecting media for message formation and delivery matter for inclusiveness.

In cultures of various disciplines, tools and artifacts may also be prone to or prevent students from demonstrating their learning. "Current technologies available to distance education and e-learning environments have the potential to support accessible education congruent with non-western pedagogical approaches and social justice aims to serve marginalized populations" (Kovach et al., 2008, p. 1). Greenfield (2009) has compared the visual cognitive aspects of video games and other types of media for informal training and education. The case-based comparison has concluded, "Every medium has its strengths and weaknesses; every medium develops some cognitive skills at the expense of others" (Greenfield, 2009, p. 71). While non-traditional space and methods adapted for teaching and learning with informal space in COVID, inclusion and equity of these applications expect further exploration (Colleen, 2020; Ray, 2020).

Community for informal learning is situated in non-traditional classroom settings and close to the working and physical, intellectual, or virtual proximity of learners. Workplace, community centers, museums, and homes can be the physical space of informal learning; whereas networked and mobile devices provide virtual space. In these community settings, formulating meaningful and inclusive relationships with the understanding of cultural backgrounds is the essence (Arbour-Nicitopoulos et al., 2018; Rooij, 2012). Supporting individuals, responsively, with recognizing their strengths, interest, passions, and capabilities with the wholeness of resource provision can lay the paths to success from the Community perspective. These include understanding the flexibility of resources for informal learners, helping these learners understand potential barriers, and supporting their re-orienting with ownership to overcome the barriers (Gardner & Toope, 2011; Kahn, 2018; Raisinghani, 2019; Staron, 2011). These strength-based approaches will engage learners with the media and methods of their choices to express their learning, which usually can result in interdisciplinary and intercultural expressions and applications of outcomes (Kahn, 2018).

As an ecosystem for informal learning co-habiting with learners living' and social interaction spaces, Community can only be effective when respecting and scaffolding learners with all abilities. Compliance of accessibility guidelines situates in culture-specific communities with implementation of Universal Design for Learning (UDL) principles (Burgstahler, 2018; Estes et al., 2020). Accessibility is also accompanied by the primary concern of access, which means to lower educational cost and barriers with reliable and accessible open educational resources (OER) (Liu & Johnson, 2020). Along with emerging technologies and discovered UDL practices, applicable strategies are continually explored, synthesized, proposed, and implemented for accessible and inclusive instructional design and development for online learning environments (Liu, 2018; Lowenthal et al., 2020).

To be able to set up these inclusive communities for informal learners, enabling new patterns of Rules and Division of Labors in the learning environment with AT is crucial. These will require instructional designs to understand the culture and context of stakeholders (Subramony, 2017). The historical colonial roots in education invite instructional designs to take an informed, critical, and reflective process-oriented approach to inclusivity. The evolving decolonization dialogues will connect instructional design process with the "recognition of epistemological dominance tied to systemic analyses that highlight the historical, discursive, and affective dynamics that ground hegemonic and ethnocentric practices. . . .

This interruption entails transforming the way power and resources are accumulated by current beneficiaries, to make space for difference and for the redistribution of resources, opportunities, and symbolic value" (Andreotti et al., 2015, p. 26). The understanding of decolonization needs to encompass stakeholders beyond power dynamics to encourage organizational changes and inclusive talent development, and to enable effective inclusion in the implementation of instructional design in communities with the right rules and division of labor for informal learning (Borg, 2018; Staron, 2011).

#### **Inclusiveness in Instructional Design and Development**

Instructional design and development apply cognitive science with technologies and tools in diverse cultural contexts. Instructional design practices can carry cultural stamps and shape culture (Benson, 2018; Bradshaw, 2018). "Approaches to instructional design not only reflect differing world views, but they consist of values, ideologies, and images that involve inclusions and exclusions that act in the interests of particular cultural, class, and gendered groups . . . as cultural artifacts, computers, software, and instructional design influence the dynamic work of cultural reproduction and transformation" (Henderson, 1996, p. 87). Needs are emerging in curriculum transformation to overcome cultural barriers in teaching and learning and make education culturally responsive for the ever-evolving multicultural diverse learner populations (Chen, 2007; Higbee et al., 2010; Raisinghani, 2019).

With the rising needs from workplace and non-school settings, inclusive informal learning is to be designed and developed to sustain lifelong learning for human life goal achievement and personal fulfillment (Arbour-Nicitopoulos et al., 2018; Berg & Chyung, 2008; Carliner, 2013; Jin et al., 2019; Straub, 2009). To provide an inclusive learning experience with equity and inclusion in mind and as a knowledge base, instructional design can be most effective when understanding the social and cultural contexts of these learners and adopting the appropriate awareness, conceptualization, and actions in design and development (Bradshaw, 2018; Garcia & Lee, 2020; John & Sutherland, 2005; Ley, 2020). With these integrations, instructional design practices and directions can drive inclusiveness in changes of curriculum and training, analyses of learners and their learning needs, and processes of learning fulfillment with the right cultural settings.

#### Changes of Curriculum Culture and Instructional Design Inclusiveness

Changes in curriculum culture for formal and informal learning are evolving. This includes conducting self-reflection and self-criticism of euro-centralism, acknowledging bias and privilege, revisiting and revising curriculum that carries cultural misconceptions of Western dominant pedagogies, and ensuring voices of the marginalized and underrepresented population are heard and recentered. Twyman-Ghoshal and Lacorazza (2021) argued that "antiracist teaching is about changing a culture that maintains a system of oppression and upholds disparities in education, health care, criminal justice, politics, science, and business". Inclusion and equity strived by these changes require "to understand which learning behaviors are based on deeply entrenched cultural values that should not be challenged and which behaviors are more superficial practices that can be challenged for the sake of promoting learning" (Parrish & Linder-VanBerschot, 2010, p. 10). With these calls for changes, multicultural instructional design, trans-culturally responsive education, critical pedagogy, and digital critical pedagogy based on critical race theories need to be the training and reflective foundations for inclusive instructional design and development (Bradshaw, 2018; Campbell et al., 2009; Higbee et al., 2010). Actionable examples can include, systemic conceptualization for instructional design professional development with content on culturally responsive and critical pedagogies for epistemological transformation; decolonization for equity in technologies, resources, infrastructure; legislature and compliance information, and an understanding of applying strength-based approaches in real-world workplace and informal learning settings (Andreotti, Stein, Ahenakew, & Hunt, 2015; Gray & Kabadaki, 2005; McLoughlin, 1999; Morong & DesBiens, 2016; Smith & Ayers, 2006).

Curriculum changes can center or recenter marginalized groups with interdisciplinary and culture-oriented programs and redistribute instructional resources (Andreotti et al., 2015). Culturally inclusive curriculum changes can provide informal learning that relates to all learners to integrate science and humanity curricular with cultural base, that transforms career paths for marginalized and underrepresented populations, and raise awareness of and develop conceptualization for changes (Arora et al., 2020; Banks, 2001; Baynes, 2016; Borg, 2018; Metaxa-Kakavouli et al., 2018; Scheiner-Fisher, 2012; Staikidis & Morris, 2019; Yeboah, 2018). These changes may also affect identity formation for informal learners (Greenhow & Robelia, 2009). These will also require insights and expertise from multiple disciplines for inclusive curricular, courses, or training programs. Therefore, instructional design and development for these novel programs and courses will need professionals and relevant stakeholders to have a shared understanding of these cultural settings.

#### Understanding Learners' Values, History, and Culture with Culturally Situated Research

Analyses have been fundamental to instructional design in developing a thorough understanding of needs, learners, and instructional tasks (Branch & Kopcha, 2014; Larson & Lockee, 2019; Merrill, 2012). The history of the instructional design and development fields has unveiled, "not making explicit connections between IDT benchmarks and the broader social context is nothing short of mis-educative" (Bradshaw, 2018, p. 342). Understanding the culture and history with cultural-situated participatory research can lay a cognizance foundation and context for inclusive and accessible instructional design and development (Benson, 2018; Burgstahler, 2018; Henderson, 1996; Higbee et al., 2010).

Culturally orientated participatory research places instructional design as a disruptive analysis that transforms the views from the pre-existing colonial, racial, and socially patterned assumptions. The analyses will situate instructional design in the mindset of learners in their cultural settings. The Culture here is defined as:

"... multiple types of cultures, including cultures based on demographic characteristics such as race, gender, ethnicity, nationality, and social class, as well as organizational cultures, group cultures, learning environment cultures, etc. Further, the definitions acknowledge that individuals can belong to multiple cultures, sharing the characteristics of each culture to a certain degree" (Benson, 2018, p. 329).

Multiple dimensions of cultural differences can affect learning (Parrish & Linder-VanBerschot, 2010). These dimensions are reflected in the social relationship of "equality and authority, individualism and collectivism, and nurture and challenge, epistemological beliefs, stability, reasoning and causality, and in the temporal perception of time" (Parrish & Linder-VanBerschot, 2010, p. 10). The understanding of these dimensions needs cultural-situated participatory research as instructional design analysis so that scholars and practitioners can critically and inclusively analyze the learners, their needs, learning process in the power dynamics, from social justice perspectives (Bazzul & Carter, 2017; Davis et al., 2010). Then the disruptive and equity-oriented power understanding will ensure inclusive access to equipment, facility, resources, and technology that support and enable teaching and learning (Andreotti et al., 2015).

Cultural-situated analyses, and equity in resources and material distribution are just part of inclusiveness. Instructional design that is based on the strengths, values, interests, passions, and abilities can make informal learning a belonging journey, to begin with, continue, and conclude with the sense of engagement and success. Because of the integration of strength-based approaches in nurturing the learning interest of students with special needs, Robert with Tourette's Syndrome can become a knowledgeable librarian on research topics from anthropology to genetic engineering, with *stories and plays to explain science visually to him.* Alice with Pervasive Developmental Disorders can use *drawing and designing maps* to demonstrate her interest in astronomy and using songs to show her chemistry learning achievement (Kahn, 2018). Strength-based instructional design can situate learners with their life experience. Gray and Kabadaki (2005) have experimented to use life stories to connect older adults to set up their learning community. Using dramatic vignettes, they have also provided scaffolding to help these older adult learners express concerns or previously encountered issues in learning. Conducting participatory cultural-situated research, with these learners in their workplace or relevant learning settings over time, is fundamental to proper analyses of their needs, purposes, and process of learning, and highlight learners' strengths for their cultural-situated learning journeys.

#### Universal Design Principles as the Cornerstone for Inclusive Instructional Design

The metaphor of opening or slamming doors can be critical in instructional design for both physical and virtual learning settings for informal learners. To implement UDL for online learners, Burgstahler (2015a, 2018) proposed guidance for making course-level and program-level accessibility, including navigation, predictability, keyboard friendliness, enough time, and alternatives of different media formats. Lowenthal et al. (2020) compared representative guidelines of accessibility compliance for online learning environments and provided practical strategies on making text, images, audio, and video accessibility for online learners.

In the COVID-19 pandemic, online learning became pivotal for both formal and informal learning with reliance on the online environment and mobile apps, although the fundamental difference between this emergency remote and real online learning was identified (Green, 2020; Hodges et al., 2020). This historic switch to online mode, however, disclosed so much about inclusiveness for instructional design. Finding low-tech solutions and being creative in instructional design and teaching also indicated intentions to make learning accessible. Providing high contrast text with background and making shortened and explicit course content descriptions were just some basic steps to make the course accessible and inclusive. This was also enhanced by making content downloadable to not be hindered with slower internet speeds. The experience of teaching and learning with video content taught instructors and instructional designers to make it more effective through the use of microlearning, embedding questions to engage students, and manage the content delivery with a clean and clear timeline (Moore, 2020). In addition to the close captioning of video, transcripts and live captioning for video conferencing recordings saw rising uses and attention, even though there is still much to be expected (Greta, 2020).

Since informal learning has been taking place in both physical and online settings, the conceptualization and guiding principles need to encompass accessibility of physical space for informal learning as well (Berg & Chyung, 2008; Ley, 2020). In the design of physical non-classroom settings for informal learning, Burgstahler (2015) provided principles in educational settings with a primary focus on accessibility and inclusion for learners with all abilities.

#### Inclusiveness in Informal Learning Environment Development

Informal learning can occur anywhere. In the workplace, museums, homes, community centers, and parks, with online or mobile instructional materials. Design of these spaces with inclusion, accessibility and equity in mind is crucial for access and is novel and in need of creativity and interdisciplinary exploration. For example, physics instruction and learning are not restricted to a physics lab on a traditional school or college campus. Bülbül (2018) presents details and procedural description for converting an office space into an accessible physics lab. The design includes the JAWs text-to-speech screen reader, Braille labeling of the facility, and protection of learners from hard surfaces with soft material covers. Informal learning design like this is emerging to gradually fix the "ramp vs. stairs" scenario and enhance learners' access to informal learning in-person and online (Burgstahler, 2015a, 2015b).

Inclusive instructional design can also be expressed through lower costs for broader access such as open educational resources (OER) and low-cost laboratory kits. Liu and Johnson (2020) investigated instructional design and development of accessible low-cost OER to reach learners online in non-traditional classroom settings. Vutukuru (2020), an instructor from Boston college, has shared an inclusive lab-based learning scenario of "a lab kit containing all the essential components for the labs and shipped the students, wherever they were in the world."

For gender equity, Daniel (2013) proposes a Gender-Integrated Design framework to support designers to be able to see the proxemics, feel the ergonomics, and make sense of space through participatory research of status and identity. Metaxa-Kakavouli et al. (2018) compared student learning and perception of two computer science courses with identical content, but with different web interface designs. For example, one course was designed with gender-neutral themes; whereas another with masculine themes. The study results indicated that female students felt less "ambient belonging" with the masculine-themed course site. The researchers provide suggestions for developing gender-neutral online interface design. Mobile applications using inclusive design are also essential to informal learning. For example, Gray and Kabadaki (2005) conducted a study of mobile app development for older adults for pursuing personal fulfillment with informal learning. Their study results recommended mobile apps use self-paced learning, deliver chunked segments of content, and have lower need for assistance and offer features that encourage interpersonal and intergenerational collaboration and communications. Online learning environments present more flexibility in study location, time, and pace. Informal learning can take place with learner-driven connection and communication through social media/networking sites, in combination with formally or informally developed instruction or training materials. These can possibly pose challenges and opportunities for informal learning where instructional design can leverage an inclusive lens on the context and technology affordances.

#### Inclusiveness in Instructional Design Implementation

Inclusive instructional design sets the framework for equity and belonging in learning experiences. The development of instructional content and the actual instruction will further gear the results of inclusiveness in its implementation. Inclusive design and development take place in contextualized settings with varied infrastructure and organizational culture of educational technologies. These technological and organizational cultures, with subjectively assumed affordances, have historically had colonial and biased preferences of how the media should be captured and presented (Andreotti et al., 2015; Dyer, 1999; Dyer, 2000). Thus, equity and inclusion can best be understood through the social and cultural contexts of the application and learners to make respective adjustments (Garcia & Lee, 2020; John & Sutherland, 2005).

Inclusive instructional design can be sustainably implemented with the considerations of inclusive learning space, inperson or virtual (Berman, 2020; Yeh et al., 2020). Arbour-Nicitopoulos et al. (2018) conducted a scoping review of literature on out-of-school physical activities for children with disabilities, and provided recommendations for in-person informal learning settings. Relevant to an online environment, these recommendations include, "low-technology adaptations to provide additional support and stability" (Arbour-Nicitopoulos et al., 2018, p.127). An online self-paced training for wellness assistants and caregivers for persons with disabilities can adapt UDL principles in a minimalistic design with Amazon Polly embedded in a WordPress site to allow mobile access with screen readers for informal learning (https://inclusivewellness.org/training).

The implementation of inclusive instructional design in informal learning can also be provided in professional development (PD). After conducting a systematic review of literature on PD for inclusive education, Waitoller and Artiles (2013) recommend PD "on the intersections of disability with other markers of difference and educational equity." The incorporation of a culturally inclusive PD for instructional design professionals and stakeholders increases the awareness that access is not neutral and that human relations in a technology-mediated learning environment need to be recentered. Critical technological literacy needs to be developed "for disrupting and dismantling structures that uphold inequality while inventing new tools that sustain a more equitable and humanizing world" (Garcia & Lee, 2020, p. 255).

In essence, the inclusiveness of instructional design in online environments requires a culturally oriented examination of the assumptions that a technology's infrastructure may afford to learners of diverse backgrounds and needs. For example, video conferencing has been assumed to support and enhance connectivity for online learning. However, Roberts and McCluney (2020) indicate that the COVID-19:

"... work from home arrangements often require people to (virtually) invite coworkers, clients, physicians, students, and professors into their homes, which undermines their ability to exercise agency and control over how they present their identities. Videoconferencing has transformed formerly safe, private spaces for authentic cultural expression into focal points of the public gaze."

These experiences confirm how online environments can shape perceived identity positively or negatively. These also provide a profound reflective basis for implementing inclusive informal learning with the balance of work, learning, and life (Ley, 2020).

#### Discussion

The informal learning infrastructure, learners' needs, settings, and space are culturally inherited and evolving. These variables affect the various components in the activity system of informal learning. With the continued access to online learning materials post-COVID19, informal learning continues to grow in the online environment, in parallel with learning and engagement occurring in the workplace, community centers, museums, and learners' living space. Post-COVID19 learning also presents a greater need for attention to diversity, equity, and inclusion in curricular and workplace. Therefore, culturally situated awareness and PD for inclusive competency appears to be pre-requisites for designers, developers, and strategists in the development of inclusive informal learning for in-person and online communities. Online informal learning, in a digital and networked world, plays a key role in connectivity and continuity while meeting the demands of equity, access, and inclusion.

To meet these demands, instructional design and development for informal learning is facing transformations in approaching culturally situated systemic re-conceptualization and change. As Bradshaw (2018) states:

"We must explore how we can individually and collectively reconcile and integrate the struggles for critical consciousness and education for freedom, with the primary purposes and responsibilities of our field. We must seek and learn other ways of engaging, such as dialectics instead of debates, cultural synthesis instead of cultural invasion" (p. 343).

Scaffolding systemic changes and approaching social equity through instructional design will raise awareness of cultural, technological, and curricular inclusiveness. Particularly as it relates to adaptation in developing activities for informal learning. Activity Theory together with UDL, strength-based approaches, and decolonization, provide a synthesized theoretical framework for inclusive instructional design and development for informal learning with online environments. Culturally situated collaborative research can prepare and position instructional designers properly with a peer supportive foundation to understand, analyze, propose, and apply course- and curricula-related transformations.

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### Gab, Parler, and (Mis)educational Technologies: Reconsidering Informal Learning on Social Media Platforms

Spencer P. Greenhalgh, Daniel G. Krutka, & Shannon M. Oltmann

Social Media

Educational Technology

Learning Spaces

Miseducation



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"Alternative" social media platforms like Parler and Gab—on which hate speech and conspiracy theories often exist unchecked—present an opportunity for instructional designers and other education professionals to revisit assumptions about informal learning on social media. Employing a conceptual framework that distinguishes education from miseducation, we use these controversial platforms to argue that educators should more fully consider: 1) the miseducation happening in learning spaces, 2) how the design of educational technologies may amplify miseducation, and 3) the importance that formal education resist miseducation.

#### Introduction

The 2020 United States presidential election brought increased attention to "alternative" social media platforms<sup>[1]</sup> such as Parler and Gab. Two days after mainstream media networks called the election for Joe Biden, Brandom (2020) reported that the Parler mobile app had been downloaded nearly a million times since the election, with over half of those downloads occurring the day after the election was called. Although the Biden campaign felt Facebook was not doing enough to curb misinformation (Kang, 2020), many conservatives perceived platform efforts to label and remove misleading posts (part of enforcing existing policies) as censorship and anti-conservative bias. This led some to seek out other, less-moderated platforms such as Parler and Gab (Aliapoulios et al., 2021; Isaac & Browning, 2020). After Trump's false claims of election fraud and the subsequent storming of the U.S. Capitol, Parler's association<sup>[2]</sup> with the event (see, e.g., Groeger et al., 2021; Bajak, et al., 2021) led to the removal of the platform's apps from the Google and Apple app stores and the platform itself from Amazon servers (Lyons, 2021).

These events offer an opportunity for education researchers and instructional designers to reflect on informal learning on social media platforms. These reflections will not be the first of their kind: A substantial proportion of early social

media research was focused on education (van Osch & Coursaris, 2015), and recent literature reviews (e.g., Greenhow & Askari, 2017; Greenhow et al., 2020; Greenhow et al., 2019) attest to continued scholarship of social media's intersection with learning. Furthermore, most social media platforms have had long-standing problems with offensive speech and hateful communities, including hate groups on Facebook (Sonnemaker, 2020) or racist *subreddits* (Matney, 2015). Yet, the association of social media platforms like Gab, Parler, and even mainstream platforms with events like the storming of the Capitol, movements like American White nationalism, and conspiracy theories like QAnon provides a current opportunity for instructional designers and other educational technology professionals to revisit the ideas and assumptions that we as a discipline have brought to social media research.

In this position paper, we challenge the existing optimism surrounding informal learning on social media platforms (including our own) by considering *what* is learned on social media platforms like Gab and Parler through a conceptual framework of *miseducation*. In doing so, we underline that these specific platforms are not necessarily the focus of our paper—indeed, at the time of writing, both remain controversial-but-still-niche platforms whose future (and even survival) are uncertain. While we argue for the need to study informal learning in the darker corners of the social Web, we ultimately refer to these platforms merely as compelling examples of ideas and concepts that ought to guide researchers' and practitioners' consideration of *all* social media platforms and *all* educational technologies. We begin this paper with a brief review of existing research on informal learning and social media before describing the rise of "alternative" social media and outlining a conceptual framework of *miseducation*. With those pieces in place, we then outline considerations for considering these phenomena.

#### Footnotes

[1] We recognize that some use this term to refer to a broader phenomenon than social media platforms associated with the far right. However, it is being used this way in academic literature (e.g., Aliapoulios, et al., 2021; McIlroy-Young & Anderson, 2019; Rogers, 2020; Trujillo, et al., 2020), the popular press (e.g., Darroch, 2016; Isaac & Browning, 2020), and by the platforms themselves.

[2] Although Gab and Parler have rightly received scrutiny for their users' role in the storming of the Capitol, it is arguably more important to acknowledge that rioters also used mainstream social media platforms in conjunction with the event (e.g., Brewster, 2021).

#### **Informal Learning and Social Media**

This brief review will describe common conceptual frameworks for informal learning on social media, particular platforms that have been studied in this context, and the aspirational connections between informal and formal learning.

#### Understanding Informal Learning

It is common for research on educational uses of social media (including our own) to be informed by sociocultural perspectives on learning. For example, Greenhow and Robelia (2009) have suggested that the New Literacies tradition—which "focuses on ways in which meaning-making practices are evolving" (Knobel & Lankshear, 2014, p. 97)—is key to understanding learning through social media. Similarly, Hashim and Carpenter (2019) have noted that *community of practice* (see Lave & Wenger, 1991; Wenger, 1998) and *affinity space* (see Gee, 2005, 2017) frameworks are commonly used in work on teachers' uses of social media. Inspired by fields such as anthropology and sociology—rather than the psychology that informs much learning research—the sociocultural tradition is especially open to learning not typically associated with formal settings (Greeno et al., 1996). For example, social media research has studied adolescents' becoming feminist (Gleason, 2018) and citizens' engaging with an activist movement (Gleason, 2013).

#### Differences Between Social Media Platforms

Education researchers have applied these sociocultural perspectives to many social media platforms. We follow technology scholars (e.g., Gillespie, 2010; van Dijck, 2013) in using the term *platform* to refer to technologies that not only facilitate but also influence the activities they mediate. Educational research has tended to concentrate on more popular platforms such as Facebook and particularly Twitter (Greenhow & Askari, 2017; Greenhow et al., 2020). However, scholars have considered informal learning on many platforms, including Reddit (Haythornthwaite et al., 2018; Staudt Willet & Carpenter, 2020), YouTube (Lange, 2019), Pinterest (Hu et al., 2018), Voxer (Carpenter & Green, 2017), MySpace (Greenhow & Robelia, 2009), and the education-specific Edmodo (Krutka et al., 2014).

Key to understanding any educational technology or social media platform is a thorough evaluation of its design, its governance, and the values underlying these practices. As an example of design, "Facebook's choice of a 'like' button betrays an ideological predilection: it favors instant, gut-fired, emotional, positive evaluations" (van Dijck, 2013, p. 14). These "likes" are easily collected and acted on as data (see van Dijck, 2013); whatever their ideological shortcomings, they provide a simple metric by which the platform's operator and users can justify evaluation or intervention. Although educational platforms likewise provide "massive administrative, systems, academic, and student learning data . . . more educational data does not always make better educational data" (Ifenthaler & Tracey, 2016, p. 877; see also van Dijck & Poell, 2018). Thus, those employing educational platforms must look beyond design and data to underlying ethics and values—two concepts understudied in the field of educational technology (Gray & Boling, 2016; Moore & Ellsworth, 2014, p. 113). In short, although researchers have considered how learning practices may look different on different platforms (e.g., Staudt Willet, 2019; Staudt Willet & Carpenter, 2020) or even within different contexts on the same platform (e.g., Greenhalgh, 2021; Greenhalgh et al., 2020), there is more work to be done in reflecting on these platforms.

#### Formal and Informal Learning

It is widely held that informal learning can (and, implicitly, should) inform and support formal in-school learning. We emphasize, however, that social media is "a space for learning with *varying attributes of formality and informality*" (Greenhow & Lewin, 2016, p. 7, emphasis in original). Thus, while we continue to use the formal/informal dichotomy throughout this paper, we acknowledge that it is an oversimplification of the more complex reality of learning—through social media and more broadly.

In asserting the value of these *informal* instances of learning, scholars have often suggested that understanding them is key to improving learning in *formal* settings. This assumption and strategy predate social media as we currently know it (e.g., Gee, 2003; Smith, 1998). For example, Greenhow and Robelia (2009) suggested that understanding adolescents' "experiences, communication, and literacy practices in out-of-school online social contexts is essential to building on them within schools" (p. 1131). However, in this paper, we question the assumption that online informal learning is (always) educational and desirable in formal learning spaces.

#### The Rise of "Alternative" Social Media

As social media platforms have grown, they have struggled with content moderation—managing the vast amounts of information posted to their platforms by incredibly diverse users around the world (Gillespie, 2018; Roberts, 2019). Platforms such as Facebook, Twitter, Reddit, and YouTube long maintained a hands-off approach to content moderation despite frequent calls to address hate speech, conspiracy theories, and other problematic content—and back-end algorithms that often amplified them. Although online right-wing extremism has a long history, this came to a head in many ways during the contested 2016 U.S. presidential election and the Brexit vote (Conway et al., 2019; Frenkel et al., 2018).<sup>[1]</sup> In the summer of 2016, former Facebook moderators alleged that Facebook routinely suppressed right-leaning stories from its "Trending Topics" news section (Nunez, 2016), leading to conservative outrage. At the same time, misinformation, as well as conspiracy theories and alarmist posts, about Brexit and U.S. presidential candidates spread rapidly across social media in 2016 and thereafter.

Partly in response to widespread concern about the spread of mis- and disinformation from 2016 onward, many social media platforms pledged to "do better." They hired more content moderators, adjusted their algorithms, responded

quicker to flagged posts, and tightened community guidelines regarding what was allowed (McIlroy-Young & Anderson, 2019; Nurik, 2019). These moves angered conservatives, who sometimes purposefully violated community standards and then claimed political targeting. At other times, platforms' responses to mis- and disinformation were seen as politically biased, even when (or sometimes because) platforms tried to appear even-handed. For example, Facebook and other platforms were critiqued for deferring to the Southern Poverty Law Center (Grind & McKinnon, 2019)—but also for incorporating perspectives from the far-right Daily Caller (Rupar, 2019). As Pena (2020) wrote, "After the 2016 [U.S. presidential] election tech companies were criticized for not doing enough to stop disinformation. Just weeks before Election Day [2020], social media giants are facing big criticism from conservative voices who say they have gone too far" (para. 1; see also Freelon et al., 2020, who suggest that right-wing individuals see "big tech" as "irredeemably biased" [p. 1198]<sup>[2]</sup>).

#### Footnotes

[1] Social media have long been used to circulate (and have algorithmically amplified) mis- and disinformation not just in the US and UK but also globally, often at the expense of already-marginalized populations, such as the Rohingya in Myanmar (see Smith, 2020), Muslims in Sri Lanka (De Sayrah, 2018), religious minorities in India (Mirchandani, 2018; Datta, 2014), and ethnic minorities in Nigeria (Hassan & Hitchen, 2020).

[2] On the other hand, moderate and liberal platform users argued that social media companies' efforts had not resulted in substantive changes. Furthermore, many People of Color (particularly Black women) have noted that they receive little support from platforms despite being frequently harassed, doxxed, or suspended for discussing racism (Guynn, 2020).

Because of these moves to restrict hate speech, misinformation, and conspiracy theories, many conservatives began exploring different social media platforms. Parler's membership doubled in the week following the U.S. 2020 Presidential election, for example (Hayes, 2020; Isaac & Browning, 2020). Gab and Parler, in particular, featured heavily in the mainstream media as alternatives to mainstream social media platforms, but many other platforms welcomed new users as well (including MeWe, BitChute, 4chan, 8chan, Discord, Minds, Telegram, and Voat). As Rogers (2020) noted, when deplatforming gathered speed in 2018 and 2019, "the migration from mainstream to alternative social media platforms was underway" (p. 214). Freelon et al. (2020) explained, "although alt-tech platforms are much smaller than their mainstream counterparts, they allow partisan and fringe communities to exist without opposition from alternative viewpoints" (p. 1199).

In short, platforms such as Gab and Parler position themselves as "free speech" alternatives in response to mainstream platforms' moderation of extremist rhetoric and political misinformation. For example, Parler's community guidelines in fall 2020 stated that "In no case will Parler decide what will content [sic] be removed or filtered . . . " (Parler, 2020, para. 3). However, research on Gab has suggested that "free speech" translates in practice to unchecked hate speech and conspiracy theories (Zannettou et al., 2018; see also Aliapoulios et al., 2021; Trujillo et al., 2020).

#### "Miseducation" as a Conceptual Framework

There is no universally accepted definition of "learning," and this can cause confusion when educators and scholars attempt to identify the conditions in which it is likely to occur. The rise of standardized curriculum and testing has often defined "learning" in terms of snapshots of disciplinary knowledge on multiple choice tests (Gee, 2003; Kohn, 2000), but scholars in education, instructional design, and other fields have sought to offer more nuanced and meaningful definitions of "learning." The sociocultural perspectives on learning described above are included among these more nuanced definitions, which likely helps explain their popularity in describing informal learning through social media (in

contrast, more "standardized" views of learning may call into question social media's educational potential; see Barbetta et al., 2019). Yet, such a broad view of learning invites an almost-instinctive criticism: Can *anything* be considered learning? Perhaps so, but Gee (2003) noted that some kinds of learning support social justice while others do not—and expressed hope that students will gravitate toward the former.

Distinguishing among learning experiences can give educators and instructional designers important tools for considering informal learning more deeply. Indeed, Dewey (1938) believed educators should determine whether experiences are more *educative* or *miseducative*. He argued that "any experience can be miseducative that has the effect of arresting or distorting the growth of further experience" (p. 25) and that educators must therefore assess the *direction* of learning experiences. Whether an experience is ultimately educative or miseducative depends on two components of Dewey's theory of experience: continuity and interaction. Continuity requires that an individual both show growth and develop attitudes and habits that create the conditions for future growth. Interaction is related to inner habits and attitudes as well as to the larger environment in which learning takes place. Thus, experiences must not only lead to individual and moral growth but also to that which is good for society. Therefore, educators must "specify the direction in which growth takes places, the ends towards which it tends" (p. 36). Yet, even Dewey's own writings that associated technological progress with civilization (in contrast to the racist idea of "barbarism") could be considered evidence of racist miseducation (see Kendi, 2016).

We therefore turn to critical scholars who have long confronted the ways that Whiteness has been miseducational. Carter G. Woodson (1933) famously described how "the mis-education of the Negro" took place through school curriculum that distorted Black history through a racist lens of White superiority. In this sense, Black Americans were encouraged to either reject Blackness or embrace Whiteness, even though neither direction addressed the ways in which systemic and structural racism restricted Black opportunity. The reality of miseducation has also been documented and recognized for students of other minoritized groups (An, 2016; Díaz & Deroo, 2020; Sabzalian, 2019; Takaki, 2008). A vast amount of scholarship has been published over the last hundred years detailing all the ways that schools miseducate students through official (i.e., what is explicitly taught), hidden (e.g., what is implicitly taught), and null (e.g., what is excluded) curriculum (Milner, 2017; see also Kentli, 2009). For example, Anyon's (1980) famous study showed how schools taught a hidden curriculum of work based on the dominant social class of the community. Educators might therefore judge any spaces including oppressive ideologies as miseducational in character.

#### **Implications of Gab and Parler for Education**

In the remainder of this paper, we discuss what the examples of Gab and Parler suggest for future work on the intersection of informal learning and social media. In doing so, we touch on the same three areas that we addressed in our brief literature review above: conceptual frameworks, social media platforms, and connections between informal and formal learning.

#### Studying Informal Miseducation on Social Media Platforms

Sociocultural conceptual frameworks that have been used to argue that learning is happening on social media platforms such as Twitter and Facebook can also be used to suggest that it is happening on platforms such as Gab and Parler—but of what nature and direction? Conway and colleagues (2019) described far-right extremists' use of "memes, specialised jokes, and jargon . . . as a means of identity creation and formation for users both new and old" (p. 12). Similarly, participation in communities embracing the QAnon conspiracy theory requires engagement with cryptic posts released by the eponymous Q, a supposed operative in Donald Trump's alleged conflict with "a worldwide cabal of Satan-worshiping pedophiles who rule the world" (Rozsa, 2019, section 1).

These examples demonstrate ways that people understand *meaning* (e.g., Joe Biden's upcoming arrest) by engaging with *texts* (e.g., a "Q drop") and thereby joining *communities* (as seen in the QAnon motto "Where We Go One, We Go All") by adopting associated *identities* (as an Anon or a "Q patriot"). As such, they correspond with Gee's (2003, 2007)<sup>[1]</sup> work on how people learn in technology-rich spaces—as well as other New Literacies approaches to informal learning.

Even education professionals who do not embrace Gee's approach should take notice of the way that members of the online American far right explicitly talk of teaching others to hold their views (as "red-pilling" them; Evans, 2018) and of their own learning of those views (as "being red-pilled"). In this subculture, red-pilling becomes synonymous with a specific *direction* of learning (Ganesh, 2018).

However, it is important not to overlook miseducation on the more mainstream platforms that have been embraced in education and have vastly larger reach. For example, Lewis (2018) documented how far-right influencers have used YouTube to guide their audiences "from mainstream to extreme content" (p. 1; see also Conway et al., 2019; Lavin, 2020). In short, while the education community might instinctively be concerned about platforms like Gab and Parler, teachers, instructional designers, parents, and researchers should also be wary of the larger amounts of miseducative content that likely exist in parallel with the YouTube videos, Facebook groups, and Twitter hashtags that they have generally endorsed for learners.

#### **Footnotes**

[1] Thank you to Chris Dennis Myers, a student of Spencer's who made this connection between Gee and QAnon and has generously allowed us to share it in this manuscript.

If this miseducative kind of learning is happening informally in social media spaces, what are the implications for education and instructional design professionals? Although (most) education professionals would be uneasy with this kind of learning, the response must not be to redefine learning so as to exclude these very real phenomena. On the contrary—acknowledging that *miseducation* is happening is critical. Education and educational technology researchers should study informal learning in places like Gab and Parler, acknowledging that society benefits from understanding miseducation, not just education. Documenting harmful learning happening on alternative platforms is important not because it is exemplary but because it is nonetheless happening—and miseducation along with it.

Furthermore, teachers need to carefully consider whether and how content acquisition and assessment in their classroom correspond with broader social goals (or problems). For example, ClassDojo produces behavior data that may appear to be an objective assessment but instead reflect sociocultural expectations of behavior and compliance, which historically result in disproportionate punishment for Black and Latinx students. Instructional designers need to reflect on the role of ethics and value in design (Gray & Boling, 2016) and beware of discriminatory design often built into platforms (Benjamin, 2019; Noble, 2018); they should consider what techniques and models promote not just "effective learning" but an education that is responsive, just, and sustaining (Paris, 2012). Morris's (2021) call for contributors to a critical instructional design reader offers an example of such work that addresses ableist design assumptions; however, true change will come not from specific recommendations or bounded examples but from thorough reflection (see Gray & Boling, 2016; Ifenthaler & Tracey, 2016; Moore & Ellsworth, 2014 for some guidelines). Especially important to encouraging more equitable design is centering the voices of marginalized communities, particularly People of Color, in responsive and sustaining ways.

More broadly, scholars studying "learning" on social media infrequently touch on the *direction* of learning in larger social contexts (contra. Rodríguez et al., 2020; Shelton et al., 2020). This is not surprising, as social media data often conceal the larger educational context, psychological impact, or social worthiness which Dewey (1938) believed were necessary to distinguish between educative and miseducative experiences. He argued that educators must evaluate both the continuity and interaction of experiences—and we extend this argument to research considering social media. Evaluating whether a space or particular experience is educational or miseducational can be challenging, but critical scholars like Carter G. Woodson (1933) have long identified the ways curriculum can be oppressive and miseducative. Considering whether social media spaces are educational requires educators and scholars to give close attention to the social dynamics of participants and context. Qualitative data, triangulation of sources, and the inclusion of counter-

story telling are of particular importance for researchers seeking to move toward just understandings of what is education and miseducational (Solorzano & Yosso, 2001).

## Studying Social Media as *Designed Platforms*, not Neutral Learning Spaces

Gab and Parler serve as compelling examples of informal learning environments that are miseducational (in part) because of their design and governance. Van Dijck (2013) has argued that the technical design and governing policies of a social media platform are informed by its underlying values and—ultimately—business model, which can reflect the sociocultural biases of the designers (Benjamin, 2019; Noble, 2018). For example, in 2006, Facebook's design was changed from prioritizing users' pages (which needed to be checked individually) to prioritizing a personalized News Feed that aggregated information of presumed interest. This aggregation and automatic presentation encouraged users to spend more time on the site, which ultimately contributed to Facebook's revenues.

In the case of Gab and Parler, it is governing policies that are more obviously informed by platform values and profitability—and that more obviously contribute to miseducation. Whereas a wise and responsive classroom teacher would facilitate a classroom discussion by establishing norms and providing boundaries, Gab's barebones moderation policies—driven by its positioning itself as a free speech platform—result in a proliferation of hate speech, conspiratorial theorizing, and far right content (Zannettou et al., 2018). This is all the more striking given that both Gab and Parler explicitly engage in *some* moderation (Colburn & McCarter, 2020; Torba, 2020b) while defending users' right to post conspiracy theories or White nationalist content. An implicit—or, in the case of Gab, explicit (Torba, 2020a)—acceptance of QAnon (and other problematic material) when these platforms have shown a willingness to moderate other content is a deliberate governance choice that has obvious effects on whether informal learning on the platform will be educational or misducational in the aggregate.

As we have already seen, the influence of design on (mis)education is not limited to these extreme examples. Twitter's hesitance to moderate content has resulted in criticism "for allowing a culture of harassment to fester largely unchecked on its service" (Gillespie, 2018, p. 24), and Hao (2021) argued that Facebook's commitment to engagement and continual growth is inseparable from—and amplifies—the misinformation and hate speech that circulate on the platform (see also Vaidhyanathan, 2018). Learners, instructors, and instructional designers who want to integrate social media into the learning process must understand the ways in which these platforms' underlying values and business models may affect the learning process.

Furthermore, van Dijck and Poell (2018) argued that there is value in looking at educational technologies (i.e., beyond repurposed social media) not just "as tools, but as *platforms*, driven by a complex interplay between technical architectures, business models, and mass user activity" (p. 579, emphasis in original). In short, if "Facebook is for getting likes" (Frier, 2020, p. 234), researchers and students might wonder what Canvas is "for"—that is, how does a platform communicate success, and does it correspond with success as defined by educators? Careful examination of educational technologies may reveal ways in which they "are pushing a new concept of learning that uproots or bypasses the values that are fundamental to publicly funded education" (van Dijck et al., 2018; see also Kerssens & van Dijck, 2021). Thus, Williamson's (2017) careful consideration of the popular *ClassDojo* app raised concerns about shoring up surveillance and behaviorism, and Krutka and colleagues' (2021) technoethical audit of Google identified underlying values that are at odds with educational ones.

Designers—instructional and otherwise—create environments where certain behaviors are encouraged and others are discouraged. It is, therefore, critical that they reflect on their ethics and values—and how they inform design (Gray & Boling, 2016). Then, instructional designers could conduct their own technoethical audits (Krutka et al., 2019) of learning management systems (LMS) and other technology platforms like Zoom (Krutka et al., 2020) to determine how they support or conflict with those ethics and values. If, for example, an online class is committed to respectful and deep discussion that also protects students (particularly those most often targeted), instructional designers might ask how discussion boards and other LMS features promote—or dissuade—those values. Based on that evaluation,

designers might prompt teachers to democratically establish explicit class norms with students, rather than allow the LMS to implicitly establish norms through its design.

What values are programmed into the apps, ed tech platforms, and repurposed social media sites that are being used in (and out of) classrooms all over the world? Do those who retrieve data from these platforms for data-intensive educational research (e.g., Baker & Siemens, 2015; Greenhalgh et al., 2021; Kimmons & Veletsianos, 2017; Rosenberg et al., 2021) look for miseducational values embedded in these "big data" or assume them to be objective (see D'Ignazio & Klein, 2020) and inherently educational? Is the design of a platform discriminatory and miseducative (Benjamin, 2019; Noble, 2018)? Again, consulting communities of color—as one step in the process of design—can be a way to minimize miseducative impacts.

## Studying the *Relationship* Between Informal Miseducation and Formal Education

Research on *informal* learning often expresses a hope or expectation that it will subsequently influence learning in *formal* settings. For example, in introducing their research on the use of social media in secondary writing instruction, Galvin and Greenhow (2020) noted that this phenomenon is inspired by the vast amount of writing young learners are already doing on social media and by work that conceptualizes this informal writing as supporting formal writing. Yet, the possibility (even likelihood?) of the informal learning of White nationalism and conspiracy theories on platforms such as Gab, Parler, or Facebook turns these assumptions on their head—and raises the importance of a formal education that can withstand and undo any informal *miseducation* students are undergoing. Indeed, Koul (2020) reported on teachers' responses to students' bringing conspiracy theories into class, and research suggests that students who are asked to evaluate evidence on a controversial issue often ignore credible evidence for what they have previously learned online (Crocco et al., 2018).

The steps needed to bring about a formal learning that is educational are numerous and significant enough that we cannot hope to address them in this paper. Nor are they likely to be easily adopted. In 1997, Thompson expressed concern that anti-racism "sounds too . . . provocative" (p. 8) for educators to embrace as a philosophy. Nearly a quarter of a century later, the Trump administration's *1776 Commission* (which advocated for "patriotic education" in response to anti-racist critiques of American history; see Crowley & Schuessler, 2021) suggests that not much has changed. Efforts at "patriotic" education and White master narratives of American progress have long pervaded social studies education (Busey & Walker, 2017; Evans, 2004; Johnson, 2019; Sabzalian, 2019; Vickery, 2017), and anti-Black misinformation has long been part of the Black experience in the US (Woodson et al., 2019).

Nonetheless, the importance and exigency of removing miseducation from schools cannot be understated. Alim and Paris (2017) suggested that for People of Color in the United States, "The purpose of state-sanctioned schooling has been to forward the largely assimilationist and often violent White imperial project" (p. 1). Not only is such an approach to formal learning incapable of adequately resisting White nationalist learning happening in informal spaces, but implicit messages of White supremacy in schools may actually serve as a jumping off point for students to (mis)learn more on the internet.

Perhaps more worrying is the very real possibility of teachers bringing conspiratorial and nationalist thinking into classrooms. After the insurrection at the Capitol, it became clear that some of those visiting Washington, D.C. and either involved with or sympathetic to the rioters were employed as teachers (Koop, 2021; Peiser, 2021; Tavernise & Rosenberg, 2021). Teachers' uses of social media are well documented (Greenhow et al., 2020), and it should come as no surprise to learn that educators are using alternative social media platforms as well. Lee (2021) noted that in March 2021, one of the most popular private groups on Gab appeared to be associated with teachers. Given that misinformation, conspiracy theories, and White supremacist thinking are not limited to platforms like Gab and Parler—and that teachers' personal and (several) professional uses of platforms blur (Carpenter et al., 2019; Carpenter et al., 2020; Greenhalgh et al., 2016)—there is ample room for concern.

Whether it is students or teachers who are bringing miseducation into the classroom, educational professionals have responsibilities to respond to and effectively counter it. For example, although media reports help to identify this phenomenon, scholarly research is needed to more clearly define the scope of the problem and the mechanisms by which it happens. In particular, Barron's (2006) research on learning ecologies that span in- and out-of-school contexts serves as a model for how researchers might document more worrying versions of this phenomenon. Furthermore, instructional designers' important influence on the development and delivery of curricula in many educational contexts suggests that they may play a role in ensuring those contexts are truly educational—and can withstand miseducation. Finally, teacher educators, schools, districts, and professional organizations have the responsibility to ensure that pre-and in-service teachers are committed to promoting educational experiences that are responsive, just, and sustaining (Paris, 2012).

#### Conclusion

Although social media platforms continue to hold considerable promise for informal learning, the emergence of platforms like Gab and Parler serves as an important opportunity for instructional designers and educational professionals to reconsider the relationship between informal learning, (mis)education, and social media platforms. Gab and Parler offer illustrative examples of *miseducational* informal learning spaces, the ways that technology design can foster that miseducation, and the importance of asking how miseducation influences (or happens within) formal learning settings. Yet, while it may be beneficial for education professionals to consider these implications in the immediate context of Gab and Parler, these controversial platforms are ultimately a reminder of the importance of applying these ideas to other social media platforms, educational technology platforms, and ultimately all formal and informal learning settings.

Instructional design and other educational professionals should be concerned about and attentive to (mis)educational and (mis)informational opportunities across an array of social media platforms. Although somewhat contrived, the formal/informal dichotomy of learning can help draw attention to the ways that informal learning on social media connects to formal classroom learning. We have evidence that informal learning through social media is occurring, but at least some of it is miseducational and potentially explicitly harmful to marginalized communities. Online platforms are not neutral (learning) spaces; they need to be carefully constructed, with ethical principles in mind.

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# Justice-Oriented Lurking: How Educators Lurk and Learn in the Marginal Syllabus

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This case study examines interviews describing the experience of social reading and lurking as a form of informal learning. This study details the ways educator lurking occurred in the Marginal Syllabus, a public informal learning community that discusses educational equity topics, implications for literacy education, and digital pedagogy. Strategies are offered for instructional designers to optimize social reading and lurking practices for informal online communities that challenge dominant cultures and educational narratives. Research on social reading and lurking as informal learning is needed to leverage informal online communities to dialogue about educational equity and more just learning futures.

### Introduction

Reading online is a social practice. Digital social reading allows readers to take advantage of features and affordances of everyday technologies – from websites and blogs to social media, to peer-reviewed scholarship – to converse, comment, and connect among larger communities of readers (Cohn, 2021; Pianzola, 2021; Reagle, 2015). The everyday social practices of reading with other people online enable activities that educators, in particular, participate in as part of online communities that are not "structured in terms of time, space, goals and support" (Kyndt et al., 2016, p. 1113). While (digital) social reading can be considered less formal, as it does not necessarily require institutional support or alignment with organizational structures, associated repertoires of practice are evident in emergent forms of knowledge construction, collaborative skills, and attitudes (i.e., Chen, 2019; Eraut, 2004; Kalir, 2020) that are professionally relevant and may be strategically incorporated across both academic and civic settings (i.e., Avila & Pandya, 2013; Hollett & Kalir, 2017; Jenkins et al., 2016).

Social reading is an important aspect of peer-to-peer learning that occurs within informal online communities. Our interest for this article is in educators' participation in these communities – sometimes referred to as professional learning networks (Trust et al., 2016) or affinity spaces (Gee & Hayes, 2012) – and how educator social reading is

relevant to ongoing professional learning. With the growth of informal online communities, educators more regularly participate in peer-to-peer learning through digital and social reading practices as they make use of professional learning networks (Trust et al., 2016), leverage social media platforms like Twitter for networking and resource-sharing (Carpenter, 2015), and join in other online affinity places like MOOCs (Jones et al., 2016) that are professionally relevant. Amidst considerable scholarship about digital literacies and related learning practices, both within and outside of academic settings (i.e., Turner, 2019), there remains a need to further examine how educators' social reading practices online contribute to cross-context professional learning.

Participation in informal online communities, including educators, have a range of socially situated literacy practices, from reading and writing during Twitter chats to play during online gaming (i.e., Novak, 2017). One challenge for such communities is creating both an environment and opportunities whereby peripheral participation, as with activities sometimes described as lurking, lead to other forms of more robust social interaction. Lurking is typically defined as an individual activity, or:

A form of online behavior found in online/digital environments and has always been a very popular activity among online participants as it leaves no trace and is made possible by the technology that allows access without being visible or having to publicly participate. (Edelmann, 2017, p. 282)

Although often perceived as a solitary and disconnected practice, lurking is an important aspect of participation in online communities with implications for informal learning (Bozkurt et al., 2020). Lurking in online communities has also been described as the ways in which a new participant "enters, observes, and learns the culture and the norms of the environment as well as the tools provided" (Dawley, 2009, p. 118). This article suggests a more direct connection between lurking and social reading practices whereby certain online literacy practices are understood as a form of lurking. More specifically, lurking includes the social reading of online conversation and commentary created by participants in online communities (Cohn, 2021; Pianzolla, 2021).

The relationship between lurking and social reading practices is not only germane to participation in informal online communities, it is of particular importance to better understand how educators join, make sense of, and interact with groups expressly committed to educational equity and justice-directed learning. In informal online communities, lurking as social reading is an important first step toward professionally-relevant learning about topics of educational equity and future justice-directed practices. Accordingly, this article presents a case study addressing the question: How do educators describe their experience of lurking, and their relationship of lurking to social reading, in an online community that discusses educational equity?

# Methodology

### **Research Design**

Educator lurking, social reading, and informal learning has seldom been investigated in the context of an online social community expressly concerned with issues of educational equity and justice. Accordingly, we adopted case study methodology (Yin, 2014) as an appropriate means to describe the relationship between lurking, social reading, and educators' professionally relevant yet informal learning. Our case is bound by educator participation in the Marginal Syllabus, an online social community that, since 2016, has sparked and sustained conversation about educational equity through collaborative partnerships with the National Writing Project, the National Council of Teachers of English, and the annotation organization Hypothesis (http://marginalsyllab.us/). Social reading in the Marginal Syllabus occurs through educators' use of social annotation (SA), or the addition of multimodal notes to digital texts for the purposes of discussion, information sharing, knowledge construction, and meaning-making (Zhu et al., 2020). During Marginal Syllabus activities, educators collectively read scholarship about educational equity topics such as whiteness and privilege, racial justice in literacy curricula, and youth activism. Educators also read SA written by other participants who contribute to online discussion located in the margins of these open-access texts. To date, 62 partner authors have provided the Marginal Syllabus with permission to feature 41 texts for educators to read and annotate, over 600

educators have participated in the project since 2016, and participants have written more than 4,700 public Hypothesis annotations for others to read and discuss. Our interest in this case—with lurking, social reading, and informal learning is a useful complement to prior Marginal Syllabus research that has examined how this online social community enables educator civic writing (Kalir & Garcia, 2019), ethical debate about digital literacy (Kalir & Dillon, 2019), and collaborative epistemic expressions (Kalir, 2020a).

### Data Collection

The data collected for this case study were drawn from a series of interviews conducted with 26 educators who participated in the 2018-19 Marginal Syllabus. Interviews took place online via Zoom. The second author (Kalir) interviewed each educator for approximately one hour. All interviews were recorded, and the audio subsequently transcribed for analysis. As the Marginal Syllabus community has grown, interviewing has served as a regular and useful means of engaging with educators to better understand their participation in social reading and SA as a public, social, vulnerable, and critical professional learning activity (Kalir, 2020b). The featured interview dataset has provided data for a prior analysis of educator collaboration as open learning (Kalir, 2020a). In this case, we examined educator responses to a single question about the public writing, curation, and reading of SA during Marginal Syllabus activities. Responses to this question by eight educators were explicitly relevant to our concern for lurking and social reading activities, and amidst this subset of interview data we identified 31 excerpts for our analysis. Table 1, below, provides basic demographic information about the eight educators whose interview data were included in this study (all names are pseudonyms).

#### Table 1

Name	Gender	K12/HE	Discipline	Career Stage
Karine	F	HE	Teacher Ed.	Mid
Tess	F	K12	Literacy	Early
Lester	М	K12	Literacy	Veteran
Teresa	F	HE	Teacher Ed	Veteran
Nannette	F	HE	Composition	Veteran
Kent	Μ	K12	Literacy	Veteran
Nina	F	HE	Literacy	Veteran
Kallie	F	HE	Learning Technology	Mid

Demographic information of educators included in case study

### Data Analysis

We analyzed excerpts from educator interviews using two complementary and inductive methods – first, classical content analysis followed by critical discourse analysis – to better understand how educators described their lurking and social reading practices during Marginal Syllabus activities. In our first analytic pass, classical content analysis (Berelson, 1952) was used to identify a set of five characteristics relevant to educators' social reading. Interview excerpts were inductively coded and revealed characteristics of vulnerability (24 code occurrences), lurking (14), access to other people (10), professional learning (8), and critical media literacy (7). For example, one Marginal Syllabus participant, Teresa, spoke about the presence of vulnerability when social reading ("I feel vulnerable in that space"), the importance of accessing other people's thoughts via SA ("learn from their perspectives"), the value of social reading to critical media literacy are just super relevant right now"), and the general importance of social reading to professional learning ("a focused exploration of a core text"). Employing classical content analysis allowed us to ascertain key themes in our data regarding the qualities and value of social reading as a form of educators' informal learning.

Our second analytic pass used a socio-cognitive approach from critical discourse studies (CDA) with a triangular analysis of the transcript (Van Dijk, 2016) to further clarify the ways in which educator lurking and social reading may have been informed by perceptions of power. This approach specifically looked at systemic power dynamics (Wodak & Meyer, 2016). Given that educators read and discuss scholarship about educational equity and justice during Marginal Syllabus activities, it was appropriate to extend our prior analysis of educator interviews using a second method attuned to the dynamics of power in social discourse as reflecting broader socio-political structures. The critical stance of the Marginal Syllabus aligns well with the "critical attitude" (Wodak & Meyer, 2016, p. 6) of CDA as this method can help to reveal patterns in discourse associated with "subjugated knowledge against dominant knowledge" (Wodak & Meyer, 2016, p. 7).

CDA afforded analytic insight about aspects of power in educator discourse such as the use of pronouns, identification language, self versus other descriptions, expressed activities, expressed or implied norms or values, and stated interests in resources (Van Dijk, 2016). More specifically, we examined the "microstructure" of educators' personal learning through mention of pronouns, identification, and emphasis of self-description (Van Dijk, 2016, p. 73), as well as the "macrostructure" of "activities, norms and values and interests" (ibid, p. 74) in which they participated in the Marginal Syllabus as professional learning. Use of CDA to analyze educator interviews for evidence of lurking and social reading behaviors surfaced, for instance, tension between the benefits of personal learning and the vulnerabilities of public professional learning activities. For example, Nannette stated, "I have to overcome some serious anxiety to put it out there. As much as it is anxiety inducement for me, that's, for me, a personal issue that I keep wanting to challenge myself to overcome." CDA also afforded the ability to analyze how participants looked at inherent sociopolitical power considerations amidst group-level and public professional learning such as with Kent, who stated, "We're worried that folks would feel alienated when we're talking about issues of DACA [Deferred Action for Childhood Arrivals policy] youth who are fighting for their rights and whether or not they're even considered part of the civic conversation." CDA revealed how some educators – particularly those who were new to social reading and SA activities oriented toward educational equity and justice – grappled with insecurities, expression, and participation amidst broader ideological dynamics.

# Findings

Findings suggest participation in the Marginal Syllabus encouraged educators' social reading practices, and this form of lurking may be explained by two themes. The first theme of *personal learning* described qualities of educator comfort and value when learning about educational equity and justice through social reading in an informal learning community. The second theme of *professional learning* described potential contradictions, vulnerabilities, and potential professional risk associated with contributing to public discussion about educational equity and justice in an informal online community.

### Social Reading and Lurking as Personal Learning

We found through analysis of the interview excerpts a primary discourse of self which was relevant to the theme of personal learning through social reading. Self-discourses were characterized by educators' repeated use of "I" to describe their lurking behaviors and descriptions of personal thoughts and reasonings for individual actions. Additionally, self-discourses addressed the microstructures of individual social network access and formation, or how they joined the Marginal Syllabus, acquisition of new knowledge and perspectives, and evolution of the self--or perceptions of their participation in the project.

In the Marginal Syllabus, participants saw lurking as a way of learning without risk of unnecessarily exposing themselves. As Nanette shared, "I'm a voyeur, because—I don't know—there is something about putting something out there that might never disappear." Educators considered lurking as a legitimate way to initiate involvement in the community or, as Teresa stated, "It's an entry point, and it's still valid." There was noteworthy discussion by participants of other educators who they also believed may be lurking in the Marginal Syllabus as informal online learning. One such example was mentioned by Kallie, who observed, "I'm sure there are teachers that are reading what's going on, but not

taking the step into the margins to become part of that conversation." Similarly, another participant, Lester, discussed his lurking behavior in the context of colleagues:

I think some teachers would see the tension as, "I'm not ready to do that, even today," so they don't get engaged in that conversation. They might read it—I bet you, I'm sure you can track reading, and stuff like that. I'm sure there are teachers that are reading what's going on, but not taking the step into the margins to become part of that conversation.

Throughout educators' interviews, there was a commitment to learning more about equity in education alongside recognition that voices and perspectives were not being heard despite multiple participation pathways in the Marginal Syllabus. Kallie stated, "I think a lot of people whose voices do matter and should be part of the conversation aren't necessarily in there because they're not always convinced that their voice matters as much as other people's do." A related tension that educators expressed consisted of wanting to learn while publicly managing their ignorance of certain topics from others while they continue to grow as individuals. Teresa stated, "Because it's open and because I feel vulnerable in that space, I don't always ask all of the questions I would ask because I'm not sure that any space is a safe space to ask them for me right now." Even when educators felt that as though they did not have the time to participate in the Marginal Syllabus' annotation activities, they felt the project's featured scholarship was important to read in a social context for their personal learning.

### Social Reading and Lurking as Professional Learning

In contrast to personal learning as enabled by social reading, educators also described how professional learning opportunities and tensions were evidenced in more public discourses as characterized by general references to "others," or other participants of the Marginal Syllabus community with more knowledge. Lurking discourses of "others" addressed the macrostructures of navigating network access to more knowledgeable others, avoidance of traditional network gatekeeper mechanisms, and determining one's fit within the learning community. CDA methods, in particular, allowed us to describe how Marginal Syllabus participants viewed professional power, or the "knowledge, status, fame and access to public resources" (Van Dijk, 2016, p. 71), present in social reading and SA activities.

One aspect of professional learning, and broader dynamics of professional power, concerned how Marginal Syllabus participants perceived complex feelings of ignorance and vulnerability. For example, the complexities of joining, reading, and also participating through annotation in the larger public professional group was illustrated by Nina, who commented:

I also am thinking out loud right now about the fact that sometimes there's risk involved with these kinds of things. If you write, there's a certain way in which that writing is given to a broader public, but you don't necessarily want to see everyone's thread of thought on everything you've ever said.

Throughout educators' interviews, lurking discourses of "public" and "professional learning" reflected macrostructures of social status as new participants navigated the Marginal Syllabus' network and voiced trepidation about being judged by established project participants. For instance, one participant, Teresa, stated, "Many of the people who come are people who do have more of a background in the topic than I do," which suggested feelings of vulnerability due to a perceived lack of knowledge. Additional concern about participation insecurities and professional vulnerability was related to the educational equity topics discussed in the Marginal Syllabus. One participant, Kallie, explained:

I have that theory that teaching is a public act, yet I sit there and censor myself sometimes and really have to decide what I will put out there and what I won't. Sometimes I think that's a good thing. We all need to make those private-public decisions, but there's definitely been times where I'm like, "Ooh. That's a tough conversation," or "That seems a little," I hate the word sensitive, but "sensitive," and "Do I put that out there right now?"

As participants navigated their social reading and degree of public participation, professional learning complexities surfaced at the intersection of lurking, vulnerability, and access to a useful online community relevant to educational

#### equity.

A second quality of professional learning concerned the challenges of transitioning from anonymous social reading to attributable SA. As educators switched from being solely a lurking social reader to an active contributor through annotation, participants did connect with a broader network whereby information and perspectives flowed in multiple directions. As Teresa described it, "I'm thinking from a professional learning perspective with the opportunity to connect to other ideas . . . [I'm] learning a lot by learning from others." Yet, there was also fear of judgment based on the public nature of discussing educational equity topics as evidenced in statements from Karine like "I'm a little more careful with my words if I know I'm gonna put it out publicly." Many Marginal Syllabus participants acknowledged grappling with discussions of racism, intersectionality, and critical approaches to justice-directed learning for the very first time. For a participant like Kent, who had more self-described experience examining equity in education, the transition from social reading to SA was difficult, too, as when publicly discussing civic education, he'd say "I spent a lot of time wrestling with even using the framework of civic engagement and talking about citizenship". However, once Marginal Syllabus participants moved from lurking to SA, they did express feelings of agency and power associated with that act of contribution. As Kallie reflected:

Once I really do kind of turn on that active engagement switch, it is almost hard not to wanna comment because I just—as someone who's been actively reading for a long time, I can't read anymore without writing or I can't read anymore without thinking about what I would say or what I would highlight in response.

Despite reporting how lurking was connected to feelings of personal vulnerability, Marginal Syllabus participants also reported SA in this informal online learning community was valuable. There was a point whereby each educator bested feelings of vulnerability and moved from lurking as social reading to actively writing SA and extending the project's public discussion of educational equity.

### Discussion

Our case study of participation in the Marginal Syllabus investigated how educators described their experiences with lurking and social reading in an online community that discusses educational equity and encourages justice-directed professional learning. Based on our findings, our discussion first considers the importance of encouraging educator participation and agency in online communities as professionally-relevant learning. Then, we discuss how to effectively design informal learning spaces and activities for educators interested in educational equity and justice, as well as possible participation pathways from lurking to broader practices of connectivism (Siemens, 2004) and social network knowledge construction (Dawley, 2009). Our case informs a set of recommendations for instructional designers interested in leveraging online social communities for informal, professionally-relevant, and equity-oriented learning. Last, we offer recommendations and implications for designers, particularly when lurking behaviors may describe initial and ongoing participation in educational justice communities.

Informal online communities for educators, like the Marginal Syllabus, extend what is considered legitimate peripheral participation (Park, 2015; Wenger, 1998) in that membership and meaningful contribution does not require spatial colocation, formal registration, or credential. Our study of educator lurking behaviors, like social reading, suggests professionally-relevant opportunities may be encouraged as alternatives to compulsory professional development often required for educators. Lurking is an act of agency whereby participants are invited to read together, share perspectives, disseminate resources through channels and networks of their choosing, and not be constrained by the formal expectations or political pressures of their workplaces. Nonetheless, our interviews with educators also suggest their social reading practices were associated with perceptions of vulnerability, potential participation risks, and deliberation about how to thoughtfully contribute to public discussion. Accordingly, we recognize complexities of power defined social reading practices as a form of legitimate, and agentic, participation in a justice-directed online community like the Marginal Syllabus. As learning designers, we are also interested in how our insights about lurking and social reading may be applied to help guide educator participation in professionally-relevant and equity-oriented learning. First, learning designers can help educators identify appropriate networks for social reading and make suggestions about how to *read* – literally, socially, and symbolically – informal online communities relevant to their professional interests and goals. Second, learning designers can effectively facilitate this process by being lurkers within the community (Lai & Chen, 2014), by evaluating the amount of engagement typically required, as well as by determining how new participants are welcomed into the community. Third, learning designers can pay attention to the tools and practices used within the community to encourage initial social reading and subsequent forms of participation. For example, social reading may be encouraged through easily accessible FAQs, or short videos featuring community leaders describing the culture and norms of the community. For informal online communities focused on educational equity and justice, a glossary of commonly used terms may also be useful to help newcomers feel welcome and knowledgeable enough to move from lurker to contributor. Learning designers might also create discussion questions that attend to community building and nudge the lurker to make their first post or annotation. Our case suggests learning designers with expertise creating engaging participation in online environments can collaborate with (informal) communities of educators to encourage and support activities relevant to justice-directed learning.

Learning designers are uniquely positioned in guiding educators to identify and join informal justice-oriented learning communities, and to help with the technical and social design of the communities. McNeil (2020) wrote that "lurking can be a waiting room before communication, in brief delay like the brutal clang of an old dial-up modem sound, a moment to pause and prepare oneself for an exchange with others" (p. 4). Learning designers could consider where there is the potential, or at what moments, for lurking to turn into engagement in an informal online learning community. We further recommend that learning designers—who are not often involved in the outreach, communication, or informal marketing of these online communities—become involved during the conceptualization phase. Learning designers, who as part of their profession regularly look at systems and delivery mechanisms, should be brought into early discussions about the audience for the informal learning community. These processes may be facilitated through social media and established professional learning organizations. Learning designers can also help informal social networks analyze participant characteristics, and identify the participation constraints of lurkers whose greatest anxiety may be public vulnerability.

Implementing these recommendations will present some challenges for academic, open education, as well as corporate learning designers interested in supporting lurkers and creating pathways for social reading as personal and professional learning. For instance, participation options might need to prioritize the ability of community members to remain anonymous or not publicly recognizable. Rather than setting standards for participation or, in more formal settings, the assessment of learning objectives, lurking should be encouraged for participants who have time constraints and for participants who only feel comfortable reading without writing (or other forms of social interaction). After helping introduce the informal learning communities, learning designers can also build small activities that allow participants to safely lurk. For example, webinars held synchronously, and then recorded and distributed, whereby learning materials are contextualized by more knowledgeable community members. This could open pathways for lurkers to understand content more deeply and potentially transition from individual reading to more social commentary and other public contributions. Additionally, learning designers can help create environments in which learning is not only socially constructed but also builds online connections to nodes of knowledge (Siemens, 2004). To do so, learner designers must understand possible participant needs within informal learning communities as different from academic courses or corporate training contexts in which lurking is often not an acceptable learning behavior. Informed by insights from this exploratory case study, learning designers can leverage social reading and lurking practices as informal learning to further enable online communities to dialogue about educational equity and more just learning futures.

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# Parents Caring, Sharing, and Learning Together Online: An Examination of Information Seeking and Learning Strategies Utilized in an Online Health-Related Support Group

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Facebook

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Social Media

Informal Learning



The current study explored various dimensions of informal learning by members of a Facebook group made up of parents and caretakers of infants or children with Gastro Esophageal Reflux Disease (GERD). Interview and posting data were collected and analyzed using a Grounded Theory approach. Findings led to the creation of a new model of information-seeking designed to apply to online informal learning spaces that are found in social media groups. This model includes the stages of initiating, lurking, and browsing; requesting information; being guided by a highly knowledgeable member; reconciling; applying; and appraising. In contrast to previous information seeking models, this model proposes a continuous cycle with entry and exit permitted at each stage based on the learner's needs.

### Introduction

Although there is a robust body of research on learning, understanding of what learning is, where it occurs, and how it functions continues as an evolving process (Livingstone, 2001). Social media sites, such as Facebook, enable individuals to gather in an informal online space to share and acquire knowledge without a formal instructor or curriculum. The purpose of this study was to qualitatively explore the informal learning experiences of members of an online social media group hosted by Facebook to gain insight on the various dimensions of informal learning in this space including, what learning strategies members used, what types of knowledge were encouraged and shared, and how community within the group was characterized and its role in the learning space. The theoretical framework of communities of practice and affinity spaces provides a foundation for the present study and is discussed in the following section.

# **Related Literature**

Lave and Wenger's (1991) Communities of Practice (CoP) framework is helpful for understanding the social aspect of informal learning pertinent to the current study. Like COPs, online social media groups form around a common concern or passion and involve the sharing of knowledge and collaborative meaning creation. Lave and Wenger's work positions informal learning as a group process occurring between individuals in communities of practice rather than within a single individual. Through various knowledge-sharing activities, members created a community (Wenger, et al., 2002). COPs formed around a common concern or passion and were comprised of people "who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger et al., p. 4). Members met because they found value in the interaction as they learned together by sharing information, helped each other solve problems, thought about common issues, and created tools for shared understanding.

Research on Online Communities of Practice (OCoP) has explored what motivates members to share knowledge (Lin et al., 2009) including factors such as trust, self-efficacy, expectations, (Hsu et al., 2007) and social capital (Chiu et al., 2006; Hall & Graham, 2004). Lin et al. (2009) investigated what factors determined members' knowledge-sharing behavior within workplace-related OCoPs, or professional virtual communities. They developed an integrated model to explain the associations between contextual factors, members' perceptions of knowledge-sharing, knowledge-sharing behavior, and community loyalty.

Hsu et al. (2007) examined the factors that foster or hinder knowledge-sharing behavior in OCoPs. They used a social cognitive theory-based model to investigate factors such as self-efficacy, expectations for personal influences, and trust. These researchers and others identified several fundamental social cognitive factors that influence knowledge-sharing in online groups. Participants learn as they interact. For example, participants learn through interaction which results in cognitive restructuring. Restructuring occurs by having ideas challenged by other members' differing ideas. The process leads participants to update their mental models and knowledge (Neufeld et al., 2013). Participation occurs through interaction and knowledge-sharing. Of the social cognitive factors appearing in the literature on OCoP, the factors most applicable to the current study are sense of community, interpersonal trust, self-efficacy and social awareness, and community identity.

Many popular online social media groups such as the one in this study are considered OCoPs when viewed through the COPs theoretical lens. Online social networks are formed by a group of people around a shared concern, problem, or passion. Through ongoing interactions, these groups become further established and develop tools, communications, and learning strategies. The technological tools inherent in online community spaces, such as calendars, discussion areas, and archives also help support the learning processes (Wong et al., 2011).

Though CoP theory provided a useful framework for exploring social learning within groups, the focus on in-person groups with long-term membership limits applicability when studying online social media groups. Gee (2004) introduced the affinity spaces theoretical framework to describe spaces that do not fit criteria of the COP framework.

### Affinity Spaces

In 2004, Gee introduced affinity spaces. He proposed although people learn by apprenticing themselves to a community sharing practices, there are limitations to the application of the COP framework. For example, while CoP may allude to close personal ties between members, this connection may not fit all of these types of social learning settings where some groups are composed of relative strangers (i.e., the group examined by this study). Whereas the word community connotes membership by a group of people, a better paradigm may be to think of spaces where social interactions occur. This new way of classifying social forms allows for more flexibility and applicability (Gee, 2004). The idea of space is not limited to physical space but also extended to virtual spaces such as individuals playing chess via email. Gee (2004) went further to discuss a specific type of space, called affinity space, where individuals connect around a shared interest. He identified 11 features of an affinity space that apply to social media groups. More recently, Curwood et al. (2013) proposed defining features of affinity spaces including common endeavors, self-directed participation, and provision of a passionate, public audience for content.

## Informal Learning in Social Media Sites

Heo and Lee (2013) used an activity theory framework to examine informal learning processes occurring in a blog, Naver, and a social network, Cyworld. By examining the types of division of labor within these spaces, Heo and Lee (2013) identified three dimensions of learning that occurred in social media: an acquisition process, a reflection process, and a practice-based community process. Learning as an acquisition process included learners who sought and gained information from others in a passive role. The second dimension included learners who were more active in dealing with knowledge by creating meaning and reflecting on that meaning. Learning as a practice-based community described learners who created and increased their knowledge by interacting with others. Heo and Lee concluded the third dimension of learning best utilizes the capabilities of Web 2.0 sites.

### Informal Learning in OCoPs within Social Media Sites

Dissertations (Davis, 2010; Dolan, 2013; Smock, 2012) and a research article (Mak, 2013) have specifically explored online communities of practice (OCoPs) within social media. Dolan (2013) focused on the use of Facebook, LinkedIn, and Twitter in the workplace to help foster workplace learning, building engagement and COPs. Dolan shared despite not determining any statistically significant inferences, evidence "[omit] indicated that social networking sites were contributing factors in informal learning within an organization, and that they were useful in building networks and engagement among employees" (Dolan, 2013, p. iii).

Davis (2010) explored connectedness or sense of community and professional development in an OCoP within LinkedIn, and focused on the use of OCoPs for ancillary learning by workplace training and learning professionals. Davis also examined the transfer of learning from the social networking site to workplace practices and professional development and found there was a statistically significant correlation between connectedness or sense of community and learning. Connectedness explained 46% of the variance. Most interviewed self-identified as lurkers or those who seldom post messages, but admitted they observed and read messages posted by others. Davis cited legitimate peripheral participation (LPP) as a key component of OCoPs.

Mak (2013) examined how workplace socialization is achieved through Facebook status updates and used the COP theoretical lens and discourse analysis method to analyze over 60 status updates made by employees over a period of five months. He found that chitchatting in status updates helped to understand workplace norms and engage in workplace socialization.

Smock (2012) focused on the use of Flickr as a COP in a non-workplace context. His study closely aligns to explorations in the current study. Smock (2012) investigated group membership, activity, learning strategies, and how expertise is shared within Flickr. Personality traits predicted commenting and asking questions. Participants used two types of learning strategies – solitary and interactive. New members engaged in solitary learning to increase knowledge and skill, and then progressed to more interactive types of learning activities.

Ebardo et al. (2020) used netnography to examine informal learning of a Facebook group of older adults. The study resulted in three themes which included "keeping healthy, ensuring safety, and family relationships" (p. 598). Of the three themes, the most pronounced were challenges associated with members' health. Ebardo et al. (2020) concluded given the speed at which information is disseminated in these informal learning groups, information verification should be emphasized to prevent misinformation, particularly with health-related information. The next section further discusses the use of social media to acquire health information.

### Health Related Informal Learning in Social Media Sites

Social media groups, including Facebook groups, have formed around a variety of health topics including Gastro Esophageal Reflux Disease (GERD), the focus of this study. As White et al. (2021) stated, "a systematic review of data on the use of social media for public health topics in general concluded that qualitative benefits can be derived in terms of learning and education for both patients and physicians" (p. 1). They found that within 13 Facebook groups focused on antidepressant withdrawal, the main reason for participation was failed services from clinicians. In a study on a Facebook diabetes group, Zhang et al. (2013) found interactions among members centered on exchanging information, providing emotional support, and community building. Participants included administrators, individuals with diabetes, and parents with diabetic children.

In a recent systematic review of 23 qualitative studies, Tradegold et al. (2020) found parents reported gaining a sense of community through making connections with others, building relationships, and feeling validated and reassured. According to the authors, "Parents also reported feeling better informed about their children's conditions, which helped them feel more in control in subsequent medical consultations and felt good about helping similar others by sharing their own experiences" (p. 10).

The current study qualitatively explores the informal learning experiences of members of an online social media group hosted by Facebook, specifically, the informal learning behaviors of parents or guardians of children with GERD. It is part of a larger study examining: the factors influencing activity, the existing types of knowledge, and the patterns of participation in the online social media group (Vargas Wright, 2018). Using an adapted grounded theory approach (Charmaz, 2014; Corbin & Strauss, 2008; Glaser & Strauss, 1967), data from members of a Facebook group comprised of parents and caretakers of infants or children with GERD were collected and analyzed to explore the following research question: According to participants, what learning strategies do participants use to gain knowledge in this online social media group?

# **Research Methods**

### Context

Participants included members from one online social media group hosted by Facebook of which the lead author was a member for several years. During that time, she developed relationships with the administrator and members of the group, which facilitated the recruitment of participants and provided necessary insights into the group, along with its norms and processes.

In keeping with the nature of social media, the online social media group's composition and size was fluid and everincreasing. It increased the number of members on an almost daily basis. For example, it was composed of 822 members in 2015, 2,200 in 2016, and 3,144 in 2017. An average month's worth of activity in this social network included: nine original messages and 87 comments posted per day; 71 original messages and 673 comments posted per week on the social network's wall. This study presents a snapshot of the functioning of the group during the length of the research.

The social media group was a closed group individuals can only join if approved by the group's administrators. When this study first began, the social media group's purpose, as posted on the about section of the network, was to share advice for the care of GERDlings (i.e., infants with GERD) from the true experts, their caretakers. During this study, an additional disclaimer was added to the description of the group encouraging members to always seek medical advice and guidance from a medical professional. A pinned post or posting always visible at the top of the page's feed, was also added. The post welcomed members, requested that they post an introduction of themselves, and asked them to answer 15 questions about their child's reflux condition. It advised members that other members are not medical experts and share what they have learned through personal experiences. The purpose of the group also changed to work alongside a companion website to help babies/infants/children with acid reflux or various food intolerances/allergies. New members were required to write an introductory post, allow tagging and messaging in their account settings, and not block administrators.

### Participants

Group members were spread across the world with a majority coming from the United States. According to leaders, members were primarily female, white, living in the United States, with a post-high school degree. In addition to obtaining Institutional Review Board approval, the lead author received permission from the group's administrators to

recruit participants for the study from the social media group's membership. Interview participants were selected based on frequency of posting and length of group membership using a quota selection (Goetz & LeCompte, 1984) to gain a cross-section. The categories, frequency and length, were selected based on previous research on informal learning within online social media groups (Davis, 2010; Smock, 2012). The initial semi-structured interview protocol included closed and open-ended questions concerning participants' activities as members of the online social media group. The interview protocol included: questions related to demographic information including gender, highest level of education, frequency of postings, and length of membership in the social network; learning strategies used to gain knowledge; factors influencing their activity in the group; the types of knowledge shared and/or gained online; types of connections developed between and among members; and the ways members supported one another. For the purposes of the current study, particular focus is paid to the types of knowledge gained and shared among the members of the group. Although, due to length constraints, extensive interview excerpts are accessible in the larger work (Vargas Wright, 2018).

In addition to interview data, with participant permission, postings were downloaded from the Facebook group and were imported into NVivo for analysis. Due to the high level of activity and membership in the group only activity during one specific week of postings was collected for analysis. A total of 53 original threads were collected and analyzed which included 604 postings, original postings, and responses.

### Data Analysis

To facilitate data analysis, NVivo was used to implement an adapted Straussian Grounded Theory methodology including theoretical sampling, constant comparison, and analytic memo-writing was used. As data were being coded and gaps identified, additional participants to contribute further evidence in various areas were selected (Glaser & Strauss, 1967). Data collection continued until saturation was achieved (Corbin & Strauss, 2008). Additionally, during axial coding, the lead author interviewed some initial participants a second time to further investigate aspects of the emerging theories. Table 1 contains a breakdown of the participants interviewed. A total of 31 interviews were conducted with 25 unique participants.

#### Table 1

#### Theoretical Sampling Participant Characteristics

Frequency of Posting	Length of Membership		Phase of GERD		Role in Group		Total
Description	n Description	n	Description (n)	n	Description	n	n
Frequent (1 or more per day)	2 Newcomers (less than a year)	2	Beginning	2	Administrators	3	
Average (a few times per week)	2 Continuing (1-2 years)	2	Middle	2			
Infrequent (a few times per month)	2 Long-term (2 years or more)	2	Post GERD	2			
Peripheral (never)	2		Recurring (2)	2			
Number of participants							N = 25
Follow-up interviews							6
Total Number of Interviews							31
Note. GERD = gastro esophageal reflux disease.							

### Coding

Three stages of coding interview data occurred: open coding, axial coding, and selective coding. During open coding, the transcript text was analyzed line by line which forced a close analysis of what participants said (Gibbs, 2008). Using a Constructivist Grounded Theory method (Charmaz, 2014), gerunds, used to code and analyze, highlighted a sense of action and the conveyance that participants were active parts of a process. A code example is the core category "encouraging external knowledge" which subsumed the subcategories of "identifying related learning spaces" and

"sharing research articles created outside the group." Then, codes were compared/contrasted and organized into provisional categories. Tables and hierarchies were used to assist in organizing codes and categories.

During the axial coding stage, categories were refined and further developed by looking at various elements considering Strauss and Corbin's (1998) dimensions such as causal conditions, phenomena, strategies, context, intervening conditions, and actions/interactions. Constant comparison continued throughout axial coding to find additional evidence or dimensions of the categories resulting in a re-organization of codes by associations to each other. During selective coding, associations between core categories and themes were examined while memos were revisited and sorted to create a storyline. The lead author returned to the field and interviewed six participants a second time to add insight. This process continued until theoretical saturation was reached.

### Results

### **Relevant Themes**

In examining the learning strategies group members (parents and caretakers of infants and children with GERD) used to gain knowledge, three core themes were identified from the data:

- 1. Participants engaged in distinct information-seeking behaviors in non-linear patterns.
- 2. Members followed a clear process of skills acquisition or steps to go from newcomer to an experienced member.
- 3. Members learned by applying acquired knowledge gained through participation in the group to the care of their child.

Each of these themes is discussed in detail in the following section.

#### Information-Seeking Behaviors

Participants engaged in distinct information-seeking behaviors in non-linear patterns. They discussed several distinct information-seeking behaviors engaged in to learn about infant or childhood GERD while participating in the group. Behaviors classified as information-seeking were: initiating; browsing; requesting information; lurking or learning vicariously; evaluating information; applying; and monitoring. Information-seeking behaviors are listed in Table 2. The information-seeking behaviors mentioned most by participants were evaluating information, initiating, requesting information, and receiving guidance through knowledge acquisition by a highly knowledgeable member.

#### Table 2

Types of Information-Seeking Behaviors in Interviews and Postings

Information-Seeking Behavior	No. Referenced in Interviews	No. Referenced in Postings
Evaluating information	75	79
Initiating	38	17
Requesting information	19	67
Being guided through information-seeking by a highly knowledgeable member (usually group leader)	0	68
Lurking or learning vicariously	17	1
Browsing	14	6
Applying	11	53
Monitoring	6	0
Total	180	291

Note. Total refers to the number of instances these behaviors were mentioned in interviews and postings.

The majority of participants interviewed discussed going through one or several processes of evaluation before applying information gained from the group. The evaluation process included reconciling knowledge gained from the group with members' own experiences and prior knowledge. This may have also involved asking follow-up questions of the group and comparing similar experiences with group members. Once reconciled, members decided whether to apply the information to the care of their child or not. As demonstrated by interview participant 7:

I'm part of the self-help page for [another online support group] and I find a lot of times I get concerned about some of the medical questions that people ask on the group and I have concerns about the way people who aren't in the medical field answer those questions because I feel like they're giving a lot of really bad and dangerous advice. Certainly when I'm researching stuff on the Internet and if I'm part of a Facebook page, I'm always looking to make sure that the advice there makes sense with my training and I have really been, I hate to say I have been surprised but it's been nice to see that everyone who is commenting on the page (group) and the information that's being provided seems to be good advice and sound advice. That made me more confident about using the page for advice.

A posting by interview participant 11 represented reconciling:

At that point you know if it applies to me like a particular advice or suggestion, I have to determine whether or not I feel comfortable with it myself and whether or not I feel like it would be safer or beneficial for my son. If I do, then let's say it requires me getting a probiotic or medicine I will figure out what would be the best place to get it. So, it's kind of just that process of determining whether this information applies to me and whether I feel comfortable and safe applying it to my son. Sometimes the answer is yes and sometimes the answer is no.

The second most cited process was verifying information other members shared through different methods such as: comparing with published research; verifying with medical providers(both general and specialists); verifying with a spouse or family members; verifying with information available on other sites on the Internet; and re-verifying with the group. Several members mentioned seeking out articles in peer-reviewed journals. Interview participant 1 explained:

I'm a huge Doubting Thomas, so I definitely wanted to confirm it in some other source before I actually did it, although not that I would doubt anyone, just for my own peace of mind, but absolutely. I'd see if I'd find whatever information, whether it was a peer-reviewed study or a published article.

Several members also discussed taking the information to their medical providers and obtaining their opinion on it:

I got that information from some member on the site, that she was recommended. I of course confirmed it with my pediatric GI at a subsequent visit I had with him. He said, "Oh yeah, that's definitely the right way to go, you're doing the right thing." So that was invaluable information, for sure.

The third evaluation process, seemingly a key process, was judging the trustworthiness of the individual sharing information. Members did this by evaluating the information the group member(s) shared with others including: judging the individual based on the length of their membership in the group; their own previous interactions with the individual; the type of language used in their post; the person's social media profile; what sources the person provided; and what stage of GERD the person's baby was in. Interview participant 5 explained:

Well because I'm on there frequently enough so I kind of get a feeling of who the people on there that know something about something and that you see posting frequently and that they seem educated based on their responses and you kind of get a feel for, I guess if their posting . . . and that's why I don't ever use that information to completely make a decision but you kind of glean who's a little bit more trustworthy and more educated about certain things.

Members also trusted the ideas validated either by sharing the same idea or by showing support for the idea by the greatest number of members. Participant 6 stated: "You see a lot of moms coming together to share information. Especially when many moms are validating the same ideas, then it's worth spending time to listen to."

Figure 1 further breaks down the ways participants initiated their information-seeking.

#### Figure 1

Frequencies of interview responses and postings for information-seeking



Picture displaying the frequency of interview responses

Note. Numbers given in the figure refer to the number of instances these behaviors were mentioned in interviews and postings.

Participants discussed joining the group because they were searching for medical advice from alternative sources to doctors and specialists because they felt they were not helpful. Fifty members whose postings were analyzed sought medical advice on the group's wall as an alternate source to doctors and specialists as described by participant 11:

Parents even though they are told not to, will Google and look up their kid's symptoms and a lot of times there is that kind of mother's intuition where the doctor may say it's just this or do that and you kind of just know that there is something else going on with your child and it's not o.k. So, I think that disconnect kind of drives people to look elsewhere because a lot of times I think professionals make it seem simple or that there really is no answer or options. For some people that is just not good enough and so they go to groups like this and look for other options and look for people that will give them other options.

Members also discussed joining the group based on recommendations from other individuals or groups turned to for information. They described information-seeking and joining the group because they were seeking others with similar experiences as participant 2's posting related:

Did any of you struggle with a baby who just didn't want to eat? A friend's baby has been struggling to stay on the curve (3% weight) so she started EP so she could measure ounces. She's already milk and soy free. Her daughter just doesn't seem to have an appetite. Ideas???

In addition, members mentioned searching the Internet for learning spaces where they could obtain any additional information on GERD. Interview participant 8 explained:

Basically, first I searched on the Internet. I Googled about it. Basically, I had an elder son also. He also had reflux. But at that particular point of time, four and a half years back, back in 2010, I really didn't know that these kinds of groups existed. At that particular time, it was not very common. We used to use . . . so, at that point of time I did not know how to handle my baby because he had severe reflux. This time it is a lot easier because what really happened to me is that I searched Google and found a lot of sites that had lots of information about GERD, so I went to all those sites and then I thought this is what this new baby is having. Then I searched on Facebook because I know now everything is on Facebook there are all kinds of groups for everything on Facebook. So, I found a couple of them and joined them. After joining these groups, I have not gone back to search Google for anything because anything can be answered there.

Participants described using different methods to request information from other members of the group. Table 3 shows the different methods mentioned 37 times in interviews and 70 times in postings.

#### Table 3

Methods Participants Mentioned Using to Request Information

Methods for Requesting Information	Number of References in Interviews	Number of Referenced in Postings
Asking questions on the group's wall	24	52
Contacting members individually	10	1
Asking follow-up questions of group	0	6
Bumping for more information	2	5
Commenting on someone else's postings to ask questions	1	6
Total	37	70

The most often mentioned and observed method for requesting information within the group was posting to the group's wall. Facebook technology made the group's wall central to the group's site. In addition, the group's rules requested all new members answer a series of questions and post an introduction to the group's wall upon joining. This mandatory introduction compelled most members to ask questions and request information through the group's wall. Another method participants used for requesting information was contacting other members individually through personal messaging technology. A third method apparent when analyzing group postings was individuals asking follow-up questions of the group once they received initial responses. Participants would obtain information, then come back, report what happened, and request more information from the group. Another method interviewed participants mentioned was bumping for information. Participants posted a comment of bumping or bumping for more information to keep the thread at the top of the feed to ensure all members would see and hopefully post more comments. A last method of requesting information was commenting on someone else's post to ask a question.

### Clear Process of Knowledge Acquisition

The second theme was members followed a clear process of knowledge acquisition or stages to go from newcomer to a highly knowledgeable member. Postings analyzed showed evidence of skills and knowledge acquisition. Figure 2 shows the individual stages that were part of the learning process: questioning, asking, receiving, reconciling, applying, and sharing knowledge.

#### Figure 2

Stages from newcomer to highly knowledgeable member as reported by study participants



Picture displaying the six stages from newcomer to highly knowledgeable member

Learning strategies included information-seeking behaviors such as initiating information-seeking, requesting information, being guided through information-seeking by a highly knowledgeable member, lurking or learning vicariously, evaluating information, and reconciling information. There was a clear process of stages of knowledge and skills acquisition or a progression from a newcomer to a highly knowledgeable member. Questioning included: the caretaker questioning what was normal for their child; the caretaker being discontent with their child's health care; and the caretaker doing their own research. Asking included: the caretaker desperately sharing their situation and asking for help from group members; members asking detailed guestions of the caretaker; and the caretaker answering members' follow-up questions in the thread. Receiving included: members indicated helping the caretaker identify related conditions; encouraging the caretaker to do their own research; highly knowledgeable members suggesting sources or actions for the caretaker to take; and members personally messaging newcomers. Reconciling included: the caretaker evaluating information; the caretaker looking for duplicating responses; the caretaker assessing the applicability of the information in their own life; and the caretaker asking follow-up questions of the members. Applying included: the caretaker applying the group's advice, seeing results, and reporting back to the group; and the caretaker having doctors acknowledge their knowledge. The last step, sharing knowledge, included: the caretaker assessing their own knowledge-sharing ability; having other parents seek their advice; and the caretaker sharing knowledge and becoming a new highly knowledgeable member.

### Applying Acquired Knowledge Gained Through Participation in the Group

The third theme centered on how members learned by applying acquired knowledge to the care of their GERD child. Interviews and postings showed that members of the group applied knowledge gained in the group in different ways. Table 4 shows the ways in which knowledge was applied, and how often these were referenced in interviews and in postings analyzed.

#### Table 4

#### Application of Acquired Knowledge

Applications	Number of instances referenced in interviews	Number of instances referenced in postings
Using acquired knowledge to advocate for child	33	4
Applying knowledge to care of subsequent children diagnosed with GERD	18	1
Applying knowledge by compounding medication	14	10
Generating new learning artifacts	9	3

Applications	Number of instances referenced in interviews	Number of instances referenced in postings
Applying advice and changing diet	0	8
Discerning misconceptions pediatricians and gastroenterologists have	7	3
Group experience-based knowledge informing practicing medical profession	3	0
Trying natural treatments recommended by other members	0	3
Acquiring options to design own child's treatment	1	1
Controlling direction of learning	1	0
Total	86	33
Note. GERD = gastro esophageal reflux disease.		

**Discussion and Implications** 

Schugurensky's (2000) taxonomy included three forms of informal learning: self-directed, incidental, and socialization. Based on participants' statements, aspects of all three forms of informal learning appeared evident in the online social media group explored in this study. Participants described engaging in self-directed learning activities within the group. They sought out the group and asked questions of their own accord. They posted questions in their own words on the group's wall as they needed information, and engaged in incidental learning such as gaining emotional knowledge to help them deal with changing expectations of their role as a caretaker of an infant with GERD. Participants discussed socialization, a process where they internalized skills and values from their participation in the group including learning how to question medical professionals and advocate for better medical care.

A valuable implication of this study for instructional designers trying to create and sustain successful informal learning spaces in social media is that informal learning in these spaces is highly shaped by the learner (Marsick & Volpe, 1999). As Rogoff et al. (2016) note, this is one of the distinctions of informal learning compared with formal learning, that is, the role of learner choice or direction. Participants of this study described ability to shape their own learning within the group. There were no expectations for participation, time limits imposed, or limitations on what knowledge members could seek, acquire, or share. Informal learning was unstructured, experiential, and self-selected (Carliner, 2013; Marsick & Volpe, 1999). Learning was unstructured and flexible – it could be started and stopped whenever they wanted. It was also indeterminate and represented a process of becoming (Hager, 2006). Participants described not knowing when their participation and group membership would end, and that their learning and participation in the group was a contextual process highly dependent on the needs of their child or life situation at the time. All of these features of informal learning lead to a need for a different type of design for learning-oriented social media sites.

### Information-Seeking Behavior

Researchers have developed models for better understanding information-seeking processes. One of the most cited is that of Carol Kuhlthau (1991b) who developed the Information Search Process (ISP) which includes a six-stage model that incorporates three dimensions of information-seeking behavior: affective (feelings), cognitive (thoughts), and the physical (action) and involves the stages of initiation, selection, exploration, formulation, collection, presentation, and assessment.

However, a new model is needed to better understand information-seeking behavior when initiated by the informationseeker to solve a real-life problem they are experiencing and invested in versus an imposed need. Kuhlthau's (1991a) model was created in the 1990s and much has changed regarding the use of online spaces to find information. Figure 3 depicts a new information-seeking model that best describes the information-seeking behaviors of participants, including their feelings, thoughts, and actions at each of the six stages (Vargas Wright, 2018).

#### Figure 3

	Initiating Lurking Browsing	Requesting Information	Being Guided by Expert Member	Reconciling	Applying	Appraising
Feelings (Affective)	Desperation	Hopefulness	Clarity	Optimism	Empowerment	Feeling Satisfaction of Dissatisfaction
Thoughts (Cognitive – Blooms Taxonomy)	Identifying/ Locating	Describing	Comparing/ Contrasting	Evaluating	Constructing, Designing Plan of Action	Assessing
Actions (Physical)	Exploring	Seeking	Gathering	Examining	Implementing	Continuing or Re-Starting Information Seeking Process

Model of Information-Seeking in Social Media Groups

Picture showing a Model of Information-Seeking in Social Media Groups

It is depicted in a similar fashion to Kuhlthau's (1991b) model to facilitate comparison. The identified stages were initiating, lurking, and browsing; requesting information; being guided by a highly knowledgeable member; reconciling; applying; and appraising. For the first stage of initiating, lurking, and browsing, feelings were desperation, thoughts were identifying/locating, and actions were exploring. For the stage of requesting information, feelings were hopefulness, thoughts were describing, and actions were focused information-seeking. For the third stage or being guided by a highly knowledgeable member, the feelings were clarity, thoughts were comparing/contrasting, and actions were gathering/sorting. For the reconciling stage, feelings were optimism, thoughts were evaluating, and actions were examining. For the applying stage, feelings were empowerment, thoughts were constructing and designing a plan of action, and actions were implementing. For the appraising stage, feelings were satisfaction or dissatisfaction, thoughts were assessing, and actions were continuing or re-starting the information-seeking process.

The current study's findings about the information-seeking behavior of individuals within an online social media group suggest participants highlighted the sense of belonging in a community as a factor in their continued membership, participation, and knowledge-sharing in the group. Thus, the design of these spaces should consider the needs of social learning and guided discovery. New members need to be guided as they learn group processes and negotiate knowledge acquisition and sharing. Group leaders should have a visible presence that allows participants to experience a focused, safe space to share personal information and seek knowledge.

In addition, each stage of the information-seeking process is not always engaged in sequentially. In fact, many participants engaged in multiple behaviors simultaneously while delving into deeper levels of knowledge acquisition. For example, one participant would apply information while requesting information or would be reconciling the information already gathered while initiating a new search on a related topic. Therefore, the model is best illustrated by Figure 4, which intentionally depicts the information-seeking process as a continuous cycle, with the individual central to deciding which stages to engage in and when (Vargas Wright, 2018).

#### Figure 4

Information-Seeking in Online Social Media Groups Directional Model



A picture showing the directional model for information-seeking in online social media

The individual's role as both the learner and the one who directs information-seeking and the knowledge acquisition process speaks to the flexibility and non-linear information-seeking afforded by new informal learning spaces, such as social media. Although the model is depicted as a cycle, there are exit/entry points at each stage. As the interviews and postings analyzed illustrated, in social media spaces and other newer informal learning spaces, individuals can exit at any point and re-enter at any point in the cycle. Learners are in control of their learning paths and can engage in different behaviors whenever needed.

One of the applied implications for this model involves medical providers, traditionally viewed as health authority and screener of medical information (lverson et al., 2008). Throughout the study, there was a common thread that participants were seeking additional information beyond that offered by their doctors. There was a general sense that doctors were not adequately listening to participants or did not have enough familiarity with the challenges of infant GERD and the day-to-day care of infants with GERD. Many felt medical providers would be better informed in joining groups like the one this study explored to learn what needs caretakers had and how to best help them. Informal learning spaces, such as the one described, may be discounted for the important resource they provide. Medical providers may wish to consider and explore the ways online groups facilitate communication with patients to improve or close the distance between them and patients. Given time constraints and the desire of patients to proactively investigate on their own, lverson et al. (2008) suggested doctors encourage patient questions and health information searching because they increase patient compliance and lead to better health outcomes. Participating in online groups that center the experience of the learner may be one way to help those who need both reliable medical information and much needed encouragement and support.

### Limitations of the Study

A limitation of the study is focusing on a group of people in a space interacting around a particular topic in one moment in time. Generalizability is not possible; however, the study does add to the small body of research focused on informal learning in online social media spaces (Davis, 2010; Dolan, 2013; Mak, 2013; Smock, 2012). A second limitation of this study is inability to interview members who had left the group, as their information was deleted from the social media group. Hence, they could not be recruited for participation. Their experiences with the group and what caused them to leave are missing from the study. It should also be noted, the lead author was a participant observer and a member of the group. This could have led to certain assumptions; however, as discussed in the methods section, triangulation, member-checking, analytical memos were used to mitigate this risk.

### **Future Research**

This study adds to the body of work on information-seeking in online spaces, but more needs to be examined on information-seeking in social media. Although some researchers such as Asghar (2015) have developed scales to evaluate information-seeking in Facebook in general, there is still much research to be conducted on information-seeking within specific Facebook groups. More studies need to be conducted regarding the validity and reliability of information gained online, particularly when it comes to health outcomes, along with the effects of seeking emotional support for a health issue online through Facebook or other social media groups (Oh et al., 2013).

Using Grounded Theory, the current study explored the learning experiences of members of an online informal learning community space. It contributes to a better understanding of online informal learning spaces in social media when focusing on information-seeking behaviors. The study resulted in a proposed framework for exploring information-seeking in online social media groups. Findings suggest online spaces provide an important space for informal learning and a viable avenue for the transferring of experience-based knowledge.

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# Informal Learning Experiences on Social Media: The Case of #MarketingTwitter

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Informal learning in online social communities encourages a sense of belonging and support in a casual environment while enhancing members' knowledge and expertise. Several studies have explored the use and benefit of online social communities, particularly in the education field. Yet, little research examines how informal learning occurs in other professional hashtag communities on Twitter. This research explores the #MarketingTwitter professional's community to identify how users promote an instructional design of informal learning experiences and strategies to engage and impact members in the community including possible new users.

# Introduction

Twitter

On December 3, 2020, Twitter user @ThatChristinaG tweeted, "if you have less than 1,000 followers and work in marketing in some capacity, introduce yourself to Marketing Twitter. Say hi, tell us about yourself, and what you like to tweet about. Make friends." This tweet posted by Christina Garnett, Community at HubSpot, generated more than 5000 likes, 700 retweets, and 3000 comments. This tweet helped to contribute to the growth of the Twitter professional community called #MarketingTwitter. With her tweet, Garnett highlighted one of the key motives to user's participation in online professional communities: to provide support and create a sense of community in a casual environment. Professionals in diverse industries are looking for online niche communities that focus on topics related to their field to deepen their knowledge and expertise (Eaton & Pasquini, 2019). Several studies have explored the uses and advantages of Twitter communities in the education field (e.g., Blankenship, 2018; Goodyear et al., 2019; Gao & Li, 2019; Johnson-Holder & Bethea-Hampton, 2019; Xing & Gao, 2018), such as #AcademicTwitter (Gomez-Vasguez & Romero-Hall, 2020), Academic Advising (#AcAdv; Eaton & Pasquini, 2019), and Twitter chats like #Edchat (Staudt-Willet, 2019).

There is growing evidence of teachers using and engaging in social media communities to share information about practice (Trust et al., 2016; Wesley, 2013), and the necessity of belonging to professional learning communities for continued professional development (Goodyear et al., 2019). Several studies focus on professional communities on Twitter for early-career networking for women in academic medicine and science (Lewis et al., 2018) and public health professionals (Hart et al., 2017). However, online professional communities are still an understudied field (Carpenter et al., 2020), particularly across different contexts and fields on social media (Veletsianos, 2017). To date, little research has centered on how instructional design of informal learning occurs in other niche professional communities on Twitter, such as marketing. Marketing is growing as a field, and with the advancement of social media and digital platforms, marketers are turning to online communities to connect, learn, participate, and belong. As diverse online professional communities continue to grow and thrive, it is imperative to research various networks' functions and contributions to professional life (Eaton & Pasquini, 2019) for instructional designers' benefit when building online learning experiences.

This paper explores how the #MarketingTwitter community shapes informal learning experiences through online social activities that provide attention, relevance, confidence, and satisfaction (Keller, 1987) using quantitative content analysis, textual analysis, and social network techniques. The research questions guiding this study are:

RQ 1. What communication patterns can be observed in the #MarketingTwitter community?

RQ 2. What kinds of users contribute to the #MarketingTwitter community?

RQ 3. How are informal learning and communication strategies shared?

RQ 4. What content formats and resources are utilized with learning and message strategies?

RQ 5: How does the #MarketingTwitter community promote instructional design strategies of informal learning experiences to engage members and shape learning experiences in the community?

This paper also discusses practical implications of how informal learning in online social communities, such as #MarketingTwitter, provide insights and recommendations into instructional design strategies.

# Professional Development and Informal Learning Experiences on Social Media Communities

Social media (e.g., social networking sites, listservs, messaging apps, online discussion forums, and workplace networks) enable users to participate in online communities for sharing ideas and co-production of knowledge. Literature indicates social media bridges formal and informal learning through participatory online communities (Greenhow & Lewin, 2016). Informal learning through social media encourages professional development opportunities, particularly in specific niche communities on Twitter (e.g., #AcademicTwitter, #AcWri, #Edchat), which are highly situational and interactive, and controlled by all participants (Luo et al., 2020). Twitter's newfound sanctuary for professional networking and development has led to academic interests in online communities and the possible informal learning opportunities for the rich content within these communities. When users contribute in a relaxed setting, it allows for more organic and forthcoming information on the topics discussed. According to We Are Social 2021 Digital Global Overview Report (in collaboration with Hootsuite), 63% of users globally use the internet as a tool to find information, while 30% of users utilize the internet as a tool for business research and networking (We Are Social, 2021).

Informal learning within social media communities is unplanned, unstructured, and motivated by the learner. For example, the #MarketingTwitter community is a highly participatory online community of digital marketers on Twitter. A representative Tweeter tweets, *"Hey #MarketingTwitter, what's the most gimmicky stunt you've pulled to promote something you did/will do? I'll start."* This Twitter user encourages other members in the community to share experiences and collaborate and learn from each other (Beach, 2012). Through informal learning, users could have a

more effective learning experience (Marsick & Watkins, 2001) and even empower members to reach goals faster with less effort (Donelan, 2016; Klein et al., 2013). Singh (2020) has found that both professional academics and participants in industry-based jobs have relied on the internet and its communities for career development and support. Therefore, Twitter's purpose in online communities is to inspire relationships benefiting all parties of the community (Witkemper et al., 2012).

The benefits of belonging and participating in online communities are extensive. Members turn to these communities to combat isolation, find emotional support, and build knowledge while experiencing a sense of camaraderie in informal settings (Staudt-Willet, 2019; Trust et al., 2020). Online social communities also allow members to develop desired skills or knowledge (Luo et al., 2020). They promote timely and situated informal professional learning for supporting social, cognitive, affective, and identity growth (Carpenter & Krutka, 2015; Greenhalgh & Koehler, 2017; Trust et al., 2016). Furthermore, these communities encourage instant feedback or allow space to brainstorm new ideas from interdisciplinary members (Hart et al., 2017).

# Professional Online Communities: Twitter Chats and Community Hashtags

In educational literature, Communities of Practice (CoPs) and Professional Learning Communities (PLCs) are terms used to define professional development opportunities occurring on social media (Luo et al., 2020). CoPs are a group of people "who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger et al., 2002, p. 4). On the contrary, PLCs are groups of people "who share common learning/professional interests, in which interactions and discourse take place over time through discussion, analysis and problem solving, that result in professional learning" (Goodyear et al., p. 422). Literature around CoPs and PLCs have focused on how teachers and professors engage with social media for professional development purposes (Carpenter & Krutka, 2014). Nevertheless, there is limited understanding of how informal learning experiences occur via social media among professionals in business settings and/or specialized fields and what it might mean for instructional designers within these communities (Conley & Sabo, 2015; Veletsianos, 2017).

Social media platforms have been utilized in the development of both CoP and PLCs in the past decade. Teachers have used social media for professional learning purposes implementing hashtags and Twitter chats (Trust et al., 2016; Wesley, 2013). Scholars proposed Twitter's community hashtags as fostering imagined communities of mutual or common interest (Bruns & Burgess, 2011; Gruzd et al., 2011). The study of online professional communities has also been common in the health (e.g., Xu et al., 2015; Rashid et al., 2018) and education sectors (e.g., Gomez-Vasquez & Romero-Hall, 2020; Trust et al., 2020) through the employment of community hashtags such as #TipsForNewDocs, #RemoteTeaching #RemoteLearning, #AcademicTwitter, and others. These community hashtags center around conversations related to academic life experiences, accessibility, teaching, research support and advice, and selfprofessional branding (Gomez-Vasquez & Romero-Hall, 2020). They serve as platforms for meeting educator's cognitive, social, and affective needs (Trust et al., 2020). These community hashtags also involve messages promoting socialization in a humorous and colloquial style (Rashid et al., 2018). Furthermore, Twitter chats are valuable avenues for making connections and enhancing education about a wide range of topics. One of the most popular chats in the education field is #Edchat (Britt & Paulus, 2016; Coleman et al., 2018; Staudt-Willet, 2019). Twitter chats, such as #Edchat, have been an excellent tool for supporting teachers' development and informal learning (Britt & Paulus, 2016). However, interactions within #Edchat are brief, thus, encouraging casual relationships through weak ties (Coleman et al., 2018). Collaboration and networking are not standard in large Twitter networks such as #EdChat due to the rapid flow of information (Staudt-Willet, 2019). Twitter chats like #Edchat have been effective for exploring ideas but are underutilized for sharing emotions (Staudt-Willet, 2019).

Online communities draw participation from a wide range of users with different levels of experience and expectations (Xu et al., 2015) from various disciplines. Gomez-Vasquez and Romero-Hall (2020) found the #AcademicTwitter

community attracts educators (professors, researchers, and graduate students) and media accounts, and professionals from related disciplines. However, unequal user participation in these communities is notable and is attributed to "lurking" (Veletsianos, 2017). Most of the participants lurk, while a small number of users contribute to the community. These communities not only face lurking behavior when it comes to user participation, but also find a loss of long-term user retention. Xing and Gao (2018) determined tweets' writing style influences participants' continuation as active members. For instance, the authors found cognitive tweets (e.g., sharing personal opinions or experiences) and interactive features on those tweets (e.g., asking questions, having examples, making, or expressing arguments) contribute to a lower risk of members dropping out of those communities. The COVID-19 pandemic has contributed to the increasing use of Twitter professional niche communities for emotional support and sharing of experiences among educators (Trust et al., 2020). Therefore, it is imperative to examine instructional design characteristics rooted in social media to shape better informal learning experiences for learner retention.

# Instructional Design of Informal Learning Experiences on Social Media

Instructional designers have utilized techniques and strategies from various entertainment media (e.g., film, television, comics, computer, and video games) to design educational materials for diverse audiences (Dickey, 2005). With the popularization of social media platforms and online communities, instructional designers have opportunities to learn and borrow techniques to leverage the inherent benefits of social media in instruction design. Since instructional design creates learning experiences for the unique needs of different audiences or topics (DiFranza, 2020), social media provides an array of diverse applications and online communities encouraging collective knowledge building and strategies to learn from.

Social media affordances encourage participation, engagement, collaboration, relationship building and others (Kaplan & Haenlein, 2010), which contribute to fostering online learning (Dickey, 2005). The interactivity of social media affordances is due to the "participatory nature of viewing, creating, and sharing content and the knowledge it offers" (Conley & Sabo, 2015, p.1). These platforms facilitate the development of reusable content that is easy to update and revise (Conley & Sabo, 2015). Hashtags play a key role in social media platforms and online communities. They serve as instructional content tagged with descriptors for free and easy to search and locate content (Churchill, 2006). Veletsianos (2017) emphasizes the importance of studying hashtags in online professional communities to identify their productive use. Veletsianos stresses instructional designers should investigate innovative benefits of technology (e.g., social media communities) to recognize learning techniques for professional development.

It is essential to understand how social media should be used for instructional purposes (Conley & Sabo, 2015). As an example of emergent digital media, online professional communities on Twitter may inform instructional designers in uncovering features and strategies with new methods for engaging diverse learners. In other words, using social media, especially niche communities on Twitter, in a "structured" way allows the identification of elements to improve learning experiences. Few studies, until this paper, have addressed social media platforms and the link with instructional design. For instance, Conley and Sabo (2015) published a literature review discussing how social media could be effective in the classroom by examining learning and instructional design theories. The authors proposed a Social Media Instructional Design Model Framework to guide instructional designers using social media in teaching. However, the research does not discuss instructional strategies or techniques on social media for content creation and social interaction. Therefore, this study contributes to instructional design literature by identifying and analyzing instructional design characteristics rooted in the niche professional community on Twitter (#MarketingTwitter) through online social activities and strategies that provide attention, relevance, confidence, and satisfaction (Keller, 1987). This paper proposes a thematic framework of key themes on the #MarketingTwitter community that included instructional design features and strategies which emerged from the analysis (inductive) and previous frameworks (deductive; Keller, 1987; Goodyear et al., 2019; Rashid et al., 2018; Staudt-Willet, 2019). The thematic framework provides strategies for instructional designers to build and maintain an online social community of learners to contribute to community engagement to shape informal learning experiences.

# Methodology

Using quantitative content analysis, textual analysis, and social network analysis, this paper aims to understand how the #MarketingTwitter community shapes informal learning experiences through online social conversations. Netlytic software was used to collect, download, and analyze tweets containing the hashtag #MarketingTwitter from December 5, 2020 – January 22, 2021. The raw dataset had 28017 messages and 9634 unique users. A random sample of 1,500 tweets was selected from the dataset. Netlytic software was used to identify centrality users and examine social network characteristics.

Textual analysis using Netlytic and Linguistic Inquiry and Word Count (LIWC) software was used to identify word recurrence, sentiment analysis, authenticity, and analytical thinking of the tweets. Several variables and categories were established for performing a quantitative content analysis of the 1500 tweets, using both manifest and latent units. The categorization was derived inductively and deductively:

- 1. Type of tweet (e.g., tweet, reply, retweet quote tweet);
- 2. Content format identifies the multimedia format that accompanies the tweet;
- 3. Resources are tools that accompany the message to amplify or support it (e.g., related hashtags, tagging, and emoji);
- 4. The level of engagement of the tweet in terms of likes, shares, and comments;
- 5. Purpose of a tweet describes the communication message strategy, such as information, community, mobilization, appreciation, inspiration, and others. This is based on the Information-Community-Action (ICA) framework by Lovejoy & Saxton (2012) and some inductive categories;
- 6. Learning strategies refer to the different informal learning strategies employed in the community; this categorization was built on Carpenter et al. (2020) and Trust et al. (2020).

All categories coded were mutually exclusive. Inter-coder reliability tests were conducted to check the validity of the manual coding schemes. The authors independently coded 170 tweets. The inter-coder reliability tests performed on each variable indicated scores ranging from 0.911 to 0.989 agreement (Cohen's Kappa), indicating a high level of inter-coder reliability. The remaining tweets were divided between the authors and coded independently.

# **Results and Discussion**

# RQ1: What communication patterns can be observed on the #MarketingTwitter community?

Researchers used quantitative content, textual, and social network analysis techniques. During the analyzed period, 28 017 messages were exchanged by 9634 unique posters. Sentiment analysis revealed most tweets included positive feelings (3844 posts, 4171 terms) compared to negative feelings (274 posts, 279 terms). Most recurrent positive words were *great, good, happy, excited, and kind*. On the contrary, most frequently used negative words were *bad, tired, terrible, awful, and embarrassed*. To explore sentiment analysis even further, we used LIWC. Results indicated that #MarketingTwitter had a 90.83% tone, showing a high positive and upbeat style network. Negative tweets were minimal (0.65 out of 100 070 words), with only 0.15 tweets signaling anxiety, 0.12 anger, and 0.12 sadness. After this analysis, it is evident #MarketingTwitter is a positive environment for professionals to engage in conversations, as summarized in this tweet:

I've seen so many tweets about this recently, is #MarketingTwitter a new thing? It seems so positive and there were so many great threads I already read through, so I definitely want to get involved and get to know some new marketing folks.

Communication patterns revealed formal, logical, and hierarchical thinking (73.2% according to LIWC. Furthermore, most of the users in this community showed high expertise and confidence (LIWC Clout level: 85.78), which does not come as a surprise since this is a community of marketing professionals. Authentic levels were low (35.36) suggesting

a more guarded, distant form of discourse. Other communication patterns revealed (using Netlytic software) #MarketingTwitter is a wide network (diameter: 30) based on the longest distance between two network participants. Users were not close with others (density: 0.043300), indicating a centralized network dominated by a few participants (centralization: 0.077030). Findings align with previous studies which found highly contributing users provide a significant proportion of the overall content while most users make few contributions indicating participation inequalities in online settings (Veletsianos, 2017). Only 4% of tweets were two-way conversations. #MarketingTwitter showed several small communities instead of a solid single community (modularity: 0.741800). Data indicated only five main clusters, but most participants were outside these main clusters (See Figure 1 for the #MarketingTwitter network).

#### Figure 1

#### #MarketingTwitter Network



A visual showing data clusters pertaining to #MarketingTwitter Network

# RQ2: What kinds of users contribute to the #MarketingTwitter community?

We performed a social network analysis to identify indegree and outdegree users. A degree is the number of connections a node (user) has and is measured by the number of ties (e.g., tweets) a node receives from others. Outdegree users mention/tag others frequently; they connect others with resources and information. Most outdegree users were marketers while a few were marketing companies with an average of less than 10K followers. Indegree users are tagged or mentioned in tweets. Indegree users are key players in the network (e.g., influencers), they are extensively involved in relationships with other network members, and they are considered trusted information sources (Gruzd & Haythornthwaite, 2013). Information shared by prominent indegree users shapes how others in a community understand and view a topic. Most indegree users were Twitter accounts like ClubHouse, Adweek (media outlet), and marketing professionals with 15K followers. The highest indegree and outdegree user was a marketing professional that became a leader in this community by contributing resources and connecting with others in the community. The affordances of social media platforms allow new kinds of transparent, empathetic, and inclusive leaders with unique skills such as community building and engagement to emerge in online community groups (The Gov Lab, 2021).

# RQ3: How are informal learning and communication strategies shared?

U textual and content analysis, the authors identified recurrent words in the conversations (See figure 2). Further analysis found that the top 50 words encompassed positive words like *good, great, amazing, and love*. Call-to-action language, suggesting indications of informal learning, was found in words such as *click, build, connect, check, make, read, find, join, learn, share, and dm (direct message)*. Authors also found additional words related to informal learning and community building such as *#marketingtips, tips, experience, reading, community, building, friends, follow, followers, and team*.

#### Figure 2

#### Top Ten Most Frequently Used Words



A bar graph showing the top ten more frequently used words

Table 1 shows a descriptive analysis of the variables used for quantitative content analysis. Most of the tweets included hashtags (63%), emoji (26%), and tagging (24%). Tweets had an average of 21 likes, three shares, and two comments. As seen in table 1, tweets that included only text (no images, hyperlinks, or multimedia) were used more frequently. Communication strategies were primarily informational which means users were mainly focused on distributing information and not engaging or mobilizing. However, other strategies were utilized such as community (e.g., dialogues/conversations), action or mobilization (e.g., call-to-action language), and appreciation and inspirational content (e.g., encouragement such as *"Don't Analyze the Solution. You should Try to analyze the problem. Then you will Find out a better solution"*) which summed 61% of the tweets. If almost 61% of the tweets were cognitively or interactively encouraging (e.g., personal experiences, asking questions, providing examples), these results indicate members present a lower risk of dropping out of the community (Xing & Gao, 2018).

#### Table 1

Type of tweet	Content format	Purpose	Learning strategies
Tweet: 51%	Text only: 58%	Information: 36%	Support ideas: 36%
Retweet: 30%	Images/graphics: 18%	Community: 27%	Networking & education: 22%
Reply: 11%	Link to article: 16%	Inspirational: 19%	Offer/ask advice/support: 15%
Quote tweet: 9%	Multimedia: 8%	Action: 10%	Self-promotion: 15%
		Appreciation: 5%	Amplify others: 10%
		Other: 2%	Other: 2%

#### Descriptive Analysis of Main Variables and Categories

#### Variables and categories

Type of tweet

%

Variables and categories	%
Tweet	51
Retweet	30
Reply	11
Quote tweet	9
Content format	
Text only	58
Images/graphics	18
Link to article	16
Multimedia	8
Purpose	
Information	36
Community	27
Inspirational	19
Action	10
Appreciation	5
Other	2
Learning strategies	
Support ideas	36
Networking & education	22
Offer/ask advice/support	15
Self-promotion	15
Amplify others	10
Other	2

Participants encouraged diverse informal learning strategies by supporting content or other members' ideas, encouraging networking and learning, and offering or asking for support. Members supporting (or endorsing) content ideas, statements, or quotes were the most used learning strategies (See Table 1). Although tweets were informational, they provide members with resources and knowledge for informal professional development. 22% of tweets encouraged networking and education demonstrated by questions or statements that supported responses from different perspectives. Hence, it becomes a relaxed and enriching learning experience for members. For instance:

#MarketingTwitter should get together once a month and make a thread where we answer brands on different questions regarding marketing. There is nothing to lose. They get a free advice, and we get to think outside our everyday tasks. We can help each other.

These interactive tweets provide members with opportunities to brainstorm ideas, get informed and educated while networking simultaneously (Xing & Gao, 2018).

# RQ4: What content formats and resources are utilized with learning and message strategies?

Authors ran crosstabs to see descriptive relationships between the categorical variables to answer RQ4. Information and community categories (that belong to the 'purpose of tweet' variable) used mostly text (13.42% and 22% respectively), followed by links to articles (12% for informational purpose), and images/graphics (4% for community purpose). The most used learning strategies (support ideas and networking/education) had similar results as the purpose variable whereby text was mainly used, followed by image/graphics. Hashtags were used primarily for

informational purposes and learning strategies such as supporting others' content ideas. When running a crosstab between purpose and learning strategies, it was found that the support of others' content ideas strategy was mainly informative (15%) and inspirational (13%).

# RQ5: How does the #MarketingTwitter community promote instructional design strategies of informal learning experiences to engage and impact members in the community?

By conducting a thematic analysis of the tweets, authors identified key themes on #MarketingTwitter tweets to propose a thematic framework of instructional design strategies for informal learning on niche professional communities to comprehend needs, interests, and motivations. As shown in Table 3, the framework builds on Rashid et al. (2018), who analyzed the health professional community on Twitter #TipsForNewDocs and proposed five main categories of sharing knowledge: propositional, personal, process, know-how, and socialization. Motivations were identified for each of the five main categories using The ARCS Model of Motivational Design Theory which details motivational characteristics of learners: attention, relevance, confidence, and satisfaction (Keller, 1987). The framework provides instructional design strategies to promote motivation to build a community around informal learning experiences on online social communities.

#### Table 3

Propositional knowledge (Attention)	Process knowledge (Relevance)	Personal knowledge (Confidence)	Know-how knowledge (Satisfaction)	Socialization (Satisfaction)
Self-branding and achievements	Professional development opportunities	Provide advice/support	Inspirational moments	Affiliation
Insights from colleagues	Mobilization through call-to- action language	Community engagement	Amplify content/other members	Appreciation
Improvements in the profession	Networking opportunities	Work/life balance		Everyday life

Thematic framework of instructional design strategies for informal learning in niche professional communities by motivation type

Propositional knowledge describes theoretical aspects of professional knowledge. For instance, #MarketingTwitter members engage in self-branding (i.e., going beyond simple introduction to using the opportunity to brand themselves for career opportunities or promoting achievements), learning from peers through their insights, and sharing tips on how to improve as professionals. Propositional knowledge strategies in online niche communities encourage learners' attention. It includes unexpected elements, curiosity, creative content, asking challenging questions, and providing insights and real-world examples on solving industry/work issues through active participation.

Process knowledge describes the exchange of professional development opportunities resulting in mobilizing users to do an activity (including call-to-action language like *click, build, connect, check, read, find, join, learn, share, and dm*) leading to networking and learning opportunities. Process knowledge strategies in online niche communities encourage relevance since learners in the community share diverse valuable content, opportunities, and experiences while contributing to completion of work or tasks. Furthermore, personal knowledge (interpretations of experience) refers to professional knowledge acquired through an experience such as giving advice or support about the profession, encouraging engagement through dialogues and conversations, and learning how to balance work-life or manage stress. Personal knowledge strategies in online niche communities inspire confidence in learners because it facilitates self-growth while providing constant feedback and support.

Know-how knowledge refers to details regarding how workplaces operate, which stimulates or persuades members to think about work concepts leading to inspirational moments. It also includes the importance of amplifying or giving voice to other professionals with different perspectives regarding how an industry or a field operates. Additionally, socialization reinforces relationships through experiences by helping to create a defined sense of professional identity. Different themes regarding socialization were indicated in the results such as an appreciation of all the benefits and opportunities #MarketingTwitter provides, a sense of affiliation, and an enjoyment of everyday life tweets (day-to-day life experiences including funny moments). For instance:

*If you see the #MarketingTwitter community and feel like you don't belong — you're inexperienced, feel like you have nothing to say, etc. — know you're ABSOLUTELY welcome. We're all just nerds learning from another, having fun, and sometimes tweeting while on gummy edibles.* 

Both know-how knowledge and socialization in online communities encourage satisfaction by providing learners with positive consequences in learning, participating, and contributing to the community.

# Conclusion

This paper explored the #MarketingTwitter professional's community to examine how members encouraged instructional design strategies for informal learning experiences built using the unique attributes of online social media communities. Most community members used simple text forms to inform and nurture a sense of community by supporting content ideas/statements while fostering networking and informal professional development. Although links, images, and multimedia combined were found in 42% of the content shared in the community, as advancements on Twitter continue to grow, online niche professional communities are expected to use other content formats to provide an enriching informal learning experience on Twitter. Hashtags were highly used among members, offering opportunities for professional development, and as aligned with other studies, reflected user's needs and desires (Veletsianos, 2017). For instance, the second most used hashtag, #MarketingTips, suggests marketing professionals are using Twitter for informal learning experiences. Findings support the analysis of previous studies about hashtag online professional communities, and mainly focused on sharing and improving personal and professional knowledge (Rashid et al., 2018) or overall awareness of topics (Xu et al., 2015). Call-to-action language revealed relevant opportunities for members to strengthen informal learning and community engagement. Instructional designers supporting designing interactive online learning experiences must carefully consider formats, types of posts, purpose, and online learning strategies, such as those identified in this article, on social media platforms. These features, along with the thematic framework proposed, contribute to visualizing Twitter communities in a "structured" way, and presenting the identification of elements and strategies to improve online learning experiences.

Our study aligns with Goodyear et al.'s (2019) conclusions which noticed most interactions became disconnected and fragmented due to the high number of participants – also revealed in the social network analysis results. Although findings indicate members were engaging in diverse informal learning opportunities (e.g., support content ideas/statements and fostering networking and education), most of these tweets were posted by members that are not part of highly connected clusters. To navigate against these challenges, members encourage and mobilize other members to form small niche communities (i.e., more specialized communities within marketing). For example, "Hey MarketingTwitter! I'm looking to connect with folks who are interested in or doing great things in the area of Employee Brand Advocacy and Internal marketing generally. Looking forward to exchanging ideas. Please tag or reach out". Or thesemember continue the conversation on other social media platforms like Clubhouse for informal learning, professional development, and networking opportunities - also revealed in some of the data from this study. These opportunities provide more advantageous professional relations, and new areas of discussion and research (Goodyear et al., 2019) for future studies.

Our data analysis suggests #MarketingTwitter represents an established group of marketing practitioners looking for online informal learning experiences and resources to address professional challenges. At the same time, those users are searching for opportunities to support and help each other. These findings also line up with previous studies in teaching online communities (e.g., Staudt-Willet, 2019; Trust et al., 2020), in which the benefits of these communities have positively impacted teachers' practices. The thematic framework proposed can be utilized when designing professional development and learning experiences across diverse industries, social platforms, and audiences. It

suggests instructional design strategies and motivations to engage and impact informal learning experiences in online niche professional communities. Future studies can build upon this framework for analyzing Twitter educational communities such as instructional designers in education, instructional designers working in K-12 environments, or small niche communities in other fields such as public relation professors (e.g., PRprofs). One of the community leaders and highest indegree and outdegree user of the #MarketingTwitter community, @ThatChristinaG, tweeted on December 8, 2020, "This community doesn't belong to me. It belongs to all of us. Be kind. Hype each other up. Add value. Learn. #MarketingTwitter" indicating the true nature of #MarketingTwitter.

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# Learning Without Borders: Moving Beyond the Comfort of the Classroom Cohort to an Inter-cohort

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Collaboration

Learning Without Borders

Flipgrid



This study explored student responsiveness to using social web technologies as a tool for fostering dialogues across university boundaries. Focused on the theme "Learning Without Borders," this study explored student responsiveness to using a video discussion tool (Flipgrid) to facilitate an inter-cohort collaboration between classes from two universities. The results highlight students' appreciation towards practicing "Learning Without Borders" rather than simply reading about it. Also, students' reflections on the experience raises their awareness about learning as occurring in one centralized location versus a distributed phenomenon mediated by social technologies. The authors argue for a new direction in online classes, one that moves the conversation from siloed, limited engagement to supporting a paradigm of Learning Without Borders.

# Introduction

Technological advances have made it easier to connect globally. Despite vibrant networks of learners and content around the world made possible by social web technologies, the benefits of extended learning communities expanding beyond the immediate boundaries of the classroom remain unexplored. This study discusses an inter-cohort collaboration between classes from two universities. Focused on the theme "Learning Without Borders (LWB)," the study used a video discussion grid tool (Flipgrid) to facilitate conversations across classroom communities on this topic.

While the advent of video in online classes is rightfully celebrated as a good innovation, the authors argue that there are many missed opportunities. As Mott and Wiley (2009) assert, most current use of video presents a picture where "... instructors and institutions are essentially making the old, content-centric paradigm more efficient, but leaving it largely unchallenged and unquestioned" (Mott & Wiley 2009, p. 6). Expanding their critique, they argue video use in educational contexts is unnecessarily limited by three common characteristics: a) imposing artificial time constraints on learning; b) privileging instructors as the foci in the learning process; c) situating teaching and learning in "walled gardens that are

disconnected from the rich and vibrant networks of learners and content in the wider world" (Mott & Wiley, 2009, p. 7). It is the third element of this critique that has particular relevance to our study of video and the concept of LWB. Similarly, the study aims to respond to this gap by recognizing and supporting the synergetic learning occurring through networked collaborative discourse (Chen, 2019). Regardless of whether text or video is used, the ultimate goal of discussion boards is to promote engagement in a course. Therefore, the authors argue for a new direction in online classes that moves the conversation away from siloed, limited engagement (Asino & Tietjen, 2018) and towards supporting a paradigm of LWB.

Many class-based learning communities remain housed within the safe borders of their respective educational institutions despite the often-cited promises of web-based technologies to eliminate conventional boundaries such as geography. West and Williams (2017) propose further research should explore questions such as how new media technologies (e.g., Flipgrid) "clarify our understanding of the boundaries in learning communities" and "What relationships and/or level of interdependence can exist between learning communities defined by these various boundaries" (p. 1578)? This study used the video posting tool, Flipgrid, as a small step towards exploring student responsiveness to this type of mediated inter-cohort communication. Overall, students found it a positive experience and appreciated the opportunity to practice LWB rather than simply reading about it.

# **Literature Review**

LWB is used in the literature frequently, but often without an agreed upon definition. In general, it is most often used as a way to describe any type of learning outside a classroom. According to literature, understanding of LWB comprises of three key aspects: learning in service, removing distance, and collaborating on activities.

# Service Learning

One of the most common uses of LWB refers to service learning. Flipsen et al. (2009) used the LWB concept to refer to community-based service learning in an international context. The authors viewed LWB as providing a way for students across national borders to work together. When engaging in LWB:

The cultural component stretches over the continents and stimulates participating students, instructors and communities to develop a flexible way of working, using all kinds of techniques and communication methods to work together adapting to different points of view and attitudes. (p. 5)

Cox et al.'s (2008) concept of LWB describes service learning using the following example. For instance, taking students on trips to provide medical service as volunteers in countries such as the Dominican Republic, Cuba, and Guatemala. Similarly, Zhang et al. (2013) reported taking students to the Gambia to find solutions that address and convert agricultural waste to fuel briquettes. Kirkup (2015) discussed LWB in terms of bringing students to a university as a means of enhancing campus diversity. In the above instances, the term LWB was used as a reference to moving students from their physical borders on campus to an unfamiliar terrain to demonstrate learning is not bound to their campus.

# **Removing Distance**

A second reference to LWB in the literature refers to removing distance or showing distance should not inhibit learning. In their reflection on the disruptive impact of COVID-19 on clinical care and medical education, Brady and Pradhan (2020) linked LWB to the opportunities afforded by distance learning. They discussed how current technologies removed borders by allowing flexibility of not having to be physically on campus. Students can learn asynchronously, but also contribute synchronously from remote locations. Brown et al. (2018) associated LWB to distance education and blended learning experiences. The authors argued despite the borders distance provides, it was still possible to provide learners with meaningful experiences, including blended formats. Medina and Todd (2017) explored the issues through a lens of online safety, arguing for "learning without walls, learning without the sense of personal or system safety being compromised" (p. 203) no matter where one is located. In these examples, the concept of LWB was used to reference the removal of physical distance through technology by reminding learners that in the age of technology, safety awareness is not limited to safety in the physical world.

# Collaborating on Activities

The third type of LWB discerned from the literature included bringing students together and collaborating on problembased learning challenges. In one case, students from the United States and China developed problem-solving and online collaborative skills through a virtual classroom exchange. In 2010, the State College Area School District (SCASD) in Pennsylvania, USA agreed to help develop a virtual international classroom exchange called the Schoolwires Greenleaf program. The program's project-based curriculum paired U.S. students with Chinese learners to collaborate, foster global citizenship, and prepare students for the digital work environment. In the work of Livshits and Vasilyev (2013), LWB means:

Students will have no borders: political (they can participate in international projects); without strict educational frames - they follow their schedule and took necessary subjects; they are also free to participate in the projects with professors and adult researchers - so they are not limited only to students projects'. (p. 4)

In this case, LWB was conceptualized as not just about physical space but also collaborating and broadly removing various borders.

# **Defining "Learning Without Borders"**

As the literature review illustrates, there are many different definitions and conceptualizations of LWB. For purposes of this study, we conceptualize LWB as removing the borders of grades (undergrad/grad), institutions, Learning Management Systems ("LMS"), and other related bureaucratic borders (See Figure 1).

#### Figure 1

Conceptualizing Learning without Borders



A picture showing the conceptualization of Learning without Borders

# Method

This study employed a design experiment, which involves an iterative cycle of designing, implementing, and evaluating (Cobb et al., 2003; Barab, 2014). For this paper, we report on the third iteration of the study.

# Participants & Context

This experiment featured one cohort from a university located in the Mid-Atlantic region of the U.S. ("Cohort 1") and another university from the southwestern region of the U.S. ("Cohort 2"). The Cohort 1 class consisted of 12 graduate students enrolled in an instructional technology and design program. The Cohort 2 class consisted of 20 graduate students enrolled in an educational technology program. Students were at varied levels in their master's journey and included in-service teachers as well as graduate students from various industries.

# **Design Intervention**

The design intervention involved three phases. The first was an initial meet-and-greet where students posted a video introducing themselves. The second phase asked students to respond to the Positing the future of the field (Asino, 2015) column published in TechTrends. The column consisted of two articles. The first was, Contemplating the Future of Educational Technology by Dr. Patricia A. Young of University of Maryland Baltimore County, and the second section was The Future of Learning Design: The Future's So Bright I Gotta Wear Shades by Dr. Kyle Peck of Penn State University. The column was selected because it highlighted aspects of LWB, specifically culture and systems thinking. In the first section, Young (2019) "emphasizes the importance of culture in our field and the design of learning and learning tools" (p.20). In the second section, Peck (2019) reflected on his "four decades career as a systems thinker and shares his optimism about the bright future ahead for the field" (p.20). In the third phase, we asked the students to reflect on their experience of participating in this "beyond borders" collaboration. A central question that guided this

design intervention was, did the participant's conceptualization of LWB, change due to this experience? Accordingly, we focused our analytical lens on two aspects: (1) how the participants defined LWB at the beginning of the experience and (2) how they defined it at its conclusion.

# **Results & Analysis**

# Participation Data

Before presenting a more detailed analysis, a summary of participation data across the three main activities is provided (See Table 1).

#### Table 1

Participation Data

Activity	Responses	Replies	Views	Engagement Hours
Introductions	42	48	1579	20.3
Article Reflection	38	94	1655	40.2
Reflection Activity	17	26	455	8.7

# Analysis

Our data analysis consists of two levels. The first is a summary of emergent codes generated through an analysis of the transcript. The second is a comparative analysis of how participants described their conceptualization of LWB changing, or not, as a result of the experience (i.e., How do you define Learning Without Borders? After participating in this discussion activity, how has your definition of Learning Without Borders changed?).

# Level 1 Analysis: How are the Participants Talking about the Experience?

Before immediately delving into a comparison of how definitions of LWB may have changed due to this inter-cohort experience, some insights were made based on how the participants from these different universities were talking about and characterizing LWB. What keywords, phrases and words frequently emerged in their descriptions, framings and perceptions of LWB? Analysis of the transcripts revealed seven codes:

- 1. Space and time
- 2. Physical geography
- 3. Access
- 4. Autonomy
- 5. Collaboration
- 6. Pedagogy
- 7. Praxis

In the paragraphs below, we provide a definition and brief example of each code.

#### Space & Time

The code of Space & Time referred to instances where a participant described how LWB meant learning was not restricted to a predefined classroom space and time. Similarly, this conceptualization of LWB meant the student could tailor learning to a time that was most suitable to their schedule. An example of the "Space & Time" code is demonstrated in the excerpt:

It means being able to learn share communicate without the confines of 4 walls or the confined of having to do it at us in very specific time. It is open. I can do it with any one, it doesn't matter where they are located.

## Physical Geography

Similar to "Space & Time", the element of physical geography emerged in participants' definitions of LWB when they explicitly referred to their physical location and how it related to learning (e.g., as an obstacle being removed). For example, in the following excerpt is "It doesn't depend on where you live. It's about your desire to learn and you're not confined to only knowing about the things that are going on in your area."

#### Access

Access generally pertained to when participants contextualized LWB as providing all people equal access to resources for learning. An example of this is "Learning Without Borders to me means that we should really have all the information at our fingertips. And that everything would be accessible to us."

#### Autonomy

The characteristic of autonomy surfaced when participants defined LWB by how it enabled one to pursue self-directed learning. An example:

I'm a big believer in trying to better yourself and be better for this world so I think that that's all great. There's a lot of great things out there, I've really enjoyed this week, collaborating with Oklahoma State. I think it's great to get a different perspective from people that we wouldn't normally interact with everyday.

#### Collaboration

The element of collaboration could be observed when a participant defined LWB as support for building understanding across divergent viewpoints. An example is in the following excerpt:

What Learning Without Borders means to me is the realization, or the fulfillment of what the Internet dreams of the Internet originally came with in the late 90s, where people were talking about communication with people from all over the place not necessarily just your own country not necessarily your own ethnicity or culture... should be able to have a classroom where I can join students from Africa from Asia from everywhere and the same thing.

#### Pedagogy

The element of pedagogy was noticed when participants defined LWB as how it stimulated new ideas for changing their teaching practice. An example is "I've had a lot of fun. I look forward to doing more of these styles of assignments and classroom education, and I might start incorporating something similar to this in my own work, education."

#### Praxis

Praxis most notably surfaced in the data when participants described how they saw the current activity as a form of applying or doing LWB rather than just reading about it. An example of this is "we're practicing learning Without Borders" and "... so after this week. I feel like my understanding of Learning Without Borders has definitely increased and I feel that after having this experience I have gone just from learning and talking about Learning Without Borders actually doing it [emphasis added]."

# Level 2: Content Analysis

To better understand student responses towards extending the boundaries of their respective classrooms, our second level of analysis of the data primarily focused on student reflections and how the experience impacted or changed their notions of LWB. More specifically, the analysis focused on two categories of change as a result of participating in this experience: (1) those participants who explicitly acknowledged a change in their definition of LWB and (2) those who said the experience did not change their definition or only in very small ways.

## Change in Definition of LWB

We begin this level of analysis by focusing on examples of participants who described their definitions of LWB as changed. To adequately contextualize the nature of this change, the definition they gave before participating in the experience and the definition they shared afterwards are provided. In this first example, the participant conceptualizes LWB primarily as an issue of access to resources and the importance of equity when it comes to the access of educational resources:

Before: "And Learning Without Borders means to me that. We can all have access to the same information. And it doesn't matter where we're from what we look like? What other resources we have things like that."

After: "so after this week. I feel like my understanding of Learning Without Borders has definitely increased and I feel that after having this experience I have gone just from learning and talking about Learning Without Borders to actually doing it. It's been really helpful in showing me the benefits that learning Without Borders and online learning can have with students, especially students who don't have the same type of access to learning materials as other students and so this has been a really helpful experience. I really liked it and I feel like I've learned a lot."

In the case of this participant, a transition in their definition of LWB from one that is more abstract and arguably idealistic (e.g., "We can all have access to the same information") to one that is more concrete and specific (e.g., "after having this experience I have gone just from learning and talking about Learning Without Borders actually doing it") is apparent.

In the next example, the participant explains the change in their LWB definition has undergone a small, but nevertheless noticeable change:

Before: "Learning Without Borders means to me, giving students the freedom to learn any place at any given time. It allows individuals who may work, a 9 to 5 job or even though they have families. The ability to continue their education."

After: "overall, I definitely enjoyed this week's discussion and it kind of changed my viewpoint a little bit about learning Without Borders. And I just think it's a great tool and I hope that we can use this in many ways. I just want to think also doctor [name of professor facilitating the experience] for putting this together and allowing us to join you guys an open this up in a different format."

Initially, the participant conceptualizes LWB as affording an individual personal flexibility with regard to their professional and family responsibilities. After the experience this participant envisions LWB as more specifically connected to pedagogy, and specifically how it presents opportunities for more creative teaching and learning experiences by engaging in conversations with cohorts from different universities. Therefore, the participant expresses how it is now seen as a "great tool" for experiencing learning "in a different format."

#### No Change in Definition of LWB

Next, the analysis shifts to examples of participants who's definition of LWB remained the same. In this first example, the participant conveys the lack of change in definition in a nuanced way stating initially their definition "hasn't changed" but then later that it "has been enhanced."

Before: "To me learning Without Borders means I can learn from anywhere at any time with any resource available to me, I can reach out to people across the Globe and in turn, they can reach out to me and it just takes it much further than just the local schools."

After: "And I think that my understanding of Learning Without Borders hasn't changed. It has been enhanced. I think I have a better understanding of collectively what we all think it is. There are parts and pieces that maybe I hadn't thought of that were brought to my attention and I think that we're all on the same page when we're talking about Literacy and digital literacy and the future of where instructional design and digital education is going. . . . I look forward to doing more of these styles of assignments and classroom education, and I might start incorporating something similar to this in my own work, education." (userid: yj)

Enhanced understanding of LWB develops through the participant's recognition that "parts and pieces" introduced new dimensions of awareness. In addition, this richer depth of awareness involved more than viewing LWB as anywhereanytime learning, but also suggested notions of learning as part of a larger collective leveraged for furthering advancements in educational pursuits such as digital literacy and instructional design. This enhanced understanding of LWB parallels previous participants (e.g., "ks"; "yj") who are drawn to the creative possibilities of the pedagogy. This is illustrated, for example, in the utterance "I look forward to doing more of these styles of assignments and classroom education, and I might start incorporating something similar to this in my own work." In this example, the participant has been inspired to think about how this experience could be applied to their own professional practice.

In the next example, the participant shared their definition of LWB through the lens of their job and related work:

Before: "Learning Without Borders to me means my customers which are our students at [name of university] as the production manager for [name of agency], we make videos for all of our online courses. So all the people that take the courses that watch videos they're watching the videos I make so all of the people that I work for basically are learning Without Borders. They're getting their degree all over the world through [name of university] and some of them might not ever set foot on campus at my alma mater."

After: "As far as my understanding of Learning Without Borders goes, it's remained the same basically been reinforced from other experiences I've had with other online classes. But getting past theories and actual practical use, I guess. As far as I am concerned as a student. It was just reinforcing things I've heard about but actually doing myself, I've just come to notice that. You know. Especially with as far as student community involvement goes where you are kind of building a community, people's responses to each other and videos and sharing thoughts and ideas so those are my thoughts."

This participant clearly conveys their definition of LWB has not changed. Their definition is an extension of what they already do in their professional work context. In addition, the participant uses variations of the word "reinforce" to show the high degree of overlap between the classroom learning experience facilitated by Flipgrid and other aspects of their professional and personal life. Also yielding worthwhile insights was comparing "before" and "after" statements. In the "before" statement, the participant's vision of LWB is transactional and unidirectional. The statement "they're watching the videos I make . . . " includes little to no mention of any reciprocal dialogue with the audience to whom the video content is being shared. However, in the "after" definition, this participant revealed slight malleability in the definition by pointing to LWB as relating to "building a community" – an intrinsically dialogic function. The participant exhibits a small shift from a perspective on LWB less about the geographical movement of the communication and more about the dynamically moving social processes of "sharing thoughts and ideas" to facilitate the construction of a community.

In this last example, the participant envisions LWB through a philosophical lens, and while their philosophical perspective has not changed, the recent learning experience has prompted them to think about how it can impact their teaching practice.

Before: "Learning Without Borders to me just means thinking about learning more expansively more broadly, so for example, I've used Flipgrid with my students before to have had them record book reviews. But I never thought about using the discussion feature to have them communicate with each other, or to communicate with people in other places so maybe just thinking about even an existing tool using it in a new way."

After: "I think my basic idea of Learning Without Borders **has stayed kind of the same** [emphasis added] as far as Conceptualizing it. what I think this experience has done and **what has changed is I been able to take it from theory to practice as it were, and think about ways to use it in my classroom**. [emphasis

added] It's very much more concrete and accessible so I've been thinking about ways to use Flipgrid in this way, with my students for example, to connect them with people and ideas, they wouldn't have access to otherwise. You know whether that's from other schools or just other parts of the country. You know it always thought before. You know learning Without Borders is. You know something wonderful that I should be doing, but it's probably very expensive and complicated. And now I see that it's it doesn't have to be."

Similar to some of the previous examples, this participant also adopts a nuanced perspective when it comes to expressing their thinking on the concept of LWB. On the one hand, they state their definition of LWB "stayed the same," yet they qualify this position by qualifying "kind of" (i.e., kind of stayed the same). The depth of this qualification becomes more evident as they describe how this learning experience inspired them to think how LWB can be transformed from an abstract, philosophical concept into practical application for teaching. Specifically, LWB expanded their thinking (e.g., "I never thought about using . . . ") about how LWB is realized through tools such as Flipgrid because the tool enables students to "communicate with people in other places." Another interesting detail surfacing in this participant's post-experience definition is how it has changed the participant's view of the cost or economics of implementing this type of learning experience. As Flipgrid is free to educators, the prior belief that LWB was a costly venture has become much less so. This, in turn, has reshaped their understanding of LWB as something that is a lofty philosophical principle to one that can be practically achieved.

# Discussion

In general, students explained that while their definitions of LWB did not change dramatically, this experience did, however, prompt them to think about it in more deliberate and deeper ways. A key pattern emerging in this initial round of analysis was how students made the metacognitive connection between the general goal of the design activity and their own internal thought processes. One way in which this surfaced was when students described much appreciation for actually practicing the concept of LWB rather than just reading about it. These metacognitive reflections provided greater insights into students' overall receptivity of the experience.

From a somewhat different angle, students' reflections conceptualize the learning space as something not restricted to the physical classroom but rather extended by connections made through the Internet. Similarly, students' comments suggested recognition of a shift from seeing learning as occurring in one centralized location (e.g., classroom) to a distributed phenomenon mediated by social technologies such as Flipgrid. Other students commented directly on the partnership between the two different cohorts which signals students' willingness to extend the classroom beyond conventional boundaries. Finally, it was promising to see some participants talk about how the experience served as inspiration and encouraged them to try something similar in their own teaching practice.

# Conclusions

This study explored student responsiveness to using social web technologies as a tool for fostering dialogues across university boundaries (i.e., LWB). Overall, students found this experience to be a positive one and appreciated the opportunity to practice LWB rather than simply reading about it.

This study sought to address the primary issue of better realizing the potential for using social web technologies to foster learning connections beyond the boundaries of the conventional classroom cohort. Despite the often-cited promises of social web technologies to eliminate conventional boundaries, such as geography, many class-based learning communities remain housed within the safe boundaries of their respective educational institutions. Comparatively, little progress has been made to expand the classroom boundaries to include and collaborate with students from other universities. One possible obstacle may be lack of rich media (e.g., video) to enhance meaningfulness of collaborative conversations. Another possible factor might be the logistics for coordinating an inter-cohort collaboration are too time-consuming or detract from the primary course content. However, the authors argue

this type of inter-cohort learning experience can be adapted for any disciplinary area. Moreover, the social learning processes embedded within this experience proves immensely rewarding and complementary to student learning. Several participants pointed that they realized through participating in this project the value and the opportunity to practice LWB rather than simply reading about it. Similarly, Flipgrid represents a promising social technology tool for facilitating this type of inter-cohort communication.

In considering future paths of investigation, this study represents only initial steps towards exploring how to use computer-mediated discussion technologies in more creative ways. Similarly, this study raises a variety of questions to guide future investigations. Future questions guiding further research include:

- Are there certain disciplinary subject areas where these digitally-mediated inter-cohort learning communities show stronger evidence of success?
- Could digitally mediated inter-cohort learning communities encourage or promote higher levels of student engagement? Agency?
- How would a study such as this change if the length of engagement was longer or more frequent?
- How would a study such as this change if participants were asked to assess the experience either privately with the instructor or more publicly through social media?
- In what ways could the designs of these inter-cohort learning community experiences be shared and developed as Open Educational Resources (OER) and/or as exemplars of Open Pedagogy?
- How would the nature of the conversations among the cohorts change if the primary discussion mechanism was something other than an article? For example, what if students shared a personal artifact that had special meaning to them?
- How would a study such as this change if a different technology was used such as for example the synchronous, audio platform, Clubhouse?

These options only scratch the surface of what is possible for future avenues of exploration. While educational research has generated a substantial body of research on learning communities, most of it is restricted to traditional classroombased cohorts. This study aims to advocate for using the affordances of social web technologies to build inter-cohort learning communities to encourage students and faculty to move beyond the safe comforts of traditional boundaries.

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# Place-Making for Informal Learning in an Online Programming Course

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Co-Design

Place-making Interest-driven Learning



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In this article, we report on exploratory research that documented the informal student-generated interactions in Piazza, an open-source discussion system. This research leverages the concept of place-making to understand how students co-designed Piazza as a place for their learning of the Python programming language in an advanced programming online course at a large northeastern university. Our analysis shows how students used Piazza in specific ways to connect their informal learning to their formal class learning. We suggest that educators and instructional designers can leverage a place-making approach to grant students learning opportunities by having them co-design their learning.

# Introduction

It is widely recognized that the design of online learning settings impacts learners' motivation and academic success (Keller & Suzuki, 2004; Sun et al., 2008). As such, learning designers and scholars have actively sought out how different design characteristics and approaches to online learning affect learners (e.g., Kumar et al., 2019). Briefly, these studies have showcased how constructivist-oriented design frameworks, such as the Community of Inquiry Framework (Swan et al., 2009) and pedagogical strategies that leverage authentic learning opportunities centering on learners' needs and interests are crucial for student engagement and success (Martin & Bollinger, 2018; Herrington et al., 2014). Embedded in these approaches to learning design is the understanding that learning is a social and relational process. Good learning design, thus, should account for interactional learner experiences by providing online learners with regular opportunities to interact with their peers, their course instructors, and their course content (Horton, 2012).

In this article, we report on exploratory research that documented the informal and organic student-generated interactions in an open-source discussion system (Piazza). We argue that the informality and unwritten rules of Piazza allowed learners to design a *place* for *their* learning where they connected their immediate needs to their formal "inclass" learning. As such, we identify learner-initiated interactions in Piazza and discuss how each pedagogical

encounter supported their learning of the Python programming language. Through these interactions, we suggest that learners configured Piazza into a "place" for their learning through the informal interactions they pursued and the practices they adopted. We leverage these interactions to consider potential design opportunities where learners can become co-designers of their learning.

Our motivation for this research is to identify how opportunities for learners to configure and co-design aspects of their learning environment impacts their learning. Despite growing interest in the design of online learning environments, this research complements current scholarship by highlighting how online learners undertake roles as agents of purposeful design in-time for their learning when provided the space to do so. As such, we view co-design as a method for learner agency which is understood as an important contributor to academic success (Luo et al., 2019). This form of agency may be partly limited due to the realization that proper online learning design takes significant time and preparation, a characteristic that was quite evident when universities switched to emergency remote teaching amid the COVID-19 pandemic (Hodges et al., 2020).

In the following section, we review existing literature that explores how students are co-designing and configuring their online learning environments. This review will lead to an explanation of our theoretical perspective, and how place-making can be leveraged as a design concept.

# Place-making and Co-configuration in Online Learning Settings

Although literature focused specifically on place-making in online learning settings has had little exploration, the push to explore how learners might configure their learning environment is not new. While considering the role of learners and their design choices in learning settings, Ryberg and Ponti (2005) suggest that there

emerges the need for a design practice in which learners are more involved in the symbolic activity of re-creation of meaning which is intrinsic to place-making. They need to understand the space, but they also need to engage directly in collective practices of construction of place (p. 4).

Admittedly, when learners engage in any online learning space, their contributions and experiences should inevitably shape the construction of that environment (Hickey et al., 2020). Building a community of learners, thus, is critical because it enables learners' agency and connection with their classmates and instructors (Moore, 2014). Correspondingly, we believe that Ryberg and Ponti's (2005) suggestion calls for more learner input in the design of learning settings from the "ground up," shifting the design of online learning from a strict educator and designer endeavor to a collaborative practice where learners, teachers, and designers actively re-shape and contribute, in part, to the design of *their* virtual space.

Recently, educational researchers have attempted to unearth how students' place-making practices have influenced their learning in online environments. Gallagher et al. (2017), for example, explored online learners' domestic place-making and found that online students frequently configure their personal spaces in specific ways when attending to their online coursework. Albeit not focused on learners' virtual configurations and place-making practices, their work identifies that learners' spatial constructions influence their learning. Subsequently, educational researchers have begun exploring online learner's "co-configuration" – a priori to place-making – in online learning settings. Co-configuration refers to how students actively customize and make adjustments to the learning environments that have already been designed for them (Sun & Goodyear, 2020).

Sun (2018) investigated the place-making practices of online students enrolled in a Chinese language learning course. Akin to Ryberg and Ponti (2005), as well as Gallagher and colleagues (2017), Sun found that these Chinese language learners made significant adjustments to their personal domestic learning spaces when attending to their classwork. More importantly, Sun (2018) also found that these learners configured online spaces collectively with classmates that did not exist before the start of the semester to support their learning. Sun describes how the students' interest and learning of Chinese cascaded into student-to-student collaboration and communication in other digital realms, including Skype, Facebook, WeChat, and Google Docs. Separate from the course requirements, these new learner-initiated and coconfigured digital spaces became important places that supported students' informal group work and language learning. As such, these sites, although not location-based, became social places for informal learning where participation was voluntary, initiated by the learner, reflective of their needs and interests, and embedded in meaningful activity (Callanan et al., 2011; Gutiérrez & Rogoff, 2003).

Similarly, Hollett and Kalir (2017) found that when given the opportunity, learners will design their online spaces to meet their personal and professional needs. Through an investigation of learners' interactions in Slack and Hypothesis.ie, Hollett and Kalir (2017) illustrated how learners brought together a wide array of resources in digital spaces to configure and make a place for their informal and formal learning. These learner-supported designs represented the "productive tension between the structure of a priori objective (primarily with course content) and the emergent patterns of participation that cultivated how learning was meaningfully accomplished" (p. 244). As such, we recognize that online learners in these studies configured informal spaces adjacent to their formal environments to support their learning. Recognizing these sites as student-initiated places for informal learning (Callanan et al., 2011), our research was guided by the following research question:

How do students' use Piazza to support their learning of the Python Programming language?

In the following, we build off of the reviewed literature to present our theoretical perspective. We present place and place-making as concepts that can be potentially leveraged for design. Then, we elaborate on the background of our research, including contextual information and our methodological choices.

# **Theoretical Perspective**

Theories of "place" have an extended lineage within the fields of cultural and human geography and anthropology, and are becoming increasingly popular in learning sciences research, broadly (Kostogriz, 2006). These theories, in turn, have been an effective way of envisioning and defining educational settings, as increased use of place in research has provided opportunities to explore the intersection between learning settings and social life (McKenzie & Tuck, 2015). Frequently, places are identified by using location descriptors, and they tend to be familiar and obvious – one's home, town, school, local store – their reference often denoting ownership or association to an individual. To help make sense of place, *space* is often used in distinction. As such, space is traditionally more of an abstract concept when compared to place. Space is not neat and orderly, rather it is something that gets layered with social meaning to become a place (Cresswell, 2015).

For us, there have been two perspectives that have helped to develop our understanding of place. First, Casey's (1996) philosophical account of place highlights the "gathering" nature of place. For Casey (1996),

Places are at once elastic – for example, in regard to their outer edges and internal paths – and yet sufficiently coherent to be considered as the same (hence to be remembered, returned to, etc.) as well as to be classified as places of certain types (e.g., home-place, workplace, visiting place).(p. 44)

In Casey's writing, places are malleable to those that gather in them but have qualities that define them to the individuals. Places, then, always reflect the needs, lived experiences, and interests of those who inhabit them.

In addition to Casey's work, Massey's (2005) conceptualization has been influential for our orientation. Massey (2005) identifies the relational nature of place, where place is defined by its "throwntogetherness," and as a result, is frequently "unfinished." In short, place in human geography is defined by the characteristics of its environment and the influences that act upon it. Places aren't just locations but spaces that have "some relationship to humans and the human capacity to produce and consume meaning" (Cresswell, 2015, p. 14). Place-making, follows similarly, stemming from the interactions of individuals as they come together and modify a space to fit their needs (Cresswell, 2015).

In educational research, theories of place and place-making are being leveraged to conceptualize and analytically understand the relational and complex lived experiences of learners across space and time. Although place-making is not a familiar concept to the learning design community, we suggest that by theorizing learners' social interactions in

Piazza as place-making practices, we can provide new collective design pathways for learners, educators, and designers.

# **Background and Methods**

This exploratory research investigates the natural and ongoing learning experiences and interactions in an online *Advanced Python Programming* course at a large northeastern university. Through the presentation of three vignettes, this research aims to unearth how learners place-making practices in Piazza support their informal and interest-driven learning. This article, in particular, ruminates on learners' place-making experiences in *Piazza* and how they co-configured Piazza as a place for code sharing and informal communication. In the following, we elaborate on the context of this research, the use of Piazza, and our methods.

## **Course Context**

The data presented in this article stem from observing an upper-level online programming course. Specifically, this course focused on the advanced application of the Python programming language to develop and customize Geographic Information Systems (hereafter GIS), design user interfaces, solve complex geoprocessing tasks, and leverage open-source materials. Throughout our observations, this online course was an intimate experience for students, often enrolling less than twenty students and running on a condensed semester schedule of 10-weeks instead of the traditional 15-week track.

Students enrolled in *Advanced Python Programming* had a range of backgrounds and experiences, and were working professionals (e.g., geospatial analysts for law enforcement, environmental agencies, and the IT industry), most of whom had already received a bachelor's degree in a related field. So, students taking the course were expected to have some programming skills and experience, and it was common for enrolled students to have familiarity with a range of programming languages, including *Python, R, ArcGIS*, and *C++*. Frequently, these students were seeking an extra certification for their current or prospective job. Additionally, these students were often geographically dispersed across the world. As such, the asynchronous format of the course provided accessible learning opportunities for students as they logged in at inconsistent times and juggled family, work, and school obligations.

The instructor and learning designers for *Advanced Python Programming* used Canvas to house all content for the course, including readings, working files, activities, and assessments. Since code-sharing is a familiar method for distributing work among programmers (Warren et al., 2014) both the learning designers and instructor realized the need for a tool that would allow students to communicate and share code, free of formatting errors. Unfortunately, the discussion forums in Canvas did not have this ability so the learning designer sought out alternatives that could integrate effectively with Canvas. Piazza, in turn, was selected because of its ability to provide users a digital platform to share code asynchronously. In the next section, we briefly describe some of the main characteristics of Piazza and discuss how it was used as an adjacent space to the Canvas course.

#### Piazza

Piazza is marketed as a learning management system that allows students and instructors to ask questions in a forumstyle format, where discussions can be moderated and endorsed (Figure 1). Although dated, the forum-style interface is familiar to other online forum spaces (e.g., Reddit, stack overflow) and provides users with quick and intuitive navigation. Along the top menu bar, content (e.g., forums) can be separated into topics or modules (e.g., lessons) similar to navigation in popular learning management systems, such as Canvas. Along the left side of the interface, content headings and statistics (e.g., the number of contributors to post) are neatly displayed. When a conversation has been selected from the menu on the left, the whole thread appears as the main screen, displaying questions or comments by the original author, content (e.g., python code), and answers or comments from any contributors to the conversation.

#### Figure 1

#### The Piazza Interface



A picture of the Piazza interface

# Methods

In this article, we present a case study (Yin, 2014) focusing on student-generated interactions in Piazza. This case is described through three vignettes that detail how learners in an *Advanced Python Programming* course configured Piazza to support their learning of the Python programming language. In each vignette, we focus on a specific configuration method that learners employed in Piazza. We used purposive sampling procedures, selecting the course because of our professional work commitments and its capacity to provide student-driven learning experiences in Piazza, and inspired by the work of virtual ethnographers (e.g., Hine, 2000), we immersed ourselves in the interactions in Piazza over the course of two semesters to understand learners' use of Piazza. Our primary source of data was our observations of the interactions, and due to the nature of our work, as designers, we were regularly required to "check in" to the course. As such, our work responsibilities supported our analysis. During these check-ins, we were able to monitor students' participation in Piazza and make note of who's participating, how they're participating, and the context of their participation. This ability to conduct weekly check-ins granted us the privilege to trace student interactions and participation across time. Even more, to document our observations, we captured screenshots of the interactions.

Leveraging principles of Interaction Analysis (Jordan & Henderson, 1995), we documented virtual interactive "hotspots" – moments of rich student-generated interaction – through the screenshots collected. These screenshots were then shared among research team members and we used moments of "trouble and repair" (Jordan & Henderson, 1995) as an entry point for our analysis. As such, this research was interpretive in nature and much more work needs to be done before extending large-scale generalizations. In pursuit of internal reliability, the research team converged weekly to discuss and reexamine findings. Individual observations and identified themes were compared between researchers to produce a reliable and representative group of themes (Braun & Clark, 2006). Furthermore, the research team collected additional data through student surveys and interviews. However, data collection from the survey and interviews was greatly disrupted due to the COVID-19 pandemic.

In the next section, we present three vignettes that exemplify how students used Piazza in informal ways to support their formal learning. We show how Piazza, as an unregulated space, became an environment that students actively

shaped to support their interests and personal learning.

# Findings

In the following, we highlight three representative examples of how students configured Piazza to support their in-themoment learning of the Python programming language. In the first vignette, we show how students' frequent use of Piazza as a help forum mirrors the collaborative work being conducted in professional learning communities like *Stack Overflow.* In the second vignette, we provide an example of how a student uses Piazza as a sounding board, similar to our first example, but the unregulated nature of Piazza creates an opportunity for the student to engage with their thinking across space and time. In our third vignette, we show how two students leveraged Piazza to share resources and make a place for their collective problem-solving.

# This may be a silly question, but . . .

The students' interactional practices in Piazza often mirrored the practices that are associated with professional programming communities like *Stack Overflow.* As such, students would use Piazza as a place to ask questions about their code. Notably, these interactions were triggered by students running into code "trouble," or situations in which they tested their code but did not receive the desired result. So, as students experienced issues with class activities and projects, they leveraged Piazza as a space to initiate informal conversations.

In this first example, a student reports their "trouble," an error message they have received while copying programming files (Figure 2). This student initiates their request for help by stating "This may be a silly question, but" thus positioning their interaction as an informal endeavor. The student's initial request for help reflects the informal nature of Piazza, and how in this community, learners became comfortable using the platform by asking and answering practical questions that were related to their formal class learning.

#### Figure 2



#### A Student's Post of an Error Message

A picture of a student reporting an error message

In response, many problems posted by learners were met with practical, utilitarian answers. Indeed, the responses from other students, and occasionally from the instructor, reflected the informality of their configured spaces, as students

had the freedom to answer questions as they saw fit. Evident in the students' response to the original question is that their informal question and answer (Figure 3) – presentation of "trouble" and offer of "repair" – highlights a production-centered focus on solving problems and improving solutions.

#### Figure 3

A Student Responding to the Error Message

S the students' answer, where students collectively construct a single answer	
I just went through this yesterday and ended up copying the folders that contained the "_" files over. Things didn't wo did work with the folders.	$rk$ with just the files starting with the $^*\_^*,$ but they
edit · good answer 0	Updated 10 months ago by I
the instructors' answer, where instructors collectively construct a single answer	
Hi - right - the best approach is to copy the whole folders across - then they're picked up automatically because the It may be worth running through the manual process as well just to make sure that all of the individual pieces are bein if you're still having trouble though please let us know. It's an unfortunate but common occurrence that installing external libraries into conda can occasionally be difficult. Th your own environment (and i had similar issues to these a couple of days ago building a new environment of my own), steps in the lower half of https:// conda install beautifulsoup4 gdal jupyter etc.	ey're in the right place within those folders. g installed correctly. he difficulties come from having inconsistencies in . In my case the solution was to use the manual le line :

A picture of a student's response to an error message

Through this encounter, and other similar student-student question and answer interactions, students made Piazza into a low-stakes informal environment that could offer highly valuable rewards.

In a similar informal pedagogical encounter, Greg requested help as they were experiencing issues importing their code. Again, we see the informal nature of Piazza playing out in both the initiating post and in Tony's response. Indeed, Greg informally queries for help ("What am I missing?") and receives a direct, and to-the-point, response from Tony ("Try removing that and see if it makes a difference . . . Best of Luck!") (Figure 4). Instead of offering an elaborate solution to the problem, Tony's response illustrates the informality of the interaction. He simply identifies the problem and offers a straightforward solution, a customary form of interaction in similar learning communities. The two students then debrief on their learning and experience, leading them to a discussion of the role that specific syntax played in their interaction.

#### Figure 4

Tony Helping Greg with Their Syntax

Unread Updated Unresolved Following	0-	Tax ther Consile + Question Monory.
New Post Q, Search or add a post		I This class has been made inactive. No posts will be allowed until an instructor reactivates the class.
Filtering by: le	$\odot$ knoces	1
WEEK 11/34 - 11/30		S dearen dat Q il II a
Failing to get getExistingDirectory for Helio, I am trying to define a folder for output with QFIeDIalog using: def defineOutpath0: " select:	11/27/19	Main not importing waterbodies.Stream
<ul> <li>An instructor thinks there are good followups:</li> <li>Accessing 'water' tag for areal features.</li> <li>Hello, I am trying to construct the areal features - focusing on lakes, and have identified way 129649734 as the text Id.</li> </ul>	11/27/19	to in the set of the ductionality of the set
Having trouble pre-sorting the GeoPac Hello, I have tried many ways to produce CeoPackages that are pre-sorted by the length attribute of their features. I ca	11/27/19	Faceback (most recent call last): File "main.py", line 7, in emodule> invect exclusion/invector
fromPolygonXY vs fromPolylineXY Correct me if fm wrong, but the use of fromPolylineXY and fromPolygonXY is functionally the same : send a list of Qg	11/26/19	<pre>import waterboulds File "Cluberslohmathan\Gogle Drive\Grad School\PSU_GIS_Cert\GEGG 489\Lesson4\clementi_L4_Deliverables\ aterbodies.py", line 4, in cmodule&gt; import main</pre>
OMessage Box Question I was trying to add complete and error dialog boxes to my CUI using OMessageBox for Assignment 4, similar to Assignment • 2 Unresolved Followage	11.26/19	File "C:Ubers\Denthan\Google C:vvbGrad SchoolV9U_GiS_Cert\EEGG 489\Lesson4\clementi_L4_Deliverables\usin.py", In: 109, in cmobile? result = waterbodies.Stream.fram@SWAp(w, node50Lct) ttributerror: module 'waterbodies' has no autribute 'Stream'
Main not importing waterbodies.Stream Hi all, So I'm testing the functionality of my stream class currently and I am getting an AttributeDror when I try	11/26/19	clas Strant Fourd at waterbadies
Constructing a Stream Object Troubles Hello, J am having some trouble constructing the stream object from a test script I compiled focusing on way/D #2004497.	11/25/19	class Stream(Linea/Waterbody) # Instantiated subclass of Linea/Waterbody defnotbielt, came, generate() # Installar same, generaty, and length instance variables superStream andmctbame_generations
Running Main.py from the BusTrackAn Sorry, my bad. Post deleted Howard • An instructor thinks this is a good note	11/24/19	det from/CMARiag/issg: allholder.) # Override from/CMARiag of Waterbody if warg/tag/tag/tag/tag/tag/tag/tag/tag/tag/ta
'm not at my home right now so I c nakes a difference. Best of luck!	an't dou	- An instructor - An instruct
edit 1 good answer 2		Updated 1
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Click to start off the wiki answer		
ollowup discussions for lingering	questions	and comments
Resolved Unresolved     9 moc     Thanks - that was it. So     good comment 0	ths ago	of recursive import statement?
Tony I our class definitions import main to work	9 month isn't ne , but the	a sigo: That's what I've gathered. So long as we are just returning materials from our class file, importing the main.py in cessary. I think of It like in terms of importing accyp (which I imagine is filled with classes), arcpy doesn't need to inverse (main importing accyp) is required.



By providing a less-regulated space for students to make their own, Piazza became a place where students could pursue their learning through questions and answers. Characteristic of informal learning, their learning was learnerinitiated, embedded in meaningful social activity reflective of the work of GIS professionals but didn't follow a structured curriculum or face assessment (Callanan et al., 2011). As a result, their co-configuration of Piazza, and their engagement and interactions not only reflected those of programming professionals and enthusiasts but, more importantly, allowed them to engage in interest-driven learning practices.

## I've been stumped

In many ways, students made Piazza into a public forum that could be returned to across time and space. As a result, students often initiated interactions that not only received varying levels of feedback but created learning opportunities that could be revisited. In this vignette, we show an example of a student who hasn't been able to figure out a workaround for an error code they keep receiving. More specifically, the student poses a question regarding an error message in their code and has been "stumped on for a while" (Figure 5). In a more regulated environment (e.g., a Canvas discussion forum) with conventional methods for engaging in discussions, this may have prompted an immediate response or a set of student responses.

#### Figure 5

A Student Poses and Answers Their Question

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New Post Q, Search or add a post	Q.	Ban User Console + Question Hotory	C dada bia
		Problem with workers	
Effering by 1	o freened	Ive been stumped for a while on a	n error Tm getting. When I run the scriptical it progresses to the point at which it is supposed to start the workars but the workars aren't called
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the been stumped for a while on an error the	88	B fully factory factory 10 1 1 10	Entre Extend 0 - 0
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edit good answer the instructors' i the instructors' i ve seen this issue bei propy.env.overwriteOu s that possibly what y	fore - i tput=1	er, where instructor it can be caused i frue. experiencing? Are	mand line propy.bat fix that Dan mentioned in a different post.

An excerpt from a student discussion

Reflective of how students used Piazza in this course, however, the nature of this pedagogical encounter is much different than one would expect in a traditional discussion forum setting. Instead of a student's post automatically generating a set of student replies (a traditional discussion forum participation strategy), the student's trouble leads to self-guided experimentation and a search that results in them answering their question. Remarkably, their interest-driven practice can be interpreted as a significant investment in the social sphere of the forum as they, intrinsically, returned to their story-so-far, explaining that they found help in another classmate's post and identified their "repair" method. Instead of leaving the problem unsolved or waiting to see if the instructor would offer help, the student chose to post their solution to the problem, informing the rest of the community – whether they were experiencing the same problem or not – and contributing to an evolving socially constructed knowledge base. Significantly, the "remembering" nature of the students' place in Piazza enabled the student to find help in an older post by another student.

# Piazza as a Place for Joint Problem Solving

Place-making in Piazza should not just be seen as direct questioning and answers though, as how places are made reflects the wide-ranging needs of those who inhabit them. As such, our third example illustrates how students often used Piazza to pursue collective problem-solving. In this example, Mark reports that they are having trouble successfully running a portion of their code script and asks some clarifying questions while also assuming where his error might be originating (Figure 6). At a roadblock, Mark, in a manner similar to our previous examples, posts his trouble. However, being such a complicated problem, the conversation takes multiple turns and includes sharing multiple lines of code and input from both another student and the course instructor.

#### Figure 6

Mark Posts Their Trouble



A picture of a student posting a challenge they are experiencing

#### Figure 7

Jamie Begins to Troubleshoot Mark's Problem



A picture of a student responding to another student in a discussion forum

Mark's trouble is initially responded to by another student, Jamie (figure 7). Jamie addresses Mark's original questions while asking for more details, trying to share an example of his code (repair), and identifying a specific element in their
code (51 responses of False) (Figure 8). The conversation again turns, as Mark shares their "sql string" and Jamie identifies the root cause of the error, a syntax issue, and provides two options that successfully resolve their issue.

#### Figure 8

Mark and Jamie Follow Up

Resolve	
irk	8 months and
I am i	mporting the same way:
_	
fr	om multicode import worker
My q	Jery is:
qu	ery = '"' + field + '"' + ' = ' + str(oid)
good (	comment 0
Ja	(Doing a guick definition guery set builder in PPO on the states layer returns OR IECTID = 14.)
	boing a quick deminition query sqi builder in PHO on the states layer returns Obocomb = 14.
	try this for the query
	<pre>query = """{} = {}""".format(field, str(oid))</pre>
	or
	query = field + ' = ' + str(oid)

A picture of a student responding to another student in a discussion forum

After they worked out the error, the instructor enters the conversation, offering their feedback. Despite the instructor's knowledge of the topic, they don't receive deference, contributing to the conversation with their clarifying question and advice, and Mark responds with a copy of their code and confirmation of their success (Figure 9).

#### Figure 9

Mark Confirms the Code is Working



Example of students conversing with one another in the discussion forum to solve a problem

Even with Mark's confirmation that their code had been repaired, the conversation takes another turn with Jamie responding and adding their question (Figure 10). Mark responds again with their successful code, crediting Jamie and the instructor's advice. The nature of this interaction illustrates the unfinished and "always becoming" nature of place (Massey, 2005), as even when the problem seemed to be resolved, the conversation took three more turns with the instructor offering their advice, Jamie's response, and the instructor following up one more time after Mark shared their code. Unlike the first two vignettes, Mark's problem was not something that could be repaired with a quick response. Rather, repair required a collective approach to problem-solving.

#### Figure 10

Mark, Jamie, and the Instructor All Following Up on the Original Problem

Jamie	pesky env variables.
	I'm still curious why my code throws an error for the query when I use " " as written but there are some other things that are acting weird (like the realative/absolute paths, Spyder not starting without having to reset every other time, Pro throwing %1 errors for numpy) so I may blow away reinstall Pro and recreate the Pro python env. I fought with an install of conda prior to installing Pro and I am wondering if it has left some artifacts in my system.
Mark	s months ago Successfully tested it with the following query syntax, for both the command line and script tool:
	<pre>query = f"""{field} = {str(oid)}"""</pre>
	Combination of your syntax suggestion and f-string formatting.
Instructor	7 months ago Good to hear you got it working, Cale! Regarding   overwriteOutput, try with placing that line in the other file instead, the one that contains the   worker() function. That should do the job. The reason this makes a difference is because the worker   processes and the main process all have their own independent version of arcpy.env .   good comment 0
Mark	with the addition of overwriteOuput to the other file. Thanks for the suggestion!
Reply An e	to this followup discussion example of students and the instructor conversing about a problem in the discussion forum

The three examples of student-initiated place-making in Piazza show the interactional moves that students make to coconfigure their learning space. In the first vignette, we share how Piazza was configured into a place that mirrored the practices and ways of interacting in more professional learning communities. In the second example, we share how Piazza was treated as a place that didn't require specific ways of interacting. Instead, not all questions were always answered, resulting in continuous effort on the part of the originator of the post to address the error. In our final vignette, we show how students frequently used Piazza to engage in joint problem-solving ventures, requiring the sharing of code and resources. In this manner, the students made Piazza into a place that supported their informal learning, as they designed it to be socially collaborative, embedded in meaningful activity, and shaped iteratively through their immediate needs (Callanan et al., 2011). Although their actions were deliberate, the mailability of Piazza allowed students to tie their informal learning with their more formal class-specific learning in-time.

# **Discussion and Implications**

From both a theoretical standpoint and our observations of interactions in Piazza, we believe that we can derive some potential opportunities for future research, as well as design suggestions for online learning settings. Significantly, Piazza became a place as it was layered with social meaning stemming from interactions around Python code and formal concepts related to their coursework. The ability to interact informally in a self-regulated manner though left much of students' learning up to them. Indeed, students could actively choose how they wanted to use Piazza, and could shape its future uses as well, from a simple question and answer forum to a space where students could engage in joint problem-solving ventures similar to GIS professionals. With each interaction, students produced novel questions, new understandings, and additional resources that, along with their classmates, they could return to throughout the semester. Some students participated more than others, some rarely participated at all. However, our analysis shows that students did co-configure Piazza to meet their learning needs, and as a result, we suggest that a place-making design practice can lead to powerful agential learning opportunities for students.

Further, Piazza was chosen for its ability to easily integrate with Canvas and provide a platform that students could access and contribute to. In fact, Jamie spoke to their participation in Piazza, stating:

*My* daughter, she's in gymnastics and guitar lessons and stuff. So, after work, I'd pick her up from school and take her to those events. And that's where I would do a lot of my reading [in Piazza] – on my cell phone.

For Jamie, the ability to access Piazza and contribute to ongoing pedagogical encounters across time and space supported their interest and expertise in Python programming. In the same vein, because it was less regulated than a typical course discussion, students felt free to contribute without having to worry about the formality of their responses. As seen in all of the vignettes, despite the instructor's access to Piazza, students' contribution and use of the forum didn't follow rigid rules or expectations.

While we are not attempting to propose any new rigorous guidelines for designing formal online learning environments, our examples illustrate how students, when granted the opportunity, can configure their online spaces to create robust digital learning environments that meet their needs and support their learning, as well as the learning of their peers. Students in our research used Piazza to pursue interest-driven and often informal learning, where their experiences were constructed by them and members of their community.

Our data suggest that there is a need to better understand how students, when given the opportunity, create collaborative digital learning spaces adjacent to their formal learning environments that can support their interests, professional practices, and informal and formal learning. Additionally, we suggest that a place-making perspective can open up new design considerations for online learning designers and educators. At the very least, place-making as a design perspective opens up additional questions for exploration and research. For instance, as online educators and designers, (1) how might the concept of place-making affect our design practices, broadly? (2) How can we incorporate design practices in online learning environments that have enough elasticity to be shaped and reshaped by students throughout a semester? And, (3) how can we create conditions in online learning environments that proactively encourage learners to curate digital spaces for their learning?

In our vignettes, we revealed how Piazza was co-designed by students to support their informal learning. Even more, we have demonstrated how learners in this Advanced Python Programming course used Piazza to engage with their peers in similar ways to GIS professionals. We argue that student-designed, maintained, and run spaces can become important places for students to collaborate, share ideas and resources, and pursue learning pathways. We do not suggest that every online teacher or designer implement Piazza or forego using evidence-based design frameworks to design online environments. However, we encourage online instructors and designers to seek out ways that students can become more involved in the design of their learning from the outset.

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# Free Asynchronous Professional Development By, From, and For Instructional Designers: How Informal Learning Opportunities Shape Our Professional Learning and Design Practices

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Instructional designers (IDs) need to maintain an understanding of the current trends and issues within the field. Pursuing professional learning informally supports IDs' effort to keep up with current trends and issues because it is not restricted by curriculum and time. Professional development (PD) offered by Professional Development for Instructional Designers (PD4IDs) learning group can address issues related to geographical and funding limitations. This application paper presents the coordination of PD based on the conceptual framework (e.g., Community of Practice and Social Network Knowledge Construction) and reflections of several PD4IDs members with various roles. The reflections indicate the benefits of participating in PD for shaping IDs' professional learning and practices. Discussion and implications for IDs intending to pursue non-traditional PD are also presented.

# Introduction

Working professionals should keep up with the field and continuously learn to improve their knowledge and skills to stay current. Instructional designers (IDs) are not exempted, especially since the instructional design field constantly evolves alongside the rapid development of technologies (Sharif & Cho, 2015). As Sharif and Cho (2015) have mentioned, continuously improving knowledge, skills, and attitude related to the instructional design process is one of the competencies stated in the 2012 International Board of Standard for Training, Performance, and Instruction. This competency applies to IDs regardless of their work setting (e.g., K-12, higher education, business, government, etc.) and location (e.g., within the U.S. or worldwide) (Instructional Design Competencies: The Standards, n.d.).

By pursuing professional development (PD), working professionals also support their organizational performance (Yanchar & Hawkley, 2015). Therefore, employers support their employees' participation in non-traditional PD programs to meet the practical learning needs (Yanchar & Hackey, 2015). Such non-traditional PD opportunities may include informal learning that is not bounded by a specific curriculum, allowing working professionals to acquire just-in-time knowledge and expertise (Richter et al., 2011).

Professionals pursue continual PD due to the dynamic job demands (Littlejohn, 2017). When a new task involving new steps arises, working professionals do not hesitate to reach out to their networks who may have performed similar new tasks and ask for advice; particularly, they believe that the strategies from those who have been in similar new tasks are more effective (Littlejohn, 2017). The technology-enhanced learning environments supporting social interactions play an imperative role in this regard, wherein the Social Network Knowledge Construction (SNKC) framework can provide guidance for working professionals to interact with, communicate with, and learn from the peers within their social networks (Dawley, 2009).

Working professionals are willing to take advantage of technologies to enhance their knowledge and skills without limited by geographical and temporal constraints (Muljana et al., 2020). For example, IDs encountering budget, traveling, and time constraints perceive the value of joining online Community of Practice (CoP) groups enabled through social media (Muljana et al., 2020). Online CoP allows IDs to participate flexibly; they can adjust their participation level (e.g., whether they seek information only or contribute to the collective knowledge) according to their professional learning needs and time availability (Muljana et al., 2020; Schwier et al., 2014). To support IDs who needed PD without being limited by such constraints, a CoP-based learning community called Professional Development for Instructional Designers (PD4IDs) was formed to offer free asynchronous PD events for IDs once or twice a year.

The purpose of this application paper is to describe the conceptual framework, how PD4IDs learning community facilitates free PD events for IDs, and the coordination process of the PD events, as aligned with the conceptual framework. Additionally, the paper includes reflections of the learning community members regarding how participating in the PD events may have influenced their engagement level in the community over time, professional learning experiences, and instructional design practices. Discussion and implications for IDs intending to pursue non-traditional PD are also presented, which inform (a) practitioners regarding ways to pursue just-in-time informal PD opportunities, (b) those with supervisory roles for supporting emerging informal PD outlets that are achieved through interactions with social networks, and (c) leaders who are interested in offering informal learning opportunities. As more non-traditional PD outlets may emerge due to advanced technologies, this paper may additionally offer insights to working professionals outside the instructional design and technology field in regard to ideas for acquiring or providing informal professional learning that is not restricted by geographical and temporal boundaries.

# **Conceptual Framework**

The formation of PD4IDs and facilitation of free PD events for IDs are aligned with CoP and Social Network Knowledge Construction (SNKC). The following sections present each concept in detail; in addition to describing how both concepts are manifested in the efforts to provide free PD within PD4IDs.

## Community of Practice

Community of Practice (CoP) is a community or group where people with common interests and goals can gather to learn together (Wenger et al., 2002). Facilitating a CoP group can help people improve their knowledge and expertise (Wenger et al., 2002) as CoP includes three key components: (1) a domain of shared interests, in which the members share and thus display a level of their knowledge and competence; (2) interaction, allowing members to learn together through activities, seeking and sharing information, and discussion; and (3) shared experiences or practices, displaying the collective knowledge as a result of the interaction among members (Wenger, 1998; Wesely, 2013). Because of the domain of shared interests, the CoP members share a commitment and passion about the domain, respect the collective knowledge, and are eager to learn from each other (Wenger & Wenger-Trayner, 2015). Because of the

interaction, the CoP members can participate in discussions and activities that further generate shared experiences and practice in the form of dialogues and resources (Wenger & Wenger-Trayner, 2015).

Participation in CoP is voluntary. The members are welcome to participate at any level. For example, the members may serve as a core (e.g., facilitator), active (e.g., members who do not mind sharing insights in addition to learning from others), or peripheral members (e.g., members who prefer to obtain information, rather than actively participating in discussions (Wenger et al., 2002). The core members of an online CoP group are typically expected to lead the community, transforming the information sharing activities into knowledge construction, which can be challenging as it takes time (Gray, 2004). As suggested by Lave and Wenger (1991), new members may start from the peripheral participation so that they can observe how the active and core members interact and learn from their information exchange. Gradually, the comfort, confidence, and trust levels of the new members will increase, which can encourage further participation (Muljana et al., 2020; Gorrell et al., 2013; Tseng & Kuo, 2014). This suggests that the members who are perceived as passive may be strategic about their participation level (Romero-Hall et al., 2020). We also recognize the members' challenges of adjusting their participation levels. Most of the members are working professionals; therefore, they may have time constraints that prevent them from increasing their participation levels (Muljana et al., 2020; Gray, 2004; Preece et al., 2004). They typically "put their participation on the back burner" because they have to prioritize their duties and tasks at work (Gray, 2004, p. 29).

Facilitating a CoP group can be performed online by taking advantage of modern technologies. As a result, an online CoP can bring people together regardless of their location and time zone (Muljana et al., 2020; Woo, 2015). It also potentially addresses the budget limitations that working professionals may face (Eaton & Pasquini, 2020). Online CoP, serving as a virtual space, provides learning opportunities through the interactions among members that help the members combat the isolation feeling, regardless of their participation levels. For instance, peripheral members can learn from and be inspired by the more active members' postings, such as the stories of experiences and discussions of problems, even without contributing (Gray, 2004). When members have time limitation, they can still take advantage of the online CoP discussion; they may simply read the online discussions and perceive the key takeaways without responding (Preece et al., 2004). For the more active members, actively posting discussions also serves as a way to gain multiple perspectives from others, providing opportunities to challenge their own perspectives (Gray, 2004). Participating in and observing diverse dialogues in an online CoP additionally provide opportunities for the members to reflect on their own practices, potentially informing and shaping their professional practices (Akerson et al., 2009). We particularly pay close attention to these characteristics and potentials of online CoP when we coordinate our CoP-based PD events, which are described in a following section.

## Social Network Knowledge Construction (SNKC)

Social Network Knowledge Construction (SNKC) is another framework considered during the facilitation of PD4IDs learning community. SNKC explains how people interact with one another and learn from each other in a technologyenhanced environment, such as one that uses social network communication mechanisms (Dawley, 2009). Additionally, SNKC also provides a description of how the knowledge constructed from the social network communication may influence learners' thinking process about future decisions on their further interaction or participation (Dawley, 2009). We include this framework because it can complement CoP. Essentially, CoP describes the interaction level of the members (e.g., peripheral, active, and core), whereas SNKC can serve as a guideline for the members on how to increase their participation level.

Dawley's (2009) SNKC framework includes five levels of social network engagement, originally aimed at helping an instructor introduce social technological tools to students and pace the engagement or participation levels. While our learners are mostly working professionals, this framework is helpful to guide them in exploring learning opportunities through a social-technology-enabled learning environment according to their comfort and experience levels. These five levels of social network engagement are (1) identify, providing opportunities to identify which social networks suitable for pursuing professional learning; (2) lurk, allowing people to observe the learning community or environment and identifying the purpose of it; (3) contribute, encouraging the participation and contribution; (4) create, allowing the

knowledge creation within the learning environment; and (5) lead, motivating those who are already comfortable to acquire leadership opportunities.

We can juxtapose the aforementioned five levels of social network engagement with the context of instructional designers' non-traditional professional development. For example, in level 1, working professionals like IDs may locate potential learning opportunities that can support their just-in-time professional learning needs, whether it is an online CoP or other format. In level 2, IDs may read the contributions made by others, such as the information shared and the dialogues occurring in the discussions. In level 3, IDs may begin to participate by making an introduction and asking questions. According to Dawley (2009), these individuals may gradually share their insights, experiences, and work to participate in active discussion. In level 4, IDs may increase their participation through knowledge creation; in the context of our PD, we provide opportunities for IDs to facilitate PD in the form of an asynchronous module and lead discussion surrounding their module topics. In level 5, IDs may acquire a leadership opportunity, such as by getting involved in the coordination of PD events; in our context, one member joined the leadership team at a later time and was given a choice to determine her leadership role. When we coordinate the PD events, we attend these five levels of social networking engagement. Detailed information about how PD4IDs was established and how we coordinate the PD events is described in a later section within this article.

## Applying CoP and SNKC

Facilitating free PD events in PD4IDs learning community is aligned with CoP and SNKC. The members of PD4IDs are primarily IDs from various work settings and with different experience backgrounds and levels. They also live in dispersed geographical locations. The free PD events occur annually or bi-annually; each PD event takes place asynchronously in Canvas, a Learning Management System (LMS), to accommodate IDs in various geographical locations and time zones. Additionally, all members are provided with opportunities to connect or network with one another voluntarily. Both CoP and SNKC support such professional learning activities.

Furthermore, the members are welcome to participate at various levels, which is aligned with both CoP and SNKC. In the PD4IDs learning group, there are co-founders and a designer/reviewer, serving as core members, who coordinate the PD events, as well as moderating the ice-breaker discussions. Using SNKC framework perspective, these members are considered as those who usually lead, create, and/or contribute. There are also presenters in the PD4IDs learning group, serving as active members, who share their knowledge, resources, and best practices during a PD event. Resonating with the SNKC framework, these members typically contribute and/or create knowledge. Participants in our learning group serve either as active or peripheral members, who access the course site in Canvas to access the information and sometimes participate in discussions. Aligning with SNKC, members at this participation level may be still lurking or identifying the network. For example, the numbers of our Facebook group members and registrants of PD events are typically higher than those who actively participate in discussions. This is aligned with Marett and Joshi (2009) and Rafaeli et al. (2004) that the majority of CoP membership may consist of "lurkers."

In addition, during any PD events, all members are welcome to participate at any level, whether they simply provide ideas regarding the topics to learn, register and access the modules, post discussion, or present or facilitate a module. Figure 1 illustrates the participation or engagement levels as we compare CoP, SNKC, and our PD4IDs group.

#### Figure 1

Comparison of the Participation Levels in CoP, SNKC, and PD4IDs



Note. Each element of CoP, SNKC, and MM are listed juxtapositionally according to the participation level. The participation level in CoP (core, active, and peripheral) resonates with the five levels of social engagement in SNKC (lead, create, contribute, lurk, and identify) and also similar to the members' roles in PD4IDs group (co-founders and reviewer/designer, presenters, and participants/learners).

# **The Coordination of Professional Development Events**

## How It Started

There were conversations in a Facebook professional group joined by thousands of IDs regarding the challenges of pursuing PD. IDs expressed a need for fulfilling PD without limited by time, location, and budget. They would not mind learning from their colleagues regarding best practices and strategies. Being proactive, three IDs (including Author 3 and Author 1) responded to this need and were willing to lead the efforts.

## The Initial Needs Analysis

The three IDs conducted the initial needs analysis, aimed to determine the most requested format or delivery of PD, and the best possible schedule to facilitate the PD by utilizing an anonymous questionnaire. The initial needs analysis is crucial not only to assess what the IDs need, but it is also a way for us to gather people with similar interests and goals in pursuing professional learning opportunities. As stated by Wenger et al. (2002), CoP is a community or group of people with shared interests and goals who gather to learn together. The results of the needs analysis showed that IDs' work setting was diverse, ranging from K-12, higher education, corporate setting, and self-employed. Responses about topic interests were mixed at that early point such as anything related to instructional design, design thinking, ID models, learning analytics, assessment, accessibility, faculty buy-in, portfolio development, and emerging technology.

Survey responses also indicated that the majority of IDs preferred asynchronous format through an LMS and a combination of synchronous and asynchronous formats. Since many IDs also wished for a combination of

asynchronous and synchronous formats, there was an idea about including an opening keynote through a synchronous webinar, with a provided recording. Because there was no available budget and no plan to charge event fees, a free version of LMS could be used.

As far as the schedule, survey respondents were not unanimous because they lived in dispersed geographical locations around the world. Therefore, a PD event could asynchronously occur for a week to accommodate all preferred days and times. Additionally, two asynchronous PD events could take place twice each year: one in June or July, and another in December. These months were typically slow and peak season for instructional designers.

## The Formation of PD4IDs Learning Community

The three IDs were then formed as the PD4IDs learning community as a space for IDs who wished to pursue free PD. Referring to themselves as the co-founders of PD4IDs, the three IDs identified the coordination process of each PD event. The process includes the topic selection (two months before the PD event), call for proposal (six weeks before the event) and acceptance of proposals (four weeks before the event), module development by the accepted presenters and call for registrations (four weeks before the event), peer-review of the modules (one to two weeks before the event), implementation, and evaluation during the event. Figure 2 depicts the overall process. Recently, a member joined the core members—this member is now referred to as a designer/reviewer who assists the co-founders in designing logos and images, creating an LMS template, and reviewing proposals and modules. This acceptance of new leaders resonates with both CoP and SNKC; members may adjust their participation at any time (Muljana et al., 2020; Schwier et al., 2014), and they are given an opportunity to participate in a leadership role (Dawley, 2009). Additionally, there is a Facebook group for the PD4IDs members to connect and interact with one another outside the PD events.

#### Figure 2



The Coordination of Each PD Event

#### Timeline of Professional Development Events

## **Topic Selection**

Two months before a PD event, an anonymous questionnaire is available for all members to vote for and suggest the learning topics. Questions in the questionnaire revolve around demographic information and requested topics. A

questionnaire item lists pre-selected topics based on the needs analysis results, allowing the members to vote on topics and suggest any other topic(s) in an open section within the questionnaire.

We promote the topic-voting call through our Facebook group and additionally share it with several other instructionaldesign social media groups. Depending on the response, the two or three most-voted topics are selected for the upcoming PD theme. Asking the CoP members to request and select the relevant topics is our way to ensure that the members can perceive the value of learning from the PD events, resonating with Cadiz et al. (2009) as well as Wenger (1998).

## Call for Proposals and the Acceptance

Next is announcing the call for proposals. An online form accompanied by a digital poster is posted again on our Facebook group and other groups to invite fellow IDs to share their knowledge and best practices related to the respective topics. Essentially, the call for proposals serves two purposes. First, it is to motivate the members to increase their participation level, in hope of helping them move to level 4 of SNKC (Dawley, 2009). Second, the call for proposal phase assists the core members in promoting the knowledge-sharing activities among members. This resonates with the purpose of facilitating a CoP; one of which is about promoting knowledge sharing (Wenger & Wenger-Trayner, 2015). Once the due date of the call is closed, the co-founders and designer/reviewer review all incoming proposals using selection criteria to select the facilitators or presenters to ensure: (1) the alignment of the title, objectives, and content with the event's topic and (2) clear session description and objectives. Between three to five presenters are usually accepted.

## Module Development

Once the presenters are selected (about one month before the event), core members communicate with the presenters regarding the module development. Presenters have approximately three weeks to design and develop the module. Providing a welcoming environment is crucial in a CoP, particularly to establish the learner engagement (Jones et al., 2016). Additionally, knowledge sharing in a CoP may take form in joint discussions and activities (Bond & Lockee, 2018). Therefore, we developed the module criteria for the presenters to consider as below:

- 1. the module should take approximately 30 minutes to complete,
- 2. the opening includes an introduction of the presenter to encourage networking opportunity with the participants,
- 3. the module contains discussion(s) to promote the engagement throughout the week, and
- 4. facilitated discussions allow interaction beyond the event, e.g., through e-mails or social media.

At this point, the call for registration and the link to register are available in the Facebook group page. All members can register for the PD.

#### Peer-Review on the Modules

The co-founders (including Author 3 and Author 1) and reviewer/designer (Author 2) perform peer-review of the modules. As alluded, providing a welcoming learning environment (Jones et al., 2016) and intuitive course navigation is imperative (Preece, 2000), particularly that time may be of essence for the participants (Preece et al., 2004). Therefore, we adapted the questions below from the Quality Matters Continuing Education and Professional Development standards (CPE Rubric, n.d.) for the peer-reviewing the module content:

- 1. Overview and introduction: Is it clear where to start and find module elements? Did the presenter include a biography? If specific technology is used, are technical requirements included?
- 2. Learning outcomes: Are the module learning outcomes learner-friendly (brief but transparent)? Are the outcomes reasonably achievable?
- 3. Instructional materials: Do the materials match the learning outcomes? Do materials cover the topic adequately? Is the content interesting and motivating?
- 4. Learning activities: Do the learning activities help achieve the learning outcomes? Do learning activities promote engagement? Do learning activities help learners make meaning of the content?
- 5. Technologies: Do the technologies used to promote the achievement of learning outcomes? Are technologies easy to obtain and use? Do all technologies used function well?
- 6. Learner support: If learners encounter any issue or have questions while completing the module, do the instructions indicate ways to find help?

Once all modules have been reviewed, the presenters are notified on whether they need to clarify or add some content to meet with the criteria above.

## Implementation and Evaluation of each Event

Each PD event utilizes a centralized LMS account in Canvas. To create a consistent approach to each PD, a template was created. It contains a home page with placeholders for the welcome image, title, dates, and session description. The modules area contains a sample module for the presenters as they work on their modules. When preparing for a new PD event, a new Canvas course site is created as a copy of the template. Then, the modules in the new Canvas course site are prepopulated for each presenter, serving as a working-space for their section. Using a template and providing a sample module can ensure the consistent, logical course structure and minimize technical issues (Preece, 2000; Preece et al., 2004).

Although asynchronous, the facilitation of each PD event takes place for one week. The one-week duration is a signal for participants that discussions occurring during that week are monitored. Therefore, co-founders and presenters can set a time every day to read and respond to the discussions. At the end of the one-week duration, we make an evaluation form available, acquiring feedback and suggestions for improving the PD event. The questions included in the evaluation form are related to the overall experience, whether participants would attend again and recommend the PD. Additionally, we ask for any feedback on improvements of future PD, whether they would like to see a different topic, and recommendations on any other better month for hosting a future PD. It is imperative to provide the flexible learning opportunities (Trust et al., 2017), therefore, the modules remain open for on-demand, self-paced PD after the one-week duration. If the self-paced learners want to share insights and discuss, there is a Facebook group for extending the discussion.

# **Member Reflections**

We took the reflective approach to understand "the similarities, differences, and patterns across two or more cases that share a common focus or goal" (Goodrick, 2014, p. 1). Such an approach can be used to analyze experiences and challenges that the members may have faced while navigating and conducting informal learning within a CoP-based PD. An example use of the reflective approach is provided by Perrotta and Bohan (2020), wherein they examined their challenges and opportunities of online teaching. Through the reflections of our members, we gain a deeper comprehension of how informal learning in a CoP-based environment shapes their practices of professional learning and instructional design.

Several members with various participation levels, such as a co-founder and a reviewer/designer (we refer to them as Core Member 1 and Core Member 2), a presenter, and a participant, present their reflections. Each of them shared about:

- whether their participation level may have changed at any time while being a member of PD4IDs;
- how participating in one of our PD events, regardless of their participation levels, may have improved their knowledge and expertise, and influence professional practice; and
- any challenges hindering their participation.

The three aspects of reflection listed above are imperative because pursuing PD is essential for improving knowledge and expertise and informing professional practice, as needed by IDs (Sharif & Cho, 2015). Furthermore, CoP members are welcome to participate at any level; but because a CoP function is to help improve the members' knowledge and expertise (Wenger et al., 2002), it is essential to understand how any participation in PD4IDs is helpful for IDs in improving knowledge, expertise, and practice. Last, recognizing their challenges informs us in better facilitating CoP-based PD events.

## Core Member 1

As a co-founding member of PD4IDs learning community, I am honored to have the opportunity to share free professional development with others and provide a way for those in the field to gain presentation experience, all without the barrier of cost, time, and travel. The COVID-19 pandemic has affected my workload and ability to be active. However, I always look forward to planning and participating in each PD event.

I am constantly amazed by the variety of experience levels and expertise shared by the presenters within each PD event. I have been able to utilize the examples shared in the PD events in my work. For example, in the 2017 event, the session titled Leveling up, Badges, and Avatars, has provided a way to encourage faculty to design with the learner in mind. By meeting students where they are, they can create an artifact that meets the learning objectives, with a technology that they are most comfortable with. This can range from a paper using Microsoft Word, all the way up to a full video presentation. In the 2019 event, a session titled Learner Journey Maps as a Course Design Tool, has influenced the way I instructor faculty on creating assignments. When creating authentic assessments, faculty may consider the steps needed for each project, from start to finish, and how they may instruct students on the skills needed to complete each step. Not only does this help to create more thorough instructions, but it considers the learner, who is a novice in the subject, along every part of the journey.

I am now in my fifth year as an instructional designer, and because of this organization, I have the increased confidence that I can perform my job effectively and provide an opportunity for others to learn in the field, without any constraints caused by time or money. I truly respect large professional organizations for providing the resources that they do for our profession, but I also believe that there is a place for smaller organizations who have a passion to share knowledge with others. It has been such a joy to meet so many other IDs in the field who are as passionate about the field as I am.

## Core Member 2

I first became aware of PD4IDs as a graduate student while attending a formal professional development conference in 2019. In a session I attended, Author 1 presented her research on PD4IDs and I was immediately attracted to the concept of an accessible community of professional IDs. After looking at the online forum, I contacted Author 1 to discuss opportunities for active contribution to the projects she and the co-founders are working on. I would describe my current participation in PD4IDs events as a designer and reviewer; I mainly work on the design and development of visual elements used in courses and marketing material, as well as reviewing the courses before they are made available to the larger instructional design community.

My participation in PD4IDs has significantly supported my growth as a professional in the instructional design community. Through my work with the co-founders, I had an opportunity to witness how experienced IDs work with presenters, or instructors, in building an online course. I also learned how to use specific features within the LMS that we use for our asynchronous events. Indirectly, the co-founders modeled how to effectively collaborate with other IDs on a shared goal. In the online forum, I often read external articles that were shared by other IDs in the group. Most of the posts that I engaged with in the forum were individuals sharing information about other free professional development opportunities, job openings, and discussions on technology selection. For most discussions, I would

consider myself a lurker who reads what other people are saying or sharing. I find reading the discussions to be beneficial, especially to read about the thoughts of experienced professionals, who bring a lot of work experience to the conversation. In PD4IDs specifically, I have not shared any articles or initiated any discussions myself, although I do create and share content on other networking platforms, such as LinkedIn.

Connecting with my co-founders, who all live in different states, has helped build my confidence in reaching out to others in the instructional design community to talk to them about trends in instructional design or their areas of expertise. I have also become quick to share what I am learning with both IDs in my department and the larger instructional design community, through one-on-one conversations, blog posts, and social media.

#### Presenter

Mother Theresa said that "we can all do small things, with great love, and together we can do something wonderful" and I wholeheartedly agree. To be a teacher, an instructor, to think about the students and their development, to be interested in eLearning trends— this is the first step. But, we can only grow to be exceptional IDs if we work together, collaborate, and exchange our knowledge. Even after 10 years of experience, I still believe it is essential for me to learn from others. Therefore, I am always looking for ways to expand my professional horizons, and PD4IDs was one of them and a pretty damn good one.

In my eyes, for an experience of that sort to be successful, three main elements need to be fulfilled: the event needs to be eclectic so that I can meet other points of view; it needs to feature a variety of topics so that I can be exposed to ideas I have not come across before; and last but not least it should need my attention so that it can "tell me and I remember," as Benjamin Franklin said. PD4IDs puts attention on all. However, what proved to be the most satisfying, was the tactile experience of engagement throughout the event, and after it as well.

As a presenter, I was not passive during the event; oftentimes, such events only require creating or recording a talk and adding slides, but nothing more. At PD4IDs, I was responsible for inputting the content into the LMS, managing it, and inciting and curating a healthy debate about the subject—and it allowed me to look at how I prepare my talk, how I share it, and how I interact with the listeners. The responsibility to lead a discussion turned my focus from "done the deed" into "I can shape young minds and re-invent my own." As a result, I carry it with me that my talk extends far beyond the time allocated to the presentation, it (hopefully) follows other people to their jobs, it transfers to business circles and discussion groups, and it can make or break someone's thinking.

Of course, this feature was also available to me when I was the listener. I could engage in a healthy debate with other interested participants and exchange my thoughts for their ideas. I had the ability to confront my views, change my mind, and adjust my thinking on the basis of other IDs' brains attending the event.

## Participant

Due to time constraints, I was not able to participate in on-site or in-person professional development. I was participating in a few online learning forums on Facebook and LinkedIn, but I wanted a more robust learning experience. I found the PD4IDs group on Facebook and joined right away. I was instantly energized by the plethora of ideas, topics, and discussions that happen in this group. There was even a free asynchronous professional development that I attended that helped me stay up to date on current topics and trends.

About a year later, I landed my first full-time instructional design position. It was a significant move and required a great deal of courage. Having had the support of my colleagues from the informal instructional design groups, including from the PD4IDs group, I felt more confident. Posts and discussions by these colleagues in social media and the informal learning opportunities have an important role in my professional learning. While working on the day-to-day instructional design projects, I did not mind asking questions and seeking ideas from other colleagues.

As I continued to grow in my career, I sought out new employment opportunities. Our PD4IDs group posted a job opportunity in my geographic location at a public university with an innovative, creative, progressive instructional design

team. I applied right away and got the job! I am very grateful to be in this PD4IDs group and have the support of my colleagues for professional growth and their backing when I needed to move on to a new position.

There are challenges in online groups, and the PD4IDs group was not an exception. There may be a communication barrier from the lack of being in a face-to-face environment. If someone posts something sarcastic or disrespectful, it is easy to assume that it is intentional. As a result, I am cautious about commenting on other members' posts. When I post a comment, I make sure that I wrote something rather general but encouraging. Since the field of instructional design is so vast and varied, it is critical to stay on topic and within one's sphere of expertise.

I have continued to stay connected with the PD4IDs group and found that some of my new colleagues at my current ID position knew people in our PD4IDs group even though we lived in different geographic locations. Since that time, I continue to grow by reading research articles and posts, participating in free professional development opportunities from the PD4IDs group. I am not alone in this new endeavor. I have a whole group of collective minds that inspire me, support me, and push me to be my very best.

## Discussion

In this application paper, we initially present the needs for IDs to continually pursue professional learning. The paper additionally includes the relevant conceptual framework, how we facilitate free PD events within the PD4IDs learning community by following the conceptual framework, and the reflections of several members. The reflections are overall congruent with existing literature and conceptual framework. We discuss this alignment in several key points: (1) participation change; (2) improvement on knowledge and influence on practice; and (3) challenges of participating in online CoP-based PD.

## Participation Change

The CoP-based PD events coordinated within the PD4IDs learning group are coordinated to promote knowledge sharing and informal learning through social interactions and motivate members to participate in various levels. The members' reflections show that they start by identifying the learning community they would like to join. Then, their participation levels change from time to time. As seen in Participant's reflection, she purposely looked for a learning community and found PD4IDs. She then initiated her participation as a peripheral member by enrolling in the PD events but rarely contributing to the discussions during the PD and in Facebook. This resonates with Lave and Wenger (1991), learning in a CoP may begin with legitimate peripheral participation. Participating passively in the beginning allows the new members to get the sense about the community and observe how other members interact (Dawley, 2009; Lave & Wenger, 1991). As she became more comfortable interacting in the CoP environment, she then started to ask questions and contributed responses to the discussions during PD and in Facebook, resonating with Lai and Chen's (2014) study and Dawley's (2009) levels of social network engagement.

As Core Member 2 shared, she found the PD4IDs learning community through a conference presentation. Similarly, Presenter indicated that she was initially looking for ways to expand her professional horizons and found PD4IDs. This experience, once again, resonates with Dawley's (2009) SNKC framework. Additionally, it is aligned with Guldberg and MacKness' (2009) study presenting that the participation levels in a CoP group may shift from time to time. An active member like Core Member 2 helps the coordination of the PD events by reviewing proposals and modules, as well as designing course elements. However, at another time, she is sometimes a "lurker," plainly reading the discussions and Facebook posts. Regardless of her varied participation levels, she seems to perceive the learning value. Therefore, she tends to share the information gained from PD4IDs back to her workplace and other instructional design communities through casual conversations, blog posts, and social media. Despite the members' participation changes, this suggests that PD4IDs serves as a CoP to its members, not plainly a community of interest or social group. According to Cadiz et al. (2009), if CoP members no longer perceive the learning value anymore, the main purpose of CoP will diminish, and the community will not be different than a social group. Therefore, it is imperative to support the learning experiences of all members, regardless of their participation levels and changes.

## Improvement on Knowledge and Influence on Practice

IDs perceive the need to continuously improve knowledge, skills, and attitude related to the instructional design process (Sharif & Cho, 2015). As expected, the reflections also present the stories about how these members were looking for just-in-time learning opportunities. A core member typically serves by coordinating the joint activities, facilitating discussions, addressing any questions and requests from the members (Borzillo et al., 2011; Wenger et al., 2002; Wenger & Snyder, 2000). However, even as a PD4IDs group leader, Core Member 1 values the resources shared by other members and uses them in her practices. She has been able to integrate the examples shared by others into her work and further share them with the faculty members she collaborates with. This reflection suggests that her experience in PD4IDs may have shaped her professional learning and design practice.

As an active member, Presenter also values the learning opportunities gained through engaging others in a meaningful dialogue about her modules, thereby sometimes resulting in an adjustment of her own perspective. These reflections are similar to an experience of language teachers discussed in Dale's (2013) study; CoP-based PD can provide like-minded professionals opportunities to share tips and experiences, and critically think about their own practice while interacting with others, potentially resulting in knowledge and practice improvements (Dale, 2013). Additionally, information learned from a learning community like PD4IDs group may allow the members to contribute to the collective learning by resharing it with others who are not members of PD4IDs, as told by Core Member 2. This indicates a potential influence of a CoP-based PD and group in shaping the knowledge building in the broader community.

## Challenges

Two of the members, Core Member 1 and Participant, highlighted challenges with conducting informal professional learning and interacting with others online. One challenge is finding the time to participate, parallel with Preece et al.'s (2004) finding. Peripheral members prefer to stay in this role as they may not have time to participate more actively. Participating in an online CoP addresses members' time constraint because CoP groups embrace all participation levels. However, the coordination should be well-planned, and therefore it may take time of the core members, as Core Member 1 mentioned.

Another challenge revolves around maintaining netiquette in online forums. This aligns with Carpenter and Harvey's (2019) study; disagreements in a deep discussion may happen and spark defensive and offensive reactions. Therefore, there are concerns among members regarding shaming and disrespectful behaviors (Dabbagh et al., 2015; Krutka et al., 2019). As Participant pointed out, this type of behavior may occur online unintentionally. Therefore, members may want to think carefully before posting and be cautious when commenting.

## **Implications and Conclusion**

This paper offers implications for IDs searching for ways to engage in professional learning and improve their knowledge and practice. CoP groups like PD4IDs may be appealing to IDs for seeking timely information and resources as the need arises. When IDs search for a suitable CoP, especially those facilitated through social media, they may consider using Dawley's (2009) five levels of social engagement. IDs may initially identify which CoP appropriately addresses their professional learning needs (Dawley, 2009). Then, they may observe the existing members' actions and discussion (Lave & Wenger, 1991). As they feel more comfortable with other members, they may gradually share stories and experiences to offer insights to others.

CoP groups embrace all members with any participation level; therefore, IDs can adjust their participation according to their availability (Schwier et al., 2014). Peripheral participation (i.e., lurking) may not be a negative behavior because the less-active members can be goal-driven and strategic in managing their participation (Romero-Hall et al., 2020). Furthermore, a CoP group like PD4IDs also serves as a knowledge repository where members, including peripheral members, can visit previous modules or posts to find specific information or resources as needed. As these members have more availability, they may decide to be more active by volunteering in the joint activities. Additionally, as a core member has mentioned a similar time constraint while coordinating CoP activities, it is essential to open the

volunteering opportunities to other members. This opportunity can promote a sense of belonging to the community and sustain the learning value within the CoP (Eaton & Pasquini, 2020).

IDs should continually improve their knowledge, skills, and attitude related to the instructional design process to keep up with the field and job demands (Sharif & Cho, 2015). Pursuing professional learning informally supports IDs' effort to stay abreast on trends, issues, and job demands because it is not restricted by a particular curriculum and time (Richter et al., 2011). Additionally, CoP-based learning opportunities, such as those offered by PD4IDs, can further address geographical and funding limitations. This application paper presents the coordination of CoP-based PD events hosted by PD4IDs by following relevant conceptual frameworks and the reflections of several members from PD4IDs. The reflections indicate the benefits of participating in a CoP for shaping IDs' professional learning and practices. As online CoP groups are becoming ubiquitous, this paper informs (a) IDs in regard to selecting an appropriate CoP and deciding on one's participation level, (b) working professionals with supervisory roles regarding the benefits of and importance of supporting non-traditional PD, (c) working professionals from other fields regarding ideas to pursue informal learning opportunities to address immediate professional learning needs, and (d) extends the literature related to informal learning and CoP on the practical aspect.

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# Instructional Designers' Use of Informal Learning: How Can We All Support Each Other in Times of Crisis?

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Community of Practice Instructional Designers

esigners COVID-19



The purpose of this study was to investigate instructional designers' needs during a rapid transition to remote learning due to COVID-related shutdowns of campuses, schools, and organizations. For the purpose of this study, we chose a large Facebook group for instructional designers as a medium of informal learning. Following a mixed-method study design, we answered the following research questions: (RQ1) What needs did instructional designers express and report in an informal learning environment during the COVID-19 crisis? (RQ2) In what way did an informal learning environment facilitate peer-to-peer support for instructional designers was facilitated diverse expressed needs, ranging from educational technology needs to COVID-19 specific and general pedagogical needs. We found that peer-to-peer support between instructional designers was facilitated in an informal learning environment through an exchange of ideas and advice that were prompted by questions/requests for support. The study begins to document the needs of instructional designers during the COVID-19 crisis in instructional design technology (IDT) literature. The online environment we studied seems to provide numerous options for informal learning activities for instructional design professionals.

## Introduction

The COVID-19 pandemic has brought unprecedented hardships and challenges across different professional fields around the world. Due to the threat of the fast spread of COVID-19 (World Health Organization, 2020), businesses and organizations had to shut down their physical facilities. Such quick and drastic changes to everyone's daily professional and personal lives did not go unnoticed in the field of education, including K-12, higher education, and corporate training. In fact, schools, institutions of higher education, and business organizations had to quickly pivot to Emergency

Remote Instruction (ERT) (Hodges et al., 2020) in order to continue offering learning and training experiences, to their students and employees.

Transitioning from face-to-face learning to ERT while leveraging multiple instructional technologies appeared to be a daunting task (Bonk, 2020). The main challenge boiled down to how to ensure quality learning without lowering teaching standards in an online environment in such a short period of time (Abramenka-Lachheb et al., 2021a). In addition, due to the lack of real-live synchronous interactions, ensuring interactivity using a variety of tools in an online environment was not an easy task (Bonk, 2020).

While instructional designers (IDers)—who are professionally, rigorously, and ethically trained to become designers for learning (Kim, 2018)—are equipped with knowledge and skills to facilitate meaningful and engaging learning experiences in a variety of settings and contexts, this emergency pivot to ERT was uncharted territory. In such emergent situations, the need for support and guidance was more crucial than ever before. During these uncertain times when IDers in a variety of settings needed to act fast and provide effective design and instructional decisions, IDers were likely needing professional support.

The needs of IDers during the COVID-19 crisis are largely unknown in Instructional Design Technology (IDT) literature. Some needs are best known through anecdotes, such as personal stories that IDers shared with each other, either at their workplace or professional social media groups. Thus, such needs have not yet been documented and investigated through rigorous research—the focus of this study. Therefore, such an unprecedented situation resulted in ample opportunities for learning, including workplace learning in online environments. Online environments provide numerous options for informal learning activities. Social media, such as Facebook, provides a suitable platform for informal learning in which IDers coming from a variety of professional contexts and settings can exchange their knowledge with each other. In this context, it is crucial to know what kind of expressed needs the COVID-19 crisis revealed for IDers. In other words, what type of knowledge and guidance did IDers need during these unsettling times to facilitate quality and meaningful learning and training experiences? Therefore, the purpose of this study is to investigate IDers' expressed needs with the rapid transition to online learning and ERT during the COVID-19 crisis in an informal learning environment —a large Facebook group for IDers. In addition, this study investigates how online environments facilitate peer-to-peer support among IDers.

# **Literature Review**

Several major constructs are important to consider in the context of this study. These constructs are: community of practice and how it supports skill development for IDers, and informal learning for IDers. Additionally, we focus in this literature review on IDers' work with Emergency Remote Instruction (ERT). With this literature review, our goal is to connect these constructs, present the ERT argument, and consider prior work that presents an opportunity for this study.

## **Community of Practice**

In their foundational work, Lave and Wenger (1991) coined the term *Communities of Practice* while researching situated learning through apprenticeships as a learning model (Aljuwaiber, 2016; Wenger, 2011). They argue that, in a situated context, group participation and activities help facilitate the learning process among the group members (Aljuwaiber, 2016). Wenger (2011) defines communities of practice as the "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly" (p. 1). This definition has three main elements: (1) The domain - which refers to the group's shared area of interest; (2) the community - which refers to the place where group members engage in joint activities and discussions; and (3) the practice - the shared repertoire of resources, such as answering questions, helping each other by sharing knowledge, sharing tools, stories, experiences, and so on (Wenger, 2011).

In order to successfully navigate the complexities of each professional context, IDers working in diverse settings need to stay abreast of the recent trends in their professions as well as advance their knowledge and skills (Ertmer & Newby,

1993; Ritzhaupt & Kumar, 2015). This provides an opportunity for IDers to become part of a community of practice where there are shared interests, practices, and resources for help (Schwier et al., 2004). Further, such opportunity becomes crucial when considering the diversity of instructional design settings and the variety of IDers' roles (Schwier & Wilson, 2010; Sugar & Luterbach, 2016).

The discipline of instructional design technology (IDT) provides a variety of career paths that IDers can follow. That is, IDers work in a variety of professional contexts, including corporate, higher education institutions, and non-profit organizations (Stefaniak et al., 2020). At their specific professional setting, IDers are involved in a variety of activities, including design (e.g., online learning design, webinar design), media production (e.g., audio, video, and image production), and support (e.g., just-in-time support, consultations) (Sugar & Moore, 2015). Further, Sugar and Moore (2015) reported that IDers assume different roles, such as the role of an architect, engineer, craftsperson, artist, counselor, manufacturer, and trainer. It is possible to conclude that each professional setting presents a plethora of contextual peculiarities that IDers should factor in during their design process.

# Community of Practice to Support Skill Development for Instructional Designers

While formal education and training in the IDT discipline equip IDers with necessary theoretical knowledge and skills, work situations post-graduation are more complex and nuanced (Tracey & Boling, 2014). Professional reality is more complex in its variety of design problems and situations (Nelson & Stolterman, 2014). This partially explains why it is reasonably expected that employers of IDers expand the training for the designers in one way or another (Tracey & Boling, 2014). Similarly, solutions to such problems require an extensive skill set, including tacit knowledge, the ability to communicate and collaborate effectively, and the ability to make good design judgments (Lachheb & Boing, 2018; Lachheb & Boling, 2021). Research has shown that, in preparing of future IDers, formal education and training should place a greater emphasis on realities that IDers tackle *in situ* (Abramenka-Lachheb et al., 2021b; Lachheb & Boling, 2018; Stefaniak et al., 2020; Tracey & Boling, 2014; Yanchar et al., 2010). Foundational research on the topic, such as Rowland (1992) and Rowland et al. (1992), suggested that adequate formal education should help future IDers gain skills that are aligned with what IDers do in real-life professional settings. Particularly, Rowland et al. (1992) recommended an apprentice model that includes three components: learning in context, access to expert knowledge, and modeling and reflection.

The Community of Practice (Lave & Wenger, 1991) is largely based on the idea of apprenticeship and situated cognition (Brown et al., 1989). That is, people learn in context and through interactions with experts in a specific professional domain and culture of practice. A community of practice encompasses interactions among persons over time and presents a mutual exchange of knowledge related to a specific domain of knowledge and culture of practice (Lave & Wenger, 1991). Being part of the community of practice does not imply mere replication of work approaches and practices of other skilled practitioners but rather enriches each other's own practices. That is, mutual exchange of professional knowledge allows practitioners to think creatively about their solutions in their respective professional contexts.

In recent years, Virtual or Online Communities of Practice (VCoP) have become increasingly prevalent in the workplace and educational settings, especially in light of the COVID-19 pandemic. Members of VCoP develop, learn, create, and share knowledge through online social mediums, such as Facebook, and build trusted communities (Ardichvili, 2008; Chiu et al., 2006). Chiu et al. (2006) defined virtual communities as "online social networks in which people with common interests, goals, or practices interact to share information and knowledge, and engage in social interactions" (p. 1880).

## Informal Learning for Instructional Designers

In response to emerging and complex instructional problems, IDers are engaged in workplace learning (Yanchar & Hawkley, 2015). Workplace learning is driven by various factors, including the demands of new skills, the impact of emerging technologies, and the roles within various organizations and communities (Manuti et al., 2015). Workplace

learning includes both formal and informal learning (Berg & Chyung, 2008; Choi & Jacobs, 2011; Marsick & Watkins, 2015; Yanchar & Hawkley, 2015). Informal learning is defined as unplanned, incidental learning that takes place beyond institutionally supported classroom activities and is not confined to a specific place and period of time (Choi & Jacobs, 2011; Marsick & Watkins, 2015). That is, informal learning happens on demand and is largely driven by learners' professional needs and interests.

While employees learn through formal means by training to improve job performance, most of the workplace learning occurs informally (Cerasoli et al., 2017; Choi & Jacobs, 2011). Participating in informal learning communities, such as Facebook groups, offers a variety of ways to engage in professional discussions with other IDers without time constraints imposed by traditional forms of formal learning (Bull et al., 2008).

Yanchar and Hawkley (2015) investigated how practicing IDers learn informally. The authors reported the significance of informal learning and IDers' willingness to engage in informal learning in an effective manner. The authors also stated that many of the reported informal learning activities were tacit. Further attention to informal learning would lead to other forms of informal learning among IDers, such as self-reflections regarding their work. The study mentioned that participants used Google to look for examples and gain initial ideas or clarification. It did not specify whether social media communities, such as professional Facebook groups, were used as a platform for informal learning.

Facebook offers an informal learning environment for sharing contemporary knowledge (Cain & Policastri, 2011) on relevant instructional design issues experienced by practicing IDers. Researchers have argued that informal learning is an important aspect of instructional design practice and instructional design itself might be considered as an informal learning process (Yanchar & Hawkley, 2014). Moore and Klein (2015) noted that practitioners and graduate students often engaged in informal learning activities, such as consulting online resources, talking with others, sharing materials with colleagues, reflecting on the design process, scanning professional magazines and journals, and observing others (Moore & Klein, 2015). Even though most workplace learning happens informally, there has been limited empirical research on informal learning in the workplace due to its tacit nature (Berg & Chyung, 2008; Cross, 2007; Noe et al., 2013).

## Instructional Designers' Work for Emergency Remote Instruction (ERT)

Hodges et al. (2020) coined the term Emergency Remote Instruction (ERT) to denote the difference between "wellplanned online learning experiences" (p. 1) (i.e., online courses that are designed and delivered intentionally to be online) and the variety of instructional forms that educators adopt in response to a crisis or disaster, such as the COVID-19 pandemic. This term was coined in a highly cited EDUCAUSE online publication, published on March 27, 2020, right after colleges and universities in the U.S. and around the world closed their campuses to face-to-face forms of learning and pivoted to ERT. Such a distinction is important to keep in mind when educators and IDers are working to maintain instruction during the COVID-19 pandemic and plan to evaluate their work later. Additionally, this distinction serves usdesign scholars and practitioners—better when we aim to understand how IDers' work was different during the ERT compared to 'normal times.'

Abramenka-Lachheb et al. (2021a) compared IDers to *first responders* during the COVID-19 pandemic in describing their work of supporting faculty in pivoting to ERT at a large research university/school in the U.S. The authors highlighted how their work process was not what they usually followed when designing online courses. They aptly remarked that "rapid response to instructional design needs during a crisis event required an operational framework to inform the support response" (p. 304). The operational framework they described entailed a six-step process and a support toolkit outlined by Abramenka-Lachheb et al. (2021a), which helped them effectively support faculty to transition from face-to-face to ERT. Such process and support toolkits were invented on the spot and were not described in instructional technology and instructional design textbooks, which speaks to the ability of the authors to make solid design judgments and create internal design tools when needed to support their professional practice (Lachheb & Boling, 2018). In a recently published textbook chapter, Hodges et al. (2021) stated that the rapid pivot to ERT due to the COVID-19 pandemic is "likely to diminish faculty satisfaction with online teaching" (p. 48). This calls for

IDers to adopt different mindsets and work processes during ERT, focusing on how to leverage institutionally supported instructional technologies that allow them to meet emergency needs and faculty support.

## **Problem Statement**

The needs of IDers during the COVID-19 crisis are largely unknown in IDT literature. Some needs are best known through anecdotes and are yet to be documented and investigated through rigorous research—the focus of this study. As known, the COVID-19 crisis brought unprecedented challenges to many professions, and the instructional design profession was not an exception. During this crisis, as universities, schools, and other organizations had to rapidly transition to an online and/or an ERT mode of delivery (Hodges et al., 2020), IDers were most likely faced with unprecedented challenges. These unprecedented circumstances opened an avenue for learning opportunities. It is well documented in the literature that most workplace learning happens informally (Berg & Chyung, 2008; Cross, 2007; Noe et al., 2013). Online environments provide numerous options for informal learning activities. Facebook, as one of the most popular online social networks, offers an informal learning environment for sharing contemporary knowledge (Cain & Policastri, 2011) on relevant ID issues experienced by IDers.

# **Purpose & Significance of the Study**

The purpose of this study is to investigate IDers' expressed needs with the rapid transition to ERT during the COVID-19 crisis in an informal learning environment—a large Facebook group for IDers. Understanding the needs of IDers for effectively and efficiently pivoting to ERT using an informal learning environment presents an opportunity to learn important lessons. These lessons shed a light on how an informal learning environment was used to facilitate peer-to-peer professional support among IDers. In addition, IDers' needs during the COVID-19 crisis provide insights for IDT education, research, and practice.

The below research questions guided our study:

- RQ1: What needs did instructional designers express and report in an informal learning environment during the COVID-19 crisis?
- RQ2: In what way did an informal learning environment facilitate peer-to-peer support for instructional designers?

# Methods

## Study Design

We followed a mixed method design to conduct this study. The purpose of using a mixed methods study is to seek a broader and deeper understanding of the complex study phenomenon. That is, it allows the use of an arsenal of methods that enable researchers to take advantage of either approach and compensate for their limitations. In other words, leveraging advantages of both methods allows researchers to seek *complementarity* (Greene, 2007). As Greene (2007) mentions, "In a complementarity mixed-methods study, the results from the different methods serve to elaborate, enhance, deepen, and broaden the overall interpretations and inferences from the study" (p. 101).

To answer the research questions, we specifically followed a nested mixed-method design (Eickhoff & Wieneke, 2018; Hesse-Biber, 2010). The key characteristic of this type of mixed-method research is to employ at least one additional method within another primary method (Eickhoff & Wieneke, 2018). That is, first, we used a quantitative approach to collect a large textual data set—995 posts published in the Instructional Designer Facebook group. We used the topic model quantitative approach to analyze the retrieved posts to identify the dominant topics or categories from the posts. Second, we used a qualitative approach to analyze the posts and assign them to categories we identified. We discarded the posts that were irrelevant to the categories. That is, subsequent qualitative analysis of posts allowed us to make our analysis more granular and detailed to draw more meaningful conclusions. The study design is shown in Figure 1.

#### Figure 1

Nested Mixed Methods Design



Picture depicting the nested methods design for study

## Data Source

We chose posts published in the Instructional Designer Facebook group as a data source for this study. We chose this specific group because it is a public group founded in 2011 by the E-learning Industry website (Instructional Designer, n.d.). Any Facebook user can request access to this group by answering one question related to the reason for joining the group. According to CrowdTangle Intelligence, a public insights tool from Facebook, the Instructional Designer group is the largest public group on Facebook with 15,870 members as of May 29th, 2021 (About Us CrowdTangle, n.d.).

## Data Collection

We retrieved data from the Instructional Designer Facebook Group users' posts using an open-source Python code and web scraping extension available in the Google Chrome browser to parse the HTML code. To ensure that all users' posts were scraped completely, we relied on the mobile version of the Facebook group to display all users' posts from July 8th, 2019 to January 12th, 2021—a feature not available in the desktop version of the website. In light of the COVID-19 pandemic, we focused our analysis—and purpose of this study—on de-anonymizing users' posts from March 10th, 2020 to June 10th, 2020. We extracted a total of 1,074 posts that we further reduced to 995 posts by eliminating posts that had no context (e.g., "hi, hi there"; "hello all"; "good morning professionals"). These posts were tabulated in an Excel spreadsheet for data analysis work. The spreadsheet contained two columns: (1) date posted and (2) the actual post.

# Data Analysis & Trustworthiness

To aid with the content analysis and qualitative analysis approach, we relied on the Term Frequency Inverse Document Frequency (TfidfVectorizer) algorithm in scikit-learn (*Sklearn.Feature\_extraction.Text.TfidfVectorizer*, n.d.) to understand the frequency weights of words against a single user's post and all users' posts. Once we calculated the numerical representation of the posts using the bag of words model, we ran the Latent Dirichlet Allocation (LDA) algorithm to discover emerging topics using the default 'batch' setting, which processed the entire text of posts all at once for training and testing. The LDA algorithm required a specific parameter for determining the exact number of topics that

the algorithm would use to achieve distinct and coherent topics. This is crucial because topic coherence measures the degree of semantic similarity between scoring words in the topic.

For this particular corpus of data that contained 995 posts, we achieved the ideal number of topic parameters by running the LDA several times with multiple numbers of topic parameters from two (2) to 11 until we achieved the highest coherence or  $C_v$  value. As shown in Figure 2, the number of topic parameters of six topics achieved the highest coherence value of 0.46. Any number of topic parameters above six would have resulted in lower  $C_v$  values with less semantically distinct topics. While  $C_v$  is the most common coherence measure in topic modeling, LDA also required parameters for the Dirichlet hyperparameter *alpha* for document-topic density and Dirichlet hyperparameter *beta* for word-topic density. We set the *alph*a and *beta* parameters to 'auto' in which the LDA algorithm estimated the document-topic and word-topic densities, respectively.

#### Figure 2

Coherence Score of Six Topics



Graph showing the coherence scores of six topics

After inspecting the word probability distribution of the six topics in the data, we identified the first five emerging topics: (1) general pedagogical advice; (2) pedagogical advice in light of COVID-19; (3) effective use of educational technology; (4) announcement of e-learning events and webinars; and (5) job transition to the instructional designer role. In the first five categories, community members were seeking advice from others. However, we identified a sixth topic related to sharing resources: (6) links in which posts did not solicit any input from other members of the Facebook group.

Based on the six emerging topics, we generated a list of codes that aligned with each topic. We viewed these six (6) topics as general categories that needed to be distilled into specific codes. We conducted multiple cycles of coding in which we met regularly to discuss our interpretation of the posts and to what extent the LDA algorithm was accurate in proposing six emerging topics. We used these codes to code posts and ensure consistent coding practice among us (see Table 1). Each code was accompanied by another sub-code to capture whether the post was related to COVID-19 or not: "covid? (yes/no/maybe)."

In the first cycle, each one of us took a part of the data and applied codes to each post they were assigned to. In the second cycle, we reviewed each other's coding work, asked questions, and refined our coding work further by

consensus. We ensured that we all had a collective understanding of the posts, the codes, and the six emerging topics that served as categories/themes. Through multiple meetings, discussing our coding work, and refining our coding in the second cycle, we ensured intercoder reliability, improved our trustworthiness, and reduced our bias/subjectivity.

#### Table 1

Emerging Topics from the Topic Modeling and Assigned Qualitative Codes

Emerging Topic	Qualitative Codes
1 Seeking general pedagogical advice (e.g., techniques on-boarding new employees online)	Pedagogical Advice - General
2 Seeking COVID-related pedagogical advice (e.g., asking for help related to remote work and COVID-19)	Pedagogical Advice - COVID
3 Seeking educational technology advice (e.g., asking for recommendations for a learning management systems)	EdTech Advice
4 Announcing e-learning events and webinars	Announcement
5 Seeking input related to Instructional Designer role (e.g., transition from K-12 teaching to corporate ID)	Job-Related
6 Not applicable (e.g., links to resources and articles)	N/A

# Findings

Below we share the findings of the study with respect to the two research questions:

(1) What needs did instructional designers express and report in an informal learning environment during the COVID-19 crisis? and (2) In what ways did an informal learning environment facilitate peer-to-peer support for instructional designers?

#### Expressed Needs of Instructional Designers During the COVID-19 Crisis

We identified multiple expressed needs of IDers during COVID-19 based on their posts. As shown in Figure 3 and Table 2, the most expressed needs, revealed from 272 out of 995 posts (27.3%), had to do with educational technology advice. Through expressing this need, IDers were asking for recommendations for learning management systems, authoring tools, and other educational technologies that support media production and instructional delivery.

The second most expressed need of IDers, revealed from 246 out of 995 posts (24.7%), had to do with their jobs and roles. Through expressing this need, IDers were asking/seeking advice about transitioning from one educational setting to another (e.g., K-12 to higher education, and/or higher education to corporate, and vice versa), job responsibilities, relationships with subject matter experts, how to freelance design work, etc. (See Figure 3 and Table 2 for numbers and quotes). We speculate that multiple posts that belong to this category were from different educators/corporate trainers who did not necessarily hold an IDer job title, yet their posts were about seeking advice on how to switch to an IDer role —the reason behind joining and posting in this group.

The third most expressed need of IDers, revealed from 174 out of 995 posts (17.5%), had to do with announcing elearning events and webinars. Through expressing this need, IDers were promoting professional online events, such as webinars, job posts, and the release of new books/resources and reports (See Figure 3 and Table 2 for numbers and quotes). While posts of this category do not communicate 'needs' like the first two most expressed needs, announcements of webinars and professional events speak to the need for staying connected with other professionals.

The fourth most expressed need of IDers, revealed from 124 out of 995 posts (12.5%), had to do with general pedagogical advice. Through expressing this need, IDers were asking about/seeking help with general instructional design strategies and tactics, accessibility standards/questions, assessment design, etc. (See Figure 3 and Table 2 for numbers and quotes). We interpreted posts in this category as general pedagogical advice because we considered these posts to be equally relevant for COVID-19 and 'normal' times. Yet, the fact that these posts appeared during our study time frame allowed us to speculate that COVID-19 made this expressed need obvious. Additionally, although the 'not applicable' category holds the fourth highest frequency (131 out of 995 posts–13.2%), it cannot be considered as

the fourth most expressed need by IDers. As we explained earlier, posts for this category were random links and texts, without a clear context and meaning for us to interpret.

The fifth most expressed need of IDers, revealed from 48 out of 995 posts (4.8%), had to do with COVID-related pedagogical advice. Through expressing this need, IDers were asking about/seeking help with designing online and/or transitioning from face-to-face to ERT learning/training experience, planning learning/training experiences in the near future, discussing paradigm shifts of learning/training delivery, etc. (See Figure 3 and Table 2 for numbers and quotes). We interpreted posts in this category as COVID-specific pedagogical advice because the posts specifically mentioned (or implicitly reference) COVID-19. Thus, these posts are applicable to COVID-19 only.

#### Figure 3



Facebook Posts Frequency Distribution

Out of total 995 posts, we identified 128 posts (12.9%) as COVID-19-related based on key terms used in the posts, such as "COVID-19 crisis," "COVID-19," "COVID," and "remote learning." Additionally, we identified 376 posts (37.8%) as maybe COVID-19 related, based on the remote learning context of the posts and our interpretative act of such posts. We also identified 131 posts out of 995 posts (13.2%) as not applicable— which matches the above category of not applicable— and 360 posts (36.2%) as not COVID-related (See Figure 4).

#### Figure 4

#### Facebook COVID-related Posts

Bar graph showing Facebook post frequency



Bar graph showing Facebook posts related to COVID-19

#### Table 2

Expressed Needs of IDers During the COVID-19 Crisis

	Emerging Topics	Codes	Freq.	%	Example of Posts
1	Seeking educational technology advice (e.g., asking for recommendations for a learning management systems)	EdTech Advice	272	27.3%	"A question for those who are uploading SCORM files to your LMS. When you upload your courses, do you choose to embed your course or show as pop-up? When you embed, learners don't see the course in full screen but when you show as pop-up, the course opens another window. Also not ideal user experience. Wanted to hear how everyone handles this and your reasons. Thanks!" "Captivate 2019 users, I recorded a video demo with webcam and I want to remove the webcam from the demo. Can I do that without re-recording? If so, how? Thank you!"
2	Seeking input related to Instructional Designer role (e.g., transition from K-12 teaching to corporate ID)	Job-Related	246	24.7%	"After working as instructional designer in a corporate setting, I am starting my own ID business with women solopreneurs. Having never worked in the private sector, I have no idea how contractors price themselves for solopreneurs. Any suggestions or points in the right direction would be greatly appreciated. Thanks!" "Today, I'm reviewing a technical PowerPoint put together by a SME, which contains pronouns like "it" used in multiple instances. Since I'm not as familiar with the subject matter, I'm seeing multiple interpretations for the pronouns in some cases. Usually I can re-word and figure put from context clues, but this adds extra time and frustration. Has anyone else experienced this? How have you helped your SMEs break this habit?"
3	Announcing e-learning events and webinars	Announcement	174	17.5%	"Check out the email notice from TechSmith (Camtasia and Snaglt). They are offering their products for educators and businesses impacted by closures and working remotely. I received this notice earlier today and thought it might be helpful." Hello everyone! Check out this opportunity to attend a FREE webinar about creating, producing, and promoting a podcast. We are LDT Grad Students at CU Denver."
4	Seeking general pedagogical advice (e.g., techniques on-boarding new employees online)	Pedagogical Advice - General	124	12.5%	"Accessibility question: Working on elearning for a client in Storyline and they typically reference laws and court cases a fair amount. In the past, they've been understanding about accessibility concerns. The current lesson has a lot of symbols (section symbols, parenthesis, etc), which have meaning for them, but which will trip up a screen reader. Any advice?" "Without a doubt, micro-learning is no longer a buzz in eLearning. It's becoming more and more in use as it's one of the most effective learning strategies to develop training with high profits. So have you used More micro-learning videos on your eLearning to drive employee engagement?"
	Emerging Topics	Codes	Freq.	%	Example of Posts
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5	Seeking COVID-related pedagogical advice (e.g., asking for help related to remote work and COVID- 19)	Pedagogical Advice - COVID	48	4.8%	"Greetings! We've set up a space for colleagues who may need some help with instructional design tips moving their face to face courses to online mode, to discuss challenges related to the COVID-19 virus, and we More'd like to invite IDs to join in the conversation. We are just getting things ramped up. We also have some upcoming presentations being scheduled on the outbreak and all topics related to distance ed and online learning, so please sign up on our mailing list and visit our site. Thank you." "In your opinion, what are the 3 most important themes in conducting training and development for faculty – both in person and online?"
-	Not applicable (e.g., links to resources and articles)	N/A	131	13.2%	"https://aimsdigital.com/storyline-training/"

### Ways an Informal Learning Environment Facilitated Peer-to-Peer Support

The Facebook group we investigated in this study functions as an informal learning environment for IDers. When closely examining the categories of expressed needs (i.e., educational technology, job-related, announcement, general, and COVID-19-related pedagogy), we found that this informal learning environment facilitated peer-to-peer support through asking questions, seeking advice and help, and sharing other resources with each other. Additionally, IDers in this group responded to posts/each other when their peers sought support/advice/help. As an illustrative example, the following request for advice was posted on March 12th, 2020 by an IDer of this group (Figure 5).

#### Figure 5

Example of a Post Where an Instructional Designer is Requesting Advice on a Specific Design Situation



Picture of a sample post

This request for advice— on how to develop webinars to train teachers how to teach remotely— is specific and includes specific hashtags to ensure visibility and attraction. It reflects a sense of *"I need advice/inspiration on a specific design situation that I'm grappling with.*" The request for help received 44 comments. Such comments ranged from offering specific tips, strategies, and techniques/tools (e.g., Powtoon and Videoscribe, Zoom, use of school LMS), to requests for further details about the context of the training before one can offer help/advice. This last comment resulted in a broader exchange of ideas, information, and advice among IDers — one comment resulted in an additional seven nested comments that almost deviated from the original post. Each IDer was speaking from their own experience, sharing their precedent design knowledge, and offering advice through speculation and different degrees of confidence. Peer-to-peer support between IDers was facilitated by this informal learning through such an exchange of ideas and advice that were prompted by questions/requests for support.

### Discussion

The COVID-19 crisis brought about unprecedented changes to professional and personal lives within a matter of several weeks. Particularly, social distancing and attendance restrictions due to COVID-19 made an online format the only

viable option to continue pursuing one's educational and professional development goals. In such situations, it was important to act fast and leverage the existing resources. One such resource was an informal type of learning in online environments, such as the Instructional Designer Facebook group, where it was possible to seek professional advice and share resources.

### Expressed Needs Related to Educational Technology

Findings of the study revealed that the most frequently expressed need related to educational technologies (27.3% of 995 posts). We found it surprising that expressed needs regarding educational technology prevailed over expressed needs related to pedagogy (general and COVID-19 related, 17.3 % of 995 posts). It is a surprising finding for us, as we expected that more inquiries would be related to how to wisely integrate a tool and instructional strategies suitable for online learning environments (Baldwin, 2019). We expected more of such inquiries because successful technology integration goes beyond technical skills and acquisition of the newest technologies (Blackburn, 2017). We speculate that posts related to educational technologies were the highest considering the urgent nature of the situation when a quick solution needed to be offered and put in place. We believe, in such an urgent situation, there was no time to think through all pedagogical implications (e.g., alignment with learning outcomes, accessibility, and evaluating technology resources). Thus, it seemed that the key goal was to put learning materials online so that learners could access them. Therefore, IDers chose and relied on those tools that other IDers recommended, such as Articulate Storyline for building online modules. Therefore, the urgent nature of the COVID-19 crisis primarily caused technological challenges for IDers. It is one more reason why it was called ERT, not online learning, because online learning implies thorough planning based on pedagogically sound decisions regarding the use of education technologies for a given learning context. Additionally, research has shown (Lachheb & Boling, 2018; Nelson & Stolterman, 2014) that tools themselves do not auarantee good design, thus, merely using them is not conducive to meaningful learning experiences. Rather, it is how designers use their tools while considering their target audience and context.

### Job Related Expressed Needs

The second most frequently expressed need was related to IDers' role, functions, and job postings (24.7 % of 995 posts). This could demonstrate the increased interest in the discipline of instructional design due to the changes caused by COVID-19, such as an ERT and a subsequent increase in online courses and professional development programs. It could also signify the shift in one's perception about the IDers' role in maintaining learning experiences due to COVID-19. That is, the COVID-19 crisis stressed the importance of IDers' jobs in providing and supporting learning experiences.

### Informal Learning for Professional Development

Further, it is worth noting that IDers seemed to be comfortable sharing their concerns, seeking advice, and discussing their job in this informal learning setting. This is specifically evident based on the number of posts related to their jobs (e.g., seeking advice, job postings, professional development announcements, such as webinars, and resources they shared with each other). The variety of topics that IDers shared in these informal settings speaks to their willingness to learn from other professionals and trust in other professionals' expertise. This is how IDers build and learn in their Community of Practice. This specifically resonates with Yanchar and Hawkley's (2015) study, findings of which emphasized IDers' willingness to effectively engage in informal learning. This finding also echoes the literature regarding Virtual or Online Communities of Practice (VCoP). That is, such communities are becoming more prevalent and serve as mediums to develop, create, and share knowledge (Ardichvili, 2008; Chiu et al., 2006). The Facebook group chosen for this study is one of such mediums in which IDers can post their inquiries related to their practice, such as challenges and seeking advice from other professionals. This emphasizes the crucial role of informal learning for IDers and the need for such environments in which practitioners can enrich their knowledge through sharing expertise and experience with each other.

### Implications

The findings of this study foreground implications for instructional design practice, education, and research. Findings of this study highlight the need for instructional design practice to constantly offer opportunities for informal learning, professional development, and networking among IDers. Like any other design profession, the instructional design profession will continue to flourish with solid professional networks and communities in which designers continue to learn and improve. In IDers' preparation, two major ideas could be brought to instructional design students' attention early on: Learning about instructional design never stops, and knowledge from peers/other professionals is as valuable as other sources of knowledge. The answers to the most pressing issues/questions and challenges could be found outside of ID textbooks and within other professional designers' judgments and repertoire of experiences. Future research on instructional design could further explore emerging needs, challenges, and opportunities for IDers and emphasize the importance of tacit knowledge that IDers have in order to solve unique problems at their diverse workplaces.

### Conclusion

In this study, we sought to understand what needs IDers expressed and reported in an informal learning environment during the COVID-19 crisis and in what way an informal learning environment facilitated peer-to-peer support for IDers. The findings of this study highlighted diverse expressed needs, ranging from educational technology needs to COVID-19 specific and general pedagogical needs. Peer-to-peer support between instructional designers was facilitated in an informal learning environment— a large Facebook group for instructional designers—through an exchange of ideas and advice that were prompted by questions/requests for support. The study begins to document the needs of instructional designers during the COVID-19 crisis in IDT literature. The online environment we studied seems to provide numerous options for informal learning activities for instructional designers.

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# Undergraduate Students in Online Social Communities: An Exploratory Investigation of Deliberate Informal Learning Practices

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Social Media
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Informal Learning
Deliberate Informal Learning

Online Social Communities

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INSTRUCTIONAL DESIGN

A total of 573 undergraduate students consented to participate in this investigation about deliberate informal learning practices using social media. Data analysis consisted of parametric and non-parametric statistical procedures. An analysis of the rankings provided by undergraduate students for the different deliberate informal learning activities performed in their most used social media (MUSM) showed that listening to podcasts related to their area of study, following/connecting with professional organizations, and connecting with leaders in their field of study were ranked higher than the other activities. The results also showed evidence of statistically significant differences in the ranking provided to the informal learning activities performed by undergraduate students in their least used social media (LUSM). Listening to podcasts related to their area of study, viewing videos that can assist with coursework, and following/connecting with professional organizations organizations were ranked higher than the other activities. The results of this investigation can be of benefit to instructors, regardless of the discipline of study, and instructional designers wishing to connect academic activities with informal learning endeavors that undergraduate students are already performing for personal enjoyment while participating in online social communities.

### Introduction

In education and training settings, we often use the term "informal learning" to describe learning experiences that do not follow a specific curriculum and are not restricted to a specific environment (Richter et al., 2011). Other definitions of informal learning refer to education that is never organized, has no set objectives, and is not intentionally undertaken as a learning activity (Werquin, 2007). It is very possible that learners can shift seamlessly between formal and informal learning (Moore, 2016). Additionally, Moore (2016) states that during informal learning, the learners may or may not acknowledge that they are acquiring new information. Eraut (2004) refers to this type of informal learning as implicit learning. Eraut (2004) also distinguishes two other types of informal learning: reactive and deliberate learning. Reactive learning refers to a situation in which the individual is aware that informal learning is occurring; however, it happens spontaneously in a specific context. Deliberate learning refers to informal learning that occurs when an individual takes time to think about how and where to gather information.

According to Rehm and Notten (2016), online social communities provide an adequate environment in which individuals can engage in activities that lead to deliberate informal learning. Today content creation applications, such as social media, facilitate creating and sharing knowledge (Romero-Hall, 2017a). Previous researchers have argued that, through these multi-user connections and support systems, individuals using social media can in turn have access to content and participation in informal learning experiences (Rehm & Notten, 2016; Romero-Hall, 2017a). Although learning is not guaranteed from simply using social media, these social opportunity spaces provide the right set of circumstances to engage with others and forster knowledge creation and learning processes (Romero-Hall, 2017b; Romero-Hall, 2017c).

There have been many investigations related to informal learning occurring in online social communities in various settings, platforms, and populations (Rehm & Notten, 2016; Tucker, 2019; Chen & Bryer, 2012; Fox & Ralston, 2016; Garcia et al., 2015; Russo et al., 2009). However, further investigations are needed to address informal learning by undergraduate students engaged in online social communities. Research has clearly stated that young individuals, including undergraduate students, are avid users of social media (Chen & Bryer, 2012). What remains understudied is the informal learning that occurs via day-to-day interactions with content in online social communities. A better understanding of how undergraduate students partake in informal learning while participating in online social communities can help inform educators wanting to use social media for education. The aim of this investigation was to further understand which deliberate informal learning activities are more commonly performed by undergraduate students while participating in online social communities for personal purposes.

### **Literature Review**

Social media, and online social communities, are infiltrating the educational arena (Chen & Bryer, 2012; Gao et al., 2012). There are many research efforts focused on the use of social media in formal teaching and learning (Dabbagh & Kitsantas, 2012; Manca & Ranieri, 2016, 2017; Gao et al., 2012). However, the results on whether young individuals favor using social media in their formal learning experiences is mixed (Greenhow & Lewin, 2016; Garcia et al., 2015). In addition, researchers have warned against the use of social media in formal learning settings due to potential negative effects and risks associated with addiction and distractions (Lau, 2017; Terry et al., 2016; Wu, 2017), social isolation (Shensa et al., 2016; Whaite et al., 2018), online harassment (Gosse et al., 2021), lack of data privacy (Krutka et al., 2019), algorithms of oppression (Benjamin, 2019), misinformation (Eckberg et al., 2018), and others. However, researchers still believe that social media has the potential to engage users through collaboration, allow connection with educational contexts, and help blur the line between formal and informal learning (Chen & Bryer, 2012; Greenhow & Lewin, 2016).

Many researchers have explored the potential of social media to help create outlets of informal learning while looking at different populations, settings, and platforms. For example, Fox and Ralston (2016) explored how social media served as informal learning environments for lesbians, gay, bisexual, transgender, questioning, and otherwise-identified (LGBTQ) individuals during formative stages of their LGBTQ identity. The results of this investigation showed that social media allowed participants to research a diversity of topics. One of the main benefits was that participants accessed the information they were seeking while having anonymity to accomplish their learning goals (Fox & Ralston, 2016). Social media as a tool for informal learning has also been studied by researchers wishing to better understand how and when K-16 teachers and instructors who use the various platforms for informal professional development benefit from it (Rehm & Notten, 2016; Greenhalgh & Koehler, 2017; Carpenter & Krutka, 2014). For example, Rehm and Notten (2016) looked at how Twitter contributed to continuous professional development of teachers by initiating and fostering informal learning. The results of the investigation supported this claim and, in fact, established that teachers'

participation in hashtag conversations or chats contributed to structural formation of their social capital. Similarly, results were obtained by Greenhalgh and Koehler (2017) who investigated the use of just-in-time professional development using a Twitter hashtag for French teachers preparing to discuss recent terrorist attacks with their students. Carpenter and Krutka (2014) also discussed how Twitter was credited, by teachers, with providing opportunities to access novel ideas and stay abreast of education advances and trends, particularly regarding educational technology. In the higher education setting, Chen and Bryer (2012) explored the use of social media among faculty in the discipline of public administration. The results were the same as those previously expressed in other studies; faculty felt that with adequate strategies social media could facilitate informal learning.

Researchers have also aimed to investigate how students use social media for informal learning and peer support outside the classroom when they are not required to engage and interact with an instructor. Garcia et al. (2015) found that social media outside the classroom resulted in the development of a complex, invisible, and organic social network amongst students. However, this investigation was not able to determine the nature of the interaction. In their investigation, Garcia et al. (2015) were not able to clarify if the students were interacting for social or informal learning reasons.

### Theoretical Background, Purpose Statement, and Research Questions

Russo et al. (2009) stated that social media use has shifted the focus from institutional custodianship to a more participatory form of learning. This participatory form of learning is encouraged by both Vygotsky's Social Development Theory and Siemens' Connectivism Theory. According to Vygotsky's (1978) Social Development Theory, there are three critical components in the construction of knowledge: the zone of proximal development (ZPD), social interactions, and the more knowledgeable other (MKO). The ZPD refers to the distance between the actual development level while engaging in independent problem solving and the level of potential development while engaging in problem solving in collaboration with more capable peers (Vygotsky, 1978). The MKO refers to interactions with anyone who has a better understanding or a higher ability level than the learner with respect to a task, process, or concept. Last, social interactions refer to instances in which an individual comes in contact and interacts with others and that individual, in turn, starts to assimilate and internalize knowledge while adding their own value as well (Vygotsky, 1978). Vygotsky's (1978) Social Development Theory and specifically the social interaction element has major implications for informal learning facilitated by peer collaboration.

Connectivism further encourages learning in a participatory manner and considers these types of social engagements in a digital environment. According to Siemens (2005), connectivism theory implies that "learning can reside outside of ourselves, is focused on connecting specialized information sets, and the connections that enable us to learn are more important than our current state of knowing." Several key principles of connectivism relate to the informal learning experiences that individuals experience while using online social communities. These principles are the following: a) learning and knowledge rests in diversity of opinions, b) learning is a process of connecting specialized nodes or information sources, and c) nurturing and maintaining connections is needed to facilitate continual learning (Siemens, 2005). Connectivism presents a theory in which learning is no longer an individualist process, instead learning is an open, connected, real-time, information flow between many individuals, in various in-person and digital settings.

Vygotsky's Social Development Theory (1978) and Siemen's Connectivism Theory (2005) raise awareness and provide value to the shared social interaction of peers who work on a task cooperatively or interact with one another. Given these two theoretical underpinnings and the value of shared social interactions during the learning process, this investigation focused on gaining an understanding of the deliberate informal learning activities performed by undergraduate students in their online social communities. In particular, this investigation aimed to gain insights on the deliberate informal learning activities performed by the learners' while using their most used social media (MUSM) and least used social media (LUSM). This investigation also helped determine how frequently undergraduate students perform these deliberate informal learning activities. For this investigation, the MUSM is defined as the social media for which the participant had an account for and used the most. Similarly, the LUSM is defined as the social media for which the participant had an account for but would use the least. The research questions that guided this investigation were the following:

- RQ1: What deliberate informal learning activities do undergraduate students perform most when logged in to their MUSM?
- RQ2: What deliberate informal learning activities do undergraduate students perform most when logged in to their LUSM?
- RQ3: Does social media preference and rate of occurrence have an effect on the number of informal learning activities carried out by undergraduate students?

## Methods

### Recruitment

This investigation had IRB approval (IRB 18-008). Participants (n = 573) were undergraduate students attending an institution of higher education in the Southeastern United States. With approval of an IRB, the Office of Institutional Research provided to the principal investigator a password-protected MS Excel spreadsheet with emails of all undergraduate students enrolled at the institution (approximately 8,500 undergraduate students). The principal investigator used the Qualtrics email distribution setting to import the email addresses and send an invitation to participate to all undergraduate students included in the MS Excel spreadsheet. The email invitation to participate included the IRB approval number, the name and contact information of the principal investigator, the aim of the investigation, the amount of time it would take to complete the survey, the risks (if any) and benefits of participation, and the option to unsubscribe from reminder emails. The total recruitment period was one month. During the recruitment period, three reminder emails were sent out (one every two weeks). At the end of the data collection period, a thank you email was sent to participants.

### **Electronic Survey**

The survey was created using Qualtrics. Once participants clicked on the survey link in the email invitation, they were asked to provide informed consent to participate. If a student consented to participate by selecting the "I consent to participate" option, they were directed to nine demographic questions. Following the demographic questions, participants were asked to respond to specific questions regarding their social media level of usage and participation. Participants were asked to categorize and rank six self-motivated deliberate informal learning activities performed in their MUSM and LUSM (see Figure 1). Participants categorized these deliberate informal learning activities depending on their rate of occurrence (i.e., most of the time, sometimes, and rarely) and also ranked them from 1 to 6 ("1" = performed most often and "6" = performed the least). These deliberate informal learning activities were selected based on research literature that established them as common informal learning activities performed by learners in social media (Romero-Hall, 2017b; Romero-Hall, 2017c).

#### Figure 1

Deliberate Informal Learning Activities performed in Social Media



A list of deliberate informal learning activities

### **Demographics of Participants**

The investigation included participants who self-described as: males (n=129, 23%), females (n=439, 77%), and third gender (n=3, 1%). Most participants were in the 18- to 24-year-old age range (n=559, 98%), and a small percentage of the participants were in the 25- to 34-year-old age range (n=12, 2%). Based on their ethnicity, participants were White Caucasian (n = 393, 69%), Latinx or Hispanic (n=77, 13%), Black or African American (n=45, 8%), Asian or Pacific Islander (n=29, 5%), or other (n= 27, 5%).

As part of the demographic information, the electronic survey also included information related to the participants' academic standing and declared major. Participants belonged to the following academic standings: freshman (n=196, 34%), sophomore (n=120, 21%), junior (n=125, 22%), or seniors (n=132, 23%). Table 1 shows the academic majors that the participants belonged to at the time of the data collection. Overall, the participants in this investigation were undergraduate students studying a range of different academic majors.

#### Table 1

#### Academic Majors of the Participants

Majors	Total Number of Students
Public Health	45
Business Information Technology	43
Animation	37
Cybersecurity	37
Marketing	29
International Studies	26
Non-degree seeking	25
Advertising and Public Relations	21
Allied Health	21
Management Information Systems	21
Philosophy	20
Mathematical Programming	19
Sociology (Applied)	13

Majors	Total Number of Students
Theatre	13
Finance	12
Financial Enterprise Systems	12
Education - Secondary Biology	11
Graphic Design	11
Environmental Science	10
Psychology	10
Dance	9
International Business	9
New Media	8
Liberal Studies	7
Criminology and Criminal Justice	6
Journalism	6
Undecided	5
Biochemistry	5
Biology	5
Film and Media Arts	5
Art Therapy	4
Education - Elementary K-6	4
Education - Secondary Mathematics	4
History	4
Human Performance	4
Marine Chemistry	4
Spanish	4
Music Education (K-12)	3
Athletic Training	2
Chemistry	2
Economics	2
Education - Secondary Social Sciences	2
Music Theatre	2
Nursing	2
Education - Secondary English	1
English	1
Entrepreneurship	1
Forensic Science	1
Marine Science - Biology	1
Museum Studies	1
Music	1
Writing	1

= 31, 5%) their MUSM. The results also showed that Facebook (n = 245, 43%), Twitter (n = 181, 32%), and YouTube (n = 78, 14%) were consider the LUSM amongst the participants. A small number of participants considered Snapchat (n = 42, 7%) and Instagram (n = 27, 5%) their LUSM.

### Data Analysis

In order to determine if there is a significant difference between deliberate informal learning activities rankings in the MUSM and the LUSM, a Friedman test was performed. Friedman test is a non-parametric test for differences between groups when the dependent variable being measured is ordinal. Additionally, data analysis consisted of parametric statistical procedures. A two-way analysis of variance (ANOVA) was performed to examine the mean differences between the number of deliberate informal learning carried out by participants based on their social media preferences and the rate of occurrence preference.

### Results

# Deliberate Informal Learning Activities Performed by Undergraduate Students in their MUSM

A Friedman test was run to determine if there were differences in the rankings of informal learning activities performed by undergraduate students while logged in to their MUSM. The dependent variable was measured on an ordinal level using a 6-point scale ranking category explaining how often they would perform a specific informal learning activity. All assumptions required for the analysis were met. Pairwise comparisons were performed with a Bonferroni correction for multiple comparisons. The analysis of the data indicated that there was a statistically significant difference between the rankings given by undergraduate students to deliberate informal learning activity carried out while logged in to their MUSM,  $\chi 2(5) = 308.006$ , p = .000 (see Table 2). Post hoc analysis revealed a statistically significant difference between rankings of the deliberate informal learning activities (see Table 3).

#### Table 2

Deliberate Informal Learning Activity	MUSM			
n	Mean	SD	Median Ranking	
Read posts that relate to their area of study	573	2.64	1.722	2
View videos that can assist with coursework	573	3.84	1.732	4
Follow/connect with leaders in their field of study	573	3.60	1.567	4
Read blogs/articles related to their area of study	573	3.22	1.512	3
Follow/connect with professional organizations	573	3.27	1.519	3
Listen to podcasts related to their area of study	573	4.44	1.622	5

#### Descriptive Statistics of the Deliberate Informal Learning Activities in the MUSM

#### Table 3

#### Pairwise Comparisons between the Rankings of the Deliberate Informal Learning Activities in the MUSM

Deliberate Informal Learning Activities	Mdn	Sig.
Read posts that relate to their area of study	2	
Read blogs/articles related to their area of study	3	.000
Follow/connect with professional organizations	3	.000
Follow/connect with leaders in their field of study	4	.000
View videos that can assist with coursework	4	.000

Deliberate Informal Learning Activities	Mdn	Sig.
Listen to podcasts related to their area of study	5	.000
Read blogs/articles related to their area of study	3	
Follow/connect with leaders in their field of study	4	.010
View videos that can assist with coursework	4	.000
Listen to podcasts related to their area of study	5	.000
Follow/connect with professional organizations	3	
Follow/connect with leaders in their field of study	4	.047
View videos that can assist with coursework	4	.000
Listen to podcasts related to their area of study	5	.000
Follow/connect with leaders in their field of study	4	
Listen to podcasts related to their area of study	5	.000
View videos that can assist with coursework	4	
Listen to podcasts related to their area of study	5	.000

# Deliberate Informal Learning Activities Performed by Undergraduate Students in their LUSM

A Friedman test was run to determine if there were differences in the rankings of informal learning activities performed by undergraduate students while logged in to their LUSM. The dependent variable was measured on an ordinal level using a 6-point scale ranking category explaining how often they would perform a specific informal learning activity. All assumptions required for the analysis were met. Pairwise comparisons were performed with a Bonferroni correction for multiple comparisons. The analysis of the data indicated that there was a statistically significant difference between the ranks given to deliberate informal learning activity carried out in their LUSM,  $\chi 2(5) = 255.478$ , p = .000 (see Table 4). Post hoc analysis revealed a statistically significant difference between rankings of the deliberate informal learning activities (see Table 5).

#### Table 4

Descriptive Statistics of the Deliberate Informal Learning Activities in the LUSM

Deliberate Informal Learning Activity	LUSM			
n	Mean	SD	Median Ranking	
Read the posts that relate to their area of study	573	2.89	1.877	2
View videos that can assist with coursework	573	3.23	1.759	3
Follow/connect with leaders in their field of study	573	3.41	1.437	3
Read blogs/articles related to their area of study	573	3.27	1.463	3
Follow/connect with professional organizations	573	3.69	1.501	4
Listen to podcasts related to their area of study	573	4.51	1.701	5

#### Table 5

Pairwise Comparisons between the Rankings of the Deliberate Informal Learning Activities in the LUSM

Deliberate Informal Learning Activity	Mdn	Sig.
Read posts that relate to their area of study	2	
View videos that can assist with coursework	3	.036
Read blogs/articles related to their area of study	3	.010

Deliberate Informal Learning Activity	Mdn	Sig.
Follow/connect with leaders in their field of study	3	.000
Follow/connect with professional organizations	4	.000
Listen to podcasts related to their area of study	5	.000
View videos that can assist with coursework	3	
Follow/connect with professional organizations	4	.000
Listen to podcasts related to their area of study	5	.000
Read blogs/articles related to their area of study	3	
Follow/connect with professional organizations	4	.002
Listen to podcasts related to their area of study	5	.000
Follow/connect with leaders in their field of study	3	
Listen to podcasts related to their area of study	5	.000
Follow/connect with professional organizations	4	
Listen to podcasts related to their area of study	5	.000

# Social Media Preference and Rate of Occurrence of Informal Learning Activities

A two-way analysis of variance (ANOVA) was conducted to examine the effect of social media preference and rate of occurrence of deliberate informal learning activities carried out by the participants. The independent variables were the social media preference (i.e., MUSM or LUSM) and rate of occurrence preferences (i.e., most of the time, sometimes, or rarely). The dependent variable was the number of deliberate informal learning activities carried out by the participants. There results of the two-way ANOVA showed that there was a statistically significant interaction between the social media preference and rate of occurrence of deliberate informal learning activities carried out by the participants. There results of the two-way ANOVA showed that there was a statistically significant interaction between the social media preference and rate of occurrence of deliberate informal learning activities carried out by the participants, F (2, 3563) = 356.344, *p* = .000 (see Figure 2).

#### Figure 2

Estimated Marginal Means by Rate of Occurrence and Social Media Preference



A table showing social media preference

### Discussion

The aim of this investigation was to explore which deliberate informal learning activities are performed by undergraduate students while participating in online social communities for personal purposes. The results of this investigation are critical because they allow us to more clearly see the landscape of knowledge creation and learning experiences in the digital age. The outcomes support the social nature (Vygotsky, 1978) and information flow (Siemens, 2005) of learning experiences in digital settings, in particular of informal learning endeavors in online social communities.

An analysis of the rankings provided by undergraduate students for the different deliberate informal learning activities performed in their MUSM showed that *listening to podcasts related to their area of study, following professional organizations,* and *connecting with leaders in their field of study* were ranked higher than other activities. The results also showed evidence of statistically significant differences in the ranking provided to the informal learning activities performed by undergraduate students in their LUSM. *Listening to podcasts related to their area of study, viewing videos that can assist with coursework,* and *following professional organizations* were ranked higher than the other deliberate informal learning activities.

A growing amount of research demonstrate that podcast use has been steadily increasing over time (Bratcher, 2020). Approximately, 80 million Americans are now weekly podcast listeners, which is a 17% increase from 2020. Additionally, podcast listeners are now more diverse than ever, as 57% are White, 16% are Latinx, 13% are African American, 4% are Asian, and 10% are from other background (The Infinite Dial 2021, 2021). The findings also show that undergraduate students connect with professional organizations using social media. The reality is that professional organizations no longer rely solely on in-person meetings to engage with their memberships (Ritzhaupt et al., 2020). Instead, professional organizations are providing informal and supportive communication through the use of social media to improve member engagement (Wang et al., 2020).

The results also highlight the popularity of viewing videos shared in online social communities for informal learning. The Internet has facilitated and enabled self-directed, independent, and informal learning using video hosting and sharing platforms such as YouTube. An investigation conducted by Tan (2013) determined that videos shared on YouTube served to extend learners interactions with each other outside of the classroom and in some cases facilitated interactions that would not previously have happened. The outcomes of this investigation showcase that, regardless of the social media preference (i.e., MUSM or LUSM), learners deliberately engage in informal instruction in which they can exchange with others and absorb information from other individuals. Similar to the knowledge ecosystem model described by Miller et al. (2017), undergraduates students interact with an informal sphere of learning that considers both an outer focus with humans, tools, cultures, environments, and texts and inner focus that includes knowledge and information resources. Today, learners at all educational levels are regularly accessing digital and networked technologies to seek information and they are also active co-creators of content (Dabbagh & Kitsantas, 2012).

### Significance of this Research

Data from 2021 shows that globally there are approximately 4.2 billion social media users (Global Social Media Stats). In the United States, as of 2021, 72% of Americans use social media sites (Pew Research Center, 2021). People are using social media to engage with others (Romero-Hall, 2017a) and to engage in informal learning experiences (Rehm & Notten, 2016; Tucker, 2019; Chen & Bryer, 2012; Fox & Ralston, 2016; Garcia et al., 2015; Russo et al., 2009). Knowing which types of deliberate informal learning activities undergraduate students engage in benefits instructors in institutions of higher education. It can enable instructors, regardless of the discipline of study, to connect academic assignments with those informal learning activities that undergraduate students are already performing for personal purposes. Ideally, instructors aim to nurture learners that engage in a personalized and self-directed journey bridging formal, non-formal, and informal learning experiences as part of a *lifelong learning ecology* (Sangrà et al., 2019).

Additionally, gaining insights into the types of informal learning activities that undergraduate students are performing in the MUSM and LUSM illustrates worthwhile activities that social media users engage in while using these platforms. Today there is still a tremendous amount of skepticism toward the use of social media due to well established and researched risks (Eckberg et al., 2018; Shensa et al., 2016; Whaite et al., 2018). Yet, it is equally important to acknowledge how and when adequate uses of these affinity spaces can have a positive purpose. This investigation helps us gain an understanding on how this specific population, undergraduate students, use social media in their everyday lives. As the number of users of social media continues to grow and evolve, these platforms have a more prevalent presence in our lives. Gaining an understanding of their impact, positive or negative, increases our awareness of their role in education for both formal and informal experience.

### Future Research

Further research related to informal learning activities in social media can focus on other age groups (i.e., teenagers, tweens) or learners in specific majors. It can also consider similar research in a different type of higher education institution, perhaps a large public university or historically black colleges and universities (HBCU). Last, future research should aim to include qualitative elements that shed light on undergraduate students' other types of informal learning activities.

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# Designing Online Professional Learning to Support In-Service and Preservice Teachers Adapting to Emergency Remote Teaching

Maya Anderson, Alison Turner, & Barbara Brown



Service-learning partners, including a faculty of education and local school district, engaged in collaborative inquiry to support in-service and preservice teachers who were engaged in emergency remote teaching during a time of crisis and school disruption. This article illustrates how service-learning partners designed a professional learning series in an online learning environment to support in-service and preservice teachers adapting to teaching online. This article shares the instructional design process used to develop the series, insights about how the participants responded during the sessions, and a set of recommendations to inform design teams involved in developing professional learning or other types of non-formal learning opportunities for teachers.

### Introduction

In March 2020, like other jurisdictions around the globe aiming to contain the spread of COVID-19, the Alberta Education Ministry in Canada mandated the closure of all school buildings and a shift to online learning for K-12. In a measure to keep students and communities safe, all students and teachers were expected to stay home for the remainder of the school year, with schools providing online learning described as emergency remote learning (Hodges et al., 2020). As the pandemic progressed, schools were permitted to reopen; however, many school boards opted to offer online learning options in conjunction with face-to-face learning. This required in-service teachers (practicing and experienced teachers) and preservice teachers (beginning teachers also referred to as student-teachers) to adapt to emergency remote teaching using different modalities and a range of digital tools. As to be expected, the complexities of this situation caused considerable stress for teachers and those supporting teachers. A survey of 1,600 Alberta teachers found high levels of fatigue, stress, and anxiety (i.e., 94%, 95%, and 81% reporting these conditions, respectively (Alberta Teachers' Association [ATA], 2020). Increased workload and an increased need for professional learning were cited as concerns for online teachers (ATA, 2020).

Long-standing service-learning partners, a faculty of education and a local school district engaged in a collaborative inquiry (Fullan & Hargreaves, 2016) to support in-service and preservice teachers required to adapt to emergency remote teaching. Utilizing a backward design approach (Mazur, 2018; Wiggins & McTighe, 2005), initial conversations among the partners related to the context and complexities facing teachers quickly adapting to teaching online. Service-learning partners speculated, teachers new to online teaching could benefit from additional support to design and deliver inclusive and engaging learning experiences for online learners, both synchronously and asynchronously. Timperley (2011) and Fullan (2006) argue schools need to learn from each other and collaboratively apply their learning within their regular practice. Hence, the service-learning partners decided to form a design team and involve a graduate student in the faculty of education with expertise in online teaching. Together, the partners and graduate students designed a professional learning intervention with a series of five hour-long interconnected professional learning sessions for in-service and preservice teachers delivered online through web conferencing (i.e., Zoom).

This article shares our instructional design process for other design teams to modify or adapt the strategies to support in-service and/or preservice teachers with learning about online teaching. As demand for online learning continues to grow (Donovan et al., 2019; Johnson, 2019; Morris et al., 2020), our experiences from this service-learning partnership also benefit those involved in designing or conducting research on professional learning interventions to support and advance online teaching and learning. The next section provides an overview of the literature that situates the professional learning intervention as a form of non-formal learning.

### **Literature Review**

Formal learning is defined as an organized and structured learning experience, such as learning that occurs during credit-bearing postsecondary programs or non-credit-bearing workplace training required by an employer (Oliver, 2019; Organisation for Economic Co-operation and Development [OECD], n.d.). Some authors suggest formal learning is that which is externally determined, teacher initiated and led, time restricted, and provided by an educational institution (Greenhow & Lewin, 2016). Formal learning is also described as learners guided through a formal set of learning goals and objectives selected by an external authority (Greenhow & Lewin, 2016). Examples of such learning include preservice teachers participating in education courses facilitated by university instructors and guided by learning objectives set out by the university and other governing bodies leading to a degree in education. Similarly, in-service teachers engage in formal learning programs that lead to certification in particular topics guided by external bodies or graduate programs at universities leading to a graduate degree in their chosen topic.

The construct of non-formal learning is defined as "an addition, alternative and/or complement to formal education within the process of lifelong learning of individuals" (Oliver, 2019, p. 18). By contrast, non-formal learning is not organized, not institutionalized, and not regulated by a set of intended learning outcomes (OECD, n.d.: Oliver, 2019). Some authors refer to non-formal learning as asynchronous, self-directed activities (Prestridge et al., 2021) where the learner determines their own goals. This type of learning is characterized as exploratory, spontaneous, and learner controlled (Greenhow & Lewin, 2016). We posit that although this learning is typically controlled or led by the learner, non-formal learning also occurs in formal learning settings where learner-learner interaction is fostered, and learners are encouraged to share resources, experiences, and ideas (Bolliger & Martin, 2018). Formal learning has been discussed as a conduit to non-formal learning, suggesting that the foundational knowledge gained in non-formal learning settings, such as workshops and seminars, may lead to self-directed follow-up of the individual to closely examine a topic and at the same time share their newfound knowledge with others (Bednall & Sanders, 2017). Additionally, it is important to note learning can be simultaneously formal and non-formal, with non-formal learning practices such as social media and discussion boards introduced into formal learning settings (Greenhow & Lewin, 2016). The blurring of lines between the two types of learning is becoming more commonplace with the increase in participatory digital cultures (i.e., Twitter, Facebook, Instagram, TikTok, and YouTube) being utilized as non-formal learning settings (Ito et al., 2013). In many ways, this connected learning (Ito et al., 2013) bridges the gap between

formal and non-formal learning, providing students the opportunity to exercise autonomy in what and how they continue prescribed learning in formal settings.

Formal and non-formal learning is also visualized as opposites on a continuum with: non-formal at one end, described as not organized, unstructured or unintentional; formal at the other end, described as organized, structured, and intentional; and non-formal at the midpoint, two described as organized with learning objectives (<u>DECD</u>, n.d.). In this article, the professional learning intervention for in-service and preservice teachers is situated midway on the continuum, given it is intentional with a set objective, occurs outside of a learning environment in a degree program, and is referred to as non-formal or professional learning. Many examples exist of the value and benefits of preservice teachers engaging in such non-formal learning opportunities (Beck et al., 2020; Brown et al., 2020). Regarding in-service teachers, several studies explore non-formal learning through professional development, including patterns of engagement and interaction among language teachers in online learning (Pawan et al., 2003), extending professional development through online learning communities such as the INSPIRE program (Liuet al., 2009), comparing formal and non-formal learning in face-to-face versus online formats (Levenberg & Caspi, 2010), and the growth of online teacher professional development (Lay et al., 2020). Although there is considerable research on non-formal learning for preservice teachers as well as professional learning for in-service teachers, there is limited literature about designing non-formal, professional learning for both in-service and preservice teachers in an online learning environment.

We use the term "professional learning" interchangeably with "non-formal learning" and describe this as organized and intentional learning that takes place outside of class time or the workplace. Online professional learning for teachers has seen a steady increase, due, most notably, to the COVID-19 pandemic (Hartshorne et al., 2020), with the focus on supporting teachers on how to teach in an online learning environment (Ferdig et al., 2020). Designing and implementing high-quality online learning, teacher support, and training is crucial (Greenhow et al., 2020) to the success of students and teachers during this crisis. The rationale for providing online professional learning (i.e., just-in-time support to teachers in a precarious situation of adapting to emergency remote teaching with limited experience) was necessitated by the ever-changing requirements of social distancing (Lay et al., 2020). There are, however, additional perceived benefits of facilitating professional learning through online platforms. Researchers cite the growth of online professional learning as being related to improved access, flexibility in scheduling and location, networking possibilities, and lower costs (Lay et al., 2020). Additionally, online options for professional learning are of great value because they can utilize resources not readily available locally or nationally (Brooks & Gibson, 2012; Stevens & Frazelle, 2016). Furthermore, online learning formats provide the opportunity to engage participants both synchronously and asynchronously, thus encouraging the development of an ongoing professional learning community that practices inquiry, innovation, and exploration (Admiraal et al., 2019).

The examination of the literature noted a scarcity of literature on non-formal learning designed for both in-service and preservice teachers. The aim is to contribute to this growing field by sharing our reflections on designing online professional learning for novice and practicing teachers. By describing the design process as well as perceptions of how the participants responded during the sessions, we endeavored to provide insights into this complex and unique design challenge.

### **Collaborative Inquiry**

Collaborative inquiry is used by educators for professional learning and school improvement efforts (Donohoo, 2013). School-university partnerships using collaborative inquiry for codesigning teacher professional learning and examining new pedagogical approaches demonstrate promising results (Cantalini-Williams et al., 2015; Harris & Klenowski, 2017). We used Donohoo's (2013) four-frame model to guide the process of our collaborative inquiry: framing the problem, collecting evidence, analyzing evidence, and documenting (see Table 1). During the first phase of framing the problem, we determined a collaborative inquiry approach to designing the professional learning series could help teachers (both in-service and preservice) with learning how to teach online. In the second phase, as service-learning partners and members of the design team, we maintained field notes during meetings and throughout the professional learning series to document design and perceptions during the sessions to inform collaborative inquiry. We also administered exit tasks at the end of the sessions to help inform the design of the following session. In the third phase of analysis, we reviewed the design of the professional learning series and during debriefs, we discussed our reflections. We gained a deeper understanding of current learning needs, which, in turn, led to the design of subsequent sessions in the professional learning series. As a team engaging in collaborative inquiry, during the fourth phase, we reviewed the documentation and refined our collective insights about the design including our perceptions of how the participants responded during the professional learning series.

#### Table 1

#### Process for Collaborative Inquiry

Collaborative Inquiry Phase	Activity
1. Framing the problem	The design team came together to determine the need of providing professional learning to support both in-service and preservice teachers as they were required to adapt to emergency remote teaching. Ideas for potential topics were discussed based on the perceived needs of online teachers.
2. Collecting evidence	The design team kept detailed notes during the design meetings and the professional learning sessions. Additionally, exit tasks were administered in the sessions to determine the congruency between perceived and actual needs.
3. Analyzing evidence	After each session, the design team met to reflect upon how the participants responded to the sessions. These reflections allowed the team to revisit the initial designs and make modifications for further sessions to better meet the needs of the participants.
4. Documenting	At the end of the professional learning series, the design team came together to review our documentation. Through this, we refined our collective insights about the design as well as our perceptions of how the participants responded during the professional learning series.

### **Professional Learning Design**

The professional learning series was based on the backward design approach (Mazur, 2018; Wiggins & McTighe, 2005). The backward design approach is grounded in constructivist learning theory and often characterized by the following three parts: (a) identifying and clarifying desired results, (b) determining acceptable evidence and multiple means of expression and representation, and (c) planning accessible learning experiences and instruction with attention to pre-instructional decisions (Mazur, 2018; Wiggins & McTighe, 2005). This model is a proven design approach that is frequently used by instructional designers (Bond & Dirkin, 2020).

The backward design approach not only guided the design of the series, but also informed the sequence of the sessions. We aimed to support teachers with limited experience in online pedagogies. Designing the pathway of the sessions coincided with the backward design approach (see Table 2). First, we started the series with identifying and clarifying results and used the Universal Design for Learning (UDL) principles (CAST, 2018b) to make online learning accessible and inclusive for all learners. Second, we determined acceptable evidence and incorporated multiple means of expression and representation through digital choice board creation and design. We discussed what constituted evidence of learning. The sessions did not have formal certifications associated with them. Therefore, we explored the practical application of the skills and strategies presented in the sessions as the goal of the learning process. Utilizing the backward design approach, conscious of the goal of providing immediate support to teachers, we focused on providing opportunities for participants to apply and transfer learning into authentic teaching contexts (Hicks & Bose, 2019). Third, we focused on accessible learning experiences, engagement strategies, and social-emotional learning in online learning. Additionally, we scaffolded the learning to support the differing needs of both in-service and preservice teachers (Korhonen et al., 2019).

#### Table 2

Roadmap for Professional Learning Sessions

Backward Design Parts	Sessions	Content Overview
Part 1: Identifying and clarifying desired results	Session 1: How might I use the UDL principles to design online learning that is accessible, inclusive, and engaging for all learners?	• Introduction to UDL principles • Barriers in online learning • Strategies for asynchronous and synchronous sessions
Part 2: Determine acceptable evidence	Session 2: How might I use choice boards in online learning to increase student engagement in learning assessments?	● Literature related to digital choice boards ● Examples of digital choice boards ● How to create a digital choice board
	Session 3: How might I design the content for choice boards?	• Understanding by Design framework (Wiggins & McTighe, 2005) • 21st-century learning skills outlined by Alberta Education (2011) and incorporation into choice board designs
Part 3: Plan learning experiences and instruction	Session 4: How might I design online learning to encourage student engagement?	• Engagement strategies • Fostering relationships and supportive learning communities (e.g., icebreakers, whole group tasks, and exit activities)
	Session 5: How might I design online learning to encourage social-emotional development to support student mental health and well-being?	• Social, and emotional learning: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social, and Emotional Learning, 2020).

Another consideration while designing the series was the need for practical strategies that could be utilized by participants immediately. We aimed to design a professional learning series that was responsive and would provide just-in-time support for participants (Greenhalgh & Koehler, 2017). Though practicality was at the forefront of the design, we were also cognizant of the need to provide less experienced participants with foundational knowledge of the topics. Balancing the need for building a knowledge base and making learning meaningful while designing for learners with varied experience levels posed a unique design challenge. To mitigate this problem, we started each session with an entry task that posed a question to allow participants to consider their experiences and prior knowledge. We also incorporated reflection activities throughout the sessions to allow participants to share insights with one another and engage in reflection about personal expertise and experiences with online learning. The learning design for the sessions was similar for the preservice and in-service teachers: following a similar pattern of exploring the evidence base; presenting different methods for incorporating online learning; and encouraging personal reflection. The sessions incorporated an overview of online learning from an evidence-based perspective, as well as instruction and exploration of how in-service or preservice teachers might utilize online learning concepts with online learners. The sessions utilized experiential and active learning approaches to model tools and techniques useful for teachers when teaching online. For more detail about the five sessions and the tools used in the professional learning series, see Appendix A.

### **Insights and Impressions**

The sessions in the professional learning series involved 60 in-service teachers, 253 preservice teachers, and several faculty members. In this section, we report insights and impressions from our field notes about how the in-service and preservice teachers responded to the learning design of the sessions. Even though the professional learning design for in-service teachers was the same as the one designed for preservice teachers, we noticed the ways participants responded to the designs differed, particularly in the types of questions asked throughout the sessions.

We noted the questions preservice teachers asked during the sessions were related to pedagogical approaches. Preservice teachers appeared interested in learning more about how a strategy or tool could be used across different grade levels because many were uncertain as to which grade level they might be teaching in the future. Queries about how to facilitate discussions or facilitate collaboration for different age groups, how to best modify an activity for different levels, and how to differentiate tasks were asked by the preservice teachers. Other questions included whether the strategies presented could be utilized in either online or face-face learning because some participants were uncertain if they would be teaching in an online or a face-to-face scenario. Preservice teachers also asked if we could provide certificates of attendance to add to their teaching portfolios. Furthermore, preservice teachers requested additional resources to add to their teaching toolkits: book lists; citations; and online tutorials. Preservice teachers approached these sessions as a means to gain knowledge to apply to future teaching scenarios.

In contrast, in-service teachers focused less on the pedagogical approaches and favored discussions about the practicality of the tools or strategies being presented. As in-service teachers had a robust understanding of the rationale behind utilizing different pedagogical approaches, and at the same time were figuring out how to transfer face-to-face learning to an online learning scenario, their questions centered around logistical and technical aspects. Questions such as what to do when students do not turn on their cameras during online classes and how to ensure students remain engaged in sessions were at the forefront of the discussion. Questions were also about technology integration and how, for example, to embed choice boards into the learning management system for students to see the presentation view and interact immediately. There were questions about using technology to foster collaboration and how to move students into breakout spaces while ensuring they stay on task and return to the main room when asked. In many ways, in-service teachers used these sessions to examine scenarios from their classrooms and framed their questions about specific situations to receive feedback about their learning design choices.

Queries related to the professional learning sessions were also noted by the district partner following the sessions. For example, in-service teachers asked the district partner practical questions about creating choice boards to support selfdirected learning pathways and as a way to provide options for students to demonstrate their learning. Some teachers expressed once they became more comfortable teaching online, they could focus on their questions about incorporating ideas from the professional learning series. It is possible that non-formal learning for experienced teachers accompanied by coaching provided by the school district benefits teachers well past the initial professional learning sessions. This allows coaches to continue responding to questions and supporting online teaching and learning.

A few faculty members also attended the professional learning series alongside the preservice teachers. We noted that instructors in higher education asked questions about the ways to adapt some strategies for their classes with preservice teachers. In much the same way as the in-service teachers, postsecondary instructors asked questions related to scenarios from their classes. Their queries related to how to enact the strategies for an adult audience while modeling strategies and techniques their students could use with K-12 students. When reflecting on the sessions, we noted that it helped to have participants in the sessions with a range of teaching experiences to provide scenarios from their practice and deepen the inquiry by asking different types of questions.

Each of the sessions included time for small groups to convene in breakout rooms. We noticed in both the in-service and preservice groups, the participants remained for the duration of the hour-long sessions, including the breakout room segments. When groups returned from the breakout rooms, one or more of the group members shared insights or questions with the larger group. The participants asked a range of pedagogical and practical questions during these non-formal learning sessions, and the design team benefitted from reflecting on the types of questions to continually inform the evolving design of the sessions.

### Discussion

Designing professional learning experiences as part of a collaborative design team involving service-learning partners from the university and a school district and using a backward design approach was valuable for supporting both inservice and preservice teachers. Generally, designing sessions was similar for in-service and preservice teachers. In observations, we noted the types of questions generally asked by the in-service teachers were practical, and questions asked by pre-service groups were pedagogical. We speculate this was related to their teaching experiences. A design team with a broad range of educational experiences, along with participants themselves, help with responding to different types of questions asked during the sessions. The professional learning series attracted the intended audiences of in-service and preservice teachers and included a few faculty members who teach courses in undergraduate programs. Future professional learning sessions could be offered to a broader audience combining inservice and preservice teachers with postsecondary instructors. We suggest deepening the community of knowledge

increases the likelihood of developing a collaborative learning community (Chatterjee & Correia, 2020) because collaborative learning promotes higher levels of engagement and fosters deeper relationships within the participant groups (Bergmark, 2020).

Professional learning has the potential to inform the design of formal programs. From a program perspective, the design team noted that the professional learning series, although a non-formal program, helped inform the development of a new course designed for preservice teachers focused on digital pedagogies (Brown et al., 2020). Arguably, the design and observations made during the sessions designed for in-service and preservice teachers contributed to and informed new program development related to online teaching at the faculty of education. Likewise, the design of the professional learning and responses of the participants can also contribute to future designs of non-formal learning programs. Preservice teachers prompted thinking about incorporating ways to recognize participants for enrolling and participating in the professional learning series. The design team is currently considering the use of micro-credentials in the form of badges in future series to provide participants with recognition for involvement in professional learning (Ralston, 2021).

One limitation of this report is that descriptions of the design process and insights about non-formal learning are based on our experiences as a design team and our reflections from designing and participating in the sessions. Further studies could be conducted to continue to improve the design of this type of professional learning for teachers. Future studies could involve an in-depth examination of how in-service teachers, preservice teachers, and faculty enact and refine online pedagogies in classroom practice. Additionally, further studies could explore the efficacy and impact of the inclusion of in-service and preservice teachers, as well as post secondary instructors, in professional learning.

In reflecting on the professional learning series, we also noted the importance and value of collaborative instructional design (Brown et al., 2013). Engaging in collaborative inquiry with service-learning partners for instructional design of a professional learning series provided a greater understanding of designing for different contexts. A collaborative inquiry approach worked well for our design team with all of us located in non-proximal locations due to the pandemic and health restrictions (Mehlenbacher et al., 2018). Although in a lockdown scenario during our design phase, our team came together virtually to support teachers and contribute to instructional design of the professional learning series. For instructional designers, professional learning providers, and other educators involved in designing professional learning design with learning partners for multiple audiences such as in-service teachers, preservice teachers, graduate students, and faculty, we offer the following recommendations:

- Begin from an empathetic perspective and look at how the needs of all potential participants intersect. We utilized the backward design framework as a guide for our process as well as the sessions themselves: (a) identifying and clarifying desired results, (b) determining acceptable evidence and multiple means of expression and representation, and (c) planning accessible learning experiences and instruction with attention to pre-instructional decisions (Mazur, 2018; Wiggins & McTighe, 2005). This provided us with a clear action plan that provided structure, clarity, and focus working together. We see this theoretical framework as one that could be used by other design teams engaging in a similar process.
- 2. Utilize digital technologies and resources (Brown et al., 2013) to support ongoing communication between all partners involved in the design team. Working remotely due to the COVID-19 pandemic, we embraced the use of digital and collaborative technologies to work within the design team and to support our continual communication, collaboration, and sharing of materials. We relied on shared online spaces that were readily available to all partners (e.g., Google Docs, Google Slides, Zoom, and email) to maintain ongoing communications for collaborative inquiry. Docs and Slides were used to develop course materials. Zoom and email were used to connect throughout the design process. We recognize other platforms can be used to support communication and collaboration. Effective collaboration relies on dialogue and discussion (Mehlenbacher et al., 2018), and shared online spaces allowed our design team to debrief and share insights virtually.
- 3. Learn from one another and celebrate diverse viewpoints. We engaged in a process that encouraged all members of the design team to learn from one another and contribute ideas. We came into this partnership with different experiences and throughout our collaborative inquiry, we maintained a level of respect for the knowledge and expertise each team member brought with them which allowed us to be co-producers of knowledge (Hill et al., 2019). Our design team members had a robust understanding of protocols for giving and receiving constructive feedback; however, for teams with less experience, we recommend having explicit discussions on how to debrief and provide feedback to maintain a dialectic and open process. We also valued the perspectives of the participants and provided space for questions to adapt the sessions to meet the needs of different audiences. Also, we learned participants were interested in recognition for participation in a professional learning series, and plan to consider developing a micro-credential badge in future.

## Conclusion

Professional learning opportunities are necessary for in-service and preservice teachers. We argue designing professional learning using a backward design approach proved valuable for service-learning partners from a university and school district. This approach helped our design team engage in collaborative inquiry while offering a professional learning series to experienced and beginning teachers adapting to emergency remote teaching. We also learned faculty members who teach preservice teachers were interested in participating in professional learning opportunities alongside their students. The questions asked by participants during the sessions provided additional information to tailor the design responsively to the different audiences in the sessions. As designers, we reflected on the participants' responses to the non-formal learning, and the pedagogical and practical questions asked. Observations and reflections were used to inform the development of future offerings and to provide a foundation for future study.

## **Appendix A**

# Session 1: Universal Design for Learning (UDL) Principles for Online Learning

UDL was presented as a framework for designing learning that meets the needs of the largest number of learners (La, Dyjur, & Bair, 2018). In the session, students were guided through a review of the principles of UDL as well as the rationale for using UDL to design learning material. The rationale for using UDL as the basis of learning design is the importance of emotional engagement in optimizing lifelong learning (Immordino-Yang, 2016), and the idea that when the three principles of UDL are used across all areas of learning design (course design, teaching practices, learning

experiences, and assessments) student success is greatly improved (Al-Azawei et al., 2016). Equally, UDL results in increased student engagement resulting from multiple entry points and levels of challenge which meets the diversity of students (La et al., 2018). After reviewing UDL and the rationale for using UDL as a framework, participants looked at the variety of barriers that present in online learning and explored ways to mitigate these barriers. Strategies for both asynchronous and synchronous sessions were outlined with a focus on the three aspects of UDL: engagement, representation, and actions and expression (CAST, 2018a). To synthesize the learning, participants spent time in breakout groups discussing a scenario and how they would use the UDL principles to address potential barriers contained in the scenario. Participants were encouraged to think about both asynchronous and synchronous strategies. The session closed with a request for participants to reflect on the session and record the most important takeaway in the chat box. The exit task responses were used for formative assessment for the instructor to evaluate which concepts were of most value to participants, and if any concepts needed to be revisited in the following session.

### Session 2: Creating Choice Boards for Online learning

The second session in the series introduced participants to the idea of incorporating choice in learning assessments. The first segment of the session provided a brief summary of the literature surrounding choice in learning from the perspectives of Parker et al. (2017). The researchers explain student motivation and engagement can be increased when students are given choice about the material they study, assessments they complete, and who they work with because this allows students to capitalize on their strengths and meet their learning needs. We discussed how student choice can be motivating when options are relevant to students' interests and goals, not too numerous and complex, and congruent with the values of students' culture (Katz & Assor, 2007). The second segment of the session was a hands-on tutorial. After participants had the opportunity to explore an exemplar created by the instructor, participants were guided through a step-by-step process for creating a digital choice board in Google Slides.

### Session 3: Creating Content for Choice Boards

The third session incorporated an introduction and review of the Understanding by Design framework (Wiggins & McTighe, 2005). Participants were encouraged to use this framework and think about designing learning choices from a backward design perspective (Wiggins & McTighe, 2005). Additionally, the concepts of utilizing learner preferences as well 21st-century learning skills to design learning activities were highlighted. The learner preferences inventory developed by Alberta Education (2010) looked at preferences based on how individuals complete tasks. Options include working in groups, working alone with time to think, making and using pictures to learn, talking about new ideas and information, and moving and trying things out (Alberta Education, 2010). The 21st-century learning skills outlined by Alberta Education (2011) include critical thinking, problem-solving, innovation, communication, collaboration, self-directed learning, global awareness, civic engagement, information and media literacy, and financial and economic literacy. After a discussion of the key concepts, participants were given time in breakout groups to design and develop learning activities to fit each of the 21st-century learning skills, the learner preferences inventory, or both. The session closed with an invitation for participants to take their co-created list of activities and further develop these to complete their digital choice board from the previous session.

### Session 4: Student Engagement in Online Learning

The fourth session in the series focused on providing an overview of engagement strategies for use in synchronous sessions to encourage student participation and interaction with learning materials. Working from the definition of student engagement (i.e., both the effort and commitment that students expend in learning endeavors, Kahn et al., 2017), the workshop explored the idea of building relationships and supportive learning communities through the incorporation of various activities. Martin (2019) suggests building relationships with students in online learning is imperative as it increases engagement levels, satisfaction, and retention. Additionally, Jaggars and Xu (2016) posited students are more motivated to learn when they feel connected to their online course community. Building from these ideas, participants were introduced to numerous activities to use in synchronous sessions to encourage relationship building and connection. Activities included setting the scene, icebreakers, entry tasks, collaborative activities, whole group tasks, and exit activities. Setting the scene ideas included entry music, the use of waiting rooms, camera on/off

policies, and chat box protocols, and a discussion on teacher presence. Icebreakers included open-ended questions with no single correct answer. Entry/engage/hook tasks included topic and class trailers, three-question polls, and notice and wonder exercises. Collaborative activities included jigsaw and think, pair, share, and gallery walks with peer feedback in breakout spaces. Whole group tasks included opinion sharing, U-shaped discussions using Zoom whiteboards and Google Jamboards, and Kahoot! quizzes. Exit activities included the next steps in Google Jamboards, selecting a traffic light color, and writing a key idea as a tweet. The session culminated in a breakout session where participants discussed and chose the activities that they would use in their own sessions.

### Session 5: Social-Emotional Learning for Online Learning

The final session in the series focused on social-emotional learning and how in-service and preservice teachers incorporate it in online learning environments. This session began with an overview of this type of learning and its components: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social, and Emotional Learning, 2020). Participants also discussed the rationale for incorporating social-emotional learning including the likelihood of more positive social behaviors, enhanced self-efficacy, confidence, persistence, and connection to learning, decreased emotional stress, and improved grades (Durlak et al., 2011). Following the foundational knowledge segment, participants engaged in three social-emotional learning activities: a feelings check-in using the Zoom whiteboard, an all-about-you drawing activity, and a "what's in the tin" discovery activity. The session ended with a breakout activity where participants worked collaboratively to design an activity to use in their online learning environments. To maximize collaboration, participants were asked to share their activity in a shared Google slideshow to learn from one another.

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# Bridging the Informal and Formal Learning Spaces with WhatsApp

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WhatsApp Learning supports



WhatsApp is the most popular mobile instant messaging (IM) app in the global south. Hence, its use in informal and formal learning spaces has significant potential and is worthy of investigation. This study explored how University faculty and students in Namibia and India used WhatsApp for learning support and to bridge the gap between formal and informal learning. From a total of 182 participants, results reveal that WhatsApp has the potential to engage users in an informal and formal learning support and delivery environment. Learning designers and those responsible for professional development need to take note of this instant messaging app and experiment with various culturally contextual learning design models to support learning.

# Introduction

When it comes to digital-based learning, the question of engagement and presence is often focused on online learning involving traditional computing devices such as desktop computers or laptops. However, in areas where mobile devices are the most widely used computing technology, engagement and interaction between teachers and students looks different. In many parts of the world, interactions between individuals takes place through mobile texting applications to bridge formal and informal learning spaces.

One of the most popular mobile tools is WhatsApp, a free cross-platform mobile application that allows users to make calls (voice) and send messages (text). The app averages one billion daily users globally with the largest share of 459 million users located in India (Ahmed, 2021). Similarly, in Namibia, 65 billion Instant Messages (IM) are sent daily with 98% of those sent through WhatsApp (CRAN, 2019). By comparison, Telecom Namibia, the country's only national fixed-line operator, faces declining voice revenues, which is a global trend due to wider use of mobile phones and the use of Voice over IP (VoIP) applications such as Skype, WhatsApp, and Facetime (CRAN, 2019). In India, 46% of WhatsApp users are between 18-29 years (Silver et al., 2019). Therefore, it is not surprising that on university campuses, research shows (Hamad, 2017; Gachago, et al., 2015) this application has also become a tool of choice to facilitate interactions

between teachers and students to connect formal and informal learning in higher education. Additionally, Namibian and Indian socio-cultural contexts are both community-centered contexts that value social, informal learning. In this paper, we explore the use of WhatsApp to bridge formal and informal learning spaces at the university level in India and Namibia, particularly at a where the COVID-19 pandemic is making it difficult for face to face learning to take place.

# WhatsApp Usage in Higher Education

# Potential of WhatsApp for Informal Learning

The ubiquity of digital technology is changing the paradigm of education across the globe. Particularly, higher education institutions are harnessing the power of digital technology and mobile learning. In terms of mobility, ease of access, cost effectiveness, and flexibility, WhatsApp scaffolds learners in negotiating their own learning pathways through multiple memberships in diverse social groups. Consequently, the boundary between formal and informal learning has blurred, making it easier to access content, connections, and communication in individualized contexts for support or professional development. WhatsApp has enabled "alternative dialogic spaces for student collaborative engagements in informal contexts, which can gainfully transform teaching and learning" (Bere, 2013, p. 544).

The use of WhatsApp at universities is a global phenomenon. In India, WhatsApp in higher education is being used for syllabus inquiries, examination guidance, photo-sharing, educational content sharing, topic discussions, news updates, class schedule, and as a tool of information dissemination and announcements (Tandale, 2018). Gasaymeh (2017) investigated university students' use of WhatsApp for personal and educational purposes in Jordan particularly to connect with instructors and peers to ask questions and share educational materials. The results indicated that of the participants:

- 39% stated they use WhatsApp to communicate with classmates
- 10% stated that they communicate with their instructor about matters related to course requirements
- 22% use WhatsApp to publish course announcements
- 24% discuss ideas about courses with their classmates
- 16% discuss ideas related to courses with instructors
- 23% seek help related to course requirements from students who have already taken the course
- 26% percent post links to topics and resources related to courses
- 23% to form student groups for educational purposes
- 24% to organize meetings with classmates regarding the assignment and project required by the instructor
- 15% to communicate with instructors about office hours and meetings
- 21% to get feedback from course instructors.

Pinar and Pinar (2017) conducted a study on Turkish university students' attitude towards WhatsApp text-based interaction and the usage of emojis to express emotions and ideas. A focus group interview with five male and five female students revealed that Turkish students have a strong disposition to use emojis in their everyday communication. Exceptions are in ambivalent affective situations and stressful situations when they do not use emojis in their WhatsApp communication.

# Potential of WhatsApp for Formal Learning

In the socio-cultural contexts of Namibia and India, where WhatsApp has been a personal and professional tool of communication and learning, WhatsApp effectively connects informal and formal learning spaces by taking learning beyond the walls of the classroom. Informal learning happens as students and faculty communicate with one another in their daily discourse. This informal learning may be tacit and invisible, happening outside of a formal setting (Eraut, 2004). What the use of whatsapp does show though is that it can be used as an Intervention Tool to Improve Educational Outcomes (21st century skills). Specifically, it can be used for collaboration, problem solving and communication.

# Collaboration and Learning Support

WhatsApp could be used to promote mobile collaborative learning and social networking. The study from Thaba-Nkadimene (2020), recommends that teacher education in South Africa should expose pre-service teachers to WhatsApp learning and pedagogies. The use of WhatsApp in education is numerous and varied. In India. it has been used in medical education, particularly with planned educational interventions. Further, teacher training and professional development in India is an area where WhatsApp has been used to provide instructional support to teachers. To counter absenteeism and support teachers in rural India, WhatsApp was used to monitor teaching and provide professional development to enhance teacher effectiveness (Nedungadi et al., 2018). In Southwest India, where science teacher's morale was very low, a WhatsApp group was created with 30 science teachers to fill teacher-identified conceptual gaps and build confidence in teaching (Kumar Singh, 2017).

A perception study of nephrology fellows and faculty using WhatsApp as a teaching and learning tool, found that perceptions were positive. Comfort and control emerged as the main themes. The finding was that the ease of use, familiarity, and cost-effectiveness of the tool can augment student learning during fellowship (Jhaveri et al., 2020). During the COVID-19 lockdown in India, studies showed that the most common mode of consultation was by WhatsApp messages while email was the least preferred method (Pandey et al., 2020; Kapasia et al., 2020).

Albers et al. (2015) surveyed Emirati undergraduate university students (N=118) on the best mobile learning tool for their collaborative project. Findings indicated that WhatsApp is both free and allows for communication in Arabic. These factors contributed to students' preference for WhatsApp. The cross-platform functionality of WhatsApp (i.e., use on iPhone, Android phone, blackberry, and others), language support (i.e., dual language capability), ability to create groups function, media support (i.e., audio, video, images, and text with downloads), and message latency (i.e., typical response time) contributed to WhatsApp platform's communication richness.

### **Problem Solving**

Kapoor et al. (2019) used WhatsApp with Indian pediatric undergraduate students to discuss five clinical cases in a WhatsApp group. The findings indicated that clinical discussions significantly increased undergraduate students' subject matter knowledge, improved their problem-solving skills, and motivated them to study.

### Communication

Similarly, Nuuyoma et al. (2018), concluded that WhatsApp is a suitable communication tool in maintaining communities of practice among students and lecturers in higher education. The study indicated that certain behavioral issues negatively affect the use of WhatsApp for learning. In the Namibian student subject groups, students noted discrimination in the form of being sidelined with offensive emojis, disturbances through sharing unrelated videos or materials, and fellow students not responding in time to communication or questions of clarity on tasks (Nuuyoma et al., 2018). Furthermore, this study highlighted that the frequent use of WhatsApp leading to addictive behavior and the need to constantly check on posts and status of group members. Inability to balance work-life within WhatsApp seems to be a negative impact in using WhatsApp. The ease of use, access, and relatively cheap connectivity cost appear to be negated if there is a need to educate university students on mechanisms to mitigate the negative effects of WhatsApp (Nuuyoma et al., 2018).

In higher education contexts in India, most of the published WhatsApp research has been situated in medical education (Bakshi & Bhawalkar, 2017; Jhaveri et al., 2020; Kaliyadan et al., 2016; Kapoor et al., 2016). Bakshi and Bhawalkar (2017) examined second- and third-year anesthesia residents' perception of being in a WhatsApp group with a board-certified anesthesiologist with specialization in pain management, and how WhatsApp discussions in pain management presented through clinical scenarios, resident inquiries, and instructional support benefitted anesthesiology residents. Residents felt that WhatsApp discussions were useful. Documentation of details in clinical forms improved from 30% to 100%.

# Potential impediment for use of WhatsApp in informal and Formal Learning

While this article is focusing more towards the benefits of using whatsapp as a learing tool, it should not be taken to mean that everyone embraces this tool. The ability to adopt and embrace Whatsapp for learning is impacted by the perception towards it as well as various technological challenges.

## Perceptions and Use

WhatsApp use has been examined as an intervention tool to determine impact on educational outcomes. Mbukusa (2018) investigated University of Namibia's students' perceptions towards using the WhatsApp application as a learning tool for Teaching Methods of English as Second Language in a Bachelors' degree program. His findings indicated that Namibian students found using WhatsApp effective as a Teaching and Learning delivery mode for the English language. The use of WhatsApp as a platform in formal spaces however is not without challenges. For example, students found it difficult balancing online activities and academic preparation. The platform distracted students from completing assignments and adhering to personal academic schedules. The study, however, did not account for students not having smartphones, hence reliability in terms of the fewer responses to the survey cannot be accounted for. Overall, the study indicated that students preferred this platform for communication and enjoyed it as a tool for learning.

# Technology Challenges

In Kakuma refugee camp in Kenya, WhatsApp discussions provided mobile peer mentoring among teachers in a project entitled *Teachers for Teachers* (Mendenhall et al., 2018). Some of the challenges encountered in this project were lost or broken phones, retrieving WhatsApp data with replacement phones, lack of connectivity, and cost of mobile data which put the sustainability of the project in jeopardy. The time commitment for mentoring on WhatsApp was another constraint.

In the South African context, Mpungose's (2020) study revealed first-year students' perception of using Moodle as a compulsory, university-required eLearning platform was challenging. The alternative proposed in this study was to supplement the more familiar and widely used informal social media application, WhatsApp, with Moodle as an eLearning platform to create equitable educational opportunities.

# **Research Questions**

Our study was guided by the following questions:

- 1. How do students and higher education professionals use WhatsApp in university settings in India and Namibia to bridge the gap between formal and informal learning?
- 2. What are the differences and similarities in the usage of WhatsApp between the two countries or cross-culturally?
- 3. What has led to the selection of WhatsApp as opposed to other texting platforms (What does WhatsApp allow participants to do that other applications do not)?

# Method

# **Research Design**

This research used a structured cross-sectional web-based survey instrument to explore how universities in Namibia and India used WhatsApp for learning. The survey was administered electronically through the Qualtrics survey instrument.

# Data Collection Instrument

We pilot tested a draft survey for feedback to 15-20 individuals in the population to be sampled. Following an iterative process of constructing the survey, ten survey questions were identified. After reviewing seven possible surveys, a decision was made to modify Rambe and Bere's (2013) validated survey. The survey had yes or no questions, open-ended questions, and questions based on a five-point Likert scale (i.e., strongly disagree, disagree, neither disagree or agree, agree, and strongly agree). Question groupings were based on constructs such as: mobility; convenience and ease of use; engagement through WhatsApp with open-ended questions on WhatsApp use. Partners in Namibia and India received and reviewed the survey to provide input on linguistic terms and expressions. The goal was to ensure clarity of communication in the survey to be understood correctly in the specific socio-cultural contexts. The final survey consisted of four parts: (1) three yes or no questions and an open-ended question on how students and teachers are using WhatsApp. (2) three open-ended questions on the selection of WhatsApp as opposed to other texting platforms (3) 28 Likert scale questions from strongly disagree to strongly agree on various affordances and usage of WhatsApp to facilitate community and teaching and learning, and two open-ended questions on advantages and disadvantages of WhatsApp (4) demographic questions.

After pilot testing the survey with 15-20 individuals in the population to be sampled, the finalized Qualtrics survey link was sent to local partners to distribute at their universities. In India, the survey was disseminated to graduate and undergraduate students and faculty at Indian Institute of Technology in Varanasi. The faculty and students that took the survey were from the math department. Therefore, in the Indian context, a majority of the student population were from the math discipline. In Namibia, the students and faculty came mainly from the University of Namibia (UNAM). The disciplines represented for students were Economics, Biology, Mathematics, Educational Technology, Education and Languages. The academic disciplines represented were Nursing, Radiology, Human Movement, Public Health, Biology, Mathematics, English, and Human Resource Management. The aim of the survey was to collect a broad overview of a larger academic population in terms of their educational activities on the WhatsApp platform.

# Population, Sample, and Sampling

The population of this study was focused on faculty from Higher Educational Institutions (HEI) in India and Namibia. The probability sampling was aimed at simple random sampling within the population of academics at respective institutions of higher learning in India and Namibia. The subjects (n=182) logged in to take the survey. However, after cleaning up the data, only a total of 110 responses were usable. The rest of the responses (72) were discarded because they were incomplete. The survey was sent to as many institutions in the two countries and sampling was random.

# Data Procedure and Analysis

The data analysis was done with SPSS to generate descriptive statistics with mean and standard deviation of the Likert scale items. The survey offered an option to add an additional option if not in the pre-existing option lists. Additionally, a Likert-scale of 1-5 items with '5' being extremely important and '1' being not important at all. The analysis for this research was mainly frequency distributions and is presented in tables and histograms. The results report on the demographic data followed by matching the data to the research questions.

# Results

The data were collected during COVID-19 pandemic lockdown period which may have impacted participation. The demographic information of the subjects shows that the majority were students (see Table 1). The decision to report all data by country was made due to an overrepresentation of one institution from each country. The subjects from India were predominantly from the Indian Institute of Technology (IIT-BHU), Varanasi with a few others from Indian Institute of Technology, (IIT), New Delhi. The subjects from Namibia came from the University of Namibia (UNAM), with a small sample from The International University of Management (IUM). Despite results from subjects leaning towards mostly students, the dataset remains valuable and relevant for the objectives of this study as it potentially reflects the activities of the Faculty administering the WhatsApp groups.

#### Table 1

		India (67)	Namibia (43)
		instructor/lecturer (4)	instructor/lecturer (12)
Gender	Female	0%	75%
	Male	100%	25%
Age	28-38	80%	47%
	39-59	20%	53%
		Students (63)	Students (31)
Gender	Female	19%	77%
	Male	81%	23%
Age			
	18-21	97%	50%
	22-26	3%	37%
	27-32	0%	13%
Year in School			
	2nd year	98%	84%
	3rd year	0%	6%
	Postgraduate (Graduate)	2%	10%

#### Demographics of Participants

## **Faculty Demographics**

In India, all four professors who took the survey were male and 80% of them were in the age range of 28-38 years while only 20% were 39-59 years. In Namibia, the faculty participation was higher with 12 participants of which 75% were female and only 25% were male. The age distribution of faculty participants in Namibia was equal where 47% were between 28-38 years and 53% were in the age range of 39-59 years.

## **Student Demographics**

In India, 63 students participated in the survey out of whom 19% were female while 81% were male. A majority of students (97%) were in the age range of 18-21 years and only 3% were 22-26 years. There were no students in the 27-32 years age range. The majority (98%) were second-year undergraduate students and only 2% were graduate students. In Namibia, 31 students participated in the survey:

- 77% were females and 23% were males
- 50% were between 18-21 years; 37% were between 22-26 years, and thirteen 13% were 27-32 years. A majority of student participants (84%) in Namibia were also second-year university students with 6% third-year students and 10% graduate students.

Examining the pattern of participation, the trend was more towards younger male faculty and students in the Indian context as opposed to more equitable and predominantly female participation among students and faculty across different age groups in Namibia. Since a majority of Indian student participation came from the math department, it could be a contributing reason for the disequilibrium between genders.

# RQ1. How do students and higher education professionals use WhatsApp in university settings in India and Namibia to bridge the gap between formal and informal learning?

The survey data shows WhatsApp is used by educational professionals for educational purposes in both countries. As table 2 shows, a majority of teachers in the sample report use WhatsApp to communicate with students outside of class. While 17% of participating instructors from India indicated they send homework to students via WhatsApp, the number in Namibia was higher with 55%. The majority of teachers from Namibia indicated they receive homework questions from students, whereas the majority of teachers in India indicated they do not.

#### Table 2

#### The Selection/Options for Teacher Use of WhatsApp

	India (	6)	Namib	ia (12)
Have you used your WhatsApp to	No	Yes	No	Yes
1 communicate with students outside of class time?	17%	83%	8%	92%
2 send homework assignments to students?	83%	17%	45%	55%
3 receive homework assignments from students?	80%	20%	73%	27%
4 connect with your students while on campus?	50%	50%	27%	73%
$5\ldots$ receive notification from students about not being able to attend class	25%	75%	20%	80%
6 brainstorm topics	100%	0%	50%	50%
7 receive specific questions related to subject or assignment/homework	75%	25%	30%	70%
8 teach through chat, pics, video, and audio	100%	0%	40%	60%
9 collect data from participants by sending link to online surveys	80%	20%	30%	70%
10 receive concerns and evidence of issues (e.g., not being able to login or an error message, or the like)	25%	75%	20%	80%
11 send out online Moodle (or other LMS) quizzes	80%	20%	80%	20%
12 reschedule classes (e.g., if travelling for conferences/seminars, etc.)	50%	50%	10%	90%

## Faculty Use of WhatsApp to Bridge Formal and Informal Learning

WhatsApp serves a communicative function to bridge formal learning that happens at the university and informal learning that continues through conversations and questions in both contexts. Teachers' use of WhatsApp in India is mainly to communicate information such as announcements and receive communication from students about attendance, homework, issues, and concerns. On the other hand, teachers' use of WhatsApp in Namibia indicates a more active, instructional use of WhatsApp to connect formal and informal learning spaces as they send and receive homework on WhatsApp, brainstorm topics, and teach through chat, pics, video/audio by leveraging the affordances of WhatsApp.

#### Table 3

The Selections or Options in Survey on Students Use of WhatsApp

	India	(n=63)	Namibia	a (N=31)
Have you used your WhatsApp to	No	Yes	No	Yes
1. Communicate with instructor/lecturer/teacher outside of class time	30%	70%	6%	94%
2. Receive class homework from your instructor/lecturer/teacher	54%	46%	14%	86%
3. Send completed homework to your instructor/lecturer/teacher	81%	19%	50%	50%
4. Connect with your instructor/lecturer/teacher while on campus	46%	54%	44%	56%

	India	(n=63)	Namibi	a (N=31)
5. Let instructor/lecturer/teacher know that you are unable to come to class	73%	27%	56%	44%
6. Brainstorm topics	31%	69%	19%	81%
7. Ask instructor/lecturer/teacher specific questions related to subject or assignment/homework	29%	71%	19%	81%
8. Receive instruction (e.g., actual teaching through chat, pics, video, and audio)	48%	52%	11%	89%
9. Collect data from participants by sending link to online surveys	47%	53%	31%	69%
10. Raise concerns and show evidence of an issues (e.g., not being able to login or an error message, or the like)	27%	73%	15%	85%
11. Take online Moodle (or other LMS) quizzes	66%	34%	26%	74%
12. Get clarification on homework/class assignments from your instructor/lecturer/teacher.	27%	73%	7%	93%
13. Communicate with the fellow students for various academic activities	5%	95%	4%	96%

## Student Use of WhatsApp to Bridge Formal and Informal Learning

The usage by students of WhatsApp from students in both countries seems to match the usage of their instructors in both countries as shown in table 3. The highest usage of WhatsApp in both countries relates to contacting teachers for homework or engaging with each other to brainstorm on assignment topics or other academic activities. The student usage in both contexts indicates that WhatsApp is used to create a supportive learning community among students to connect formal and informal learning spaces.

# RQ2. What are the differences and similarities in the usage of WhatsApp between the two countries or cross-culturally?

Table 4 indicates the selection options of the five-point Likert-style questions in the survey. The consequent graphical representations depict the responses from subjects based on the corresponding questions.

#### Table 4

Selection Options in the Likert Style Question in Survey

#### Q1 I enjoy WhatsApp discussions more than face-to face classroom discussions.

- Q2 Receiving questions from my instructor/lecturer/teacher and classmates anytime and anywhere frustrates me because I am not given time to rest.
- Q3 Doing classwork through WhatsApp limits how I express myself and my ideas.
- Q4 WhatsApp interactions can support face-to-face classroom learning.
- Q5 It is not fair to use my WhatsApp mobile data for schoolwork.
- Q6 I would recommend using WhatsApp for learning in all my courses.
- Q7 I feel I belong to a community when using WhatsApp.
- Q8 My grades would be better if I could contact the instructor/lecturer/teacher through WhatsApp after university/college hours.
- Q9 WhatsApp is a distraction and should not be used for learning.
- Q10 WhatsApp makes learning more enjoyable.
- Q11 I use WhatsApp to share educational materials.
- Q12 I have been using WhatsApp more to connect with my instructors as a result of COVID.

#### Figure 1

Usage of WhatsApp Responses from Indian subjects



In figure 1, the stacked bar chart shows Usage of WhatsApp from responses from Indian participants.

#### Figure 2

Usage of WhatsApp from Namibian Participants



In figure 2, the stacked bar chart shows Usage of WhatsApp from responses from Namibian participants.

# Similarities and Differences Between India and Namibia in WhatsApp Usage to Bridge Formal and Informal Learning

WhatsApp usage in both contexts increased during the COVID-19 pandemic. Namibian students' usage patterns increased during COVID-19 as compared to Indian students particularly with regards to how they connect their instructors as can be seen by the high level of strongly agreed or agreed with Q12. Moreover, both student groups used WhatsApp to share educational materials as represented in Q11 thereby connecting formal and informal learning through the use of mobile devices. A majority of both Namibian and Indian students disagreed that WhatsApp is a distraction and should not be used for teaching. Challenges in both contexts were related to students not being given enough time to rest due to constant connection. As mobile learning through informal spaces becomes relevant in students' lives, they need an online supportive community. However, Indian and Namibian socio-cultural contexts also favor close-knit family ties, the wisdom of elders, and oral traditions to form their own conception of community.

Less than half agreed with using WhatsApp for learning in all courses in both contexts. This could indicate that they desire WhatsApp as a supplemental tool to connect formal and informal learning rather than as the main platform for learning. In both Namibia and India, cost did not seem to be a major issue related to use of the application for educational purposes. In the item, "it is not fair to use my mobile data for learning", only 25% of Indian students agreed and about 20% of Namibian students agreed indicating students do not mind using the data for learning. The reasons could be attributed to reasonable, cheap access to mobile data plans. Therefore, mobile technology in both contexts affords connecting formal and informal learning.

There were differences in the way participants perceived their level of enjoyment in learning through WhatsApp. Namibian students found learning more enjoyable on WhatsApp as opposed to Indian students. This may be attributed to active engagement by Namibian instructors to use WhatsApp for instructional purposes as opposed to Indian instructors using it primarily for academic communication. Consequently, more Namibian students enjoyed WhatsApp discussions than face-to-face discussions. As well, there were differences in perceptions of students in Namibia and India regarding WhatsApp's ability to support classroom interactions. Close to 50% of Indian university students and about 70% of Namibian students agreed with WhatsApp's ability to support classroom interaction. This is indicative of the active role of Namibian instructors teaching through WhatsApp. Sixty percent of Indian students either strongly agreed, agreed, or somewhat agreed to "My grades would be better if I could contact the instructor after university hours," whereas Namibian students had a slightly lower percentage. This may be due to students already receiving instructional support by Namibian instructors. Slightly more students in India (about 62%) expressed a sense of belonging to a community by using WhatsApp than students in Namibia (about 55%). This could be due to the value of fellow students in supporting learning on WhatsApp. WhatsApp interactions with peers creates a community to support learning.

WhatsApp is bridging formal and informal learning spaces in higher education in both contexts through academic communication and active engagement of students in creating a supportive learning community. In Namibia, WhatsApp goes a step further to connect formal and informal spaces by functioning as a supplemental system to teach through multimodal means, to give and receive homework, and to answer student questions. Other than the usual communication with family and friends, and the informal learning activities of sending notices and attending to queries from students and by instructors, it has been reported that formal instruction was attempted on WhatsApp.

The following formal educational activities on WhatsApp were:

- Instructors sent links to content videos to groups; YouTube tutorials and content links were sent to students.
- Notes, PowerPoints, eBooks, and articles were sent to various student subject groups; Instructors sent audio recordings of content where they were teaching in lecture format and gave instructions for assignments.
- Students were tasked to record themselves doing presentations and send them back to the instructor for assessment

Therefore, it provides a unique space where all information, materials, and personnel can be accessed to support learning. The unique socio-cultural contexts of both countries consider WhatsApp to be an effective and efficient mobile application to connect formal and informal learning as it is widely used and easily accessed by everyone irrespective of the social strata or internet access. The majority of subjects reported that WhatsApp has been a good tool to support learning. Therefore, WhatsApp provides equitable educational opportunities for Indian and Namibian populations to connect formal and informal learning with a supportive community of learners.

# RQ 3. What has led to the selection of WhatsApp as opposed to other texting platforms (What does WhatsApp allow them to do that other applications do not)?

#### Table 5

Reasons for WhatsApp Preference as Compared to Other Platforms Among Participants

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India	Namibia	
Is social media most used by student	Cheap	
most of my contacts were using WhatsApp	accessibility of it as app	
Easy to communicate with known	is easier as you can create group chats and you can post pictures/videos/notes etc.	
It is well known in the community.	Video group call	
	Because it more convenience to all student, does not require WIFI or and proper network	
	I can reach the whole group of students	
	Most people use WhatsApp	
	It has a rich environment and chat tools for richer expression and sharing of external content	
	It's available, it's popular and trending with young people	

#### Q5.1\_What led you to choose WhatsApp as opposed to other texting platforms?

The answers provided in Table 5, above, by both sets of students (Indian and Namibian) indicate that WhatsApp is deeply embedded within the structure of the society as a tool of communication. Most people use WhatsApp because it is easy to connect with contacts and friends. Additionally, the cost consideration has a considerable benefit for both countries because it is cheaper to use group chat that sends a text message to individuals or groups where regular texting charges are per text message (SMS). The affordances of WhatsApp such as group function, video chat, sharing of external content, cost-effectiveness, feasibility, functionality without requiring WIFI, accessibility, popularity, and prevalence of usage among young people, makes it a relevant tool of learning and communication.

# Discussion

The results from this study indicated the contextual differences between participants in India and Namibia. The data from both contexts will be discussed keeping the historical and socio-cultural factors in mind. First, we will present each historical, socio-cultural context and then examine them cross-culturally to determine patterns and themes informing WhatsApp use as a way to bridge formal and informal learning in higher education.

# Interpretation in the Historical, Socio-Cultural Context

The Indian universities, Indian Institute of Technology (IIT-BHU), Varanasi and Indian Institute of Technology (IIT-D), Delhi are 2 of the 23 autonomous public technical and research universities located across India. They were established in the post-colonial era as institutes of national importance to speed up industrial development in India. These institutes are heavily focused on research in science, technology, and engineering, and are well-funded through grants. The competition to get into one of these universities is very high. This background provides a historical context to analyze the socio-cultural data from India.

In demographics, none of the instructors were females. The discrepancy in employment and gender gap in the competitive STEM field is clearly evident as reflected in the Global Gender Gap Index 2021 rankings (WES, 2021). India ranks 140<sup>th</sup> in the Global Gender Gap Index whereas Namibia ranks 6<sup>th</sup> closing the gender equity gap by 80.9% (WES, 2021). This is demonstrated in the female representation in the survey in Namibia. From 63 students, only 19% were females and 81% were males. An overwhelming majority (97%) of the students were in the age group of 18-21, and only 3% were in the age group of 22-26 – none above 26. 98% of the students were undergraduates in their second year of school, and only 2% of survey participants were graduate students. In the traditional socio-cultural context of India, age is very much related to educational and career potential. Therefore, numerous competitive government jobs have age limits in India.

# Instructors' Usage of WhatsApp as Indicative of their Perception of Formal Learning

In instructors' use of WhatsApp, differences stood out between the Indian and Namibian context. In India, the educational use of WhatsApp served a communicative function. Instructors received notifications from students about not being able to attend class or received issues of concerns and notified students about rescheduling classes. Indian instructors did not use WhatsApp for instructional purposes. None of them used it to teach through chat, video, or pictures or to brainstorm topics with students. Only half of the instructors were available to connect with students through WhatsApp while on campus. In the Namibian context, instructors were more connected and available to students through WhatsApp to answer homework or other questions. 60% used WhatsApp to teach and 50% brainstormed topics with students. WhatsApp was also used to collect data through surveys in the Namibian context. The differences in instructors' use of WhatsApp could be attributed to formal and informal perceptions of learning of instructors on WhatsApp. Indian instructors took it a step further to actually teach and brainstorm with students, and to send and receive homework. In the Namibian context, WhatsApp functioned as a supplemental Learning Management System that was easily accessible to students. Current practices in both contexts provided instant connection surpassing temporal and spatial constraints. However, the implication of this finding is the dilemma of

boundaries between personal and professional time with the use of mobile devices for educational purposes, and each educator's individual decision based on context. Professor-student interactions in both contexts provided personalized support and scaffolding to students through WhatsApp.

# Students' WhatsApp Usage as Indicative of their Need for a Supportive Learning Community

Students' use of WhatsApp indicated students in both contexts used WhatsApp to connect with fellow students for various academic activities. Students in both contexts value WhatsApp for peer support in learning. A majority of Indian and Namibian students indicated they used WhatsApp to communicate with professors. There were more similarities than differences in both contexts indicating that students share a similar experience in needing a supportive community of peers and instructors to learn effectively. WhatsApp provides a supportive community of learners for students. Student usage patterns promote knowledge sharing, and student-to-student interactions promote social and academic peer support through WhatsApp's virtual network.

The size of our sample does not render itself generalizable to the population, but it does provide insights from participants in the two countries and can serve as a springboard to a larger data. What is evident in this dataset is the following:

- Student-to-student interactions promote social and academic peer support through a virtual network
- Professor-student interactions provide personalized support and scaffolding to students.
- The use of WhatsApp is supporting the building of a community of learners.
- WhatsApp helps facilitate and maintain open communication.
- Current practices provide instant connection surpassing spatial and temporal constraints.
- WhatsApp usage patterns promote knowledge sharing.

# Conclusion

WhatsApp has become a powerful tool of informal learning and perhaps an indispensable communication medium between students and their instructors in countries where it is readily used. The lines between social usage and academic usage are being blurred as all parts of the cultural context coexist in the app. In other words, while the professors may be using it to remind students of homework, sending announcements, and checking in, students are also sharing in ways that may not be common in the traditional classroom. Ultimately, the data from this study shows it is not more advocacy needed to integrate WhatsApp in school, but rather educators and learning designers must take note of the everyday tools that teachers and learners use and find ways to integrate them in design practices to support learning.

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