Passive Participation in Collaborative Online Learning Activities: A Scoping Review of Research in Formal School Learning Settings

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Abstract
This scoping review summarizes studies on passive participation in collaborative online learning activities that used computer-mediated communication tools in school settings. A total of 42 articles spanning about 20 years were explored. ERIC and three main journal indexes from Web of Science were used to locate articles. For each year searched, there were only one to five studies that investigated passive participation, indicating that not many researchers have examined this topic in general. Most studies used mixed methods and were conducted in higher education settings in asynchronous online discussions. Three terms have been used to discuss the notion of passive participation: lurking for read-only behavior, legitimate peripheral participation for low contribution, and free riding for no contribution. Studies on passive participation have mainly explored four topical areas: motivational factors and reasons, participation types and behavioral patterns, effect on learning outcomes, and pedagogical strategies for de-lurking. Most studies have investigated passive participation as one of the behavior patterns among various types of participation. A few studies have solely examined read-only behaviors. The notion of passive participation varies among researchers and should therefore be redefined. Overall, there have been few studies on the topic of passive participation and those that have been conducted reveal some inconsistencies in their findings, indicating the topic requires further investigation. Future studies on this topic are urgently needed due to the forced shift to online courses precipitated by the pandemic. While instructors are also responsible for supporting their learners in this unprecedented context, researchers should investigate ways to help instructors better understand passive participants and encourage active learner participation in collaborative online learning space.

Keywords: Passive participation, lurking, peripheral participation, free riding, scoping review, online collaborative learning activities, formal learning, school setting

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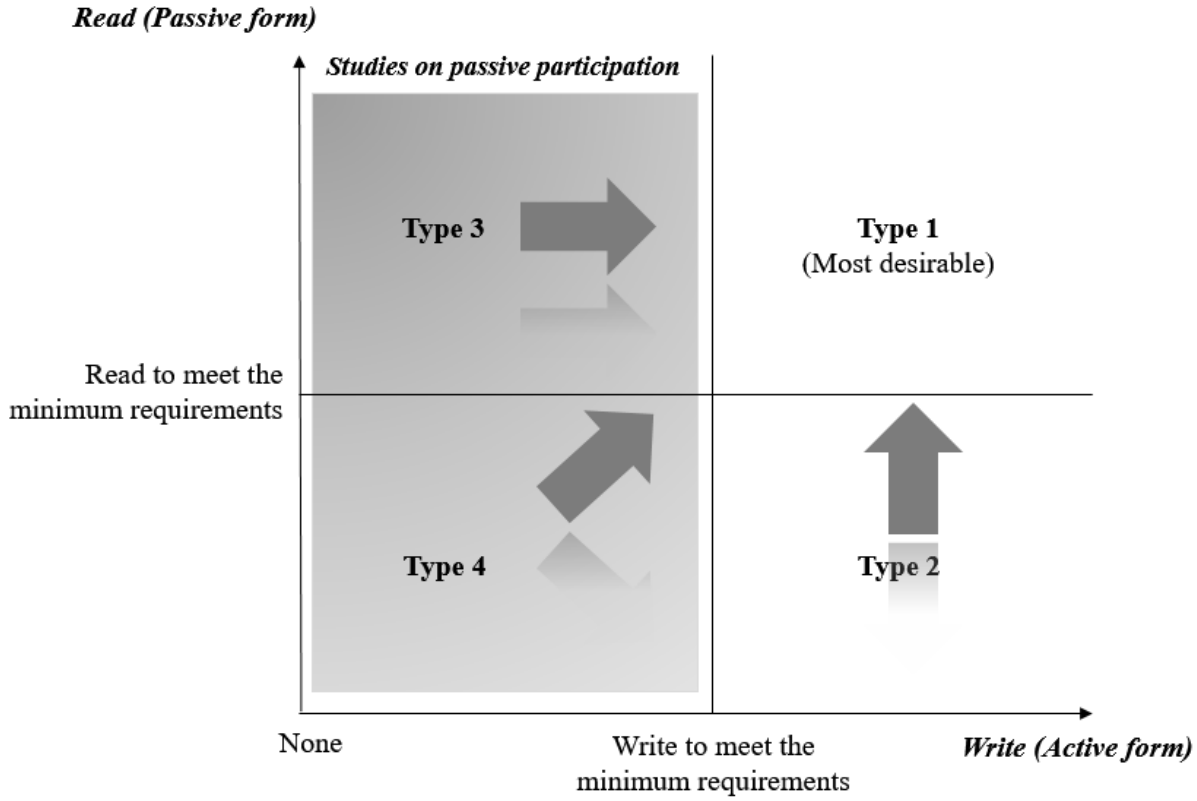
Learning is both individual and social. In online learning space, students can learn individually by reading course materials or observing others' responses in online chat box or online discussion boards. This individual learning is called student-content interaction and is understood as a passive form of participation. Students can also learn by interacting with an instructor and with other students via computer-mediated communication (CMC) tools, such as email, online chats, and online discussion board. These types of social learning are called student-instructor and student-student interactions (Moore, 1989), and are viewed as active forms of participation. Therefore, both active and passive forms of participation are different types of normal participation. Regardless of their level of participation, students generally read alone more than they write for interaction due to transactional distance (Ebner et al., 2005; Xie, 2013). Transactional distance—the psychological and communication gaps between an online instructor and their students—exists due to the temporal and spatial separation (Moore, 1991). Nevertheless, active forms of participation have been considered more important than passive forms of participation in education for two reasons. First, active participation reduces transactional distance, which is greater in distance education than in face-to-face settings (Moore, 1991). Second, active participation helps students co-construct knowledge and develop higher mental functioning while interacting with others (Vygotsky, 1978). Therefore, researchers have extensively investigated active forms of participation in Computer Supported Collaborative Learning (CSCL), which has been implemented via CMC tools.

Students' reading or lurking behavior—a passive form of participation—has not been investigated as frequently as has posting behavior (Wilton, 2018), even though reading inevitably must precede students' engagement with others about a given topic. This dearth of studies on passive participation is mainly because reading is difficult to observe and measure, even with access to students' log data. Studies that have observed reading behavior have been conducted mostly in open online forums or through social media. In formal online learning (i.e., school settings), studies on passive participation are not limited to reading (i.e., read-only, non-posting, lurking, or invisible participation, in other words), but also often involve students' minimal posting behavior. This focus on posting behavior stems from the fact that posting is usually required in online courses to earn credits, and most students post to meet course requirements (Dennen, 2008). For this reason, researchers include low contribution or minimum participation when discussing passive participation in online courses. The term "legitimate peripheral participants" (LPP) has been used to describe students who are "less active but still engaged" and is exhibited by students who read more than they write (Honeychurch et al., 2017, p. 197).

As such, the definition and scope of passive participation have been inconsistent throughout the literature. Therefore, it is necessary to review the terms and concepts used to describe passive participation in existing studies. In this review, passive participation includes both reading (i.e., a non-posting behavior) and peripheral participation (i.e., a less active form of participation) in collaborative online learning activities within formal school learning settings (see Types 3 and 4 of passive participation in Figure 1).

Figure 1

Active and Passive Forms of Participation



Note. This quadrant is only conceptual for the purpose of visualizing our definition of passive participation.

Generally, reading itself does not necessarily equate to a lack of engagement, as students read before and after they post (Wilton, 2018; Wise et al., 2013). Indeed, reading is often an indicator of student participation and learning. However, in the context of collaborative learning activities, passive participation is often considered free riding or low contribution. Free riding behaviors are considered undesirable because of the importance of active participation in collaborative learning. The different dynamics of student participation are usually dependent on course factors such as learning activity design, instructor facilitation, and learning community.

Many studies have investigated various course factors that affect students' engagement in online learning space (Martin et al., 2020; Zhou, 2015). However, only a few studies have specifically focused on students' passive participation. Understanding passive participation in various course situations will provide instructional designers and online instructors with practical implications on how to improve course design and facilitation strategies to encourage students' active participation and enhance their learning experiences in online settings. A review of the current studies on passive participation will help researchers identify the gaps and opportunities in the literature on passive participation. It will also add meaningful implications to the current findings resulting from studies on students' active participation in collaborative online learning activities.

Purpose and Research Questions

The purpose of this study is to provide an overview of research into passive participation in collaborative online learning activities in formal learning contexts from K-12 to higher education. Collaborative online learning activities are those that occur through computer-mediated communication (CMC) technologies such as online discussion forums and social media. We included passive participation in any modality (e.g., asynchronous, synchronous, hybrid learning) in our review but focused solely on text-based communication using CMC tools. We were specifically interested in passive participation in formal learning settings because user behaviors in formal and informal learning communities are distinct. Formal learning communities last only for a term and most students are extrinsically motivated. That is, students participate to receive credit towards their degree. In contrast, informal learning communities have longer durations and participation in these communities is voluntary in most cases. Since learner motivation is not the same in both environments, we chose to focus on students' participation in formal learning settings to highlight the current findings and needs for future research. We did not include massive open online courses (MOOCs), as MOOCs are usually informal, and participation is voluntary.

Additionally, we included both non-posting behavior and limited participation as forms of passive participation in our review, due to the fact that reading without posting is rare in formal learning settings where posting is usually mandatory. Therefore, our target behaviors include reading, lurking, free riding, peripheral participation, and low contribution in collaborative online learning activities. To fully understand students' passive participation and its consequences for their learning, it is useful to map and summarize the current state of knowledge and identify any gaps. Therefore, the research questions that guided this scoping review study are:

1. In formal school learning settings (e.g., K-12, higher education), what research has been conducted on passive participation in collaborative online learning activities?

    a. In what parts of the world has research been conducted?
    b. In what modalities has research been conducted?
    c. What CMC tools have been used?
    d. What methods have been used?
    e. What topics have been investigated?

2. How has the notion of passive participation been conceptualized by the researchers?

3.What has been found on passive participation in collaborative online learning activities?

Method

Research Approach

We employed a scoping literature review to provide an overview of current research and to identify gaps on the topic of "passive participation" in collaborative online learning activities. We also wanted to clarify the key concepts or definitions of passive participation used in the current research. The scoping review has been instrumental to researchers since it provides synthesized evidence of existing literature on a topic or field (Pham et al., 2014). This review method is especially useful for a topic or field that has not been comprehensively reviewed (Munn et al., 2018). We adopted the methodological framework suggested by Arksey and O'Malley (2005) for this scoping review.

We followed the first five steps of Arksey and O'Malley's framework; namely: (1) identify research questions; (2) identify relevant studies; (3) select studies; (4) organize data using a chart; and (5) report the results. We identified research questions and sampled relevant studies using selective databases from ProQuest and Web of Science. All articles were reviewed and filtered by relevance. We should point out that we considered a journal article to be relevant if the study was empirical and contained the component of passive participation in collaborative online learning activities in a formal learning setting. All relevant articles were coded by two researchers using a pre-defined coding scheme. After the coding was completed, we organized the data using tables and charts and summarized any important findings.

Search Strategies and Relevancy Criteria for Sampling

For this study, we employed two search systems: ProQuest and Web of Science. We selected these systems because the platforms give access to multiple databases simultaneously and provide advanced search options for easy refinement (Gusenbauer & Haddaway, 2020). Although ProQuest and Web of Science contain multiple databases, we used only ERIC from ProQuest and three main journal indexes—the Science Citation Index, Social Science Citation Index, and Arts and Humanities Citation Index—from Web of Science. Note that these selections were made because our target context was formal school learning within the social sciences. We determined that these four databases from two search systems provided a comprehensive set of education research. Further constraining this study, only peer-reviewed, scholarly articles written in English were included.

We conducted three sequential searches to sample enough articles. First, we used a narrow definition of passive participation and limited our search to title (TI), topic (TS), or abstract (AB) fields to increase relevancy in search results. In the narrow definition, passive participation included only non-posting behaviors such as reading and lurking. To set up our search parameters, we identified various terms from the literature that have been used to indicate non-posting behaviors. For example, lurking, invisible, non-posting, peripheral, passive, silent, quiet, listening, and free riding were entered for title search (TI). Participation and engagement were entered for topical or abstract search (TS or AB) depending on the search platform. Additionally, search terms related to online learning communities (e.g., online learning, online course, online forum, online community, e-learning, distance learning) were added to topical or abstract searches (TS or AB) to restrict the study context (see Table 1). These searches from two different platforms yielded 131 hits in total after excluding 15 duplicates.

Table 1

Databases and Search Terms

Step	Database	Search terms	Other search filters
Step 1	ERIC via ProQuest	TI(lurk* or invisible or silent or quiet or passive or peripheral or "listening behaviors" non-posting or nonposting or read-only) AND AB(online participation or online learning OR online forum OR online communit* OR social media OR e-learning OR distance learning OR online course* OR virtual course* OR distance education OR online education)	All dates English only Peer-reviewed
	Web of Science core collection	(TI=(lurk* or invisible or quiet or silent or passive or "listening behaviors" or non-posting or read-only or peripheral)) AND TS=(online learning or online forum or online communit* or social media or e-learning or distance learning or online course* or virtual course* or distance education or online education)	All dates English only Peer-reviewed
Step 2	ERIC via ProQuest	(participation OR engagement) AND ("passive participant" OR "passive participation" OR lurk* OR lurker* OR non-posting OR "silent participa*" OR "quiet participa*" OR peripheral OR "listening behavior*" OR "free ride" OR "free rider" OR "free riders" OR "free rides" OR "free riding")	All dates English only Peer-reviewed
	Web of Science core collection	((TS=(participation OR engagement)) AND ALL=("passive participant" OR "passive participation" OR lurk* OR lurker* OR non-posting OR "silent participa*" OR "quiet participa*" OR peripheral OR "listening behavior*" OR "free ride" OR "free rider" OR "free riders" OR "free rides" OR "free riding")) AND ALL=("online learning" or "online course" or "online education" or "distance learning")	All dates English only Peer-reviewed

We screened articles for relevance. Two researchers manually reviewed articles for a focus on passive participation in collaborative online learning activities such as online discussion and social annotation in school settings (see Table 2). Fifteen articles remained in our dataset after excluding 116 irrelevant and non-empirical studies. For example, studies using online chat or discussions to lead passive participants to fully participate in face-to-face classroom activities were excluded.

Table 2

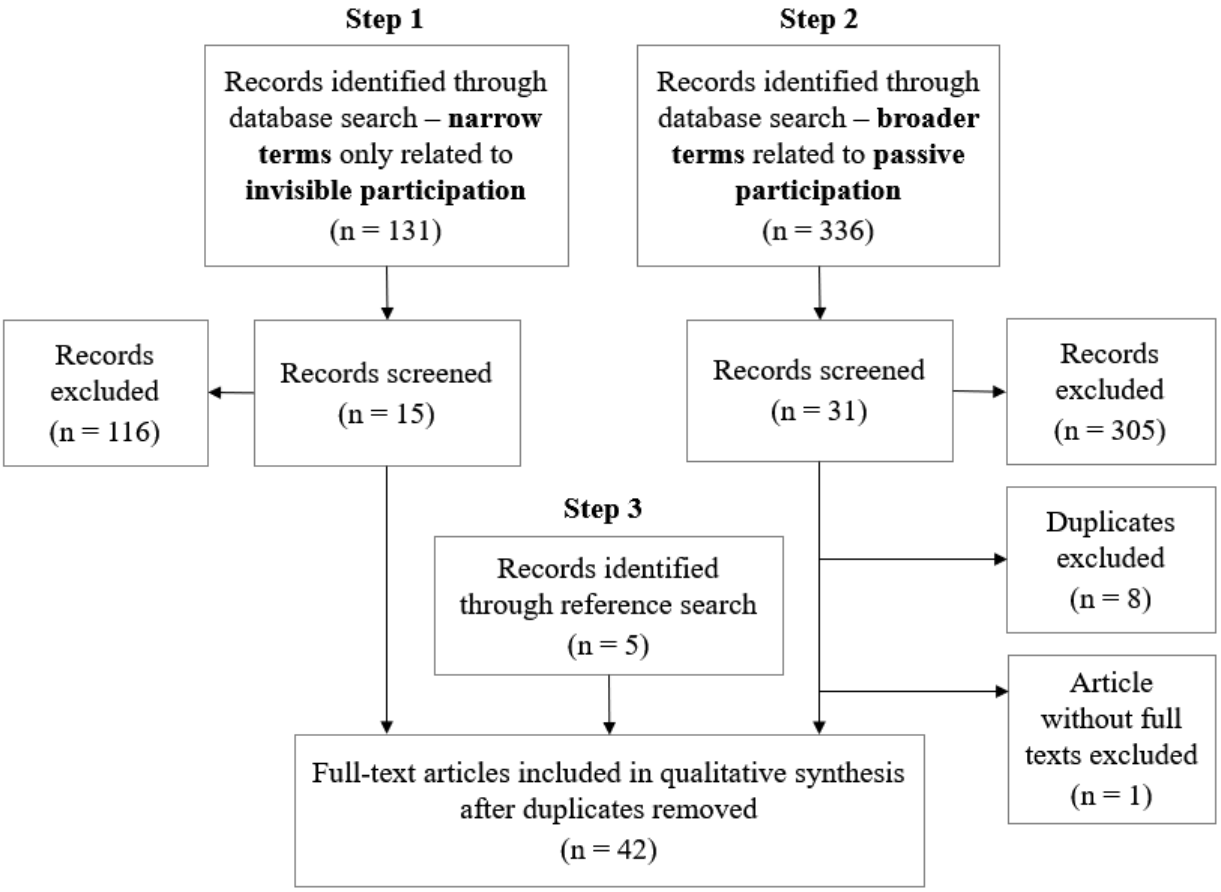
Inclusion and Exclusion Criteria

Category	Inclusion Criteria	Exclusion Criteria
Article type	Empirical, peer-reviewed	Conceptual, non-reviewed
Language	English	Other languages
Research context	Formal learning settings (e.g., K-12, higher education)	Informal learning settings (e.g., MOOC, open online forum, social media, etc.)
Subject	Students (e.g., K-12 learners, pre-service teachers, certificate students, etc.) interact to collaborate in online space.	In service teachers interact for professional development in online space.
Topic/focus	A study purpose, or one of the research questions or major findings relates to passive participation in collaborative online learning activities.	Passive participation is briefly mentioned in discussion or recommendation, or the study focus is on passive participation in face-to-face classroom activities.
Tool	Students use text-based CMC tools (e.g., online discussion, online chat, social media, etc.) for interaction.	Students use only video conference (e.g., Zoom, Microsoft Teams, etc.) or do not use CMC tools for interaction.

For the second search, we used the same parameters but did not limit our search to title (TI), topic (TS), or abstract (AB), expanding the search instead to full texts. The second search yielded 336 total hits after excluding six duplicates from two search platforms (322 from ERIC, 20 from Web of Science core collection). We screened articles for relevance; however, we used a broader definition of passive participation because passive participation often meant low contribution, including both invisible and visible participation. Two researchers manually screened for a focus and/or findings of articles that contained any meaningful implications about students' passive participation in collaborative online learning activities using CMC tools in formal learning settings. A total of 31 relevant articles were identified. After excluding eight articles that overlapped with the first search, 23 articles remained. Next, the search results based on both narrow and broad definitions were combined and one article was excluded that did not have full text. As a result, a total of 37 articles remained in our dataset. For the last search, we looked at the cited references in the articles about lurking and added five more articles. Four of them were conference proceedings. We conducted this additional citation search because too few articles about non-posting behaviors such as lurking in school settings were identified from our first database search. A total of 42 articles were selected for the final review (see Figure 2).

Figure 2

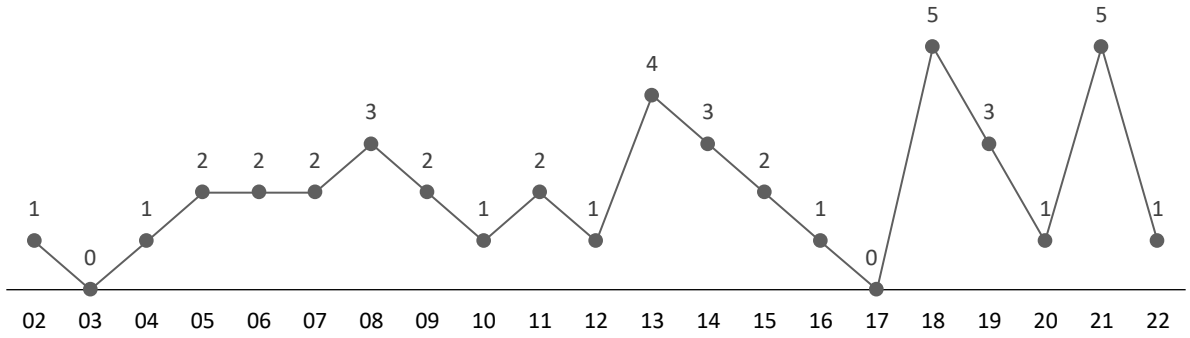
Article Selection Process



Our goal was to capture all relevant articles, so we did not limit our searches by publication date. The publication years of the articles in our final dataset ranged from 2002 to 2022 (see Figure 3).

Figure 3

Publication Year, 2002-2022



Coding

Two researchers logged and coded 42 relevant articles into the spreadsheet. The following dimensions were used for content analysis:

1. Author(s)
2. Year of publication
3. Empirical (continue only if empirical)
4. Geographic location of the study (country names)
5. Modality (asynchronous, hybrid)
6. CMC Tools for text communication (e.g., online discussion forum, social media)
7. Student level (elementary, middle, high, college)
8. Data type (quantitative, qualitative, mixed)
9. Data collection method (archive, log, interview, survey, observation)
10. Purpose of the study
11. Terms and concept/definition (e.g., lurking, peripheral participation, listening)
12. Topical focus of passive participation (e.g., behavioral pattern, motivational factors)
13. Key findings

A written protocol for coding was shared from the beginning but was refined several times by researchers after weekly meetings. All studies were situated in a formal school setting. Therefore, we coded modality according to the course format. If an asynchronous online discussion forum or social media was used for student-student interaction in a fully online course, it was coded as "asynchronous." If the same tools were used to complement in-person or remote learning, it was coded as "hybrid." Tools for text communication were coded using their original names but were later classified into several categories. For this study population, we focused only on students in a degree or certificate program. Therefore, we did not include teacher training for professional development. If in-service teachers or other adult learners took graduate level courses for their certificate or degree as a student, those learners were coded as college students.

Terms used to indicate passive participation were located from each article and coded with the concept or definition. If there was no explicit description, researchers inferred the meaning from the study context. The topical focus was only on passive participation. Both intended and unintended findings about passive participation were located and coded using a proper name of the topic. These topics were refined several times using open, axial, and selective coding methods. Key findings for each topic were coded in a separate spreadsheet for synthesis.

Results

RQ1. Research on Passive Participation in Formal Learning Settings

In What Parts of the World has Research been Conducted?

The articles were coded by geographic location to report terrestrial contexts where the study data were created and collected. If regions were not specified, the locations of authors' affiliations were counted and coded.

Table 3

Geographic Location of Studies

Continent	**N**	**%**
North America	18	42.8
Asia	11	26.2
Europe	6	14.3
Australia	4	9.5
Africa	2	4.8
Not specified	1	2.4
Total	*42*	*100*

Note. One article was left as "Not specified" due to a lack of information.

Most studies on passive participation were researched in North America, followed by Asia. Studies were heavily situated in the United States (14 out of 18). No articles that met our selection criteria were published in South America.

In What Modalities has Research been Conducted?

Researchers studied passive participation in different modalities: asynchronous and hybrid. Asynchronous courses are fully online without in-person or synchronous components. On the other hand, hybrid courses include both in-person and asynchronous components. About the same portion of studies were conducted in either asynchronous or hybrid contexts (see Table 4). One hybrid course encouraged students to join asynchronous and synchronous communication tools. The synchronous tool such as Zoom was designed to respond to COVID-19 (Ouyang et al., 2021).

Table 4

Course Modalities

Modality	N	%
Asynchronous	23	52.3
Hybrid	21	47.7
Total	*44*	*100*

Note. A few articles included multiple case studies/samples in different learning formats. Those learning formats were counted separately, making the total number 44 instead of 42.

What CMC Tools have been Used?

Most studies investigated passive participation in asynchronous online discussion forums. These included discussion forums in learning management systems (LMS), such as Canvas (Rubio et al., 2018), Moodle (Mazuro & Rao, 2011), or Blackboard (Prestridge & Cox, 2021). Eight articles examined courses that used Web 2.0 tools, which assist in providing a collaborative environment for knowledge sharing and social interaction (Boateng et al., 2010). The Web 2.0 tools used in publications include popular social media, such as Facebook and Twitter. Many studies using social media created and used closed groups where only instructors

and students can post and leave comments. In addition, researchers studied participation in Web 2.0 tools that specialized in social learning. These tools facilitated collaborative writing (Kim & Ketenci, 2019), sharing annotations and comments (Blau & Shamir-Inbal, 2021; Jones et al., 2021), and Q&A (Srba et al., 2019). Five articles explored participation in synchronous online chat (see Table 5).

Table 5

Participation Tools

Tools	N	%
Asynchronous Discussion Forum	31	70.4
Asynchronous Web 2.0 tools	8	18.2
Synchronous online chat	5	11.4
Total	*44*	*100*

Note. A few articles used multiple tools in the same study and those were counted separately.

What Methods have been Used?

The articles were coded to provide an overview of the study samples, frequently used research approaches, and data sources. Some articles examined various samples or case studies and employed multiple data sources. The majority of the articles studied college students in online courses (see Table 6). This finding is not surprising because online communications are rare in K-12 settings. Only two articles examined middle (Chen et al., 2022) and high school students (Chen & Chang, 2011).

Table 6

Participant Type

Subjects	N	%
Higher Education/College	40	95.2
Undergraduate	22	52.4
Graduate	11	26.2
Undergraduate & graduate	3	7.1
Certificate	1	2.4
Not specified	3	7.1
K-12	2	4.8
Total	42	100

As for the research approach, mixed methods were preferred to identify passive participants using numerical data (e.g., the number of postings) and obtain a deeper understanding of students' perceptions or motivation through qualitative data (see Table 7).

Table 7

Research Approach

Approach	N	%
Mixed	26	61.9
Quantitative	15	35.7
Qualitative	1	2.4
Total	42	100

Students' online participation, no matter whether it is visible or invisible, leaves trace data online. It is easy to obtain through LMS. In this regard, log data was the most common data source (see Table 8). Surveys and archives were also frequently used to collect data. To examine the quality of the posts, some researchers reviewed online discussions archives. Six articles included interview data, and they all adopted other methods along with the interviews.

Table 8

Data Collection Method

Data Source	N	%
Log Data	23	28.8
Survey	20	25.0
Text-based Archive	18	22.5
Interview	6	7.5
Observation	4	5.0
Other	9	11.2
Total	80	100

Note. An article may have used more than one data collection method and those were counted separately.

What Topics have been Investigated?

Each article was coded by multiple themes related to passive participation. These themes were grouped and regrouped several times and were finally organized into four major categories (see Table 9). The four emerging themes are: (1) participation types and behavioral patterns; (2) motivational factors and reasons for passive participation; (3) pedagogical strategies for de-lurking and active participation; and (4) passive participation on learning outcomes. An overview of these four main topics will be provided in the later section to answer the third research question (what has been found on passive participation?) of this study.

Table 9

Four Categories of Passive Participation

Topics	Articles (N = 42)
Motivational factors and reasons for passive participation	21
Participation types and behavioral patterns	20
Passive participation on learning outcomes	13
Pedagogical strategies for de-lurking and active participation	10

Note. The numbers added up to more than 42 because most articles discussed multiple topics.

RQ2. Terms and Notions of Passive Participation

The articles were coded by terms used to indicate passive participation and the terms described in each article. The articles were also coded and grouped by behavioral focus and motives, and by researchers' perspectives about viewing passive participation. Three main behavior foci have been discussed to understand the notion of passive participation: reading/non-posting, peripheral participation, and no contribution/free riding (see Table 10).

Table 10

Terms and Notions of Passive Participation

Behavioral focus	Description	Terms	Number of articles (%)
Reading/ non-posting	Lurking as a non-posting behavior or a complementary/pedagogical behavior with posting on an engagement continuum	Lurking, non-posting, read-only, invisible/quiet/silent participation, listening behaviors	31 (73.8%)
Peripheral participation with low presence	Lurking and low contribution as novice's early learning trajectory moving from peripheral to center within a community of practice	Lurking, legitimate peripheral participation (LPP)	9 (21.4%)
No contribution/ free riding	Low contribution as a rational behavior of self-interest when any gain goes to everyone in the group	Free rider, bench sitter	2 (4.8%)

Reading/Non-Posting Behaviors

A total of 31 (73.8%) articles discussed a non-posting and read-only behavior called "lurking." In these articles, lurking in an online course discussion forum or online chat was considered passive participation. This behavior was also called "invisible participation" (Beaudoin, 2002; Chyung, 2007). "Listening" was a term used to refer to active reading behavior among students or, in other words, reading that was necessary for subsequent behaviors such as responding and commenting (Wise et al., 2012; Wise et al., 2013). Among the 31 articles, 14 articles regarded non-posting behavior as generic reading and used the concept to discuss participation patterns. However, in 17 articles, researchers tried to differentiate active reading from generic reading by emphasizing the pedagogical roles of reading such as modeling and reflection. These researchers believed that lurking was just one type of behavior on an

engagement continuum (Dennen, 2008). Two articles cautioned against the positive view of non-posting behavior. Researchers underlined the social influence of such behavior and advocated for active contribution from all community members (Nigel et al., 2009; Russo & Benson, 2005).

Peripheral Participation with Low Presence

Nine (21.4%) articles focused on novice students' learning trajectory within a community of practice. In these articles, low contribution from students was considered passive but legitimate peripheral participation (LPP). Novice learners moved from the periphery to full participation with increasing social presence as they adjusted to the community and learned from more advanced learners (Carr et al., 2004).

No Contribution/Free Riding

Two (4.8%) articles used the concept of free riding to discuss issues of passive participation. An intervention was introduced to reduce free riders and increase learner contribution in computer-supported collaborative learning environments. Chen et al. (2022) introduced a system to visualize students' interaction through social network analysis. El Massah (2018) introduced a mobile system to monitor group discussions. In both studies, using an application to display students' participation and instructors' presence was effective in reducing passive participation and facilitating group work.

RQ3. Research Topics on Passive Participation and Overview of Articles

Motivational Factors and Reasons for Passive Participation

A total of 21 articles (50%) discussed reasons for lurking and the motivational factors that affected students' participation behaviors (see Table 11). Five articles highlighted pedagogical reasons for lurking. Researchers posited that students lurk before posting to understand the topic, get ideas from peers' posts, and avoid making redundant posts. They also argued that students lurk after posting to find appropriate posts to make comments on or to reply when they receive comments on their posts. Students usually scan through classmates' posts to find one they perceive is worthwhile to read more thoroughly and respond to (Dennen, 2008; Wise et al., 2012). Additional findings were that students generally select posts that provoke a question or with which they do not agree. Depending on the discussion design, students have been found to revisit a discussion board to lurk and prepare for examinations (Mikum et al., 2018).

Researchers have explored various factors that motivate students to participate in online communication actively or passively. Individual and situational factors such as course design, instructor facilitation, and community were found to affect the level of students' participation. First, students' individual differences such as goal orientation, personal preferences, and self-confidence influence their participation. For example, some students lurked simply because they preferred to read (Beaudoin, 2002). Second, discussion design and instructor facilitation affected the level of students' participation. When the participation was voluntary, a small number of students contributed and others participated as the audience or lurkers (Mikum et al., 2018). Group size also mattered. When class size increased, the level of active participation decreased and lurking behavior became noticeable (Ruthotto et al., 2020).

Table 11

Motivational Factors and Reasons for Lurking

Subtopics	Examples	Articles
Reasons for lurking	*Before posting* • Get ideas from peer posts (e.g., content, structure, etc.) • Avoid repeating the same ideas • Understand the topic and main ideas *After posting* • Check posts with no comments to respond to • Find worthwhile posts to read and respond to • Gain knowledge during the exam period	Dennen (2008) Ebner et al. (2005) Mazuro & Rao (2011) Mikum et al. (2018) Wise et al. (2012)
Factors affecting participation	*Individual factors* • Goal orientation • Personal preferences/interests/needs • Limited time/life needs • Cultural capital • Experience with online learning/self-confidence	Beaudoin (2002) Chyung (2007) Mikum et al. (2018) Ruthotto et al. (2021) Wise et al. (2012)
	Course design and instructor factors • Technical convenience • Group size • Structure of tasks (structured vs. unstructured) • Student moderation vs. instructor facilitation • Grade (credit) vs. voluntary participation	Gorsky & Blau (2009) Mikum et al. (2018) Norman et al. (2015) Park (2015) Ruthotto et al. (2021) Wijekumar (2006) Wise & Chiu (2014) Xie et al. (2014)
	Community factors • Demographic differences (e.g., gender, age, race, etc.) • Time for acclimation to a community • Peer feedback/reciprocity, social recognition • Peer engagement/social presence	Carr et al. (2004) Chyung (2007) Gorsky & Blau (2009) Guldberg (2008) Jones et al. (2021) Park (2015) Mikum et al. (2018) Nagel et al. (2009) Norman et al. (2015) Öztok (2016) Soroka & Rafaeli (2006) Xie (2013)

Note. Many articles discussed multiple factors at the same time.

Instructor facilitation both increased (Gorsky & Blau, 2009; Park, 2015) and decreased (Norman et al., 2015) the level of students' participation. This might be due to discrepancies between students' expectations and instructors' actual levels of facilitation (Dennen, 2011) and could also result from the timing of instructor comments, with late instructor posting signaling to students that it is acceptable to procrastinate in their participation also (Bonk & King, 1998). Of course, an instructor who dominates the online discussion forum or who always posts early in the discussion may inadvertently silence student voices and the overall degree of online activity (Bonk et al., 2003; Dennen, 2011).

Finally, community characteristics and behaviors influenced students' participation levels. Although lurking had pedagogical implications, lack of peer feedback and engagement discouraged students' overall levels of participation in the collaborative learning process (Guldberg, 2008; Park, 2015; Xie, 2013).

Participation Types and Behavioral Patterns

Twenty articles (47.6%) partially or fully discussed types of students based on their behavioral patterns. Five articles specifically discussed types and characteristics of lurking behaviors. Six articles used dichotomous criteria to distinguish types of participation and patterns. In these articles, visible forms of participation were classified as active participation or posting, and invisible forms of participation were classified as passive participation or non-posting. Eleven articles identified a range of types of participation by combining both passive and active participation in terms of quantity and quality (see Table 12).

Students' non-posting behaviors were also classified into different types by analyzing and clustering students' log data such as total views and length of time viewing (Wilton, 2018; Wise et al., 2013). However, most studies grouped students' participation behaviors into several categories by taking both posting and non-posting behaviors into consideration. For example, Wilton (2018) categorized students into three "cluster membership" groups based on their reading and writing behaviors: avid readers/prolific writers, avid readers/moderate writers, and moderate readers/moderate writers. Wise et al. (2013) also identified three "cluster membership" groups by examining the patterns of students' participatory behaviors in terms of breadth, depth, temporal contiguity, and reflectivity. They used "listening" instead of "passive participation" and "speaking" instead of "active participation." Researchers who adopted the notion of community of practice used stages of membership development to indicate different types of participation trajectories including peripheral participation. Peripheral participants are those who do not noticeably interact with peers but usually read others' posts.

Passive Participation on Learning Outcomes

A total of 13 (31.0%) articles discussed the relationship between student participation and learning outcomes. The examined learning outcomes included performance, perceived learning, and satisfaction (see Table 13). Eleven out of 13 studies showed passive participation related to learning in terms of performance and grades. Five studies examined students' perceptions of passive participation in their learning. Finally, using the community of inquiry framework, two studies discussed the importance of instructors' and students' social presence and the impact on learning and satisfaction.

Table 12

Participation Types by Behavioral Patterns

Behaviors	Participation Types	Articles
Lurking	• Low visibility vs. No visibility	Beaudoin (2002)
	• Type 1, 2, and 3 lurking	Chen & Chang (2011)
	• Temporary (situational, topical, peripheral) vs. Permanent	Dennen (2008)
	• Avid readers vs. Moderate readers	Wilton (2018)
	• Superficial vs. Concentrated vs. Broad listening	Wise et al. (2013)
Participation as dichotomous behaviors	• Active vs. Passive	Blau & Shamir-Inbal (2021) Mikum et al. (2018) Rubio et al. (2018) Ruthotto et al. (2021) Srba et al. (2019)
	• Posting vs. Non-posting	Ghadirian et al. (2018)
Participation as continuous behaviors	• Peripheral < inbound < full participation	Kim & Ketenci (2019) Carr et al. (2004) Guldberg (2008)
	• Peripheral < regular < mediator < influencer < starter < leader	Ouyang & Chang (2019)
	• Silent participants < audiences < advisors < contributors	Kim & Cavas (2013)
	• Lurker, member, expert, flamer, and joker	Orton-Johnson (2007)
	• Non < Passive < Average < Semi-active < Active	Park (2015)
	• Passive < Limited < Inactive < Active	Tsai et al. (2021)
	• Bench sitter < Hustler < Striker < Champion	Prestridge & Cox (2021)
	• Moderate readers/writers < Avid readers/ moderate writers < Avid readers/prolific writers	Wilton (2018)
	• Superficial listers/intermittent talkers < Concentrated listeners/integrated talkers < Broad listening/reflective talkers	Wise et al. (2013)

Table 13

Learning Outcomes

Category	Findings	Articles
Performance/ Grades	• High performance by observing others (social comparison).	Jones et al. (2021)
	• Performance/learning not much compromised by observation/pedagogical lurking (vicarious learning).	Beaudoin (2002) Dennen (2008) Ebner et al. (2005) Kim & Ketenci (2019) Tsai et al. (2021)
	• High performance and high level of cognitive engagement by active participation (posting).	Nagel et al. (2009) Ouyang et al. (2019) Palmer et al. (2008) Rubio et al. (2018) Russo & Benson (2005)
Perceived learning	• *Lurker's perception*: Still learn through observing others' opinions and works.	Beaudoin (2002) Dennen (2008) Jones et al. (2021) Wilton (2018)
	• *Poster's perception*: Learn better when there is high social presence (both instructor and peers).	Gorsky & Blau (2009)
Satisfaction	• Social presence (instructor, peers) → (perceived learning) → student satisfaction	Gorsky & Blau (2009) Russo & Benson (2005)

Historically, researchers have been interested in the relationship between students' levels of participation and their academic success. However, findings from earlier studies have not been consistent. Beaudoin (2002) found passive participation did not compromise learning, although active participation had a better influence on students' performance. Ebner et al. (2005) confirmed this finding, claiming that both active and passive participation occurred at the same time and that, in general, students read more than they write. Dennen (2008) also supported pedagogical lurking and its positive impact on learning. Nagel et al. (2009) challenged these claims by demonstrating the relationship between active participation and high performance. However, Nagel and colleagues did not deny the importance of reading others' posts. Instead, they maintained that reading and writing should occur together in a learning community to maximize successful learning. Notably, researchers in four other studies from this systematic review advocated the importance of active participation.

Furthermore, researchers from two studies claimed that social presence affected students' satisfaction and perceived learning (Gorsky & Blau, 2009; Russo & Benson, 2005). This finding is interesting because lurkers claimed that they still learned by observing others whereas their peers criticized lurkers' lack of social presence, which they claimed hindered their active participation and learning. Jones et al. (2021) showed that students improved their work and

increased their grades by viewing others' works and sharing feedback. This benefit of social comparison can be explained by the notion of vicarious learning in online discussion forums.

Strategies for De-lurking and Active Participation

A total of ten (23.8%) articles addressed pedagogical strategies for de-lurking or promoting active participation. These strategies included instructor presence, student moderation, and technological interventions that assist in online discussions (see Table 14).

Table 14

Pedagogical Strategies

Category	Strategies	Articles
Instructor roles	• Monitor & send a warning alert	El Massah (2018)
	• Increase teacher presence through active participation and facilitation in discussions	Gorsky & Blau (2009) Park (2015)
Student roles	• Assign students roles to moderate/facilitate or synthesize/summarize group discussions	Ghadirian et al. (2018) Öztok (2016) Wise & Chiu (2014) Xie et al. (2014)
Tools & technological interventions	• Provide instant feedback through Intelligent Discussion Board (IDB)	Wijekumar & Spielvogel (2006)
	• Visualize the levels of students' contributions and relationships using social network analysis	Chen et al. (2022) Ouyang et al. (2021)

While only three articles were identified from our search, the importance of instructors' roles in students' active participation in online learning has been discussed extensively (Martin et al., 2020; Zhou, 2015). Gorsky and Blau (2009) compared two instructors who received different evaluations and showed the extent to which the instructor's presence affected students' participation in online discussion forums. Although passive participants existed in both classes, passive participants in the class by the instructor with higher ratings visited the discussion board more often than those with the lower-rated instructor. El Massah (2018) described the instructor's role in a different way. The instructor oversaw students' group activities via mobile chat and sent warning messages to prevent free riding.

In addition to instructors' roles, researchers have been discussing the role of students in online discussions. Four articles from our search used student moderators to facilitate online discussions. The researchers assigned students active roles as peer moderators. These moderators were involved in multiple tasks from developing prompts, to facilitating, to summarizing discussions. In general, peer moderation had a positive impact on the overall level of student participation in terms of quantity. Öztok (2016) emphasized the improvement of quality rather than the quantity of discussion through peer moderation. Finally, researchers used technological interventions to facilitate learner participation in online discussions. These technologies included an intelligent discussion tool that provided instant feedback and visual artifacts that showed students the level of their contributions.

Discussion

Studies on passive participation in collaborative online learning activities in formal learning contexts have spanned twenty years, from 2002 to 2022. However, the number of studies on this topic is very low, with an annual maximum of only five studies. Studies on participation in online learning spaces are abundant (Martin et al., 2020, p. 7), but studies specifically investigating passive participation are limited. If a narrow definition is applied, the number of studies on passive participation is even lower. That is, only a handful of studies exist focusing on non-posting behaviors such as lurking in formal learning settings (Wilton, 2018). In formal school settings, it is difficult to find lurkers because participation is usually mandatory. This is likely one of the key reasons for the dearth of studies investigating students' non-posting behaviors.

When the definition of passive participation is expanded to include low contribution, studies on passive participation involve different types of participatory behaviors. These studies usually combine different levels of posting and non-posting behaviors. Some of these articles used a community of practice framework to explain learner behaviors within a community (Carr et al., 2004; Guldberg, 2008; Kim & Ketenci, 2019). In this case, researchers believed that passive participation was legitimate in the sense that some students need time to adjust to the community before moving to full participation. The term "legitimate peripheral participation" (LPP) has been used to indicate passive participation in this context. Some researchers equate non-posting behavior to free riding in the context of collaborative learning activities such as online discussion forums and team projects because active participation is expected for knowledge co-construction (Chen et al., 2022; El Massah, 2018).

Terms and Notions Inconsistent Across Studies

Since researchers have used different terms and provided their own definitions of passive participation, in this systematic review, we also attempted to understand how the notion of passive participation has been conceptualized in the existing literature. "Lurking" is the term originally used in open electronic forums (Nonnecke & Preece, 2001) such as social media, where participation is voluntary and membership lasts longer than the typical timeline for school settings of one semester. The term "lurking" has also been used in formal learning settings even though this behavior is usually temporary rather than permanent, as posting is required to earn credits in online courses. In most studies, passive participation within formal online learning contexts was temporary and situational since students usually read before and after posting. Additionally, students were cognitively active when they were reading others' posts, even if their behavior appeared to be passive and invisible.

Due to the negative connotation of lurking, alternative terms (e.g., listening behaviors, invisible/quiet/silent participation) were employed in studies to indicate these non-posting or read-only behaviors (Honeychurch et al., 2017). In some studies, passive participation meant not only students' non-posting behaviors but also their limited posting behaviors after meeting the requirements. In this case, legitimate peripheral participation (LPP) was used to describe passive participation as one of the five trajectories within a community of practice. When students rarely contributed by posting almost nothing because any gain went to everyone in the group, it was regarded as free riding. Therefore, various terms and notions have been used to conceptualize passive participation.

Studies Dominant in Higher Education Settings

Most studies on passive participation were conducted in higher education settings. This is most likely due to the fact that student interaction in online spaces is rare in K-12 settings. Studies used mixed methods to collect participatory data. The quantitative aspects of student participation were measured through log data or discussion archives. The qualitative aspects were investigated through interviews or observation. Given the fact that non-posting behaviors are difficult to observe and measure, surveys were used in many studies. Therefore, students' self-reported data were used to investigate the reasons for non-posting behaviors (Dennen, 2008; Mazuro & Rao, 2011; Mikum et al., 2018; Wise et al., 2012). In most studies, asynchronous online discussion forums were used for student-student communication, but other types of communication tools such as social media (Mikum et al., 2018; Norman et al., 2015; O'Bannon et al., 2013; Srba et al., 2019) and online live chats (Carr et al., 2004; Chen et al., 2022; El Massah, 2018) were also investigated in school settings.

Behavior Patterns and Motivational Factors Studied the Most

Topically, we found that half of the studies explored students' participation types and behavioral patterns, and the factors affecting those behavioral patterns. Although 74% of our sample focused on read-only behaviors, many of the studies attempted to understand students' overall behavioral patterns and the factors affecting those behavioral patterns rather than focusing solely on students' passive participatory behaviors. For example, Wilton (2018) classified participants into three clusters based on students' reading and writing patterns. The three motivational factors they identified were individual factors, course design factors, and community factors. Most articles discussed multiple factors affecting participation rather than focusing on a few specific factors. Among the three motivational factors, the community factor that relates to students' socioemotional ability to participate in group work has been discussed relatively less than the other two.

Some researchers were also interested in the consequences of students' passive participation by comparing the learning outcomes of active and passive participants (Kim & Ketenci, 2019; Tsai et al., 2021). Many researchers concluded that passive participation has some legitimate rationale if it is not free riding within a small group project situation. They posited that students' invisible participation has pedagogical relevance (e.g., modeling, read to respond, review, etc.) or can be explained with trajectories (e.g., peripheral, inbound, insider, etc.) within a community of practice. These researchers viewed participation as a continuous behavior on the engagement continuum rather than a dichotomous behavior such as "active vs. passive" or "posting vs. non-posting." However, the relationship between active participation and high performance has not been consistent among researchers. Nonetheless, most researchers were interested in ways to encourage students to actively participate in group activities by emphasizing instructor facilitation (Gorsky & Blau, 2009; Park, 2015) or peer moderation (Ghadirian et al., 2018; Xie et al., 2014).

Some tools and technologies were also introduced to prevent free riding by providing students with immediate feedback (Wijekumar & Spielvogel, 2006) or by visualizing students' level of contribution using social network analysis (Chen et al., 2022; Ouyang et al., 2021).

Conclusion

As reviewed in this study, passive participation has not been extensively explored during the past 20 years. The terms and notions of passive participation varied among researchers, with some studies focusing solely on read-only behaviors and others focusing on low contribution behaviors. Some researchers view passive participation as normal behavior on the engagement continuum. Others view this as undesirable behavior that should be corrected for students to be successful learners. Although many researchers approached passive participation when they studied online learner engagement and identified course factors that affect students' level of participation, more studies that specifically focus on passive participation are needed to better understand passive participants and help them actively participate in collaborative online learning activities.

This study will be a starting point for educational researchers seeking ways to encourage students to participate more actively in online courses, especially as more students are forced to take online courses due to the pandemic. Many students are not self-regulated enough for online coursework (Handoko et al., 2019; Hensely et al., 2022), but have no choice to engage in education otherwise during an emergency such as COVID-19. By examining the existing studies on passive participation, researchers can initiate future studies that could help practitioners to inspire students' active participation in collaborative online learning activities in any context.

Limitations

This review study has some limitations in terms of sampling. We restricted our search to peer-reviewed journal articles written in English, although we included some conference proceedings through a citation search. Our search terms were also limited because we could not include all the relevant terms even though we tried to use broad terms that could encompass possible online learning environments such as computer-supported collaborative learning. Furthermore, the keyword "passive" in our search strategy to find publications that placed emphasis on passive participation might have excluded articles that described students' general participation. Finally, there is a possibility that we missed some articles that used different terms for depicting passive participation. We included as many relevant terms as possible, but other studies that used unique terms for passive participation could have been missed.

Future Research

Through the scoping review, this study found gaps and potential directions for future research. First, the research was generally conducted in higher education contexts. Considering that COVID-19 forced K-12 to quickly move to online remote learning, further investigation on passive participation is needed in K-12 contexts. Second, more empirical research is required to validate the current findings in all four topics discussed in the articles on passive participation. This scoping review summarized and synthesized findings from the current studies, but study contexts and course designs varied greatly in all the articles. Third, current studies mainly investigated pedagogical reasons and the factors affecting students' passive participation. Although the importance of social presence was discussed in some studies, more studies need to focus on the socio-emotional factors that affect students' level of participation. For example, students may experience feelings of othering due to various reasons even in online spaces (Choi et al., 2021; Phirangee & Malec, 2017), which might result in withdrawal from class engagement (Houshmand et al., 2014).

From our study, we found that “no reading” and “no additional posting” beyond the minimum requirements are key problems or issues that need to be addressed, instead of focusing on “read-only” behaviors since most reading has pedagogical purposes in formal learning settings (Palmer et al., 2008). Therefore, studies investigating each factor on the passive participation continuum at all student levels are necessary, considering all the known factors affecting the level of participation. Those factors include both individual and situational motivations. However, situational motivations that are shaped through course design, instructor facilitation, and community are more urgent overall than individual motivation when personalized learning is still limited. Studies on pedagogical strategies to shape situational motivations to encourage students to read and write more than required are needed to support students' engagement in collaborative online learning and knowledge co-construction.

Declarations

The author(s) declare no potential competing interests with respect to the research, authorship, and/or publication of this article.

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