

Unveiling Engagement in Asynchronous Writing: A Comprehensive Exploration of Approaches and Indicators – A Systematic Literature Review

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ABSTRACT

In developing the learners' language competence, many educational institutions altered teachers to integrate computer-mediated communication (CMC) synchronously and asynchronously. However, the issue of engagement becomes another issue to be handled. Accordingly, in this literature review of 20 qualitative, 7 quantitative, and 8 mixed-method studies published in the high-ranked database from 2000-2021, we aim to examine the approaches to evaluate and indicators to facilitate the learners' engagement, specifically on writing asynchronously. Asynchronous CMC became the concern of this study as it supports the learners to follow the simultaneous discussion and supports multiple learning styles. The reviewed studies were identified using behavior, cognition, and emotion approaches to evaluate the learners' engagement. Thus, the types of indicators to facilitate the learners' engagement are input, process, and outcomes. Finally, this review suggests it is useful to design writing courses that effectively conceptualize evaluation approaches and indicators to facilitate the learners' engagement.

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1. INTRODUCTION

Writing is seen as a minor role in promoting second language development. Although writing is often considered as the result of language acquisition instead of a facilitating factor, it has recently become an activity to promote and reflect L2 development (Williams, 2012). These days research on writing promotes the value of interaction and collaboration in L2 development (Zhang et al., 2021) by cooperating computer-mediated communication (CMC), including both synchronous (SCMC) and asynchronous communication (ACMC) (Yang et al., 2014; Lambert et al., 2009; Wu, 2020; Cheng & Lei,

2021; Canals et al., 2021; Payant & Zuniga, 2022). However, instead of focusing on both modes of communication, this study aims to know the critical issue of asynchronous communication in helping learners engage in learning. The use of asynchronous online discussion forums transformed learners' collaboration with peers and exercised their cognitive effort to perform the shared task (Kim & Ketenci, 2020) and helps encourage in-depth and thoughtful discussion, communicate with temporarily diverse learners, and allows all the learners to respond to the topic (Branon & Essex, 2001). Thus, today's research needs to determine the best use of technology to engage learners in meaningful and effective learning experiences.

Understanding how technology promotes learners' writing skills is challenging for teachers (Engeness, 2018). Some research found that using digital technologies in the teaching-learning process could facilitate learners writing skills, especially in revising (Li & Zhu, 2013; Li & Zhu, 2017; Williams, 2012; Payant & Zuniga, 2022; Subedi et al., 2022). However, instead of investigating the quality of learners' writing, this study aimed to look at the approaches (i.e., behavior, cognition, and emotion) and indicators (i.e., input, process, and outcomes) of learners' engagement in writing asynchronously in the growing empirical research. Since the paradigm-shifting of education resulting from the advancement of technologies and media (Ogunyemi et al., 2022) and the learning transition from face to face into fully online learning during the pandemic, learner engagement has been an essential issue for schools and institutions worldwide. Therefore, it is important to know the factors influencing learner behavior and learning (Hew, 2018) by further investigating the issue of learner engagement in writing.

To conduct this systematic review, we summarised and synthesized empirical research on learners' engagement in writing asynchronously. This research aimed to investigate the following research questions: (1) What characteristics of the studies used to study learners' engagement in writing asynchronously? (2) What approaches have been used to evaluate learners' engagement in writing asynchronously? (3) Which indicators have been investigated to facilitate learners' engagement in writing asynchronously? Accordingly, there are two significant contributions to educational fields. First, it identifies the trends of learners' engagement in writing asynchronously during the past decades. It also reveals the approach and indicators that may provide implications for educational institutions, researchers, and teachers when incorporating asynchronous writing.

2. METHODS

2.1 Literature search

This study followed the guidelines on how to conduct a research synthesis (Cooper, 2016) that consists of (1) formulating the problem, (2) searching the literature, (3) gathering information from studies, (4) evaluating the quality of studies, (5) analyzing and integrating the outcomes of studies, (6) interpreting the evidence, and (7) presenting the results. Meanwhile, during the screening of the paper (searching the literature), this study followed the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) standard that include (1) identification, (2) screening records, (3) assessing articles for eligibility, and (4) determining whether a given study be included or excluded (Moher et al., 2009). To identify articles that study the learners' engagement in asynchronous communication for writing, this study we accessed databases (SAGE, Emerald Insight, Taylor and Francis, Oxford Journal, Springer Journal, Cambridge University Press, Science Direct, and Wiley Journal). The journal articles we selected underwent a rigorous peer-review process and were indexed by Scopus and/or SSCI (web of Science). Key search terms were applied: *learners' engagement* OR *students' engagement* AND *asynchronous learning* OR *web-based asynchronous* AND *writing task* OR *writing assignments* OR *electronic writing* OR *writing*. The search terms were combined using "AND", and "OR". We did not restrict our search to a specific school level or form. We searched for the terms in titles, abstracts, and keywords. During these searches, there were 1735 documents of journal articles.

2.2 Selection phase and criteria for inclusion

In this systematic review, the studies that are eligible should meet some inclusion criteria. (i) Written in English. (ii) Required to be relevant and focused on Asynchronous Communication for Writing tasks. (iii) Limited the search to studies published between 2001 and 2021. (iv) Empirical studies (full articles and papers). (v) Peer-reviewed studies. (vi) Four-page minimum length. (vii) Must not contain replication of the same author's idea. The present systematic review was not excluded the learner's grades and the subject matter they learned. Moreover, articles focusing on asynchronous and synchronous communication for writing tasks are excluded. After applying both inclusion and exclusion criteria, the articles selected in the present systematic review were 35 articles. Therefore, the detailed process of collecting articles according to the PRISMA standards is presented in the following figure.

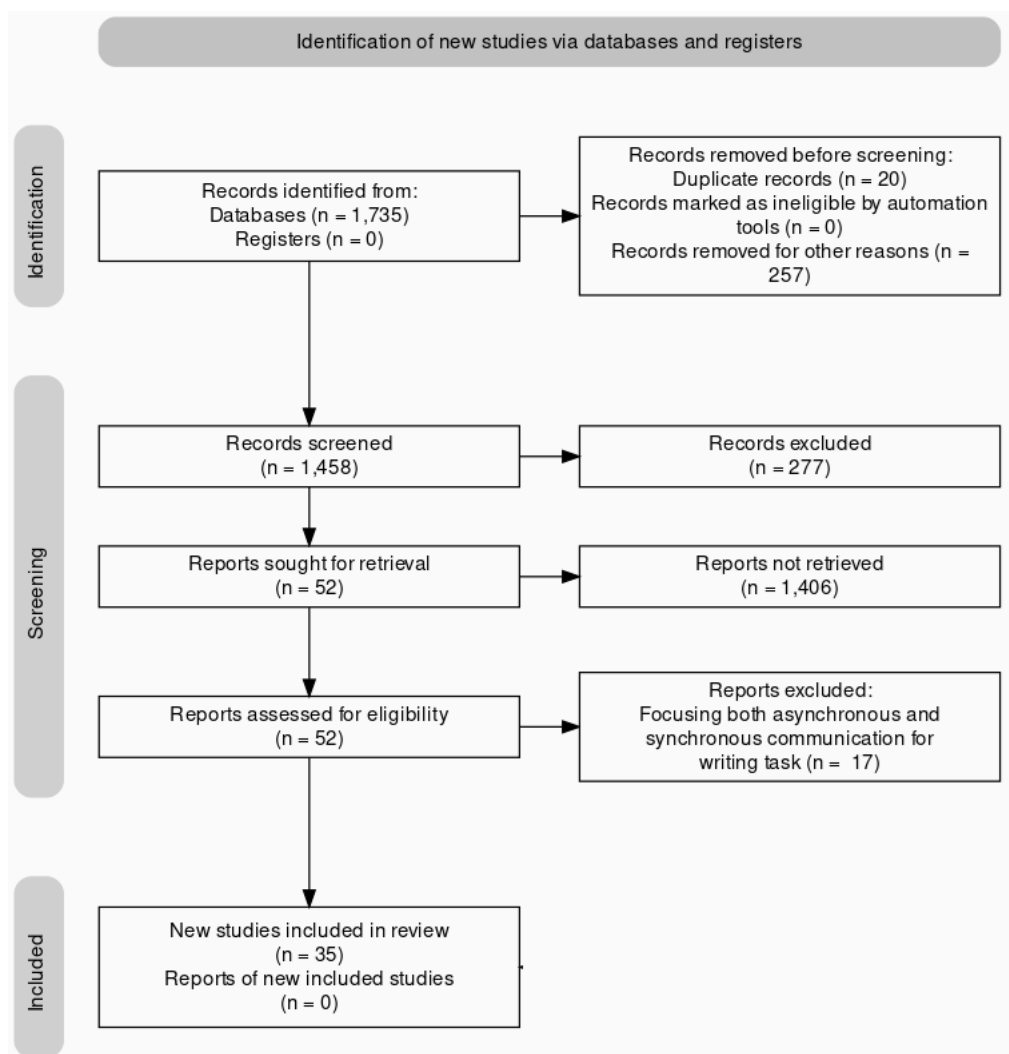


Figure 1. PRISMA flow diagram for screening articles in journal

2.3 Process of analysis and coding

The final sample of 35 relevant research studies was identified and included. After an agreement between researchers on the data extraction form, the data were summarised into some key aspects: country, grade and subject taught, research design, the technology or platform used, and type of writing task (completed individually, in pairs, or in a group), research questions or aims, the pattern of learner engagement, approaches to evaluate engagement, and indicators facilitate learner engagement. We used a spreadsheet template to code all information above, followed by basic article information such as author(s), year, and index.

While analyzing and integrating the outcomes of studies, the researchers were involved in reducing data points into a combined statement to answer the research question (Cooper, 2016). In the prior code categories, the coding of this review studies involved reading for additional emergent, which was assisted by the qualitative data analysis (Saldaña, 2013). The re-coding process was repeated more than once to get the emergent patterns. After that, from the categorizing, the researchers sort the things represented based on concept and theory.

3. FINDINGS AND DISCUSSION

3.1 Characteristics of the studies

The studies included in this systematic review were from Australia (n= 1), mixed (America & Europe) (n= 1), unmentioned specifically (n= 6), Asia (n= 7), America (n= 8), and Europe (n= 12). This indicates that different continents have paid divergent degrees of attention to learners' engagement in writing asynchronously. Students of the studies were from various levels such as primary (n= 1), secondary (n= 3), tertiary (n= 1), undergraduate (n= 21), graduate (n= 7), postgraduate (n= 1), and several levels (undergraduate-graduate) (n= 1). All the studies involved formal instruction, with the most common content types of the studies including teacher education, medicine or health care, language, social science, science, business, psychology, and technology. Regarding the publication years, as shown in Figure 2, there was no publication on learners' engagement in writing asynchronously in 2001, 2003-2005, and 2007-2008. Meanwhile, the highest number was in 2021. Although the number of studies fluctuated between 2012-2021, this still indicates that the issue still attracted scholars.

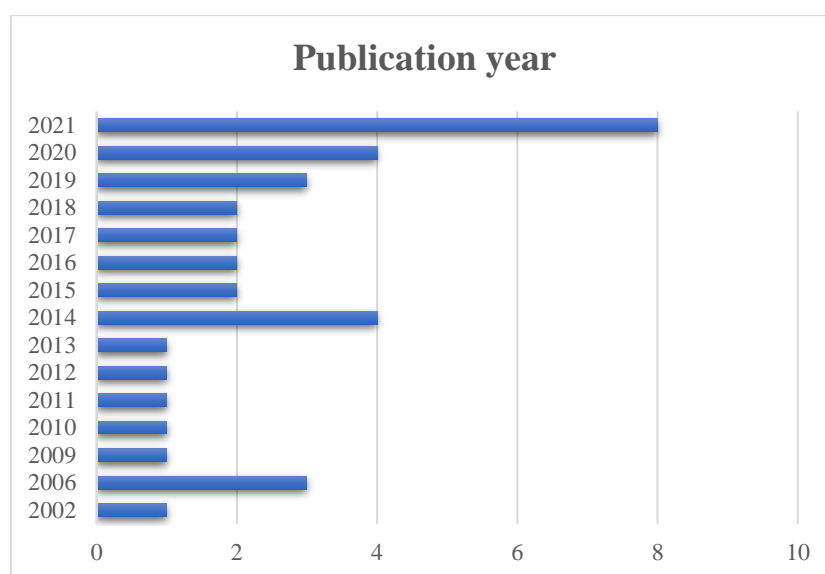


Figure 2. Publication year

Based on the group of research methods, among 35 articles, there were 7 quantitative studies, 20 qualitative studies, and 8 mixed-methods studies. Figure 3 indicates that the quantitative used by the studies showed the lowest number (comprising 20% of the total number) and was followed by the mixed research (comprising 22.86% of the total). Quantitative research describes the research problems by describing trends or explaining variable relationships (Creswell, 2014). For example, Cheng and Lei (2021) reveal the changing trends of student interaction in a blogging activity and the variability of the fluctuation of the weekly out-degree around the mean in each cycle. There are two major types of quantitative research, 6 experimental and 1 non-experimental (Ary et al., 2010). The experimental one can be used to test the ideas, whether it is a practice or procedure, to determine whether it influences an outcome (Creswell, 2014) like the study conducted by (Jiang & Zhang, 2020). Researchers utilized a

mixed method to study learners' engagement in writing asynchronously, combining qualitative and quantitative methods for optimal information and hypothesis (Creswell & David Creswell, 2018).

Meanwhile, the qualitative approach was widely used by many researchers (comprising 57.14% of the total number). There are several variations of qualitative approach in the study, such as case study, content analysis, conversational analysis, phenomenological research, and unknown. This approach was advantageous in gaining in-depth information on interactional competence through the meaning and utterance in a particular interactional moment.

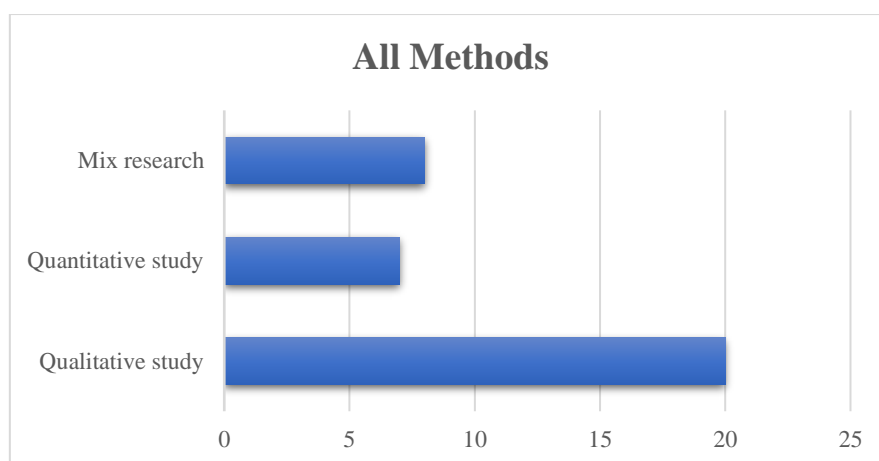


Figure 3. Research method

Studies showed a wide range of participant populations, with three studies focusing on a small group of students or instructors, less than 10 students, larger studies involving more than 24 students from multiple institutions, and an unknown study. See the following table. Table 1 presents the information from the published studies used in this study. Among 35 studies, 23 were conducted online, and 12 were completed blended, concerning the interaction with both instructors and students.

The duration of the studies varied (Table 1). Some studies reported their duration in hours, weeks, and semesters. Six studies lasted a semester. One study lasted four semesters. Four studies lasted between two and five months. 15 studies between two and twenty weeks. Moreover, some studies reported in days ($n=1$) and discussions frequency ($n=1$). Meanwhile, seven studies were unknown in duration.

Table 1. Corpus article

| No. | Citation | Title | Journal Publisher | Duration | Mode |
|-----|---------------------------------|---|--|---------------------------------------|---------|
| 1. | (Järvelä & Häkkinen, 2002) | Web-based cases in teaching and learning—the quality of discussions and a stage of perspective taking in asynchronous communication | Interactive learning environments | Two month | Online |
| 2. | (Hirvela, 2006) | Computer-mediated communication in ESL teacher education | ELT Journal | Unknown | Online |
| 3. | (Zhu, 2006) | Interaction and cognitive engagement: An analysis of four asynchronous online discussions | Instructional Science | A regular semester (12–14 weeks) | Online |
| 4. | (Boyer et al., 2006) | Transformative learning in online settings: The use of self-direction, metacognition, and collaborative learning | Journal of Transformative Education | Five sections in a semester | Online |
| 5. | (Dippold, 2009) | Peer feedback through blogs: Student and teacher perceptions in an advanced German class | ReCALL | Term 2 of the academic year, 12 weeks | Online |
| 6. | (Absalom & Léger, 2011) | Reflecting on reflection: Learner perceptions of diaries and blogs in tertiary language study | Arts and Humanities in Higher Education | 4 months | Blended |
| 7. | (Angelaina & Jimoyiannis, 2012) | Analysing students' engagement and learning presence in an educational blog community | Educational Media International | Nine weeks | Blended |
| 8. | (Jimoyiannis et al., 2013) | Social network analysis of students' participation and presence in a community of educational blogging | Interactive Technology and Smart Education | Eight weeks | Blended |
| 9. | (Rodríguez, 2014) | Content analysis as a method to assess online discussions for learning | Sage Open | Four consecutive semesters | Blended |
| 10. | (Li et al., 2014) | The effects of a wiki-based collaborative process writing pedagogy on writing ability and attitudes among upper primary school students in Mainland China | Computers & Education | Three months | Blended |
| 11. | (Pifarré et al., 2014) | Using a blog to create and support a community of inquiry in secondary education | E-Learning and Digital Media | Four months | Online |
| 12. | (Denton, 2014) | Using screen capture feedback to improve academic performance | TechTrends | Twenty weeks | Online |

3.2 Approaches for evaluating learners' engagement in writing asynchronously

Integrating CMC in educational settings could support the learners' actively engaging in developing their communicative competence (Bekar & Christiansen, 2018). However, this study

reviews ACMC platforms instead of studying the interaction and communication exchange in SCMS platforms. The studies examined social interaction mainly using ACMC web 2.0 for discussing and texting and social media networks such as Facebook and WeChat (See Table 2). However, some studies used traditional technology such as PowerPoint and online modules. Although ACMC is known for spending more time compared to SCMC, this feature supports the learner in following multiple patterns and discussions (Hewitt, 2005).

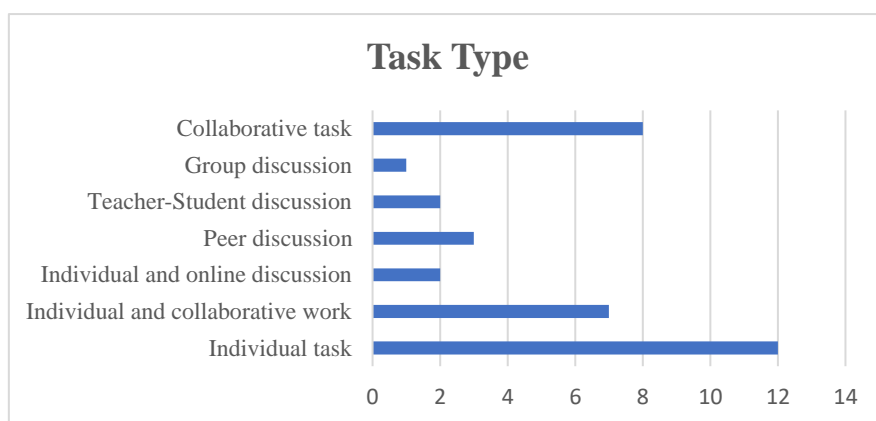


Figure 4. Task types

The ACMC platforms used in the reviewed studies have facilitated the learners' tasks (see Figure 3). Here are the task types: (1) individual task (Cunningham, 2019; ; Ghosn-Chelala & Al-Chibani, 2018; Hirvela, 2006; Ismailov & Ono, 2021; Jiang & Zhang, 2020; Kim et al., 2021; Saricaoglu & Bilki, 2021; Shabbir et al., 2021; Sleeter et al., 2020; Strobl, 2014; Wilson & Czik, 2016), (2) individual and collaborative work (Angelaina & Jimoyiannis, 2012; Jimoyiannis et al., 2013; Lee et al., 2016; Li & Yu, 2020; Nykopp et al., 2019; Pifarré et al., 2014; Sauro & Sundmark, 2019), (3) individual work and online discussion (Annamalai, 2017), (4) peer discussion (Boyer et al., 2006; Järvelä & Häkkinen, 2002; Zhu, 2006), (5) teacher-student discussion (Dippold, 2009; Hew, 2015), (6) group discussion (Rodriguez, 2014; Stoten et al., 2018), and (7) collaborative task (Abe, 2021; Absalom & Léger, 2011; Cheng & Lei, 2021; Hsu, 2020; Jimoyiannis & Roussinos, 2017; Kılıçkaya, 2020; Li et al., 2014; Schenker, 2021).

Table 2. The asynchronous communication used

| No. | First Author | Year | ACMC Communication |
|-----|---------------|------|---|
| 1. | Järvelä | 2002 | Web |
| 2. | Hirvela | 2006 | Listserv |
| 3. | Zhu | 2006 | The email system, the online discussion tool, and the course website |
| 4. | Boyer | 2006 | Blackboard course Web site |
| 5. | Dippold | 2009 | Blog |
| 6. | Absalom | 2011 | Learning management system (LMS) |
| 7. | Angelaina | 2012 | Blog |
| 8. | Jimoyiannis | 2013 | Blog |
| 9. | Rodriguez | 2014 | Blackboard |
| 10. | Li | 2014 | Wiki-based Collaborative Process Writing Pedagogy |
| 11. | Pifarré | 2014 | WordPress |
| 12. | Denton | 2014 | Screenr |
| 13. | Strobl | 2015 | Online module |
| 14. | Hew | 2015 | Blackboard |
| 15. | Wilson | 2016 | Gdocs and PEGWriting® |
| 16. | Lee | 2016 | Stories available at the center for Global Development website (http://www.cgdev.org/page/case-studies), and create a narrated PowerPoint presentation |
| 17. | Annamalai | 2017 | Facebook |
| 18. | Jimoyiannis | 2017 | Wikis |
| 19. | Stoten | 2018 | Online discussion boards |
| 20. | Ghosn-Chelala | 2018 | Screen casting software Jing® |
| 21. | Sauro | 2019 | Blogs or AO3 |
| 22. | Nykopp | 2019 | Google Drive |
| 23. | Cunningham | 2019 | TechSmith's SnagIt Screencasting softwar, Microsoft Word |
| 24. | Kılıçkaya | 2020 | Comic Life |
| 25. | Sleeter | 2020 | Drupal |
| 26. | Hsu | 2020 | Google Docs |
| 27. | Jiang | 2020 | WeChat |
| 28. | Li | 2020 | Archival discussion boards |
| 29. | Abe | 2021 | Quip |
| 30. | Schenker | 2021 | proboards.com |
| 31. | Cheng | 2021 | Blogger, WordPress, Weebly |
| 32. | Kim | 2021 | A wiki-platform |
| 33. | Shabbir | 2021 | WordPress |
| 34. | Ismailov | 2021 | Microsoft Teams app chat and email facility |
| 35. | Saricaoglu | 2021 | Criterion |

Ogunyemi et al. (2022) identified four learner engagement patterns in forum discussions and task accomplishment: behavioral, cognitive, social, and affective. The present study found that most student engagement studies have shown a similar pattern. Overall, 30 studies investigate the pattern of

students' engagement relating to behavioral, affective, and emotional aspects. Meanwhile, five studies examine only the behavioral and cognitive elements.

3.2.1 Individual work

All the reviewed studies represent the component of combined engagement. For example, in their study, Strobl (2014) and Cunningham (2019) investigate the students' engagement in individual tasks. While Strobl (2014) uses a constructivist design to guide the students, which refers to the combined exercise and feedback during the course, Cunningham (2019) uses interpersonal meaning in evaluating the language and the language resources to manage relational positioning. Their students (Cunningham, 2019; Strobl, 2014) show their cognitive engagement by investing in and valuing the learning to accomplish the challenging task. Moreover, in completing the individual work, both studies' findings show self-directed academic behaviors of the students. Students were following the classroom rules (Strobl, 2014) and had autonomy participation (Cunningham, 2019). Strobl (2014) found that emotional engagement in the classroom, supported by individual tasks and feedback, can help students achieve different learning goals for writing.

3.2.2 Individual and collaborative work

In their mixed method studies, Jimoyiannis et al. (2013) found that the students' engagement was found while students had blogging activities (ACMC) and participated in authentic learning and project-based learning. Cognitive engagement is mainly observed when the students work with peers on a task that has personal meaning (Fredricks et al., 2004). When the teachers provide instructional support and press the students to understand, their cognitive engagement and motivation will be increased. Therefore, while Jimoyiannis et al. (2013) and Li and Yu (2020) concluded that the students were engaged in critical thinking during the discussion, Jimoyiannis et al. (2013) also concluded that students were engaged in synthesizing, elaborating, and explaining their ideas into their writing of their blog. It was also found that Jimoyiannis et al. (2013) and Li and Yu (2020) also measured student behavior engagement through observation. Students' participation in online course ACMC dynamics was demonstrated through discussion, collaboration, and questioning (Jimoyiannis et al., 2013; Li & Yu, 2020), but emotional engagement was found lacking in Jimoyiannis et al. (2013). Future research should use multiple data sources.

3.2.3 Individual work and online discussion

Some studies focused on the interaction among students and instructors and between students in an ACMC discussion to help the students add to the quality of their writing. In the study by Annamalai (2017), students completed their essays and interacted with others to add quality and make changes based on the comments given by peers and teachers. This behavioral engagement was shown in the students' participation and completion of tasks. Moreover, the facilitative component of ACMC supports the students to interact, collaborate, and construct their knowledge without any temporal and spatial constraints (Annamalai, 2017). Also, the student's cognitive engagement in Annamalai's (2017) study showed the use of emotive language and imaginary ideas in their writing. Though the elements of Boom's taxonomy become the concern of Annamalai's study, the higher order and critical thinking were minor as narrative writing does not need both skills.

3.2.4 Peer discussion

For example, Järvelä and Häkkinen (2002) evaluate the learners' engagement in web-based writing discussion. They have examined the quality web-based discussion from the behavioral, affective, and emotional aspects. Students showed their effort by involving in learning activities and task completion. From the aspect of behavior, students demonstrate their cooperative participation, autonomy participation, and self-directed academic behavior (Fredricks et al., 2004). Meanwhile, in the cognitive aspect, the students negotiate and have a higher understanding during the discussion. When the

students discuss the issue, they must describe the experiences to themselves and others to process and have cognitive growth and perspectives. In the emotional aspect, the students showed their interest in doing the activities by actively engaging in discussion with several levels of discussion. Participating in web-based discussions enhances cognitive and behavioral engagement among students. A well-balanced instructor's message and specific structure and evaluation criteria in ACMC discussions positively influence students' engagement in learning, as found in Järvelä and Häkkinen's study.

3.2.5 Teacher-Student discussion

ACMC has recently been used as a tool for collaboration, self-reflection, and peer feedback. For instance, Dippold (2009) used blogs to support the students in reflecting on topical issues and feedback from experienced tutors. The cognitive engagement was shown from the students' cognitive engagement, including completing the task requirement. On the other hand, students not often used blog for educational purposes. They mostly used it for personal use. The use of ACMC in school for supporting peer feedback and blog writing actively, for productive purposes, has been shown to develop the agency of the students (on-task behavior). Moreover, Dippold's (2009) findings also showed that ACMC positively impacted class cohesion and interaction. It was shown from students' expression of enjoyment of the usefulness of the blogs in learning.

3.2.6 Group discussion

To examine how students learn, Rodriguez (2014) and Stoten et al. (2018) use social constructivism to see the students' development of personal meaning when they interact in online discussions. Both Rodriguez (2014) and Stoten et al. (2018) found all three aspects of engagement: behavior, cognition, and emotion. The key determinants of behavior engagement in both studies conducted by Rodriguez (2014) and Stoten et al. (2018) were the value associated with individual action in the activities of group discussion. The engagement among the students supports their sense of community and co-creation of knowledge (Stoten et al., 2018). While the students' cognitive engagement of Stoten et al. (2018) was recognized from the improved understanding of students, Rodriguez's (2014) study found that practical inquiry models, such as ACMC, positively influence students' cognitive engagement and emotional engagement, supporting academic progress and rewarding emotional context.

3.2.7 Collaborative task and group discussion

In order to know how students engaged in online asynchronous interaction, both chat-based discussions and writing contributions for essays, Abe (2021) used CA to examine the interactional practice. The behavior engagement found in Abe's study included online interaction and task completion for large-group communication. After the essay's final task was completed, it was not necessary to have an online discussion. So, when they had a discussion, spontaneous behavior was observed. Moreover, students also showed effort in editing behaviors in the writing contribution. Then, the study also reported critical or cognitive engagement during essay-making. The students were engaged in task-prefatory talk to discuss what to write. Also, their expression of unsatisfactory performance and their request for other members to revise their writing was shown emotional engagement. Students in ACMC display negative self-assessments and apologize for their actions, but their posts are less responsive due to the chat-based discussion's sporadic nature, requiring more interactional methods.

3.3 Indicators that facilitate learners' engagement in writing asynchronously

To define engagement indicators, this reviewed study focuses on participation and interaction (Ogunyemi et al., 2022). Almost all the findings of the reviewed studies show that the indicators for facilitating the learners' engagement are process-related and outcome-based. Only a study that is input based. The indicators regarding process type are active participation (n=27), learning materials (n=8),

and instructors' feedback (n=9). While the type of outcome indicator is performance (n=24), the type of input indicator is learners' personality (n=1).

The reviewed studies assessed learners' personality traits, including their ability and writing attitude. However, the study only focused on skill assessment. The study by Li et al. (2014) found that students' writing ability was not significantly improved due to limited practice time, low motivation, and complex features of the Joyous writing community. However, Li et al. found that peer factors and collaborative practice improved students' cognitive support and academic achievements. Further studies should consider improved features and adequate technology support.

The process indicators type has occurred frequently in the reviewed studies. The active participation of the students is mostly related to their interactivity with peers, instructors, and learning materials. The interactions of the students and peers manifest in a discussion post or forum by commenting, reading each post on the blog, and discussing for working the completion of the work. For example, Kim et al. (2021) found that when the learners prepare some comments, they are also required to prepare their cognitive effort. Learners need to read thoughtfully and understand the topic that is new to them. At the same time, it was beneficial for them as they also learned about others' writing styles and rhetorical strategies for writing (Kim et al., 2021). Also, receiving feedback also make students aware of their strength and weaknesses in writing. Through feedback, learners can recognize the gap between their current understanding or performance to the desired goal (Ghosn-Chelala & Al-Chibani, 2018). Moreover, by integrating the ACMC of Jing (screencasting) as the third part of support, they found that it could support the instructors to provide detailed commentary and explanation compared to usual written feedback. The instructors' comment was more interactive, and learners found them to be helpful when they could repeatedly view the comment. Moreover, providing feedback using third-party support, allow the instructors to devote more to comment on the content, and it is easier and more motivating to be used for learners and promotes learners' independence (Wilson & Czik, 2016).

Output indicators refer to the direct outcome of the learning process, and it could be in the form of quizzes, exercises, and assignments, depending on the course (Ogunyemi et al., 2022). In this study, we found that most reviewed studies give the students writing assignments that they need to possess relevant topic knowledge. For instance, Absalom and Léger (2011) provide assignment tasks aimed at building and deepening students' linguistic and cultural competencies. The students need to write reflective learning journals or diaries thinking about their learning process. It was found that reflective tasks could facilitate the learners' working habits and provide a space for them to use the language for regular writing. Moreover, the facilitative technology aspect in the ACMC gives a strong forced effect to complete their weekly entries in time (Cheng & Lei, 2021).

4. CONCLUSION

This systematic review illustrates that learners' engagement in ACMC is a topic that has become the attention of various studies. ACMC tools become communication and learning tools in face-to-face, as well as hybrid and online settings for all age groups and across the circular area. We found that the most reviewed studies are qualitative studies. Qualitative was mostly chosen as it could enable the researchers to gather the data without disrupting learning and effective for studying learners' engagement in the activity level. Therefore, we believe that future research should broaden the methodological methods used to investigate the issue of learners' engagement in writing asynchronously.

Moreover, ACMC tools mostly support the alternate method for supporting the learners in academic discussion. The discussion offers ways for learners to learn through interactions among peers and instructors. Also, the increased frequency, duration, and quality of communication between teachers and learners could lead to academic success. ACMC discussion required more amount of time for the learners to read, write, and comprehend the task that they need to develop, post, and read a text-based communication. Although so, it positively influenced the students deep learning.

The approaches for evaluating learners' engagement in writing asynchronously found in the reviewed studies were behavioral, emotional, and cognitive engagement. These indicators help to monitor the students' success and who need additional help to achieve their learning goals. A few reviewed papers found that the learners' intentions and interest in the course become factors that help them estimate their behavior in an asynchronous learning environment. The activities provided in the course of the reviewed papers lead to the enhancement and comprehension of course knowledge, especially through commenting and assignment completion. Moreover, the learners' involvement in ACMC demonstrates that the learners engage emotionally and cognitively in the course. Meanwhile, the indicators that facilitate learners' engagement in writing asynchronously are input, process, and outcomes. However, input is the only indicator type that rarely becomes a concern in the reviewed study. Therefore, future research might want to consider the indicators to enhance learners' engagement in ACMC.

There are several limitations to this study. First, we only included peer-reviewed journal articles that were indexed in Scopus. Thus, this study did not present other types of academic papers and might offer more important discussions. Future research could be concerned with this issue to deal with these limitations.

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