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Article abstract

This study aimed to systematically compile the activities and applications to be used by instructors to conduct synchronous virtual classrooms effectively. Using specific keywords in various databases we examined the literature to discover the activities and applications associated with effective synchronous virtual classrooms. A total of 70 studies were included in the study, based upon pre-determined criteria. A total of 53 activities and applications for conducting synchronous virtual classrooms effectively were obtained and classified according to Gagné's nine events of instruction (GNEI). These activities and applications were sorted within 11 themes dimensions: technical control, environment control, clarity, introductory activities, technological tools, course materials, interaction, feedback, summarizing, time management, and self-assessment. Synchronous virtual classrooms conducted according to this classification will serve as a guide for instructors to conduct synchronous virtual classrooms effectively.

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Identifying Pedagogical Design and Implementation of Synchronous Virtual Classrooms

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Abstract

This study aimed to systematically compile the activities and applications to be used by instructors to conduct synchronous virtual classrooms effectively. Using specific keywords in various databases we examined the literature to discover the activities and applications associated with effective synchronous virtual classrooms. A total of 70 studies were included in the study, based upon pre-determined criteria. A total of 53 activities and applications for conducting synchronous virtual classrooms effectively were obtained and classified according to Gagné's nine events of instruction (GNEI). These activities and applications were sorted within 11 themes dimensions: technical control, environment control, clarity, introductory activities, technological tools, course materials, interaction, feedback, summarizing, time management, and self-assessment. Synchronous virtual classrooms conducted according to this classification will serve as a guide for instructors to conduct synchronous virtual classrooms effectively.

Keywords: distance education, virtual classroom, synchronous virtual classroom, synchronous course, quality course design, videoconferencing

Identifying Pedagogical Design and Implementation of Synchronous Virtual Classrooms

In recent years, information and communication technology advancements have led to a transformation of distance education. This change has seen distance learning shift from a one-dimensional learning approach, where students interacted independently with learning materials, to a multi-dimensional one. Students now engage with learning materials, instructors, and their peers (Alenezi, 2023; Borel, 2013; Rovai & Downey, 2010). These learning environments have been delivered both synchronously and asynchronously, using the opportunities presented by digital technologies. They are tailored to the specific needs, scope, and structure of the education being delivered (Borel, 2013; Romiszowski, 2004).

Synchronous virtual classrooms are learning environments where instructors and learners come together in an online environment at the same time, communicate with each other through audio and video, and share experiences; teaching activities take place via Internet technologies (Akyurek, 2020; Moallem, 2015; Watts, 2016). Synchronous virtual classrooms have been seen as similar to physical classrooms in many ways (McBrien et al., 2009; Tyrväinen et al., 2021). Physical classrooms for face-to-face learning and virtual synchronous classrooms have both allowed for instant feedback, instructor and peer communication, and guided practice to motivate learners and increase their learning (Yilmaz, 2015). As in a face-to-face classroom environment (Stewart et al., 2011), the structure and use of synchronous virtual classrooms in distance education environments have offered a contextual and interactive learning environment with improved collaboration and communication, convenience, and efficiency (Basaran et al., 2021; Wang, 2005), as well as learner control, personalization, and reduced feeling of isolation (Racheva, 2018). They have also offered opportunities for collaborative or group activities (Chowdhury, 2020; Maanvizhi et al., 2020; Mueller & Strohmeier, 2011), as well as discussion and question-answer sessions (Fasso, 2013). In a well-structured synchronous virtual classroom, instructors encourage learners to change their perspectives, increase their continuous and dynamic interaction, while strengthening teaching, social, and cognitive presences (Choppin et al., 2020; Szeto, 2015).

Synchronous virtual classrooms consist of components with both instructional potential and technical possibilities. They have involved student participation, interaction, as well as many tools and activities such as (a) offering explanations about pedagogical terms, (b) explaining the relationships between different concepts and terms, (c) visualizing the content, and (d) giving and receiving instant feedback (Bouhnik & Carmi, 2012; Green et al., 2010). Planning synchronous virtual classroom activities have addressed educational aspects as well as the sensory, social, and motivational feelings of learners in the target audience (Northey et al., 2015). Activities that attracted learners' attention, enhanced dialogue, and ensured learners' active participation were also important (Alfuqaha, 2013). Synchronous virtual classroom platforms have consisted of interfaces with (a) audio, text, and video participation; (b) whiteboards; (c) material and screen sharing; (d) discussion, question and answer, and surveys; and (e) collaborative group work or research. In addition, these platforms provided an effective and productive learning environment thanks to their assessment applications (Aydın & Yuzer, 2006; Martin et al., 2012).

When the problems in synchronous virtual classrooms were examined in the literature, it was found that instructors experienced problems due to a lack of technological literacy, procedural knowledge, and techno-

pedagogical perspectives, as well as a significant gap in verbal and written communication with students (Lahaie, 2007; Lee, 2018). When examining studies that aimed to solve these problems, general recommendations included using technology based on pedagogy (Bigné et al., 2018; Bouhnik & Carmi, 2012), integrating instructional design elements, including various multimedia elements (Kuo et al., 2014), and using diversified learning methods to conduct synchronous virtual classrooms effectively and efficiently (Alfuqaha, 2013).

This study identified a technical/teaching activity and application framework for the effective delivery of synchronous virtual classrooms. It was anticipated that the framework, which was intended to help fill the current gap in the literature, would form the basis for further research. We expected that the effective and efficient implementation of synchronous virtual classroom environments would (a) reduce the problems of students separated from instructors by time and space, (b) address the issue of students' isolation, and (c) improve the quality of education. In addition, the activities and applications developed in the study were intended to enable instructors to recognise the problems experienced in synchronous virtual classrooms, and to acquire new skills and benefits by combining the pedagogical and technical competences required by these environments. The aim of the study was to identify the activities and applications by which instructors can carry out synchronous virtual classrooms effectively. We reviewed the literature to seek answers to the following research questions:

1. What factors improve the effectiveness of synchronous virtual classrooms?

2. What activities and applications are associated with effective implementation of synchronous virtual classrooms?

Theoretical Framework

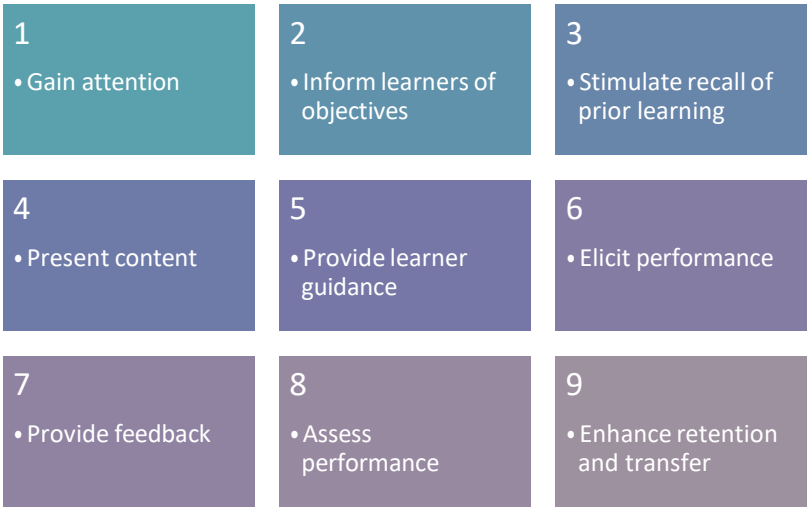
Simonson's equivalency theory emphasized the necessity for appropriate distance education applications to provide equivalent learning experiences for both traditional and online learners (Simonson, 1999). Despite the inherent differences between traditional and distance education processes, this theory emphasized the importance of instructional designs that allowed students to experience equivalent learning experiences, considering the unique characteristics of each learning environment, in order to achieve the expected learning outcomes and goals (Simonson et al., 1999). The importance of synchronous virtual classrooms in providing learning experiences equivalent to traditional education has been considered crucial. Instructors played a key role in transferring instructional activities from traditional settings to synchronous virtual learning environments. Instructors who design synchronous virtual classroom environments have significantly influenced learners' (a) participation levels (Acosta-Tello, 2015), (b) development of positive attitudes towards the class (Bower, 2016), (c) satisfaction, and (d) attainment of efficient learning outcomes. To transform synchronous virtual classrooms into effective teaching environments, instructors integrated the technological features of the platforms where classes were conducted with instructional activities using appropriate methods. Synchronous virtual classroom platforms have generally offer technological features such as (a) content sharing, (b) screen sharing, (c) audio, (d) chat, (e) drawing and annotation tools, (f) polling, (g) instant feedback, and (h) grouping into

small teams (Christopher & Hyder, 2014). When planning, delivering, and evaluating synchronous virtual classrooms, it has been important to consider the technological features available in order to support participation, interaction, and collaboration that aligns with the instructional purpose (Christopher & Hyder, 2014). In addition, Dixon et al. (2019) highlighted the interactive features of virtual classrooms as well as the various communication tools available for synchronous engagement. These tools increased the potential of synchronous virtual classrooms to create interactive and engaging learning environments, further providing an equivalent learning experience regardless of individuals' learning styles.

Gagné's nine events of instruction (GNEI) constituted a teaching framework developed by Robert M. Gagné in the 1960s (Richey, 2000). The nine events were a fundamental part of a foundational instructional theory that has been used for planning instruction for over 30 years and are widely used today as key elements In many instructional design approaches in all levels of instructional design. Gagné stated that the processes in the GNEI do not necessarily follow each other and can be sequenced differently depending on the structure of the course (Gagné et al., 1988; Richey, 2000). Figure 1 illustrates Gagné's nine events of instruction.

Figure 1

Gagné's Nine Events of Instruction



These nine events do not necessarily occur in sequence, though some of them have been used as steps to build up to the introduction of a new topic. The implementation of GNEI in synchronous virtual classrooms has been shown to improve several aspects of teaching and learning. Studies have shown that the integration of GNEI into synchronous virtual classrooms increased cognitive processing, student engagement, and overall instructional effectiveness (McNeill & Fitch, 2022). The model's comprehensive framework and adaptability have made it valuable in designing and delivering effective instruction in virtual educational environments. Synchronous virtual classrooms have often been perceived as an education model with the classroom environment transferred to a digital space. The in-class activities and strategies that instructors have devised based on the GNEI approach positively affected the effectiveness of the teaching offered in these environments (Bickle et al., 2019; Franklin, 2017; Lee et al., 2019).

Method

In this study, a systematic literature review method was used. The systematic literature review included (a) comprehensive screening to select studies that offered a solution to an application-related problem, (b) evaluating the quality of the studies based on pre-determined inclusion and exclusion criteria, (c) determining which studies will be included in the review, and (d) synthesising the findings of the studies included in the review (Kowalczyk & Truluck, 2013). Within this study, published scientific studies on the structure and functioning of synchronous virtual classrooms were systematically reviewed following the steps laid out in the preferred reporting items for systematic reviews and meta-analyses (PRISMA; Moher et al., 2010). PRISMA provided a standard peer-accepted methodology that used a guideline checklist which was strictly followed.

Data Collection

The screening process was completed for this systematic review on October 9, 2022, through the Web of Science, ERIC, Taylor & Francis, ProQuest Theses and Dissertation Database, and Turkey Higher Education Institution Theses and Dissertation database. These databases were preferred because they contained a significant number of studies on education. Studies carried out at higher education level were included in the review. The individual search terms and their combinations are presented below. Search terms as well as search strings were used to conduct the search.

- Synchronous course OR virtual classroom OR synchronous virtual classroom/course OR videoconferencing OR lecturer/tutorial/faculty roles OR quality course OR course design

  AND

- Distance education OR online learning OR e-learning OR open learning

Data Collection and Analysis

Two of this study's authors analyzed the studies included in this systematic review. To ensure inter-rater reliability, the researchers examined each other's analyses. Content analysis method was used for a comprehensive and specific assessment of studies. This method has been widely used for categorizing and comparing text data (Fraenkel &Wallen, 2000). A Microsoft Word form was created to document the title of the research, quality indicators of virtual classrooms, and specific aspects of synchronous virtual classrooms such as (a) structure and functioning, (b) activities and applications, and (c) competences and roles of instructors and students. The form was also used to record the theoretical frameworks and findings of selcted studies.

To begin, full texts of all selected studies were read and related information was entered into the form. Then, codes and categories were created within Microsoft Excel. In the content analysis process, the authors grouped the codes and categories from the 70 studies under examination according to the GNEI framework. These codes and categories, as adapted to the GNEI framework, were presented to four experts in the field for review. Two of the experts each had a PhD in open and distance learning; the other two each had a PhD in computer education and instructional technology. The themes and final version of the activity and applications for effective synchronous virtual classrooms were created in line with the recommendations of

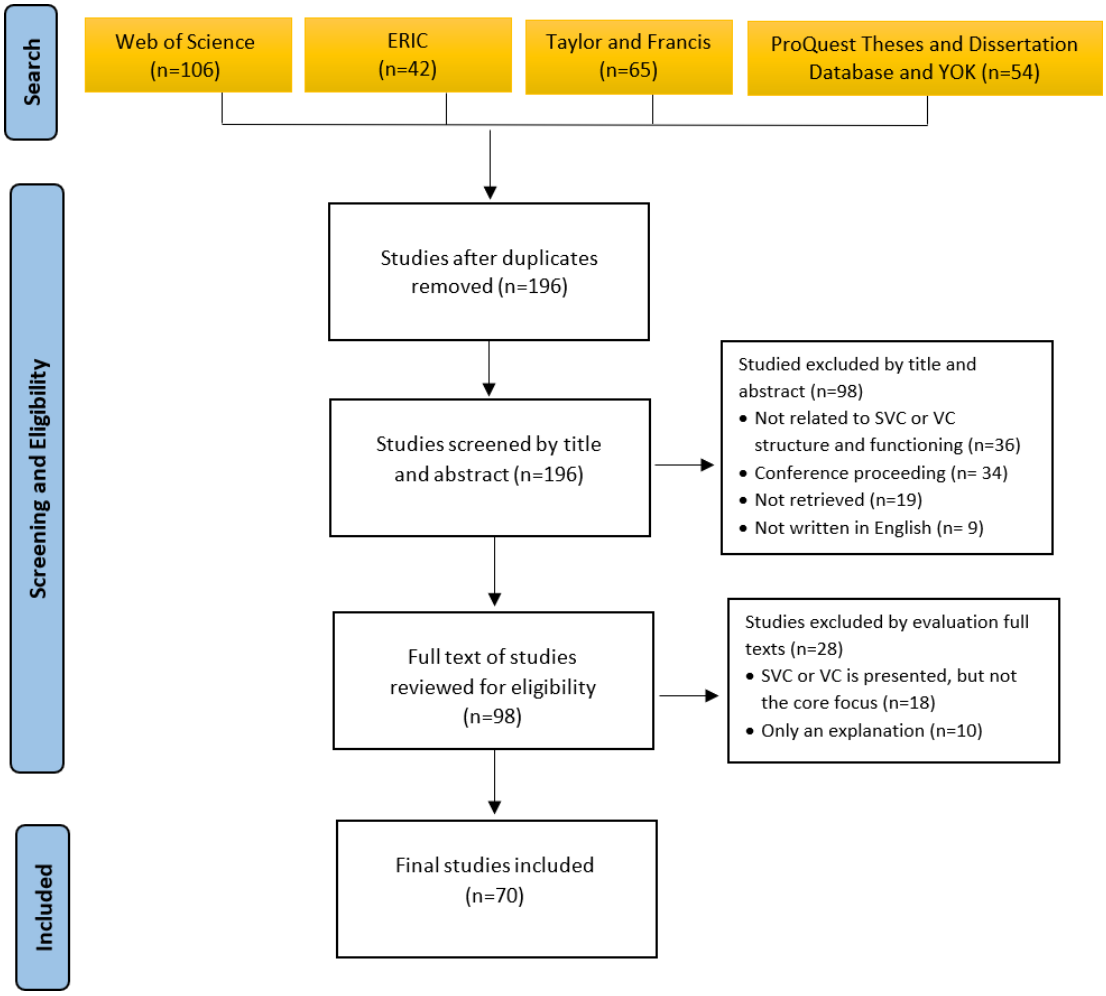
these experts who checked the validity and reliability of the activities and applications drawn from the listerature at this stage.

As shown in Figure 2, 70 studies were examined for systematic review within the content analysis. The following describes how these 70 articles were selected. Five different databases were searched (Web of Science n = 106; ERIC n = 42; Taylor & Francis n = 65; ProQuest Theses and Dissertation Database and Turkey Higher Education Institution Thesis Center n = 54) and total of 267 articles were found. Of these 267 studies, 71 were eliminated because they were duplicates. After reviewing the titles and abstracts, a total of 98 studies were excluded; 36 were not related to the structure and operation of synchronous virtual classrooms, 34 were conference papers, 19 were not accessible, and 9 were not written in English. Another 28 studies were excluded from the study, as 18 did not fully focus on synchronous virtual classrooms or virtual classrooms, and 10 were only descriptive studies with no analysis of activities and applications. As a result, after the processes mentioned above, 70 studies were found to be suitable for examination and were included in the study.

To ensure inter-rater reliability, 20 of these studies were analyzed separately by the researchers; Cohen's kappa coefficient value was found to be 0.79. According to Viera and Garrett (2005) a value between 0.61 and 0.80 is an almost perfect agreement level between the researchers. Two authors analysed the remaining 50 studies after adequate inter-rater reliability was achieved.

Figure 2

Diagram of the Selection Process for Systematic Literature Review



Findings

Factors Related to Effective Synchronous Virtual Classrooms

The studies we reviewed on synchronous virtual classrooms stated that these classrooms can be effective if the design, organization, teaching methods and strategies, and the instructors' and students' motivation are considered as a whole. The factors that were frequently focused on in these studies are summarized in Table 1.

Table 1

Factors Most Frequently Focused on in Studies of Effective Synchronous Virtual Classrooms

Factor	Sample article
Interaction, method, content, success, satisfaction, perception, communication	Kidd and Stamatakis (2006)
Support, interaction, communication, presentation, active participation, technical issues, materials, motivation	Ng (2007)
Technical support, learning activities, materials, pedagogical teaching, method, technical issues, interaction, control, group cohesion, content	Tipton et al. (2011)
Cooperation, interaction, satisfaction	Brodie et al. (2013)
Student opinions, satisfaction, feedback	Sae-Khow (2014)
Cognitive engagement, cognitive effort, motivation, emotional and behavioral engagement	Northey et al. (2015)
Pedagogical perspective, technology integration	Duraku and Hoxha (2020)
Collaboration, interaction, easy access, group discussions, materials	Chowdhury (2020)

When the factors in Table 1 that focus on revealing the effectiveness of synchronous virtual classrooms were examined, it became apparent that there was a general trend from a teacher-centred to a student-centred approach to education (Chowdhury, 2020; Kidd and Stamatakis, 2006; Northey et al., 2015; Tipton et al., 2011). In recent years, with the different technological opportunities offered by synchronous virtual classroom platforms, teaching activities that center on learners in the form of collaboration, group work, interaction, and feedback have become increasingly common. Similarly, it is noteworthy that in recent years, there has been a direct focus on pedagogical perspective, technology integration, and interaction factors with individuals or groups, with almost no focus on content (Chowdhury, 2020; Duraku & Hoxha, 2020; Northey et al. 2015).

Activities and Applications in Effective Virtual Classrooms

To evaluate the experiences and expectations of students and instructors regarding activities and applications in synchronous virtual classrooms, this study conducted a content analysis of 70 scientific studies. The analysis aimed to determine the functioning and structure of synchronous virtual classrooms, as well as the activities and applications that were effective there. The activities and applications from 70 studies were classified according to Gagné's nine events of instruction model. The authors' classification was also presented to field experts for their opinions, and feedback was obtained on its suitability. Field experts recommended dividing the numerous activities and applications from synchronous virtual classrooms into three categories—before lesson, during lesson, and end of lesson. In addition, the field experts stated that the five themes dimensions (i.e., technical control, environment control, technological tools, time management, and self-assessment) obtained from the 70 studies differed from the GNEI model and were specific to synchronous virtual classrooms. Accordingly, technical and environmental control were identified as belonging to the before lesson category, technological tools and time management were

placed in the lesson itself, and self-assessment (since it takes place outside the lesson) was placed in the end of lesson part. The final version of the classification, as approved by the field experts, is presented in Table 2.

Table 2

Categories and Themes Associated with Effective Synchronous Virtual Classrooms

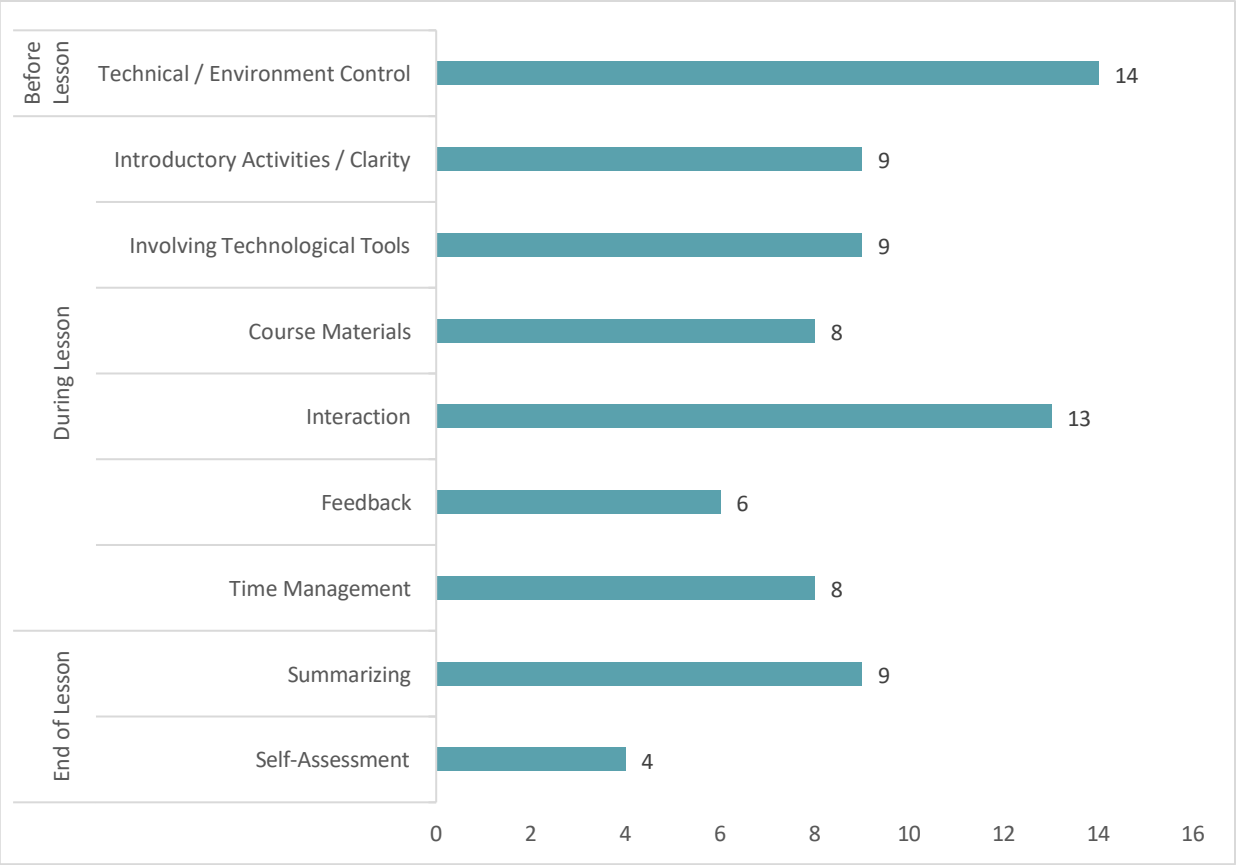
Category	Theme	Number of activities/applications
Before lesson	Technical control	3
	Environment control	3
During lesson	Clarity	4
	Introductory activities	3
	Involving technological tools	5
	Course materials	6
	Interaction	11
	Feedback	4
	Time management	6
End of lesson	Summarizing	5
	Self-assessment	4

The study identified 53 components of effective synchronous virtual classrooms, divided into 11 themes (Appendix).

Gagne's events of gaining attention, informing the learner of the objective, and stimulate recall of prior learning overlapped with the seven activities and applications under the clarity and introductory activities theme in this study. This study includes the presentation of the content and its principles, which are part of the GNEI model. We found 11 activities and applications principles under the two categories of involving technological tools and course materials. Gagne's events of providing learner guidance, eliciting performance, providing feedback, and assessing performance were included under our two categories of interaction and feedback; these two categories contained a total of 15 activities and applications principles. In this study, Gagne's event of enhance retention and transfer overlapped with the four activities and applications principles in the summarizing category. Themes Activities and applications such as technical control, environmental control, time management, and self-assessment, while outside the GNEI model, are inherent in synchronous virtual classrooms, so they were categorized accordingly. Details about themes, activities, and applications for an effective synchronous virtual classroom, derived in this study, are presented in the Appendix. The frequency values of the themes related to effective synchronous virtual classrooms in the literature we reviewed are presented in Figure 3.

Figure 3

Frequency of Themes



The items in the technical control and environment control themes carried out by the instructors before the lesson, consisted of instructors testing the operability of technical equipment and devices before the synchronous virtual classroom, and taking measures to eliminate distracting environmental arrangements and the situations that caused trouble in image transfer to the other party. In our review of the literature, the activities/applications in these themes were found in 14 studies.

In the clarity and introductory activities themes, suggestions included introducing the lesson by drawing attention, motivating the students regarding the lesson, and starting the subject by associating it with the previous lessons. In our review of the literature, the activities/applications in these themes were derived from nine studies.

In the involving technological tools theme, there were recommendations for the use of existing technologies (e.g., whiteboard, text/video chat panel, screen sharing, group/collaboration tools) available on the platforms used in synchronous virtual classrooms. In the literature, activities/applications related to this theme came from nine studies.

The course materials theme included items that should be found in the materials to be used in synchronous virtual classrooms at a basic level; suggestions were made to enrich these basic materials with (a) multimedia elements, (b) practical content-specific materials suitable for the course and the subject, and (c) examples and activities. In the literature, the activities/applications within this theme were derived from eight studies.

The theme of interaction included activities to enable students to participate actively such as methods to increase interaction in synchronous virtual classrooms and encourage students to interact. These included applications and activities to support students' interactions with teachers and peers, as well as group/cooperation, question and answer, and brainstorming activities. In the literature, the activities/applications in this theme came from 13 studies.

Items in the feedback theme suggested that instructors provide effective, regulative, varied, and timely feedback on the type of answers students gave as a result of their active participation in the lesson. In the literature review, the activities/applications in this theme were found in six studies.

The time management theme included items such as (a) planning the duration of synchronous virtual classrooms in advance and ending lessons during this period, (b) carrying out planned activities at appropriate times, (c) presenting activities at short intervals, (d) clarifying the duration of the activities in advance and complying with this time during the lesson, and (e) carrying out and ending all activities within the planned time without prolonging the lesson. The review of the literature produced activities/applications in this theme from eight studies.

At the end of the lesson, within the summarizing theme, the literature suggested activities such as (a) providing a summary of the main points in each topic, (b) including question and answer interactions at the end of the topic, (c) giving information about the topic to be covered in the next lesson, and (d) reminding students about the learning and tasks coming in the next lesson. In our review, the activities/applications in this theme came from nine studies.

The self-assessment theme included the suggestion that instructors improve themselves by examining their own synchronous virtual classroom recordings after the lesson, thereby assessing themselves and recognizing areas for improvement. In the literature, activities/applications related to self-assessment were found in four studies.

Discussion

Synchronous virtual classroom environments have been mentioned in the literature as a strong distance education alternative to face-to-face learning environments (McBrien et al., 2009). For this reason, the structure of synchronous virtual classrooms have often reflected the education-teaching applications found in face-to-face learning (Setiawan & Fauzi, 2022).

In the literature, effective synchronous virtual classrooms differed from face-to-face teaching in terms of technical control, environment control, and technological tools specific to the synchronous virtual

classroom environment. Students and instructors who will participate in the synchronous virtual classroom learning environment are expected to have the skills to use these technologies effectively and smoothly, as well as access to existing technological infrastructure (Ozkok & Bulutlu, 2020). Moreover, instructors should (a) ensure that their cameras and microphones are functioning properly during the technical check, (b) adjust the camera angle to fully capture their face, (c) avoid wearing distracting clothing, (d) ensure adequate background lighting, and (e) remove any distracting elements that may appear in the camera's field of view. However, while the instructors control the technical (LeRoy & Kaufmann, 2022) and environment (Dahmen et al., 2016) before the synchronous virtual class begins, it also is important for the students should ensure they come to the lesson with their technical tools and surroundings ready and on time.

The effective use of synchronous virtual classroom technologies to strengthen interaction and communication in that environment, and ensure students' active participation and social presence, has been a key factor in increasing the efficiency of synchronous virtual lessons (Martin et al., 2012). In fact, Akyurek (2020) emphasised that the effective use of technological tools that support students' active participation in synchronous virtual classroom environments is the most important part of helping students establish strong communication with their peers.

The use of technological tools in accordance with the teaching purposes, and according to the structure and functioning of the course, also support the active use of interaction and feedback in the educational processes inherent in synchronous virtual classroom environments (Cao et al., 2009). Similarly, Johnson et al. (2015) emphasized that a regular and efficient interaction is very important in obtaining the desired learning outcomes in an online learning environment.

It is important to provide opportunities for students to interact directly with learning materials so that technologies that support students' active participation can be used effectively in synchronous virtual classroom environments (Cankaya & Durak, 2020). When synchronous virtual classrooms were examined in general, the lessons were generally taught through at least one material object (e.g. a .pdf, presentation, video). For this reason, while preparing course materials, instructors should consider students' needs, learning levels, their ability to put the skills they have learned into practice, and their satisfaction with the learning process (Stewart et al., 2011).

The literature on synchronous virtual classroom environments has emphasized the importance of instructor's lessons with a summary. The most memorable points in a narrative are the ones conveyed in the introduction and closing, so in synchronous virtual classrooms, a good summary has been shown to be very important for students' permanent learning (Bower, 2016).

For students to benefit from synchronous virtual classrooms, instructors should pay attention to time management (Acosta-Tello, 2015; Dos, 2014). In our review, instructors stated that one of the problems they experienced in synchronous virtual classrooms, which highlighted its importance. As Koppelman and Vranken (2008) stated, it was very important to have an appropriate pedagogical approach and to have a tool that supported this approach in the organization of synchronous virtual classrooms. Managing time in synchronous virtual classrooms and being able to start and end the classroom activities at the appropriate

times, both depend on instructors' self-assessment, which is achieved through their watching their synchronous virtual classrooms after the fact (White, 2019).

Conclusion and Implications

The purpose of this study was to identify the activities and applications principles to be used by instructors in effective synchronous virtual classrooms. Within the study, a technical/instructional activity and application framework for effectively carrying out synchronous virtual classrooms was revealed. This framework, based on Gagné's GNEI model, consisted of 53 activities and applications under 11 themes—technical and environment control, clarity, introductory activities, technological tools, course materials, interaction, feedback, summarizing, time management, and self-assessment. The 53 activities and applications within the framework were classified and presented to cover all aspects of a synchronous virtual classroom (see Appendix).

This framework can serve as a guide for instructors who conduct synchronous virtual classrooms. Doing so will reduce the negative aspects of the temporal and spatial separation of students and instructors, including the feelings of isolation students experience, and will positively increase the quality of online education. The framework can also fill the existing gap in the literature on this subject, and form the basis for further studies. Using this framework as a guide or rubric to conduct effective synchronous virtual classrooms can also form the basis for further quantitative and mixed study designs.

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Appendix

Themes and Activities For Effective Synchronous Virtual Classrooms

These 11 themes and 53 activities and applications for effective synchronous virtual classrooms are organized by three categories: before the lesson, during the lesson, and at the end of the lesson.

Before Lesson

Technical Control

1. Keep the Web cam on during the lesson
2. Keep the microphone on during the lesson
3. Keep the screen camera at eye level, adjusting the entire face to be visible

Environmental Control

4. Choose appropriate clothes for during the lesson
5. Eliminate distractions in the image background
6. Adjust the appropriate backlight

During Lesson

Clarity

7. Specify the purpose of the lesson
8. Specify the purpose of in-class activities
9. Specify the rules of classroom activities
10. Specify expectations from in-class activities

Introductory Activities

11. Draw attention (e.g., present pictures, videos, cases, anecdotes)
12. Motivate students
13. Relate to prior learning

Involving Technological Tools

14. Use the whiteboard app
15. Use the text chat panel
16. Use the video chat feature
17. Use the desktop/screen sharing feature
18. Use the group/collaboration interface

Course Materials

19. Sort teaching materials in a suitable and consistent manner with the flow of presentation
20. Support teaching materials with various multimedia (e.g., picture, video, sound, graphic animation) tools in accordance with the subject being taught
21. Present examples suitable for the subject content
22. Support with real-life examples suitable for the subject content
23. Make practice sessions/demonstrations in lessons on subjects that require application

Interaction

24. Incorporate interactive activities
25. Encourage student participation in learning activities
26. Encourage student audio/video participation
27. Support active learning with learning activities
28. Organize question and answer sessions (with students or with the instructor)
29. Encourage students to participate in the lesson
30. Give a voice to all students who want to have a voice
31. Use group/collaboration activities
32. Ensure student-teacher interaction
33. Ensure student-student interaction
34. Ensure student-content interaction

Feedback

35. Provide timely feedback to students' answers to questions
36. Provide appropriate feedback to students' answers to questions
37. Use different types of feedback according to learning styles
38. Provide feedback that reinforces learning

Time Management

39. Organize course activities in advance according to the number of students and the duration of the course
40. Include various activities every five to eight minutes during the lesson
41. Adjust the duration of the activities that students do among themselves or with their peers
42. Summarize the subject when moving away from the focus of the subject during activities
43. Terminate organized events in a timely manner
44. Ensure the lesson is not less than 35 minutes and not more than 120 minutes

End of Lesson

Summarizing

45. Summarize the main points of the topic at the end of each session
46. Provide question and answer session at the end of the lesson (15–20 minutes)
47. Inform students about the topic that will be taught in the next week
48. Remind students about the tasks that will be taught in the next week
49. Make a closing speech at the end of the lesson

Self-Assessment

50. Be familiar with the synchronous virtual classroom system and use its technical/pedagogical features
51. Evaluate time management

52. Evaluate the frequency and effectiveness of interaction and feedback with students during the lesson

53. Share experience and self-assessment by meeting with other distance instructors