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Abstract

This study aimed to investigate how face-to-face cooperative learning and CALL are integrated when teaching through face-to-face Computer Assisted Cooperative Learning (CACL). Although CACL is not a new term and the integration of technology with face-to-face instruction has been discussed in previous literature, there is no clear evidence for a model that can be used as a guide in the process of integrating the two methods, namely face-to-face cooperative learning and CALL, in teaching through CACL. This study employed the qualitative research design, and semi-structured interviews and observation were carried out to investigate the process of integration in face-to-face CACL during teaching reading skills. The study used Neumeier (2005) model as a theoretical framework; however, the findings showed that this model needs to be adapted to suit teaching through face-to-face CACL. The main adaptation is in the first two parameters because face-to-face CACL is considered one mode. It is the leading mode, mainly because face-to-face cooperative learning and CALL are used simultaneously during teaching, making it difficult to count the time of each mode separately. The study concluded with a model for integration in face-to-face CACL, which can be adapted for teaching through synchronous or asynchronous CACL. Also, the paper provided implications for teachers and educators interested in the design and implementation of CACL.

Keywords: Computer Assisted Cooperative Learning; face-to-face cooperative learning; CALL; integration model

Introduction

The field of education is moving towards integrating technology to the field of education as it proved to be effective in teaching [1] [2]. Integration of technology into the field of education should focus on providing learners with authentic and meaningful learning experiences [3] [4]. Technology integration into learning is more effective when students understand how to use technology to support their learning, which requires focusing on the content to be presented to students [5] [6] [7].

However, teachers and educators still need to understand and practice the effective integration of technology in teaching to maximize the benefit to students [8] [9]. That is, the term "integration" is used in different studies to refer to the blending of face-to-face instruction with technology [10] [11] [12] [9]. One of the methods of teaching that integrates face-to-face instruction with CALL is Computer Assisted Cooperative Learning (CACL). Many scholars have tried to utilize the advantages of CALL and cooperative learning under the term CACL, which started in the field of education in the 1980s like the studies of [13] [14] [15] [16]. These studies showed that CACL is effective in the process of teaching. In this method of teaching, CALL and cooperative learning instructions have complementary advantages for students. That is, students can do different exercises easily on the computer, and they can discuss the lesson with each other [13]. Moreover, using CACL instruction is effective in teaching reading skills, taking into consideration that oral interaction among students helps them to support each other learning [13] [17].

Regarding the integration of cooperative learning and CALL instruction in CACL, Johnson and Johnson [13] stated that good integration planning leads to effective teaching. They recommended the implementation of the principles of cooperative learning in CACL. Also, Brush [18] stated that in integrating cooperative learning with a CALL instruction, the teacher should focus on different elements during the process of teaching, including the balance between the individual tasks and the group tasks, the level of students which can be homogenous or heterogeneous according to the need of the teacher, and the teacher guidance to implement cooperative learning with CALL instruction. However, the integration process in face-to-face CACL in learning activities is still vague

in previous literature. That is, CACL has two elements, namely cooperative learning and CALL. Planning the integration of these two modes in teaching has not been based on an explicit model in previous literature. In other words, there is no clear evidence for a model that explains the implementation of face-to-face CACL activities. Investigation of the integration in CACL will help teachers and scholars in the implementation process by focusing on the aspects of each mode to meet teaching goals. Therefore, the current study investigates the integration of face-to-face cooperative learning and CALL in face-to-face CACL to develop a model that can be used as a guide for scholars and educators interested in teaching, describing, or designing CACL activities. Accordingly, this study aims to answer the following question:

How are face-to-face instruction and CALL integrated with CACL to teach reading skills?

Literature Review

The idea of integrating technology into education requires more than the facilities and hardware parts of the technology to be used in the process of teaching [19]. Teachers need to focus on other factors besides the facilities to provide a successful learning experience for students through giving suitable content, support, training, technology skills, and clear learning objectives. The success of integration is even related to the process of teaching itself [20] [21] [4]; however, such integration might be failed due to complexity [22] [23], when the process of teaching is not clear for the teacher and the students.

Many studies have focused on the effective integration in CACL. The study of Heba and Nouby [24] showed that the integration of cooperative learning with CALL instruction makes the process of teaching more effective. However, the authors stated that integrating cooperative learning with technology requires more focus on "delivery methods that specifically focus on the role of the adopted instructional design (such as ADDIE), participants' characteristics, the process of paring/grouping, face-to-face student-student interaction and student-tutor interaction, the appropriate balance between e-learning and face-to-face approaches, and peer-tutoring" [24].

Another study that has focused on providing a model for online collaborative teaching is by Persico et al. [25], who developed a model to monitor online collaborative activities, and this model has four dimensions. The first one is the participative dimension; the second dimension is the social dimension; the third dimension is the cognitive dimension, and the fourth dimension is the teaching dimension. So, this collaborative system focused on group work or collaborative work, and it is clear that behaviourist CALL is a main feature in the system because the system sores the activities of the students for the reference of the teacher and the students. Also, it focused more on the interaction among students and with the teacher.

The above two studies have focused on the integration in CACL even though the studies have also used other terms such as CSCL. The two studies showed that integrating cooperative learning with CALL instruction is more effective when it is planned, yet there is no clear evidence for a model that explains how cooperative learning activities are carried out with CALL instruction.

One of the prominent works that investigated the integration of face-to-face instruction and technology is Neumeier [10]. In her work, Neumeier came up with a model that describes the successful integration of face-to-face instruction and technology. This model has six parameters, and each parameter has descriptors. She has explained the integration of face-to-face and technology, and she has covered different points for the design or description of the activities and the teaching method. What is effective in this model is the focus on the integration of the two modes, namely face-to-face interaction and CALL instruction. Although the model can be used to describe the integration of technology with collaborative activities, it did not account for cooperative learning activities based on social interdependence theory and has different strategies to be implemented in the process of teaching along with the five principles of cooperative learning. Previous studies, such as [13] [26, 27] [17], investigated the effectiveness of CACL in the process of teaching, but they did not investigate the integration of face-to-face instruction and CALL under the term face-to-face CACL. Therefore, the current study uses Neumeier's [10] model and adapts it to suit face-to-face CACL, and the findings of the study will provide a model that suits the integration in face-to-face CACL.

To sum up, integrating technology into the field of education is effective in the process of teaching, and the focus should be shifted to the effective integration of technology in the process of teaching. Face-to-face CACL integrates face-to-face cooperative learning and CALL; however, previous studies did not provide a clear model for the process of integration in face-to-face CACL in teaching, especially for EFL/ESL students. The investigation of the integration in face-to-face CACL is essential to make teaching more effective and provide educators with the optimal integration of the two modes.

Theoretical Framework: Integration of Face-to-Face instruction and CALL

Until writing this study, there is no evidence for a clear model that has explained the process of integration in face-to-face CACL. One of the prominent models that have explained the integration of face-to-face instruction with CALL is by Neumeier [10]. This framework looks at how to integrate technology with face-to-face instruction. The main idea of this framework is to investigate the integration of face-to-face instruction and technology. Therefore, this model can be adapted and modified to explain the process of integrating face-to-face cooperative learning and CALL. Thus, Neumeier [10] stated that this model is used to investigate the "combination of face-to-face (F2F) and computer assisted learning (CAL) in a single teaching and learning environment". This shows that the framework can be applied to face-to-face CACL because it has two components: face-to-face instruction and CALL. However, the missing element is cooperative learning, which requires implementing cooperative learning principles and cooperative learning strategies. Therefore, this framework will be used in this study. It will be adapted and modified according to the findings from the integration process according to the students' experiences.

Neumeier's [10] framework has six parameters. These parameters can be used to investigate the integration of face-to-face instruction and CALL. The first parameter is the mode which aims to investigate the leading mode in the process of teaching. The leading mode can be face-to-face interaction, and CALL is the secondary mode or vice versa. This parameter also investigates the distribution of modes which refers to the time spent in each mode. Another descriptor of this parameter is the choice of the modes which are related to the components of both face-to-face instruction and CALL.

The second parameter is the model of integration which has two descriptors. The first one is the sequencing of modes which refers to how the two modes (face-to-face instruction and CALL) are sequenced. According to Neumeier [10], the two modes can overlap each other. She argued that sequencing modes aim to reduce the transactional distance, which can be achieved through collaborative activities. The second descriptor is the level of integration, which refers to the flexibility of using modes. Some modes can be obligatory as face-to-face instruction, and others are optional, like some CALL features.

The third parameter is the distribution of learning content, objectives, and assignment of purpose, which refers to the use of the two modes in teaching the content to the students. The teaching of the content can be parallel or isolated. It can be parallel in the sense that the teacher teaches a particular skill face-to-face and in the lab. Also, it can be isolated in the sense that the teacher can introduce the skill face-to-face, but he does not use the lab to teach that skill. Another point related to this parameter is the objectives of the content, which is the aim of teaching or the teaching course.

The fourth parameter is the teaching method, which depends on the teacher to choose an appropriate method of teaching. This parameter has different forms, such as using collaborative learning and a communicative approach. Still, it did not give an account for cooperative learning where the teacher has to implement the five principles of cooperative learning.

The fifth parameter is the involvement of learning subjects which has different descriptors. The first one is interactional patterns. The second descriptor is the roles of the learners and the teacher. The third descriptor is the level of learner autonomy, which refers to understanding the process of learning through face-to-face instruction and CALL.

The sixth parameter is the location which refers to the place of the class. It is important to offer the students a place for learning which is suitable for them. This also depends on the needs of the teacher, so the face-to-face instruction can be in a classroom, and the CALL activities can be at home. Also, the teacher can use CALL in a lab in the school or the university.

Therefore, this study will investigate these parameters in face-to-face CACL setting as modifications might appear to suit this teaching method. Changes will be made according to the data the researchers will collect from participants to come out with a new model that explains the integration of face-to-face CACL activities.

Methodology

Research Design

This study employed a qualitative approach design as the data were collected through semi-structured interviews and observations [28]. This design is suitable for the study because the researchers needed to describe the process of integration in face-to-face CACL. This helps to get an in-depth understanding of the teaching process and learning activities in the class. Moreover, although the study used Neumeier's [10] model as the theoretical framework, it is clear that face-to-face CACL is different from the description of the model. Therefore, it was not clear to the researchers how face-to-face cooperative learning and CALL instruction is integrated with CACL. This required collecting data from participants so that the researcher could clarify what is different in the current study from the description available in [10].

Participants

The current study used purposive sampling because the participants were selected according to their active participation inside the classroom, their ability to discuss ideas with their teacher and classmates, and their educational level [28]. This will help to get an in-depth discussion with them since they can express their ideas and elaborate on their opinions during the interviews. Also, the different levels of education help to get an idea during the interviews from a different perspective instead of focusing on one education group of students. Accordingly, background information of the five participants, who volunteer to participate in the study, is shown in Table 1 below.

TABLE1. Students' background information

No.	Stage of study	Gender	University	Major
1	Postgraduates	M	Uniza	pharmacology
2		M	Limkokwing	MBA
3		M	UKM	Molecular Biology
4		M	UM	Architecture
5	Undergraduates	M	APU	Telecommunication Engineering
6		M	UTeM	Software Engineering
7		M	UPM	BA

In terms of the teacher, he is 26 years old, and he holds a bachelor's degree in English Language Studies. Also, he has CELTA certificate and is expert in teaching English with technology to EFL learners.

Process

The researchers first designed a website in order to teaching reading skills through face-to-face CACL. The design of the website followed ADDIE model. This model has five steps, namely Analysis, Design, Development, Implementation, and Evaluation. The analysis was for finding the needed reading skills to be studied by the students, the Design was for selecting the materials, the Development was for creating the website, the Implementation was for teaching, and the Evaluation was for the outcomes of the implementation.

The process of teaching was through the implementation of the five principles of cooperative learning, namely positive interdependence, promotive interaction, individual responsibility, social skills, and group processing. Also, the teaching used Students-Team Achievement Divisions (STAD), which included introducing the skills, group exercises, individual exercises, and rewarding the top team. The process of teaching is shown in Figure 1 below.
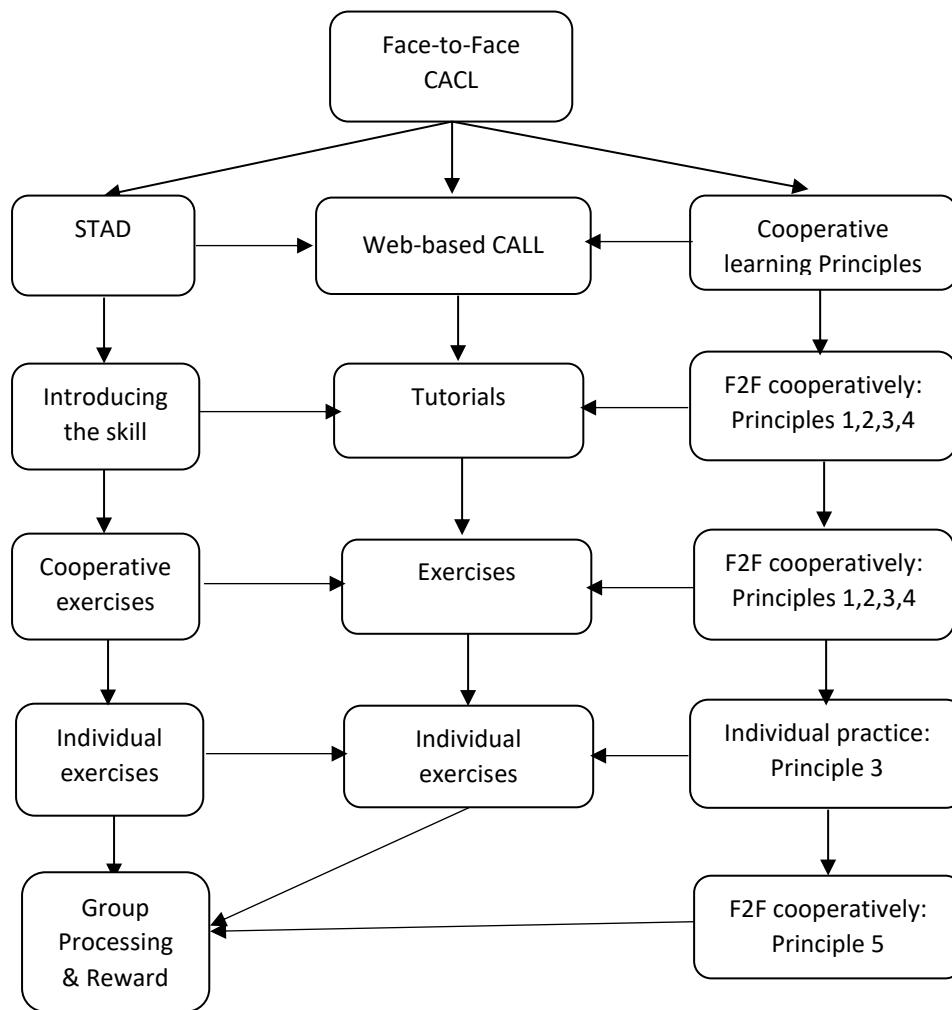
Figure 1. Teaching reading using face-to-face CACL and STAD

Data Collection

The data was collected through semi-structured interviews with five participants and the teacher. Also, the researchers have collected data through observation. That is, the first author has made in-depth interviews with five students until reaching the saturation point, where no new ideas emerged from the interviews (Creswell 2009). The interviews with the students resulted in 51 pages. Also, the interview with the teacher lasted for 42 minutes. In terms of observation data, the first author has attended the 16 lectures of the course as a non-participant observer during which he noted all the activities inside the class as well as the teaching and learning of reading skills through face-to-face CACL.

Data Analysis

The semi-structured interviews were carried out in Arabic and English according to the request of the participants to give them a chance to express themselves well. After that, all the interviews were transcribed, and the interviews in Arabic were translated into English. All the interviews were sent back to the participants to revise and modify them according to their convenience. All the participants responded that the interviews are identical to their answers in the interviews. After that, all the interviews were decoded and categorized into themes (Creswell 2009). The observation data is used for triangulation to support the themes that appeared in the interviews. To ensure the trustworthiness of the data, member checking was utilised so that the data conveys the participants' ideas, and the three researchers have revised the themes together, which is another method to ensure the trustworthiness of the data.

Findings

This study aimed at investigating the process of integrating face-to-face cooperative learning and CALL and used the model of Neumeier (2005) as a theoretical framework. This model has six parameters, and there are descriptors for every parameter. This model describes the integration of face-to-face instruction and CALL. Moreover, the situation of face-to-face CACL is different since there are cooperative learning principles and cooperative learning strategies that should be implemented in the classroom. Therefore, this question will investigate how face-to-face cooperative learning and CALL are integrated taking into consideration the six parameters as well as cooperative learning principles and STAD strategy principles. The analysis will follow the parameters of Neumeier's model, and the findings will be described according to the experience of students in studying reading skills through face-to-face CACL.

Mode

The first parameter is the mode which refers to using face-to-face cooperative learning and CALL. However, this study uses face-to-face CACL as one method, and the students stated that they cannot separate between face-to-face cooperative learning and CALL. They found it as one method because both modes, namely face-to-face cooperative learning and CALL, are used from the beginning of the class until the end. The students' expressions concerning this point are provided below.

> **S1**: "[face-to-face cooperative learning and CALL] cannot be separated from each other. … they are together."
>
> **S2:** "I think they [face-to-face cooperative learning and CALL] are integrated with each other. Computer and cooperative learning are integrated with each other. It is true that the student might use the computer alone, aaa but aaa he will not get the benefit which he came to get. For example, in the reading, he will read normally as if he is reading a book, but cooperative learning gives you the information in a nice way as groups and as a group activity. The student might lack things, and this thing is available with his classmate. This makes it cooperative."

The comments of the students showed that it is difficult to separate between CALL and cooperative learning in face-to-face CACL during the classes because both are used together during the whole process of learning. This leads to an important point that it is not obligatory in face-to-face CACL to differentiate between the two modes or decide on the leading mode. This is because face-to-face CACL should be treated as one mode, and it is the leading mode.

This also leads to another important finding concerning the descriptor of the first parameter namely sequencing of mode. That is, it is difficult to separate between CALL and face-to-face cooperative learning in face-to-face CACL, so it is also difficult to discuss the distribution of modes. That is, it is difficult to count the time of using each mode separately inside the class because the activities of face-to-face cooperative learning and CALL are used together from the beginning of the class until the end.

This theme is supported by observation because the students used to study using the two modes simultaneously from the beginning of the session until the end. So, the study of reading skills was not dependent on one mode only.

Accordingly, the time of each mode cannot be counted in face-to-face CACL. That is, it is difficult to count the time of face-to-face cooperative learning alone or the time of CALL alone. The two modes are integrated to form one mode. This shows that the first parameter should be modified to suit face-to-face CACL because they are used simultaneously. So, the mode should be face-to-face CACL, which is also the leading mode.

Model of Integration

This section discusses two factors namely sequencing of modes and level of integration. These are the two descriptors of the second parameter given by Neumeier (2005) for integrating face-to-face learning and CALL. In the context of this study, the discussion is on the integration of face-to-face cooperative learning and CALL.

a.   *Sequencing of Individual Modes*

This descriptor refers to the use of both face-to-face cooperative learning mode and CALL mode, and it investigates whether these two modes are parallel or overlap. The two modes in this study, face-to-face cooperative learning and CALL, are used together which makes it difficult to distinguish between the two modes. This is discussed in the previous parameter, but what is important is the effect of the integration on the transactional distance. In other words, this descriptor aims to minimize the transactional distance among students. The transactional distance refers to the physical distance between the students when they study together. The students' comments on this theme are shown below.

> **S3:** "I think this is the benefit of group study and the theoretical and the computer activities. This prevents boredom so you do not have time to get distracted."
>
> **S4**: "aaaa … this method of teaching is good to get the desired benefit, and the benefit which they will get. The benefit will be higher than all the other methods. Also … aaa there will not be boredom because this method keeps you active during the whole class … you will not be distracted with yourself… you will not be distracted with the other students."

Accordingly, one of the advantages of the integration is to make the study interactive and to lessen the distraction among the students. Using face-to-face CACL instruction keeps the students active during the whole class which minimizes distraction to a great extent. This is because the transactional distance between the learners is not available, and the steps of the learning are linked together to minimize the distance of communication and interaction between the learner.

This leads to an important finding that face-to-face CACL is an effective method to reduce the transactional distance between learners because cooperative learning activities and CALL instructions are used simultaneously. So, the improvement of reading skills among students is also attributed to the simultaneous implementation of face-to-face cooperative learning and CALL instruction, which helped to reduce the transactional distance among the students. To put it simply, the integration of face-to-face cooperative learning and CALL in teaching reading shows that face-to-face CACL uses the two modes simultaneously which allows the students to study together using the web-based CALL. This integration allows the students to interact with each other face-to-face, and this reduces the transactional distance to a great extent.

b.   *Level of Integration*

This descriptor investigates the optional and the obligatory sub-modes in doing the activities. That is, it investigates if some features of web-based reading are optional for the students. In this study, the website provides tutorials and exercises which are obligatory for the students. Moreover, the study used face-to-face CACL in which face-to-face cooperative learning and CALL modes are obligatory during the whole class. That is, CALL is obligatory in all the activities, and students must do all the activities inside the classroom cooperatively using the tutorials and exercises in the web-based CALL. This descriptor aims to make the learners know how to study using face-to-face CACL, so they know how to study and what are their responsibilities. This is also related to learning autonomy, which means that the students should understand the process of learning and how to use the two modes autonomously inside the classroom. This helps to make the integration of the two modes easier and more fruitful for the students. This theme is shown in the students' comments below.

S2: "yes, at the beginning there was a complete dependency but with the passage of time this weak student should participate. Thus, when we answer a passage, the group members keep the answers and we move to the weak student and ask this student about his answer. He replied that my answer is this. We ask him, how did you reach to this answer? If the excellent student starts with his answer, the argument is finished. Therefore, the weak student starts with his answer and then the excellent student gives his answer. Discussion happened after that why the weak student chose A as the answer or why the excellent student chose C as the answer."

S3: "If we did not know what to do in every stage, it would be difficult. Okay … but the situation was easy because it was divided. You start receiving the skill introduction … face to face. Then you study in group. Then you do exercises in groups and sometimes as individuals. The division for time in the class made the style easy so that we accept them together … the group, the computer and the teacher."

Distribution of Learning Content and Objective and Assignment of Purpose

This parameter looks at whether the two modes are isolated or parallel in teaching reading skills. In other words, it investigates how the two modes are used in teaching reading skills. This study used face-to-face CACL which made the two modes integrated so that they are used simultaneously in teaching reading skills. That is, the teacher introduces the skill using the projector, then the students read the tutorials in the computer in order to make sure that they have understood the materials properly. After that the students move to the practice phase, in which they practice reading exercises cooperatively. After cooperative practice, the students move to individual exercises to make sure that they have mastered the skills. At the end, there is a reward for the top team. Therefore, teaching reading skills and doing exercises in the website were taught through face-to-face CACL, in which the two modes are used simultaneously from the beginning until the end of the class. The students explained the process of teaching reading skills, which depended on face-to-face CACL instruction from the beginning of the class until the end as it is shown in their comments below.

S4: "It is Computer Assisted Cooperative Learning so we are using different things. Like for example, we are using different things … we are using our laptops/the computers, and we are interacting with the lecturers, we are interacting with the groups, we are solving problem in groups then in individual. So, it was helpful for me."

S5: "At the beginning you get instructions [about the reading skill] from the teacher, then you study with your group using the computer, and then you practice the exercises using the computer individually."

Teaching Method

In this parameter, there are three sources that influence the teaching method which are the self-access online material, the online tutor, and the face-to-face teacher. However, in the current study, there is no online tutor. So, the focus will be on reading materials, teaching methods, and STAD strategy. These three elements are discussed in this section with reference to excerpts from the interviews.

a.   *Materials*

The website materials introduced a wide variety of reading skills on different topics. In terms of content, students stated that the materials are new and suitable for them, which helped them to gain a lot of benefits and to improve their reading skills. The main theme related to the content is the diversity of the topics of the passages. That is, the content was suitable because the students came to read different passages with different topics. The theme of the diversity of the topics is discussed by the students as it is shown in the comments below.

> **S2**: "aaa it was interesting. What I noticed is that aaa the content was not directed to a specific field. It was diverse because some of the passages were in the scientific field and some were in the literary field, and some of them aaaa we can say that aaa some of them are about political sides aaa such as the leaders of America and the European countries. There were different topics, and this diversification was enriching as it helped us to aaa avoid the fear of reading in different fields. Therefore, it was very excellent and the content was excellent."

> **Teacher:** "I believe that the content will help them to study at the university … the content is very good to help them to achieve their goals in reading at the university."

Therefore, the content was suitable for the students because it provides different topics related to different majors. This made learning interesting for the students and helped them to be involved in challenging reading tasks. Also, the students could come to know many new vocabularies. Accordingly, the design of the CALL materials is vital to making face-to-face CACL effective. In other words, behaviourist CALL and cognitive CALL are highlighted in the comments of the students above ssince the materials provide different exercises with challenging content, topics, and vocabularies. These elements made face-to-face CACL instruction helpful to improve the students' reading skills. Besides, this section shows that the ADDIE model was suitable to design the web-based CALL as it guided the researchers to provide the materials according to the needs of the students.

b.   *Teaching Method*

The teaching method is face-to-face CACL in which face-to-face cooperative learning is used with CALL instruction. In this method, both face-to-face cooperative learning and CALL are used together in all the classes. This theme is discussed by the participants, who explained the process of learning. Based on their discussion, it is clear that the process of teaching depended on the integration of face-to-face cooperative learning and CALL. In other words, the teaching of reading skills was through face-to-face CACL. This theme is shown in the expressions of the students below.

> **S2**: "Yes … we studied by using computer. At the beginning, the teacher asks us to open the laptops, aaa and we open the laptops. There is a specific website in which we open the skills. There are different reading skills. Every day we study aaaa one of the skills by using the computer. We study one or two passages related to the skill. Then we move to aaaa exercises which contain passages about the same skill. Thus, when we study the skill we answer as groups, and then we take exercises individually."

> **S3**: "the teacher explains the skills, after the explanation of the skill, we move to the tutorials using the computer and study the tutorials as groups … we discuss the skill and understand it together. Then we move to do the exercises some of which are in groups and some of them are individually."

> **Teacher**: "it is neither cooperative learning nor CALL, so it is integrated, which helps in giving the best lessons, aaa and aaa getting the best results."

Therefore, it is clear that face-to-face CACL utilizes CALL instructions to provide the students with different exercises. Also, cooperative learning helped the students to discuss the materials and negotiate the answers in groups. The comments of the students show the integration of the two modes in face-to-face CACL, which is the method of teaching reading skills.

c.   *STAD Strategy*

The method used in this study is face-to-face CACL according to the responses of the students above. Moreover, the STAD strategy is used during the implementation of face-to-face CACL to teach reading skills. This is according to the explanations of the student below.

> **S4**: "And, aaa Computer Assisted Cooperative Learning was a new skill for and a new learning method for me, to be in a group and aaa do several things such as doing many activities inside the classroom. And, aaa we start by doing tutorials then we having exercises in groups, then individual, then aaa there was … there were rewards given to us as a motivation and warming up activities at the beginning making us excited for the classes. It is a new learning method for me."

Accordingly, the strategy, which the teacher used in teaching reading skills with face-to-face CACL, is STAD. In this strategy, the teacher introduces the skill. Then the students work cooperatively on exercises. After that, each student works on exercises individually, and finally, the top team is rewarded by the teacher.

Involvement of Learning Objects

This parameter investigates the interaction patterns, and what is required from the students and teachers to do inside the classroom. This parameter is important because interaction patterns shape the process of learning, especially with the advancement of technology. Also, this parameter is important to cater to the teachers' need to introduce new teaching methods that involve face-to-face interaction and CALL instruction. Accordingly, the interaction among students with the computer and with the teacher was through the implementation of the principles of cooperative learning and through the roles of students and teachers according to the STAD strategy. This will be clarified in the discussion of the principles of cooperative learning and STAD strategy below. Also, the parameter level of integration is discussed at the end of this section.

a. *Cooperative Learning Principles*

The interaction among the students with the computer was through the implementation of the five principles of cooperative learning. The discussion of the implementation of these principles clarifies the interaction among students in groups with the computer and the individual learning with the computer.

One of the roles of students was to achieve the five principles of cooperative learning. The first principle of cooperative learning is positive Interdependence, in which the students should understand the materials and help the other group members to understand the materials as well. Participants have achieved this principle as shown in the comment below.

> **S3**: "yes, the level of the students in every group was gradual from the weak to the higher and so on. So, the weak student can get from the student who is stronger than him and everyone gets benefit from the others. The division of the students in the groups played a main role in the course."

The second principle of cooperative learning is promotive interaction, which means that the students should exchange ideas and materials in order to help each other. The first theme related to the promotive interaction principle is the exchange of ideas to answer the reading exercises. The theme of exchanging ideas among group members during the classes is shown in the students' comments below.

> **S1**: "yes, this happened. It happened that some of my classmates gave me links and they told me that these links will give you more benefits. I also gave them some websites. One of my group members gave me a handout."

> **S4**: "yeah, the skills when we are solving the questions in groups, in the group you will explain to your friends why did you chose this answer, why not the other answer. So, you are giving them the idea how did you choose this answer. Why this should be the correct, and why this is wrong?"

The third principle is individual responsibility which refers to the importance of the individual to participate in the success of the group, especially through doing the individual exercises in the web-based CALL. This principle highlights the use of the students to do exercises in CALL individually, which is the individual exercise with CALL. Also, this principle highlights the responsibility of each student for the success of his team. This interaction pattern is vivid in the expression of the student below.

> **S2**: "No, we did not depend on the teacher. There was some dependency on the others when we start to answer questions as groups among the students. For example, one of the students might be excellent. He might have an excellent vocabulary background, so the other groupmates might depend on him. But, the other students aaaa quickly reach to self-confidence and work on the aaa individual exercises alone."

The fourth principle is social interaction which refers to the social skills as such skills are important to make cooperative learning more fruitful. The students showed that the language of interaction among the students was the English language as shown in the excerpts below.

> **S2**: "in terms of the language, we used to speak English all the time. We did not use Arabic language at all."

> **S3**: "the communication was interesting because the students who participated in the course were almost in the same level. There were not big differences between the students as the level was the same. This makes the maximizes the benefit. The usage of English language in the communication was excellent and there was no difficulty."

The fifth principle of cooperative learning is group processing which refers to the reflection of the students on their learning of reading skills. This reflection can be within the group and with the whole class. The students showed that the reporter used to discuss the difficulties with his groups and the whole class, and they used to get feedback at the end of the course from the teacher and the other students. The theme of group processing is shown in the comments below.

> **S3**: "we used to get feedback from the teacher and the other students as well because they used to give comments during the activities. Every group discuss its difficulties so that we come to know the difficulties which all the groups faced."

> **Teacher**: "Students got many types of feedback. The first aaa the first feedback was within the group. Aaaa the second one with the whole class … the whole class with the teacher and from the other groups as well."

The observation in all the sessions shows that the students used to work together and discuss ideas. Also, students used to help each other in answering group activities, and then students used to do individual activities to test their understanding of reading skills. Besides, students used to communicate in English during the whole class, and they used to do group reflection at the end of the class. Furthermore, they used to do whole class group processing as the students used to reflect at the end of all the sessions. These observations support the implementation of the five principles of cooperative learning in all the sessions of studying reading skills.

b.   *STAD: Role of the Teacher and Students*

This section also discusses the interaction of learning objects, and the focus is on the duties of the students according to the instructions of the STAD strategy. The teacher also has different roles in teaching reading skills through face-to-face CACL. In terms of the students, they have four roles according to the STAD strategy. The students discussed their duties and the duties of the teacher according to their experience in studying reading skills through face-to-face CACL.

In terms of the role of the teacher, the students highlighted different roles which were important for the successful integration of face-to-face CACL. These roles are carried out mainly to make the interaction among students and with the teacher effective during the study of reading skills, including teaching, supervision, and guidance. The excerpt below shows the teacher's roles.

> **S4**: "starts … he explains … he is giving us the activities which make us more interactive with the others. So, we do not feel like to be isolated during doing the course. He gave us every day different warming up activities. We interact with people and those who does not like to participate with the others, he will participate because the teacher gives activities. After that he will start to explain to us what is the course, what is the main skill of the course, what is the objective, and what we will study. Then, he will aaa ask us to study in groups, to solve the group passages and the individual passages. After that, he will give us feedback. Why aaa this is correct? Why this is wrong? We will have a discussion with the lecturer and we ask him even from out of the topic which we have studied, and he will answer to us."

In terms of the roles of students, there are four roles given to the students alternatively in every session. These roles are summarizer, recorder, facilitator, and reporter. The students' comments on their roles show that they are aware of these four roles as it is shown in the excerpts below.

> **S2**: "the recorder writes the scores on the sheet which we used to get at the beginning of the class. We have also the summarizer who summarizes what we have studied during the whole day with the other group members. The reporter takes information from him, and the reporter is the one who stands in front of the classmates to speak about what we have studied depending on the explanation … depending on the lesson and the information of the summarizer and all the group."

> **S3**: "one was the recorder who used to document the scores. The scores of every student and the whole group. There is also the summarizer who summarizes what we have studied. The reporter gets benefit from the ideas of the summarizer aaa to report them to the other groups after that and talk about them. And, aaa the facilitator who keeps the group focused and speak in English."

> **Teacher:** "They [students] are divided into groups. So, one is a facilitator, one is a reporter, one is a summarizer, and the fourth one is a recorder."

According to observation inside the class, the teacher used to divide the roles of facilitator, recorder, reporter, and facilitator at the beginning of all the sessions. The teacher used to give the students these roles alternatively at the beginning of the class.

c. *Level of Learning Autonomy*

The level of learning autonomy refers to the students' ability to understand their roles and responsibilities inside the classroom. This is also highlighted in the second parameter "model of integration", as the main aim of the third descriptor "level of integration". Hence, this section investigates how learning autonomy is important in the integration of face-to-face cooperative learning and CALL in order to make the process of learning smooth and more effective. The comments of the students show that they could improve autonomous learning when they studied reading skills through face-to-face CACL.

> **S2**: "at the beginning in the first class or the first lesson, it was difficult for the students to understand that they have to bring their laptops. After that the idea was very normal."

> **S3**: "aaa it was perfect since the beginning because the instructions were clear and the students have understood the study process."

Location

The location parameter is very important for the success of learning, and students should study in an environment with which they are familiar and in which they feel comfortable. Accordingly, the location of the course was in an institute, which is close to all the participants. In this regard, the students stated that the class was suitable for the study as shown in their expressions below.

> **S1**: "the classroom was suitable for our number. It is not crowded. We used to do the activities inside the classroom. Sometimes, we have activities that require us to move to another classroom. So, the hall was suitable, the light was suitable, and the ventilation was good."

> **S4**: "yeah. It was suitable … it was cold … yeah … we have chairs, we have the projector, we have everything that we need, we have the lecturer."

Moreover, the students had to bring their laptops with them to the classroom to study. The students stated that it is normal and this might be better than studying in a computer lab because they could move easily to do group activities and individual activities as well. The students' comments on this theme are shown below.

> **S2**: "actually, my point of view concerning bringing laptops … at the beginning in the first class or the first lesson, it was difficult for the students to understand that they have to bring their laptops. After that the idea was very normal because if we studied in a computer lab, the computer will be the basic tool without cooperative learning among the students."

> **S3**: "I mean the communication will not be there between students if every student has a computer. Also, the communication will not be easy because every student will not be able to explain to the others and the students will not be close enough to each other. Every student will have his own space and I think that this is not helpful."

This is supported by observations as the students used to move freely and comfortably to do group activities, and then take their own space to do individual exercises. The class and the use of laptops help the students to form circles for group work, and they felt free to move to a remote place to work on the individual activities.

Discussion

This study aimed at investigating the process of integrating face-to-face cooperative learning and CALL. The importance of these questions is related to the success of the design and the description of the process of integrating face-to-face cooperative learning and CALL. This study adapts Neumeier's [10] model; however, integrating face-to-face cooperative learning and CALL requires modifying these parameters and their descriptors to suit face-to-face CACL.

This first parameter is the mode, and it has three descriptors, namely focus on mode, distribution of modes, and choice of modes. According to Neumeier [10], there should be a leading mode that the students use when integrating CALL and face-to-face learning. The findings of the study showed that both modes are used together from the beginning until the end of the class, which made face-to-face CACL one method of teaching, and it is the leading mode. Moreover, the second descriptor is the distribution of modes which counts the time spent in each mode. However, in face-to-face CACL, it is difficult to count the time spent in face-to-face cooperative learning and the time spent in CALL because both modes are used together. This raises a new point when using face-to-face CACL, which is that the two modes cannot be separated from each other, and face-to-face CACL is considered the leading mode. This is against the argument of Kerres (2001) as cited in Neumeier [10] that when there are face-to-face instruction and CALL, it is important to decide on the leading mode. Therefore, this study suggests that the first parameter in integrating face-to-face cooperative learning and CALL should be face-to-face CACL which is also the leading mode. Also, the findings of this study show that the second and third descriptors, namely distribution of modes and choice of modes, cannot be discussed in face-to-face CACL instruction.

In terms of the second parameter "level of integration", face-to-face CACL also cancels the existence of the descriptor sequencing of individual modes, because the two modes are integrated as one method in the process of teaching and learning. In other words, the two modes are used simultaneously in teaching reading skills. This descriptor requires counting the time of each mode; nevertheless, in face-to-face CACL the time of each mode cannot be counted separately without being related to the activities of the other mode. According to [10], sequencing of individual modes should reduce the transitional distance that affects communication, and this transactional distance is the gap between the learners. The transactional distance is used to eliminate the feeling of isolation among the students during the activities [10]. Accordingly, face-to-face CACL minimized the transactional distance to a great extent since the students studied using face-to-face cooperative learning and CALL together during the whole class. In other words, although face-to-face CACL is considered the mode of teaching, the physical distance was reduced to a great extent during reading activities.

In terms of the descriptor "level of integration" of the second parameter, it refers to the sub-modes that might be optional for the students. In this study, both modes, face-to-face interaction, and CALL, are obligatory. Neumeier [10] argued that designing the integration of modes is important to improve learning autonomy among the students. In face-to-face CACL, both modes, face-to-face cooperative learning and CALL, are one unit that makes the integration of both modes obligatory in all the sessions. According to the experience of the students, they could increase learning autonomy with time and depend on themselves in terms of understanding understand the process of learning reading skills. The findings of this descriptor support Neumeier [10] because face-to-face CACL activities improved the students' learning autonomy.

The third parameter, according to Neumeier [10], looks at whether the two modes are isolated or parallel. However, in the current study, the aim was to teach reading skills, but speaking was an important element of cooperative learning. Therefore, face-to-face CACL uses both cooperative learning and CALL simultaneously in all the classes to teach reading skills. In other words, the best description for the integration of face-to-face cooperative learning and CALL in this study is that the two modes are used simultaneously in face-to-face CACL. The findings of this study are different from those of Adair-Hauck et al. [29] because it taught reading only without the need for discussion among students. However, in the current study, the students needed to study cooperatively which helped the students to interact with each other and support the learning among students.

In terms of content, the findings of this study are different from those of Chenoweth et al. [30]. That is, these studies presented that the online materials are not enough which led them to copy other materials and use them for their study. However, in the current study the students stated that the content was enough, especially that the students exchanged materials with each other, and this study also showed that learning theories are important for learning activities [31]. Also, the content was suitable for the students in terms of their level of reading as it provides different passages with different topics and many new vocabularies. The findings of the online materials in this study show that CALL content and the features of CALL activities increase the benefit to the students [31].

The fourth parameter is the teaching method. According to Neumeier (2005), there are three sources, influencing the teaching method which are the self-access online material, the online tutor and the face-to-face teacher. However, in the current study, there is face-to-face cooperative learning among the students and a face-to-face teacher instead of an online teacher. Therefore, the teaching method is face-to-face CACL in which learning depends on face-to-face cooperative interaction, instead of an online tutor. Also, the content delivery was through the STAD strategy. This leads to an important point that the integration in face-to-face CACL does not isolate the students, and this method makes the role of the teacher essential inside the classroom. Also, the STAD strategy was effective with face-to-face CACL because the students could do the reading activities easily without facing any misunderstandings in the process of learning [32].

The fifth parameter is the involvement of learning subjects including students, teachers, and computers. According to Neumeier [10], this parameter investigates the interaction patterns, and what is required from the students and teachers to do inside the classroom. Accordingly, the findings of the study showed a wide variety of interactions in which cooperative learning and CALL are available. The interaction patterns include teacher to students with a computer, teacher to student with a computer, students to the student with a computer, and students individually with a computer. This supports the statement of Neumeier [10] that the interaction patterns are important so that the students can improve their level of learning autonomy.

Another descriptor related to this parameter is that the roles of the students and teachers should be determined for the success of the learning process. This study supports the statement of Neumeier [10] because planning the roles of the students and teachers leads to the success of using face-to-face CACL. In this method, the students have to achieve the five principles of cooperative learning and the principles of STAD. The findings of the study showed that the students achieved the five principles of cooperative learning, namely positive interdependence, promotive interaction, personal responsibility, social interaction, and group processing, which made face-to-face CACL more effective [33]. Also, the students took the roles alternatively in all the classes as required for STAD namely recorder, facilitator, summarizer, and reporter. In addition, they followed the principles of STAD in all the classes which are introducing the skill, doing exercises as groups, doing exercises individually, and rewarding the top team in every class. The findings of the study showed that following a specific teaching method and assigning roles to students ensure the success of learning and also increase the level of learning autonomy which is in line with Neumeier [10]. Besides, the implementation of the five principles of cooperative learning made the interaction among the students during the reading activities more dynamic and more productive. Therefore, this made the interaction among the students more effective, and the use of the technology was an additional advantage for teaching reading skills through face-to-face CACL.

The sixth parameter, according to [10], is the location which is very important for the success of the integration of face-to-face cooperative learning and CALL, because the students should study in an environment with which they are familiar and in which they feel comfortable. Accordingly, the location of the course was an institute in a close place to all the participants, and the students brought their laptops with them to all the classes. The location was suitable for all the students and studying with laptops made cooperative learning easier. Hence, the integration in face-to-face CACL was smooth because the use of laptops made the students able to work in groups cooperatively and move to do individual exercises with the computer easily.

Therefore, there is a need to adapt Neumeier's [10] model to suit face-to-face CACL in the process of designing and describing face-to-face CACL courses, and integrating face-to-face cooperative learning and CALL. According to the findings of this study, Table 2 below summarizes the findings of this question and the adaptation of Neumeier's [10] model to suit face-to-face CACL.

Table 2   Integrating f2f cooperative learning and CALL

Parameter	Individual descriptors
1. Mode (face-to-face cooperative learning and CALL)	- face-to-face CACL (the leading mode)
2. Model of integration	-Sequencing of individual modes: simultaneous
	-Level of integration: face to face cooperative learning and CALL are obligatory
3. Distribution of learning content and objectives and assignment of purpose	-Simultaneous
4. Language teaching method	- Cooperative learning principles
	- Cooperative learning strategy
	- CALL
5. Involvement of learning subjects (students and teachers)	-Interactional patterns: cooperative language learning activity
	-Variety of teacher and learner roles (cooperative learning principles and students' role according to the need of cooperative learning strategy)
	-Level of autonomy
6. Location	Classroom, computer lab, institutional setting

Conclusion and Implications

This study aimed to investigate the integration of face-to-face CACL in teaching reading skills. The integration focused on the two modes in CACL, namely face-to-face cooperative learning and CALL instruction. The study used the model of Neumeier [10] as the study theoretical framework. Although this model discussed collaborative learning, it did not account for cooperative learning, which requires the implementation of the five principles of cooperative learning. This is the main difference between collaborative and cooperative learning. The findings of the study have supported many parameters and descriptors described by Neumeier; however, the findings also showed that there are different elements that need to be adapted to suit the integration in face-to-face CACL. The

main difference is that face-to-face CACL requires implementing face-to-face cooperative learning and CALL instruction together, which made it difficult to count the time of each mode. The simultaneous implementation of the two methods makes face-to-face CACL one mode, especially since they are used together in teaching from the beginning until the end of the class. Accordingly, face-to-face CACL is considered to be the leading mode with no descriptors to investigate the sequencing of modes. Besides, the simultaneous implementation of face-to-face CACL made the process of learning smooth and easier for the students, and this is one of the main factors that made teaching reading skills to students more effective.

Finally, the findings of this study show that teaching students through face-to-face CACL requires clear and planned integration of the teaching activities. Doing so helps the students to improve learning autonomy in terms of understanding the process of learning through this method, which helps to make learning more effective. Moreover, the outcomes of the study show that the ADDIE model can be used along with the adapted model of intreating face-to-face cooperative learning and CALL in Table 2 Above. That is, there are five phases of the ADDIE model, which aim mainly to design the materials and the activities for CALL lessons. However, the face-to-face CACL model adds the direction toward integrating face-to-face cooperative learning with CALL. Therefore, each model complements the other model. In other words, points are missing in the integration model in face-to-face CACL such as investigating the needs of the students, designing the materials according to their needs, and evaluating reading skills. However, these elements are available in the ADDIE model. Similarly, the ADDIE model is mainly used for CALL design, but there is no indication for integrating face-to-face cooperative learning and CALL. This makes CALL lack specific elements in terms of the integration in face-to-face CACL, including focusing on modes, distribution of modes, teaching method, and level of integration. These elements are available in the model of integration in face-to-face CACL. Accordingly, the ADDIE model and model of integration in face-to-face CACL have complementary processes for each other to have a complete picture for the design and implementation of face-to-face CACL. The model for the design and implementation of face-to-face CACL is shown in Figure 2 below.
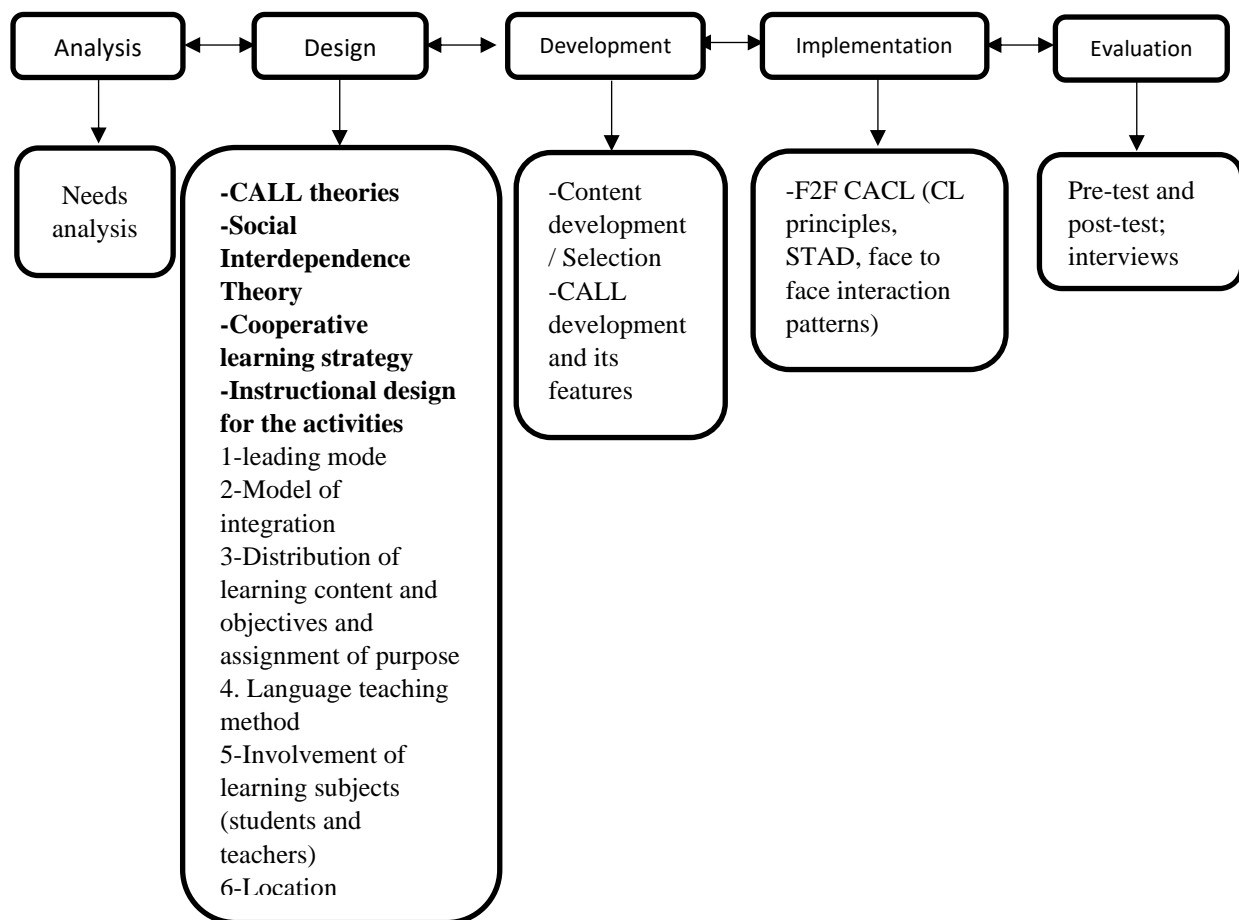

Figure 2 Face-to-face CACL design and implementation Model

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