

INTERACTIVE CHAT: AN EXPERIENCE IN A VIRTUAL ASSESSMENT

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Abstract — *The increase of distance education in the world has been a reality in universities and companies encouraging researchers to create ways to keep track of the virtual classes. And at a distance it is very important to have ways to provide interaction between the teacher and the students, because there is no physical contact in a distance system environment. The integration activities might be used not only in distance classes, but in traditional classes too. This work has been presented a methodology to plan and to handle educational chats and how to evaluate the students in these events. The methodology was applied, by the teacher Luciana Zaina, to a group of learners from the Computer Engineering course at the Engineering College of Sorocaba aiming to discuss a practical application of the Deterministic Finite Automata Theory.*

Index Terms — *chat, classroom support, interactive tool, virtual discussion, virtual learner assessment.*

INTRODUCTION

Using a synchronous tool such as chat allows the students to develop new syntheses, analysis and evaluation abilities, because it forces the students to write what they know, their ideas and to give solutions to problems proposed by the teacher.

The chat discussion gives the students the opportunity to develop a critical sense development but this is not the only point. The synthesis process is essential to make the students able to expose their points of view more clearly allowing the teacher to track of the student's performance along the course. And it can be used as an environment to eliminate learner doubts or as a way to introduce new challenges to the students, making the classes more dynamic [5],[9].

The chat may be a good option when the teacher wishes to make questions and to have immediate answers from the students, because they can exercise their ability to come to a conclusion fast. The chat is applied to situations when the teacher needs to check if the student has assimilated the concepts and if he knows how to use the topic studied developing the synthesis, analysis and evaluation abilities in the learner. The chat discussion is a good experience for many students because they may feel more comfortable to show their opinions, they don't need to stay face to face with

other students, they are not be afraid to present their ideas to other persons.

METHODOLOGY TO EVALUATION

The methodology propose in this work to evaluate the student in a chat event is composed by the points that are presented in this session.

Event Planning

Before the chat assessment event the teacher must plan how he/she will conduct the discussion and how he/she will validate the knowledge process checked in the chat. The teacher should define the discussion goal and inform the learners of the expected result at the end of the event in order not to lose the focus of the discussion. Getting an objective discussion is essential to define the questions or themes that will be made to the students, questions that encourage student's reflection about the theme, but the teacher should be prepared to ask new questions during the event if the bypass is interesting and if it doesn't damage the discussion focus [1],[7],[9].

The discussion should stimulate the student to organize his ideas and to express his conclusion about a question or about another student's opinion, constructing an interesting knowledge network. The teacher make use of questions that analyze a topic deeply such as "what do you think about...?" or "do you agree or disagree with...?". Table I presents some question suggestions to be used in a chat event [1],[9].

TABLE I
QUESTION SUGGESTIONS TO BE USED IN THE ON-LINE ASSESSMENT [1] APUD SAVAGE

Questions
Why did the author use this statement ?
Do you agree/disagree with this point of view ?
What do you think about... ?
Can you explain this statement better ?
How do you compare topic A and B ?
Why did you use this statement ?
Doesn't what you are saying now contradict what has been said before?

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The planning must approach all the concepts of the theme, without being rigid, because unplanned topics may come up and they might be interesting for the discussion. In these cases, the teacher should redirect the discussion without losing its main goal and come back to the point where the discussion was interrupted [9] as it is shown in Figure 1.

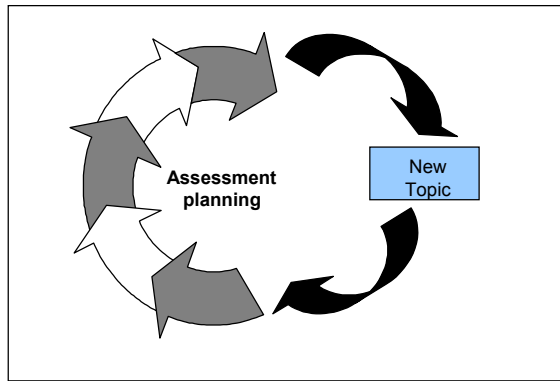


FIGURE. 1

THE CHAT EVENT MAY HAVE NEW TOPICS TO BE DISCUSSED

The teacher must determine a deadline for the discussion so that it doesn't remain unfinished. It is important to plan how much time the participants will spend talking about a topic, although this can be changed during the event if it is important for the discussion. The moment the group finds the solution for the problem is another way to establish the end of the discussion, but it is fundamental that all the participants agree with the solution and conclude the discussion [7]. Table II presents a suggestion to track the chat event.

TABLE II
ASSESSMENT PLANNING

ASSESSMENT VIRTUAL PLANNING			
Goal:		Total discussion time:	
Start date:		Finish date:	
No.	Question	Discussion Time	Doubts/ New Questions
1			
2			
3			
...			
n			
Result:			

The student should be oriented to identify himself in the beginning of the chat session helping the teacher to know who exactly is talking at the moment [2]. The chat tool can implement ways for the teacher to recognize the students through the user login or photos which are stored in the

tool's database. Besides this, the teacher must highlight the use of netiquette(etiquette used among the participants of a virtual event) avoiding the sending of rude messages among the chat participants [9].

The teacher must plan how to guide the virtual session and he should present this plan to the students before the beginning of the event, emphasizing the following points:

- **Discussion main goal:** the student must be aware that he is the center of the discussion and not the teacher. The learner may conclude a discussion topic, he doesn't need to wait for the teacher's conclusion.
- **Respect for the other participants' opinion:** the student may be critical, but he cannot disrespect another participant. He can expose his opinion without arguing with the colleague, exercising his ability to explain his point of view about a theme [5].
- **Controversy themes:** the learners may disagree with the others opinion but they cannot ridicule the other participant's ideas, because this might cause an embarrassing situation and the students may be afraid to show this opinion again [7].
- **Add new knowledge to the discussion:** answers like "I agree" or "I disagree" add nothing to the discussion. The students should feel motivated to explain why he agrees or disagrees with a subject, giving new values to the discussion. The learner may come to a good conclusion and a good explanation without adding different ideas to the discussion [1].
- **Interruptions during the discussion:** a participant cannot interrupt another participant's explanation. When the student wishes to express his opinion about a topic, he must wait for his colleague's conclusion and he might ask the teacher if he can talk his ideas about the topic. The teacher must use ways to control the time of each student in order to avoid having all the participants sending messages at the same time [5],[7].

Assessment Applying

After the planning, the teacher should schedule the day and hour of the event and expose to the students the real aim and what results he/she wishes to achieve, indicating the way that the learners should follow during the chat. This is the same as determining the assessment content.

The chat is an efficient tool when all the students have the opportunity to exchange their ideas and it may become chaotic if there are a lot of people "speaking" at the same time. Thus, it is ideal to create chat groups from five to seven learners and to put these groups in different rooms mainly when there are a lot of students in the class [3]. This way the teacher can handle the discussion more easily, avoiding difficult situations where only some students show their opinions.

Technological problems such as connection failures may cause participants not to feel motivated and the teacher must avoid these situations by checking the chat

environment where the discussion will occur before the event to start. The student must feel that he is contributing to the discussion, he must feel he is improving his skills about the subject and this kind of problem may be a critical issue [4].

The teacher should provide the group integration, in the beginning of the chat, reminding them of the discussion important points: respect between the participants concerning different viewpoints, the discussion goal and the importance of the students' participation to the success of the event. Afterwards, the discussion can start according the teacher planning [9].

It is very important for the teacher to observe if there are students monopolizing the discussion, because some may be shy and not show their ideas. The isolated students should be invited to talk about their opinion and the teacher might use sentences like: "Bob, what do you think about Susan's statement?". In case of problems with the learner's behavior, the teacher must send private messages to him referring to use of impolite language without exposing him to the other chat participants. The incentive to the students is necessary for the discussion and they may feel that their contribution is valuable [1],[2],[3].

The teacher must decide what will be the ideal topic to be discussed at first in case of message collision, when two different learners send different messages at the same time, but the teacher cannot forget that the second message can be discussed later. The teacher may use a way, as a token pass for instance, to organize the order of each participant's talk and he determine to the students the order of the token will pass to the students.

Confirming a student's statement should always be used when his explanation is not clear and the teacher may use questions to force the learner to explain his point of view better and in more details [8].

Divergent ideas must be extensively discussed during the event, but the participants cannot forget to be always respectful to one another. It is worth forcing the students to discuss different ideas and come to an agreement, about a topic exercising their critic thinking and their ability to synthesize their opinions.

Analisng and Mensuring Assessment

The chat evaluation is not an easy task, as in any kind of discursive test, but if the teacher plans the virtual event before applying it he will spend less time correcting the assessment.

Analyzing the chat event result is difficult for two reasons. The first one is that a lot of information needs to be checked. Besides, as the ideas were expressed without a sequence during the chat, the teacher must reorganize the content in order to correct it. The teacher must check the chat log to have a concrete result of the assessment, because it is impossible to obtain an accurate measurement when the chat finishes. A premature evaluation may lead to a mistake when giving the student's grade [8].

It is ideal that the teacher control the discussion using a table, so that he can verify the essential points in each theme. The loss of focus must be handled by the teacher and the teacher should consider this in his evaluation. The teacher must check the development of analysis, synthesis and evaluation skills and be concerned with the truth of student's statement, checking if what he said makes sense.

The teacher should determine the weight of the questions or themes that will be used in the assessment and at the end of the event, to measure the student contribution in important points.

The teacher should present the event result to the chat participants to give them the opportunity to evaluate their flaws as well as the correct conclusions of each student. The learner can verify his correct and incorrect statements, the difficulties he had to express his ideas and he can decide which direction he should take [2],[7].

The final result can provide the teacher with valuable information, helping him analyze the event planning. This way, he can check if he needs to change his strategy when conducting and planning the discussion.

THE STUDENTS' EXPERIENCE

Based on the proposed methodology, a virtual event was planned and applied as an alternative way to evaluate the students of an engineering course in the Deterministic Finite Automata Theory syllabus. The main goal was to demonstrate that this theory can be applied in the development of real systems.

"A System for Web Based Instruction Using Sequential Automata" was the article chosen to be analyzed and discussed, which approaches the Mealy and Moore Automata used to model the Web courses. The article emphasizing that the best organization of material and the hypermedia documents provide facilities of the maintenance and reuse of the course content through automata implementation, eliminating the redundancy of the material [6].

Planning

First, the event was carefully planned concerning in the main points such as discussion goal, the themes that will be discussed, what is important to observe about the student's opinions and the expected result. The discussion goal was "Analysis of the automata applications to systems development in the Web", focusing on the programs functionality modeled by automata. The teacher thought the article content was very important to the discussion goal.

According to the article the student must show the teacher that he understands how the theory can be applied to practice. Bringing the knowledge learned in the class to the application described in the article the student develops synthesis skills, because he will make a connection between conception and practice. The event was planned based on the article and it is showed in the Table III.

TABLE III
THE EVENT PLANNING

VIRTUAL ASSESSMENT PLANNING			
Goal: discuss the relation between the automata theory and a practical application of it in a Web system			Total discussion time: 1 hour
Start date: 09/11/2001 - 2:00 pm		Finish date: 09/11/2001 - 3:00 pm	
No.	Question	Discussion Time	Doubts/ New Questions
1	Based on the article, do you think the finite automata is ideal to develop Web programs using the hypermedia conception ?	10 minutes	
2	How are the Mealy and Moore Machines used in the model presented in the article ?	10 minutes	
3	How can the non-determinism automata be used to model a Web course ?	15 minutes	
4	How can the finite automata be applied to model the study personalization ?	15 minutes	
The result: The students understood the relation between theory and practice.			

Discussion Handling

Before the event the teacher talked to the students about the essential points for conducting a successful discussion. According to the methodology the teacher highlighted the important topics of the discussion to learners [9]:

- **The main object of the discussion:** the student cannot forget that he is the main object of the discussion. The teacher will interfere only in extreme situations.
- **The respect to other students' opinion:** the student must be careful when criticizing another learner's point of view. He must stimulate the students to participate in the event, and at the same time, keep unpleasant comments and jokes to themselves.
- **Add knowledge to the discussion:** remind the students that they should express their opinions through clear ideas, adding new values to the discussion.
- **Interruptions:** the teacher will use a virtual token to control who is talking in a determinate moment preventing the student to be interrupted by another learner. The token will be passed to the student when he wishes to say something and it must be returned to the teacher after a student finishes exposing his opinion and then the teacher will decide who is the next learner to talk.

By adopting a process to control the time that each one can talk, it was possible to prevent students from interfering in one another's explanation, mainly because the chat tool allows only text messages. The teacher used the token system, which determined who should express his opinions about a subject, and when somebody wished to talk they could ask for the token. Sometimes, it was worth breaking the normal procedure of the discussion to approach interesting topics such as the necessity to explain the relationship between hypermedia and automata according to the article.

The discussion elapsed normally and the number of interruptions was practically zero. Some students wished to expose their ideas and, because of this, sometimes asked for the token at the same time. The priority always given to whoever was talking and after he finished the teacher passed the token to another student that had requested it.

The major problem was the phone connection failure that caused the discussion to be interrupted three times. When we managed to connect again we had to restart the discussion point spending more time than necessary with the event. The time event estimate had an overload in the chat plan and part of this was caused by the connection problems.

The event started when planned and all the participants were in the chat room. The teacher welcomed everybody and started to make questions determining who was the first to answer it. All the time, the teacher passed the token to the student that she thought was the best one to expose his idea at the moment, and sometimes another participant asked for the token to explain his position about the topics. This kind of control prevented the shy student from standing only as an observer, encouraging him to explain his point of view.

During the event it was possible to observe that the students understood the article conceptions and they could relate the theory learned in the lectures to the work presented in the article. In general, they expressed their thoughts clearly and the teacher didn't need to make many interventions.

After one and half hour of discussion the teacher finished the event. He could not ask all the planned questions, because there were connection problems and it was necessary to explain some conceptions during the event. Besides these, the students' participation was higher than the teacher expected causing more time of discussion that had been planned.

Log Analysis

During the event the teacher must be concerned about conducting the discussion so she will analyze the results of the event by the log file comparing it with the event plan. Based on the questions made to the students, the weight of each question and the log chat, the teacher could conclude the real effect of the event. The Table IV shows how the teacher made the chat participants' evaluation.

TABLE IV
THE EVALUATION BASED ON THE ANALYSIS OF THE CHAT LOG

Weight						
	1	1	1		3	
Participant	Does he lose the discussion focus?	Does he add information?	Do his statements make sense?	Observations	Final Grade	
Question 1	Student A	1	1	1	He interrupted another student. He focused on the article.	3
	Student B	1	1	1	He asked me to explain a formal conception about hypermedia.	3
	Student C	1	1	1		3
	Student D	1	1	1		3
	Student E	1	1	1		3
Question 2	Student A	1	1	1	He explained the relation between the course content.	3
	Student B	1	1	1		3
	Student C	1	1	1	He made a technical explanation	3
	Student D	1	1	1	He asked me to compare the model to the distance learning.	3
	Student E	1	1	1		3
Question 3	Student A	1	1	1		3
	Student B	1	1	1		3
	Student C	1	1	1		3
	Student D	1	1	1		3
	Student E	1	1	1	He had doubts about the use of the non-determinism in the distance courses.	3

When analyzing the chat log it was possible for the teacher to verify the concrete result of the discussion. The student could get three points as a maximum grade which was divided in three sub topics and each one was worth one point. The topics available were:

- **Does the student miss the discussion focus?:** it was checked if the student didn't forget the real discussion goal.
- **Does the student add information?:** it was verified if the student understood the themes and if he related practise to theory.
- **Do his statements make sense?:** it was checked if the student said absurd statements.

The students had an active participation in the event and they didn't lose the main focus of the discussion. Sometimes the teacher had to explain some conceptions such as the formal definition of hypermedia, but this didn't disturb the event. On the contrary, it enriched the discussion with

the participants conclusions. The target change was excellent to the discussion, but the trouble was to be attentive to bring students back to the break point and not to lose the real discussion objective, and this was controlled all the time when the students had doubts.

All the participants made sense in their affirmations adding valuable information to the theme. They provided the relationship between theory and practise showing their understanding about the automata finite application. Besides this, the teacher could observe that the students exposed the main article points, always associating it with the automata finite concepts.

During the event some expressions and sentences were split making it difficult for the teacher to make an immediate analysis. The chat log was fundamental to be sure of the student's contribution to the event, because the statements could be joined to the general context of the student's affirmations.

CONCLUSION

The teacher asked the learners to send e-mail messages expressing their opinion about the chat experience. They should specify what they had felt and what they thought about their participation in an educational assessment chat. They had to evaluate the following points:

- Did he find difficulty expressing his ideas?
- Did he feel comfortable to talk in a virtual event?
- How does he compare the assessment in a chat to the traditional evaluation form?

Studying the student's answers it was possible to conclude that all the participants thought that this kind of event was very important to their learning, but they highlighted positive and negative points. The positive points pointed by the students are:

- They need to express their ideas in a writing and in a virtual way, developing their capacity to be consistent and coherent in their explanation so as not to have a misinterpretation of their point of view. Normally people have difficulty writing their ideas, they prefer speaking to writing about something. This kind of event it is a great opportunity to develop this ability.
- The interaction between the participants during the test. It is very difficult to the students exchange information and ideas to construct a problem solution step by step in a traditional test in group. The synchronous event like a chat permits learners to reach a conclusion with all the participants ideas, building a network of information.

The students pointed as negative points:

- Although the students' interruptions didn't occur frequently in this event, some students caused interruptions when another had the token. The interruptions were controlled and they demonstrated the students' wish to participate in the discussion.
- The Internet disconnection interrupted the event three times. We had problems with the Internet connection during the event and the discussion had to restart when this problem occur.

The students' information showed us that a different way of work or assessment can motivate them. They emphasized in their answers that the event allowed them a better integration during the problem resolution.

We could conclude that planning an event is fundamental because it can avoid a lot of common problems and help the teacher to deal with difficult situations. Although problems will always exist, there are ways to minimize them. Showing the students the discussion goal and what is expected from them allows them to prepare and to study the event theme.

The number of times there is loss of focus in the discussion can be reduced through a well-handled event. The

teacher must try to let learners feel relaxed and encourage them all the time to express their opinions about the theme.

The event evaluation must be done after the chat avoiding flaws in the analysis and allowing the teacher to check the truth of the students' messages. Besides this, the teacher may misunderstand a point of view and he can analyze the statement better through the chat log.

When the interactive tools like chat and forum are used in distance courses, they may be a way to get concrete data about the student's evolution in the course and, in some cases, to detect failure in the course material. The plan in a virtual discussion is a prerequisite to the success of the event, because an unplanned chat without a mediator will be chaotic.

The use of interactive chat to support a traditional class brings advantages to the teacher and to the students. The learners can improve their capacity of expressing their opinions and the teacher provides the students with different ways to discuss the syllabus, motivating them to study outside the classroom.

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