

# Implementation of virtual classroom by using Distance Interactive Learning

By

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## **Abstract**

Remote learning is an environment that simulates the physical class by presenting a virtual electronic class, this definition is broad and holds all technologies and methodologies that facilitate this simulation. This paper is dedicated to standardize a model to represent this simulation by abstracting the remote learning into two main components which are environment ( operating system, network, protocol, media) and integrated tools ( used within the virtual class to increase the learning experience of the audience). The outcome of the model proposed by this paper increases the teaching experience beside the learning experience by enforcing the lecturer with tools to visually present his ideas to the audience.

## **1-Introduction**

*classroom is a space where structured and planned teaching and learning happens,* and this can happen under a palm tree, in a tent in the middle of a desert, and in many other places, where most or all of the infrastructure of a Western-style classroom is simply not available[1]. In most of those places this could, of course, be changed by building a school and bringing in the needed equipment, but in one environment this will never be possible: the online "virtual classroom".

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Here it is not merely a matter of deprivation, to be alleviated by more resources; quite the opposite: online learning requires an extensive - and often costly - infrastructure of its own and so it is, at least at the moment, a domain of the well-to-do nations. Growth in global prosperity will not make it disappear (as it may be the case of open-air classrooms in remote villages) but rather contribute to its expansion. Therefore, when attempting to create a model of a classroom in the online environment, it is no longer useful to think in terms of blackboards, backpacks, textbooks, and desks; instead, one needs to look at its essential elements from a very different angle[5],[7].

## **2-Learning experience**

Learning experience is divided into five categories:

- \* Presentation
- \* Discussion
- \* Practice
- \* Testing and grading
- \* Social interactions

The above categories are the main parameters used by the model presented by this paper to simulate a physical class or in other words create a virtual class.[2],[3]

### **2-1-Presentation, [4],[6]**

Live presentation is probably the most common method of knowledge dissemination in the world of structured learning.

While it may be at least a decade before we may be able to offer our students the sensation of touching a fish or smelling sulfuric acid online, most visual and aural

experiences available in a "real" classroom can fairly easily be recreated in the virtual world.

### **2-1-1-Text and images,[8],[11]**

As it is no longer possible to experience the Web on a text-only browser , it would make little sense to limit our choice of media for presenting content in a virtual classroom. Making text and images available to the students is incredibly easy these days. Each of the dominant OS platforms (Unix, Windows, MacOS, Linux) has at least one good Web (or HTTP) server.

The proposed model introduces easy to use environment and tools presented as virtual environment with elements that are familiar to the student.

### **2-1-2-Audio and video,[9],[10]**

Disseminating audio and video via the Web can also be done through standard HTTP servers, simply by placing the files in appropriate directories and linking to them from a Web page, so that users can download them to their computers and play them back at their convenience.

The proposed model contains the audio and video facilities and it is introduced in an easy entertaining way to the students.

### **2-1-3-Real-time multimedia,[2],[4]**

In contrast, a real-time broadcast of slides and audio (not to mention video) requires not only more powerful hardware, but also bigger, more stable network throughput, and full-featured server software, which may cost from several hundred to several thousand dollars, depending on the number of simultaneous streams and other factors.

The proposed model uses the best environment according to student needs.

## **2-2-Discussion,[3],[5]**

The main reason for organizing students into classrooms: to make it possible for one teacher to teach multiple students (hopefully effectively). It is cheaper and more practical than to have a teacher work with one student at a time. Another important reason, often overlooked throughout the history of world's educational systems, is that in a classroom students will also learn from one another. In fact, good teachers will frequently step aside and encourage free flow of knowledge, experiences, and unique perspectives their students bring into the classroom.

Holding conversations (discussions) online is relatively easy and very often takes the form of sending/receiving e-mail messages to/from a group of people.

Where WebBoard really shines is in the implementation of these features and in a handful of other ones, not always present in other packages :

- multiple "virtual boards" can be created, each with its own URL and a set of discussion topics. (The license places no limitation on either the number of virtual boards, number of topics in each, or the number of user accounts) .
- split-window view allows the user to browse postings in any order, without losing sight of their place in the overall hierarchy.
- file attachments (including images, documents, sounds, even small programs) may be posted alongside messages.
- users can edit or delete their own postings at any time.
- fine-grained access control can block specified users from posting to or even seeing particular topics.
- support for mailing lists means that users who choose to do so, can receive and post discussion messages via e-mail, without using their Web browsers, but with the advantage of having a structured archive of the discussion maintained for

them and available at any time .

The previous tasks are well introduced in the proposed model in an easy to use manner so that students can enjoy and make a good use of the discussion activity.

## **2-3-Practice,[7]**

Whether it was carpentry, calculus, or screenwriting, practice is an inextricable part of the learning process. That's why schools spend large sums of money on lab equipment, why teachers assign and grade homework, why "deliverables" of all sorts (posters, models, essays, project documentation, etc.) are required in almost every classroom.

It is (still) very difficult or impossible to recreate the entire range of a student's classroom experience in the online environment; one cannot expect a basketball team members to meet for their practice in a chat room, or to educate a car mechanic without having him work on a real car. Obviously, certain disciplines will fit more readily into the online environment than others, or even tap into learning opportunities that are hard to come by in the real world .

According to these limitations the proposed model can only be useful with the practices that can be done through the direct observation through the net.

### **2-3-1-Synchronous[8]**

In fact, in many areas today one can practice acquired skills without rising up from a desk chair. What is required is access to the tools necessary for a practice session, and a communication channel with the instructor. Both requirements can often be more easily met in the online environment than in the "real world", even in settings where some "hand-holding" is necessary, i.e. for the teacher to be present while a student goes through the steps of the practice activity. In such a setting one would probably want to use online communication software that allows *remote control* or

*application.*

Within the proposed model the online communication is guaranteed through the proper software that enables web communication.

### **2-3-2-Asynchronous,[8]**

Of course, not every practice requires a real-time participation of the instructor. In most cases the student is simply given an assignment, instructions on completing it, and a deadline; it is then up to the student to find the time to do it and to deliver the product, while the instructor may or may not intervene in the process. It is not difficult to setup an online environment that would support this mode of practice. At the minimal level even simple e-mail messages with file attachments might be all that's needed .

### **2-4-Testing and grading,[9]**

Clearly, it still has an important place in the real classroom, but even there it has been overshadowed by the emphasis on projects, portfolios, teamwork, etc. Furthermore, each step of the educational ladder means less reliance on tests and more on other means of evaluation; for example, a graduate student encounters far fewer tests than a junior in an undergraduate program.

In both the online and the real-life environments testing alone provides a good number of challenges:

- making sure that the person taking the test is the one expected to;
- providing unique test questions for each student;
- timing the test;
- automated evaluation of multiple-choice and yes/no answers; etc.

The proposed model presents a better, more trusted testing methods that introduces the participation of a trusted, authorized committee.

## **2-5-Social interactions,[2],[5]**

Classroom is a social place. Getting to know other students, forming friendships, chatting about common interests, expressing one's emotions - for better or worse, those are all important elements of the environment we call "classroom". In the "real" world they occur quite naturally, prompted by the sheer physical proximity of the students to one another, without any intervention from the teacher (sometimes *despite* teacher's efforts to the contrary...). It isn't so in the "virtual" classroom, where students have little or no chance of meeting each other in person, and where extra effort is often needed for social interactions to occur.

## **3-The proposed model**

The proposed model introduces new suggestions for the learning experience categories. It standardizes a method to represent the virtual classroom by abstracting the remote learning into two main components which are environment ( operating system, network, protocol, media) and integrated tools ( used within the virtual class to increase the learning experience of the audience).

The environment can be chosen according to the desired network and performance. The environment encompasses the hardware and the software of the network. Installing the proper software and the efficient hardware can increase the overall performance of the whole system.

The integrated tools is providing helping tools to the teacher and the student together, these tools can overcome the practicing problem by introducing a new trend for the distance learning which is (Distance Interactive Learning).

The Distance Interactive Learning is a way that enables the teacher to interact with the students and observe directly their performance and provide them with the

correct answers to their problems.

The DIL(Distance Interactive Learning) provides the monitoring through a window contains students implementation for what the teacher taught them, if the students did not do it right the teacher can see that through his monitor and directly inform them with the right solutions, the number of the students participating in the DIL depends on teachers available on the site and the right timing management for the teachers and students.

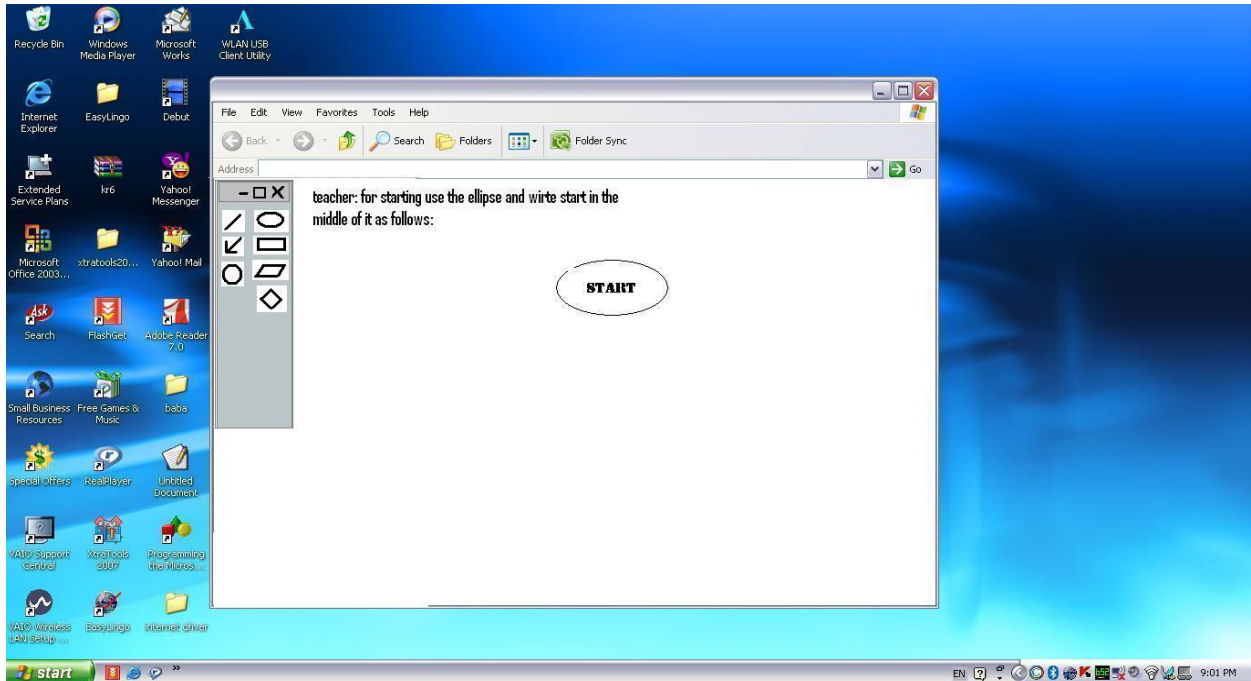
The DLI can provide several tools to the teaching class depending on the environment needs. These tools can be saved in a server and the client (teacher or student) can demand the proper tool for him.

### **3-1-Example for the proposed DIL(Distance Interactive Learning)**

The following example is for teaching design expertise for the (flow chart diagram for the computer science).

The teacher can provide the students with the correct way to start and then he can allow them to try themselves. Both steps can be observed by the two. Figure (1) shows that the teacher is informing the student about the first steps to draw a flow chart, the teacher is saying " for starting use the ellipse and write the start word in the middle of it".





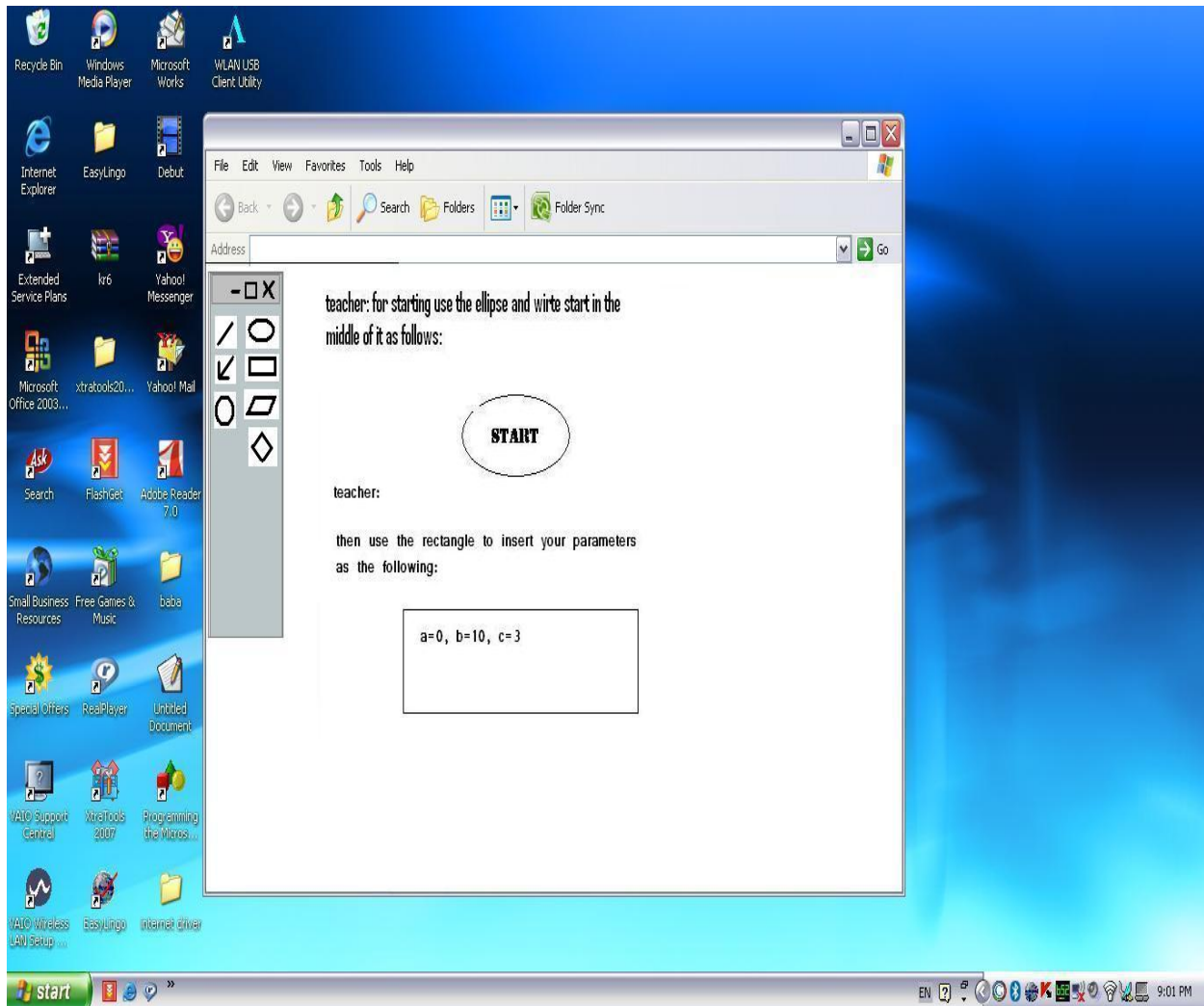
**Figure (1)**

**The teacher is informing the student about the first steps to draw a flow chart**

Figure(2) shows how the teacher proceeds in his lecture, this time he is saying "use the rectangle to insert your parameters"

**Figure (1)**

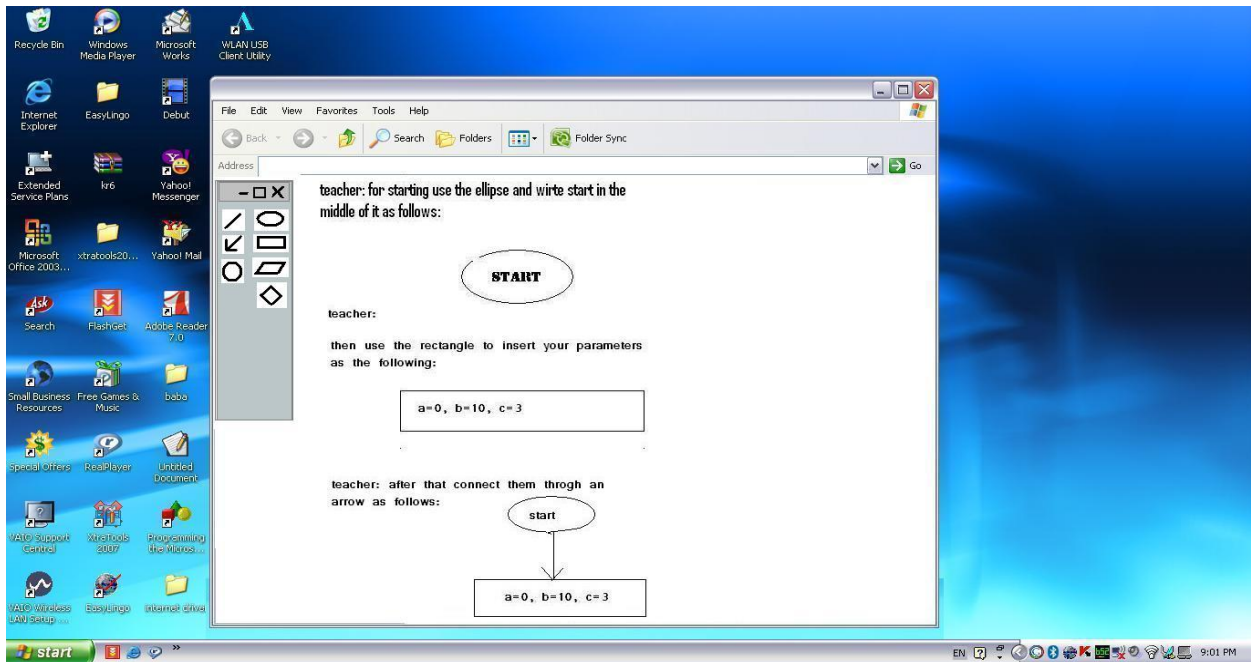
**The teacher is informing the student about the first steps to draw a flow chart**



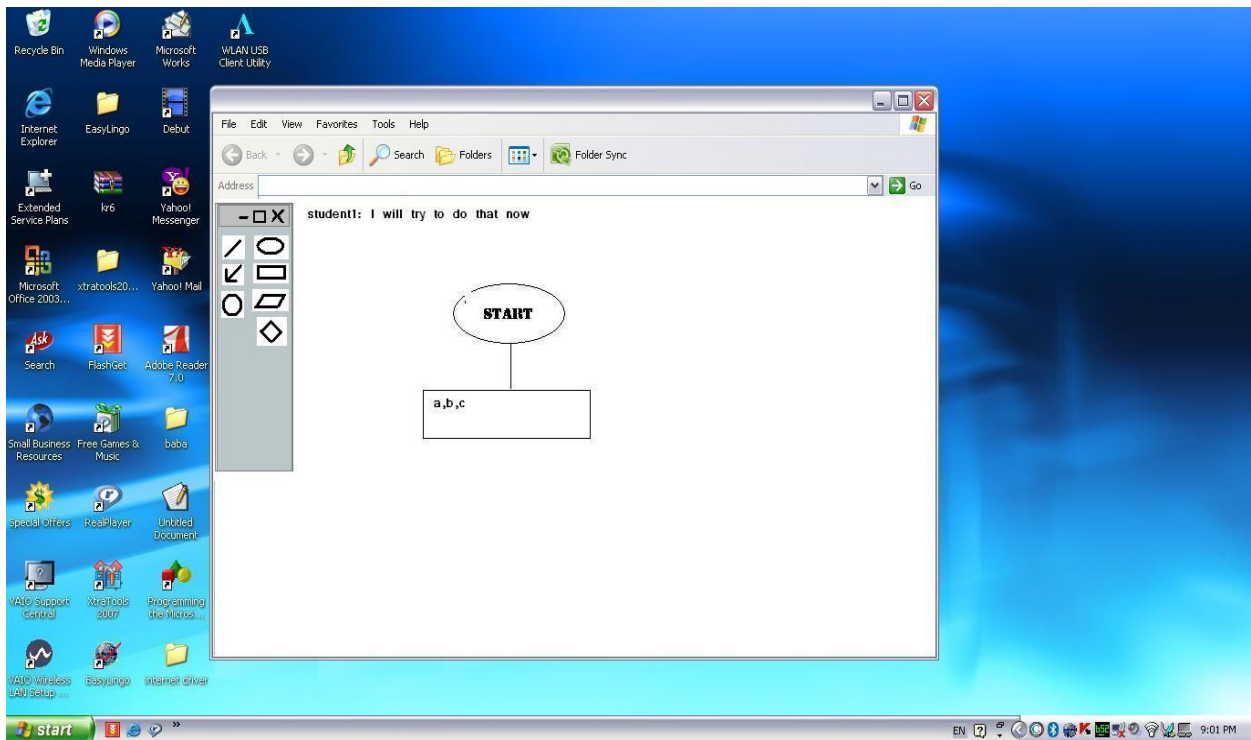
**Figure (2)**  
**Step number 2 in flowcharting**

Figure (3) shows the third step for the flowcharting lesson, where the teacher adds an arrow between the starting ellipse and the rectangle.

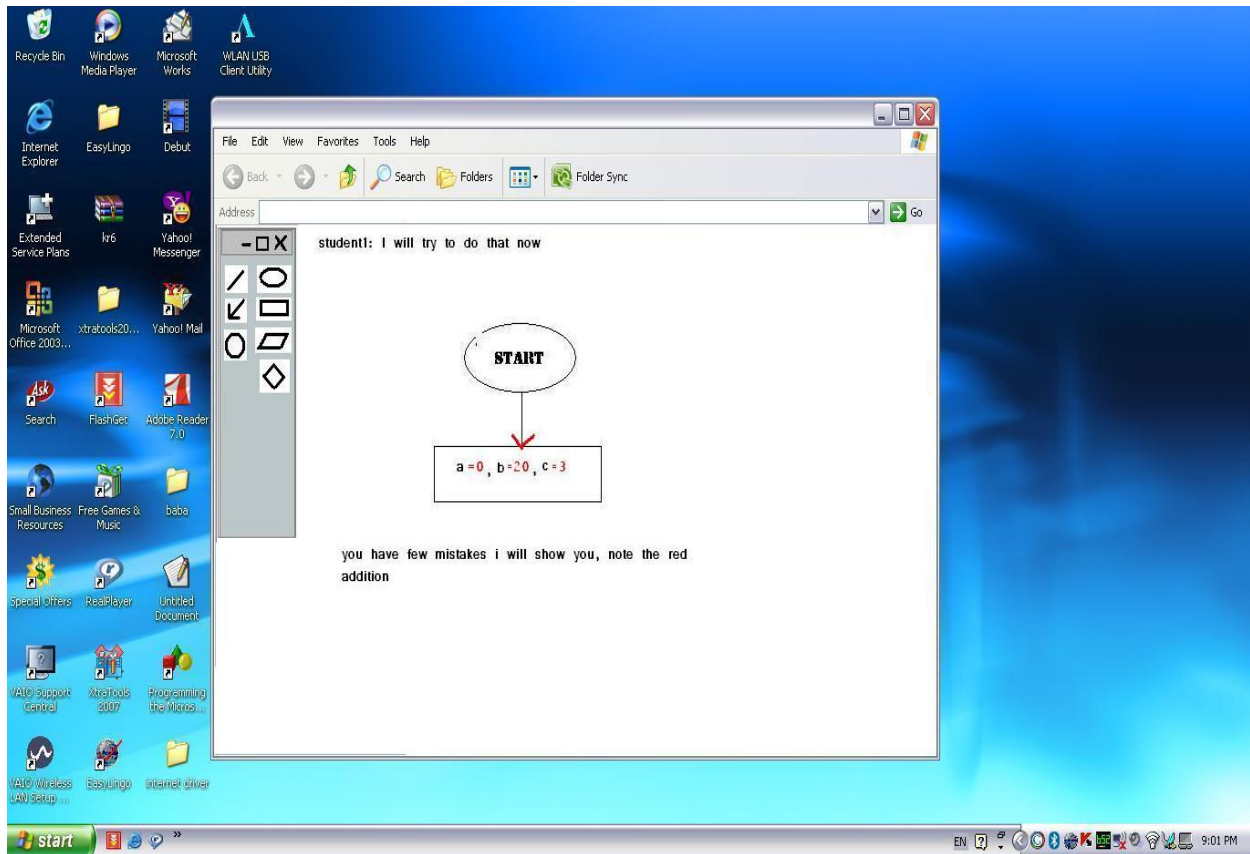
Figure (4) shows students' trials which contain some mistakes, figure (5) shows how the teacher corrects the diagram to the student using the red color.



**Figure (3)**  
**The teacher continues with his lesson**



**Figure (4)**  
**The student is trying now**



**Figure (5)**  
**Teacher's direct correction through the DIL**

### **3-2-Importance of the proposed model for the Distance education**

1-Students will be able to have access to electronic reserves and other resource materials in order to provide a high-quality educational experience for them at remote sites.[7]

2-the distance learning has been able to take advantage of its location in a large distance teaching university and the services and resources that this can offer.[9]

3- distance learning can overcome teachers obstacles such as the proper place to teach (considering safety criteria, and the ability to attend teaching location)

4- the proposed DIL (Distance Interaction Learning) ensures direct communication between the teacher and the students, this kind of learning can be helpful in skills learning (practicing lessons through the Internet)

### **3-3-Distance learning in relative to other education patterns**

Distance education is a new trend of the teaching technologies it is an advanced technique that stands over the main aspects of teaching technologies and tries to make a simulation for the whole class environment,[7].

The proposed model of distance learning tries to make use of most important teaching tools and integrate them together to get an effective learning activities and reach a better degree of the teaching result.

### **3-4-General opinions about Distance learning**

Distance learning started few years ago, the number of students attending it is increasing tremendously, that number depends on the services and teaching technologies provided through it.

Positive opinions toward the distance learning are growing, since the distance learning managed to prove and obtain good results to the students regardless to the place and time and many other obstacles that faced the learning process before,[8,9].

## **4- Conclusions**

Through this paper major conclusions can be made such as:

1. The proposed model can be useful for enhancing education process in a helpful, easy to use manner.
2. This model contains a new technology based on the basic parameters of the teaching strategy.
3. The proposed model can be helpful with the environment that is suffering from the lack of providing the good teaching staff.
4. This model can reduce costs needed for sending students abroad to get the proper level of education.
5. The proposal can increase the number of educated people since it can be available to any one and in different education levels.
6. This model is focusing on the best teaching techniques in order to reach a good teaching environment that helps to get the best learning results.

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# تنفيذ لصف وهمي

## عن طريق استخدام تعليم تفاعلي عن بعد

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### ملخص البحث

التعلم عن بعد هو بيئه تحاكي الصف الفيزيائي بتمثيل صف وهمي الكتروني ، هذا التعريف واسع و يشمل كل التقنيات و الاساليب التي تسهل هذه المحاكاة. هذا البحث مكرس لوضع معايير قياسية لنموذج لتمثيل هذه المحاكاة عن طريق اختزال موضوع التعلم عن بعد الى مكونين رئيسيين و اللذان هما: البيئه(نظام التشغيل ، الشبكات ، البروتوكول،الوسائط) و الادوات المتكامله (المستخدمه مع الصفوف الوهميه للارتقاء بخبرة التعلم للمتلقي). النتائج من النموذج المقترح في هذا البحث هي زيادة خبرة التعليم بالاضافة الى خبرة التعلم من خلال تعزيز المحاضر بادوات تستخدم للتمثيل الصوري للافكار المقدمه للمتلقي.

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