

## Smart Classroom Environment using IoT in advanced and lebanese French university Education

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**Article History:** Received: 11 January 2021; Accepted: 27 February 2021; Published online: 5 April 2021

### Abstract

When teachers go to the classroom, all the materials needed to conduct the lesson are taken with a piece of chalk, pen, pencil and notebooks, the notes are wasted without any modern technology and it is very difficult for a large number of students in the class to have too much contact. On average, we spend about 1,200 hours on Iraqi Kurdistan Airbnb students, with the help of interactive whiteboards, projectors, and writing boards, so that students can easily manage a lot of exercises that are easy to understand, with easy-to-understand tutorials, photos, and videos. Let's do it. These technologies will help teachers in the most effective manner to solve the most challenging solve the doubts not waste time. Then, these methods will help the teachers to change the classroom approach and make the students easily understand the lessons

**Keywords:** IOT, Smart Classroom, LED Projector, Document Camera, Interactive whiteboard, Digital Content solution.

### 1. INTRODUCTION

Internet of things is a strong networking device that is embedded with electronics, software, sensor, transceivers, and other similar devices which helps to interact, exchange, and analyse information, including one another and among the users, therefore becoming a necessary part of the internet. IOT modifies the way of life, that means responsive solution innovative products, efficient production and ultimately leading to exciting new ways to do business[1]. Seventy billion devices will be connected by 2022. Nowadays, IOT vision is present day aspiring and focuses on enabling smart, and surroundings are

Utilities for human beings in all places in the world. In addition, by means of presenting handy get right of entry to and communications, which include a huge vary of devices,smart homes, clever cities, durability cameras, report sensors, vehicles, industrial internet, clever farming, automation of road, and railway infrastructure, scientific factory, traffic, vehicles domestic and workplace ,the IOT is producing a greater convenient, secure, smart and individualize the experience.

It is best used for people, students and public administration which are created by IOT. It gives great solutions to great problems, giving solutions and the ability to satisfy their needs. Our smart Classroom enables real-time, digital environment, smart, physical environment, smart video games, video recording and simulation automatic feedback, over the honor of a lecture and the stage on the gratification of the auditorium with the lecture[2,8].

Figure 1 shows the internet of things fully authorized people and latest information to be connected anytime, From anywhere, with anything and anyone, preferably via any route/network and any service

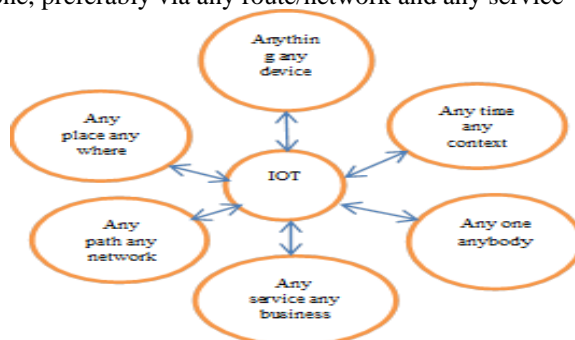


Fig 1: Any X – Point View

Within this paper, We described the possibility of the use of IOT to build a smart classroom our Lebanese French University our smart classroom is integrates voice-recognition, computer-vision, Automated classroom setup, Simplified video streaming and recording, Remote collaboration made easy,digital content solution, interactive whiteboard, Projector screen, web conferencing, Email and calendars, office online , collaborative tools, smart temperature sensors and smart heating, ventilation and air condition equipment, Smart student ID cards, attendance-tracking device, connected surveillance cameras and facial recognition systems, Research programs and other technologies to provide a tele-educational experience similar to a real classroom experience[2,3].

## 2. SMART CLASSROOM THOUGHT

Quality education is a necessary and essential thought of the latest competitive environment. Technology has affected us in each and every aspect. Earlier surveys have displayed that approximately or almost after 15-minute students' attention begins to lower. If the Teacher does not know exactly how to handle the blackboard, he does not realise that his image is hidden in the blackboard for some students of the class. Sometimes this problem occurred in the classroom for Students[5]. Students who are interested in the subject, Interested Students get upset and annoyed if the instructor erased the data from the blackboard earlier than they had a chance to copy the whole thing down. Students get the chance of dropping their interest for the relaxation of the lesson. When we are teaching by using smart class we got the best solution for that problem. A smart classroom is a good alternative to train the screen through such problems. It would have provided more understanding than words. Just for exiting without using this method, If students cannot find the volcano, tsunami, Scientific explorations, etc., can be of great benefit. Through smart classes, students interested in education are even more likely to be students. This can be taught from the first class. The smart classroom can be used in different ways, showing images, telling their names, and viewing the songs that are singing the memorable parts. In the usual way of teaching the teacher, all students in the classroom may be unable to attract. But it is possible when teaching through the screen[7]. In the case of a blackboard method, some areas like electric circuits, medical subjects, may be delayed in understanding the students. The smart class method makes it easy to understand the subject concept[4].

It is a recent vision in education. The uses of Education science be able to convey an enormous alternate in education. IOT and e-learning devices can fulfil the classroom environment extraordinarily amazing. Teaching through the computer, IOT devices will be a common thing in the future. Now a day's extraordinary multimedia lessons are available. By the use of IOT, instructors may educate the college students very easily[6].

## 3. IMPLEMENTATION LEBANESE FRENCH UNIVERSITY

In our university, Smart class introduced 2017. The smart classes are a modernised approach to education a Lebanese French University situation which provides quality learning in imitation of LFU students through supporting to them in better-thinking formation, concept elaboration, enhancement in studying expertise and educational achievement. Figure 2 shows our Lebanese French University smart class included In our new smart class having, projectors, internet wifi connectivity, tap, and LCD smart board, wall screen, dry erase whiteboard, document camera, VCR & DVD Scanner other multimedia devices such as home theatre,



Fig 2: a Smart classroom of Lebanese French University

In the connection of the scenario here, education, according to develop within education requires education and learning differences in conformity with achieving extreme growth or conceptual development. Here, Technology benefited to us in every factor of our life appropriate for communication to education. All these software and hardware facilities included in our smart classes[7].

### 3.1 Interactive Board :

The combination of analog and digital. Interactive whiteboard makes learning very interesting and engaging. Interactive whiteboard Software is an electronic interactive whiteboard. This includes multiple files similar to the course, Used to connect multimedia materials. Interactive series wiring is attached to the computer and wall-mounted tricolors (black, blue) and an eraser. Used to easily operate interactive webpage. The pen will automatically select the color from which we take the pen from the intelligence area. Pen takes from the area of color intelligence That kind of spontaneous papana will be eroded.

Document Camera: It provides a dynamic alternative to display and interact with content that does not need to capture long-life analog whiteboard content. Used as a wireless document camera every day. . Bring it to the front of the class or directly to my students' seat. We review student work, answer keys, calculators and other formulas while evaluating on the smartboard.

### **3.2 Smart Pen :**

With a notebook coupled with a smart pen, everything we write, such as writing and drawing or drawings, is digitally converted into a real-time editing system on the Internet.

The camera, which is mounted inside the smart pen, captures and records the movements of the tip of the pen moving over the pages of the notebook. It is noteworthy that the company's smart pen and notebook also have the facility to e-mail everything written in the notebook via the internet in real time by then connecting the smart pen to the internet via Bluetooth.

Not only that, if you happen to use a smart pen where there is no internet connection, it is worth noting that the smart pen has the facility to store all our notes of about 1000 pages and store them for later use. So, a smart notebook with sheets, a smart pen and a processor gives you the convenience of writing in a simple notebook and then editing it on the internet to our liking.

### **3.3 Software :**

The number of software programs out there, however, should look more objective, however, as time constraints have not been able to explore this issue in depth with life and the amount of content. Stability Still, some of the figures we stumbled on are noteworthy.

### **3.4 Google Education and Classroom :**

Google for Educate is a collection of the whole a number of Google tools to be used, namely part of the stability education process. Most people will understand that the teacher who hears the name will teach the lesson directly in the form of a video in which the students can watch [Google Meet, Google Hangout, etc.]. But really Google Classroom is not like that. The Google Classroom has a variety of options for teachers and students to engage in discussion, provide homework [assignment], edit and provide information about it to students.

For example, suppose the teacher conducts a class on a subject. He can upload and publish it via YouTube or run it live using apps like Google Meet and Google Hangout. The teacher can share the video with the students in Google Classroom. He can also give students homework on that curriculum and conduct an online exam. You can edit it and give that information right there.

## **4. ADVANTAGES OF LONGEVITY SMART CLASS ROOM**

In our university executed goals are a smart classroom to create an online board with practical software in education method at university and at home. To cover complete instruction between teachers and college students and create a regulation that may potentially replace printed class books, exams, grading, books. To confirm grate usability by creating an intuitive user interface.

### **4.1. Workability:**

Interactive whiteboards (Electronic white board) allow you to display terrifying forms of media that contain videos, animations, recent photos, illustrations, live maps, maps, games and video.

These equipment help in enlarging the nature of the content material that can be used in learning. In addition, SMART Board makes training to continue to be greater conceivable as the precise kinds of supplying documents are without problems available, and helps students to understand in an easy way [11].

### **4.2 Renovation education/education experience:**

Smart boards provide the latest state-of-the-art technology for instructors to teach and student to learn. These tools

support a wide variety of learning styles. For example, visual educators can see their teachers using whiteboards to plan visual elements, while audio learners can listen and discuss. Boards, on the other hand, come with touchscreen intentions that allow tactile learners to touch and interact. No specific space is required. Challenges can be easily faced. Learning and teaching with tireless enthusiasm occurs because of the video. Beyond time

#### **4.3 Interact or share:**

The interactive attribute of smart boards provides an opportunity for beginner and elementary learners to share and participate in the educational process. Interactivity provides a platform for university students to understand the subject through touch, drawing and writing, they can review subject any time, timers, reading guide online. A well-educated and average student has the opportunity to participate in a presentation and discussion or to perform a performance and immediately resolve doubts [10]. In addition, the boards provide a quick rating without wasting time, and effort, so that learners can get instant feedback very quickly and easily. Teachers and university students can identify individual strengths and weaknesses over a few subject areas, and isolate areas / topics that require more attention or review as they gain current information [4]. Thus Smart Board helps university students to increase their engagement and knowledge in learning in a very quick and easy way from school to college students.

#### **4.5 Low-Maintenance:**

Smart Boards are pure and easy to use. Smart boards are clean and easy to use. There is no interruption in cleaning or maintaining white boards. The information on the screen can change the use of the device or pen as a special highlight. It is not necessary to use unhygienic chalk or marker pens [10]. Once the cost is paid, there is no need for re-maintenance. And we can keep the classroom clean.

#### **4.6 Access to online documents & tools:**

Smartboards allow beginners to access a wealthy database of online resources easily. Teachers can use the enormous range regarding online data sources such as many dynamic databases, the online video then news items to reinforce their lessons. Learners can also shortly access a wide range of passionate tools and resources to conduct. The highlight of the smart board is its straightforwardness. For example, suppose we read about war in a history lesson. There, writing is the only way to imagine anything. But it is unknown at this time what he will do after leaving the post.

When you watch it as videos, you can know the context of that time, the clothes they wore, the weapons. Then when you read the books again, history will be etched in the mind as scenes. With that in mind, you can write the exam. No matter how long but never forget.

#### **4.7 Technology Integration:**

Smartboards allows for the integration of a number of applied sciences in the rule to improve the education experience. For instance, it is possible to connect equipment such namely microscopes, record cameras, cameras or video cameras to a whiteboard to a useful resource in instruction. It is additionally possible to combine the interactive education equipment with a large range of software applications[9].

#### **4.8 Communication:**

Interactive whiteboards allow you to connect to specific locations. For example you can connect yourself to any corner of the world, in that class. ; Creating better collaboration and distance learning environments will help you resolve your doubts immediately. When using smartboards, the student shows how to increase student collaboration from student to student and increase the overall contribution of the lesson.

#### **4.9 Dashboard screen:**

The first screen that seems after clicking on a course. The dashboard suggests all the information about the course, namely well as the latest resources, homework, tests, messages and updates in the education plan. That left panel is seen in every screen and is used to navigate through the complete content material of the course.

#### **4.10 Homework:**

The screen shows all the homework assignments within a table format. Teachers can add, edit, set due dates, while students may filter through homework, if needed and, of course, do homework[14].

#### **4.11. Tests**

Tests are presented in the same table format. For instructors the most important actions are positioned on the top, every test when clicked shows every student that took it, as well as their grades, or a "grade" button.

#### **4.12. Resources**

All uploads, ordered by date. Students do only download. They can upload files only when doing homework. Teachers control uploads Here we can maintain their types of accounts first one for teachers, second for students, and third for administrators.

In that account Teachers may do split their college students or groups, send common messages, instructors make learning plan, administer a test, they can hand over homework and set the last date. After teachers can evaluate and give grades for their paper.

The same portal student can do their lesson through browsing through uploaded lessons, they can do homework toughness after they may upload a file within that portal, they can write online test inside a set time duration, and students can download their materials.

Students use mobile phones and laptops in the smart classroom to ensure their safety. Creating a smart classroom in schools is a major challenge but the school can introduce its smart classroom system to ensure its maintenance and the safety of the students. Over time students will be able to become students with knowledge of English and technology and a community of educated technical knowledge will emerge because of students, learners, and educators to continue to develop in their field.

**5. RESULTS**

In this section, our university after changed old teaching to the new smart class, Let's see what changes have been made. In the new method, the recording, and audio system, with these facilities, were immediately resolved 1 shows that the attendance of year of registration. Table 2 increased after implemented advanced online, video recording, online feedback the doubts of the students by the teachers. The Table the student is higher than the shows that the pass rate has our smart class.

s.no	Year	Result Percentage	
		Morning Class	Evening Class
1	2016	42	58
2	2017	55	75
3	2018	58	80

Table 1: attendance percentage of morning and evening class

s.no	Year	Attendance Percentage	
		Morning Class	Evening Class
1	2016	83	77
2	2017	90	83
3	2018	95	98

Table 2: Result percentage of Morning and Evening Class

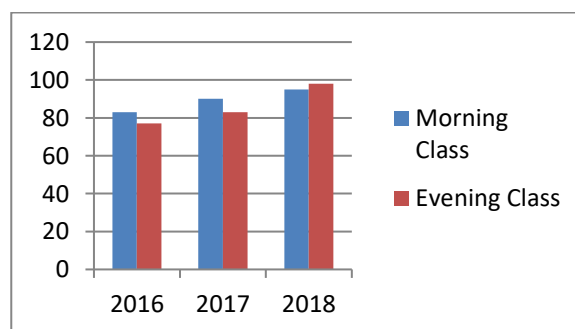


Figure 3: Successfully increased attendance Percentage

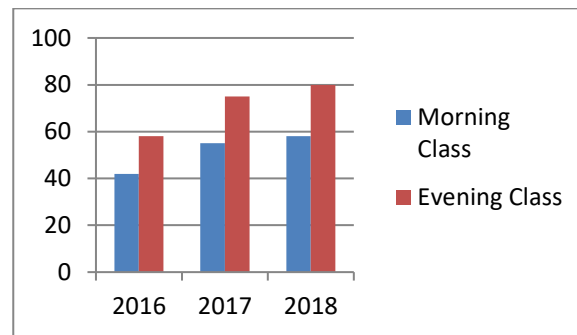


Figure 4: Successfully increased result Percentage

New strategies of teaching have been delivered which is identified, namely a smart class. It uses the academic material, virtual animation modules, and videos, or whole departments are using that concept. Our college students got the opportunity a chance to students to enhance their performance. Students' final result improved, after implementing Smart class. After implemented IOT for the smart classroom for our university Results, and Students' attendance rate is also increasing semester by semester.

## 6. CONCLUSION

In this Research paper, the smart classroom concept is described in a completely recent perspective. That is, the Internet of Things can be managed as a network of connected devices (such as printers, projectors, digital whiteboards, and cameras). These devices also generate data that can be used to gain insight into how they are used. With management software, these integrated devices make lecture room tasks easier, allowing teachers to spend more time teaching and less time with lecture room hardware or software. The Smart Class system will definitely bring a renaissance in the classroom. It updates the traditional teaching method. Students, slow learners, people with learning disabilities - will be a boon to special children. Students will also have greater relief from the hassle of better educational institutions, the structure of the educational institution, the shortage of the best teacher, as well as the bookcase, the trip to school and college, and the waste of time. Our paper is widely spoken focusing on the applications of surveillance and sensitivity technology to examine the listener's behavior in a discerning environment. Our paper is broadly speaking focused on the uses of monitoring and sensing technology to explore the listener's behaviour in an intelligent environment. This concept can assist you to provide what your college students want a personalised, flexible education model that allows them to learn anytime from anywhere. Stability Students can access their project from any device, giving them access to all the tools that they necessity to accomplish theirs out of class assignments. They can obtain after class period recording the classroom video to make it available online for later viewing.

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