



## Smart Classrooms in Recent Education

### KEYWORDS

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**ABSTRACT** *In today's context technology has the greatest influence in every field especially in the field of education the role of technology is becoming inevitable. The classrooms with black board have been converted into smart classrooms, which integrate all the multimedia elements to achieve multi-faceted goals. Through smart classrooms the students learn and capture information more rapidly than the conventional classroom set up. The understanding of the students are better as they tend to learn much complicated topics more easily for the concepts are explained in simulation mode. This paper brings out the impact of smart classrooms in recent education*

### Introduction

Smart Classrooms integrate voice-recognition, computer-vision and other technologies collectively referred to as intelligent agents to provide a tele-education experience similar to a traditional classroom experience. Smart Classroom was inspired by research on Smart Space at NIST. Smart spaces are work environments with embedded computers. Information appliances and multi-modal sensors that allow people to perform tasks efficiently by collection unprecedented levels of access to information and assistance from computers

Based on geographical locations of students and the teacher 4 basic architectures that essentially cover the whole range of Smart Classroom. These architectural demonstrations help us understand the general and specific requirements of Smart Classroom implementation in terms of technology type, resource utilization, methods of information dissemination, and nature of student-teacher interaction.

### Single Classroom Architecture

In single-classroom architecture, a physical classroom is augmented with provisions that enable students to enjoy an enhanced learning experience and teachers to enjoy an enhanced teaching experience than what is provided by a conventional classroom. The provisions include an array of equipment including multimedia playback systems, projectors, large video displays, computers etc. enabling the students to listen to the ongoing lecture without any barriers while having access to supportive information including past lecture material at finger tips. All modern classrooms in most educational facilities today fit into this architecture. (Michael.D 2006)

### Scattered classroom architecture

In this scenario the students are geographically separated and each student required having a personal computer. The teacher and the students are connected via the internet or dedicated networks and a virtual classroom is formed using audio visual and synchronous asynchronous information access tools that are made available at each participant's computer (Mark Pullen, 2000)

Unlike the single room architecture, this setting enable students to study from a remote distance without have a need to be physically present in the classroom. Consequently, it opens a new window for education and allows students to study from their workplaces or houses while enabling them attend to their personal, family or work related responsibilities (Tony Clear,2001)

Although this Smart Classrooms model can range in scale from a classroom having a few students to a cyber university,

a large scale accompanies an increasing and teaching experiences to the students and the teacher, respectively.

### Point-to-point, two-classroom architecture

This architecture harmonizes the features of the above two architectures to produce a feasible smart classroom model for realizing high-quality education for two groups of students who are geographically located apart. The architecture essentially connects two geographically separated physical classrooms, with the teacher being located in the local classroom (Shiy.Xie W. 2003)

In addition to the above mentioned electronics gadgets in two-classroom architecture also used sophisticated resources such as media boards high speed dedicated links for high-quality tele-presence etc., which are not affordable by individual participants in a scattered smart classroom scheme.

### Multiple Classroom architecture

This architecture is an emerging form of Smart Classroom that attempts to scale up the two classroom model while preserving the quality of deliverance and resource affordability by interconnecting clusters of students to a local classroom through high-speed links. Multiple classroom architecture is a promising solution to realize a high-quality educational facility over the globe and several attempts have been made to implement this scenario. However, because of inherent non-trivial challenges such as bandwidth effective information transmission, teacher capacity class interaction, tele-presence etc., its practical development, especially over the commercial internet has been quite difficult (N cast co-operation 2002)

### Implementation Technologies

Smart Classrooms integrate an array of technologies to achieve several multi-faceted goals. i.e., (a) enable distant teachers to become as effective as those who teach at local classrooms;(b) provide the students with an enhanced local class participation experience;(c) ensure system wide security; and (d) provide accessibility to past contents. In achieving these goals, the adopted technologies should facilitate multiple natural modalities for teaching, learning and class interactions. Furthermore, these must be accompanied by secured, reliable and high speed synchronous/ asynchronous contents. The followings can be considered as the most important state-of-the-art technologies which can be used for the implementation of both current and future smart classrooms.

### Sensing

Sensing technologies include capturing of vital information in the classroom to realize tele. Presence, interaction, and

quality delivery of lecture contents. Systematically arranged arrays of video cameras and microphones are used to sense the information. The quality of sensing depends on the performance of video and audio devices, camera focusing and zooming appropriate device positioning and switching etc. Contest-aware sensing in smart classroom is a promising approach for reaching the goal of attentive hatching and learning.

### Rendering

#### Presentation support

For quality deliverance, teachers should be facilitated with an environment that allows them to use natural teaching modalities rather than confining them to a computer by requiring the use of a mouse and keyboard. In order to integrate natural teaching modalities with the system, the state-of-the-art technologies provide devices that accommodate pen-based electronic writing, which incorporated most functions of a mouse in a touch screen (Smart Boards), laser-pointer-based interaction tools (Laser2cursor), speech-capable virtual assistants, which perform through voice action on presentation slides, biometric based login etc.

It is a known fact that the best way to ensure mastery and retention of a specific instructional subject is to present the subject to the user in multiple; increasingly-engaging formats. Students read about a topic, hear about it, see it, and then put into practice. They can repeat any step until they feel comfortable with the material. A graphical presentation of this idea by CERT. As can be observed, the subject mastery level continues to increase as one utilizes more of his/her sensory powers.

Students can enhance their learning by replaying recorded lectures, which are synchronized form of lecture slides, videos and transcripts. Hands-on labs, which are preformed on virtual machines, help the students to master and retain the subject matter.

#### A workable solution;

Technical challenges such as

- Lack of scalable transmission technologies
- Lack of efficient grouping mechanisms
- Lack of efficient session management

Could be overcome by adopting a workable solution to facilitate high quality education around the globe through multiple classrooms involves the following two important aspects.

- Simply the transmission and session management complexity
- Make it easily Integra table with existing systems.

#### Conclusion

The effectiveness of remote lecturing largely depends on the ability to fine-tune the products, like parameter optimization and overriding of auto settings, and most importantly, on the ability to enhance these with suitable home grown technologies designed for a dedicated purpose. With current commercial IT products, it is quite easy to link distant locations together and distribute top-quality education, developed through rigorous years of research and teaching endeavors, form one location to many other locations.

### REFERENCE

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