# Analysis of Smart Learning Architecture

[1]Mary N Peter, [2]Kalaiselvi K, [3]Gopika.S

[1,2,3]*Department of Computer Science, Kristu Jayanti College, Bengaluru.*
[1]*maryjacob@kristujayanti.com* , [2]*kalaiselvi@kristujayanti.com,*
[3]*gopikas@kristujayanti.com*

***Abstract***

*With the growing progress and embracing of smart digital technology integration for education, large amount of data is collected from informative backgrounds which has been analyzed and given motivational perceptions to the educational worker. The data-driven method for improved understanding and enhancing knowledge together with the learning situation paves the way for learning analytics to contribute to smart learning. The current learning analytics lacks knowledge awareness, an essential component in smart education—this paper analysis the smart leaning mechanism and reviews the smart leaning application development tool. The survey has been taken based on the questionnaire related to smart learning with the respondents of 100 individuals. The paper also highlights the smart classroom integrated technology development towards smart learning architecture. The analysis includes the negative and positive impact of smart application-based learning and cost-effective leaning for the middle-income sectors.*

***Keywords:*** *learning, mobile-based learning, smart watch, cloud-based communication*

## 1. Introduction

The educational organization has seen a noticeable flood in scholastic principles, movement, and curiosities in current years. Colleges and other instructive foundations have begun executing new approaches over-imparting wisely using sheets, projectors, and shrewd journals, and so forth. Also, we can't deny that these innovative updates make the training framework more intuitive and more agreeable. Understudies like to utilize tablets, telephones, and different gadgets to share the study material, sparing their time, and exertion [1]. We find this brilliant innovation causes educators to transform drilling addresses into a drawing in the meeting. It isn't just about sharing data yet additionally about making an excellent online introduction by abstaining from composing physically.

Utilizing the savvy study hall innovation and intelligent whiteboards, data can be delineated with the assistance of photographs, maps, charts, flowcharts, and vivified recordings. This makes learning more alluring, energizing, and straightforward. It urges understudies to learn and remember the point for a drawn-out period [2]. It is a well-known fact. At the end, when we learn through visuals, we get the subject rapidly as opposed to merely investigating the chalkboard and listening [3,4]. The paper has been organized as follows. Section 1 describes the introduction of smart learning. Section 2 delivers smart learning architecture. Section 3 describes tools and techniques for developing a smart learning environment, section 4 analyses the impact factor for smart learning as the new paradigm, and section 5 concluded the article.

The design of the brilliant framework comprises of three segments: (1) keen intelligent watch; (2) instructor side savvy application; and (3) cloud-based investigation framework.

**Smart Educational Watch:** to gather school understudies' learning communications and physical data, where learning connections incorporate the occasions for lifting hands and addressing questions, and the comparing reaction time in private/bunch rivalries; organic data gives pulse, practice quality (number of strolling steps), movement recurrence, and so forth. It is likewise liable for revealing such information to the educator side application and cloud-based framework for additional examinations.

**Educator side Smart App:** to get the intuitive data from the smart watch and give unique capacities to instructing with the goal that the instructor can quickly comprehend school understudies'

**Cloud-Based Communication Systems:** Utilizing cloud-based correspondence frameworks in advanced study halls through video conferencing and bound together interchanges stages can change understudies into virtual field trips they wouldn't take in any case. [5]

## 2. Smart Learning Architecture (Sla)

This section explains the enlightenment of the technical software package stand supported by the SLA. The SLA includes several modules like connected sensors, educational, and collaborative work that has been integrated with cloud-based e-learning services [6,7,8]. The gateway in the smart classroom improves collective learning experience as to conveyance of great information to understudies. Hence, we decided for our usage: videoconferencing framework, Video on Request (VoR) web-based worker, cloud the board data framework (CBDF), and a passage.

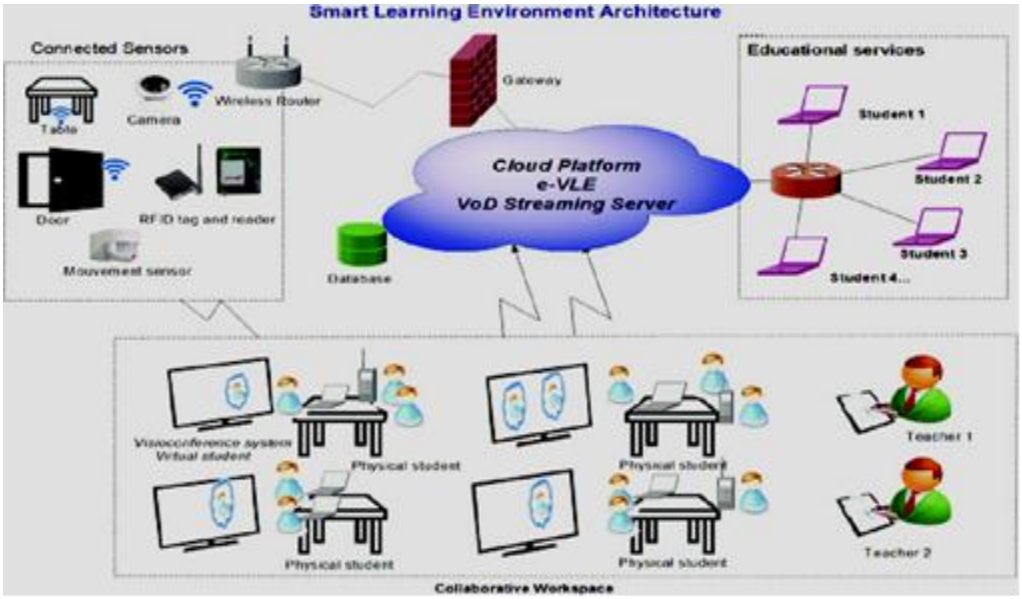


**Figure 1: Principal elements of our designed SLE**

The proposed passage is known as an extension between different associated gadgets that finished the product stage with various accessible advancements. The key component of our planned SLE has appeared in Figure 1.

## 3. Tools and Technology in the Smart Classroom

Smart classroom Tools are an accomplishment because superficially fascinating instructing strategies connect with the general media faculties and are demonstrated to be additionally speaking to the students. This strategy for showing encourages understudies to break out of their shells and become great communicators. Table 1 records barely any study hall apparatuses/sites fundamental for groundbreaking intelligent learning [9,10,11].

**Table 1 classroom tools/websites essential**

| | | |
|---|---|---|
| 1 | **Desktop or Laptop** | In a computerized Educational-room, a work area or PC goes about as the focal framework that stores data and fundamental for management workouts |
| 2 | **Smart Visualizers** | A visualizer or report camera is easy to utilize and adaptable computerized learning apparatus that permits instructors to extend records on enormous screens |
| 3 | **Communicating Whiteboard** | Whiteboards have replaced the customary writing boards, and an advanced study hall without an intelligent whiteboard is inadequate. |
| 4 | **Collaborative Projector** | The intelligent projector is a compact arrangement that helps convert any surface (existing projector screens, whiteboards, or divider surface) into an intuitive surface |
| 5 | **Basic Projector** | You can transform any explicit level surface into an intelligent one with a basic projector. |
| 6 | **Cardinal Camera** | Educators can utilize advanced cameras to improve training inside and outside of the educational room. |
| 7 | **Tablets** | Tablets are well known with understudies. These gadgets empower perusing as well as gives understudies the choice to invigorate their exercises at some random time |
| 8 | **Multimedia-Pens** | A mixed media pen or pointer is an extraordinary device to help a youngster's imaginative virtuoso. These helpful apparatuses can make a fine art or include more exact content or drawings to a picture or chart. These creative instruments keep kids connected with for quite a long time and empower learning simultaneously |
| 9 | **Microphone** | A remote mouthpiece kills the shackles of managing long loops of electric wires, which regularly lead to youngsters stumbling and falling. Small amplifiers let you be more versatile and permit you to be sans hands. |
| 10 | **Speakers** | Not anymore "The last seat, would you be able to hear me?" questions. Speakers guarantee that you are perceptible to the entire class, and nobody passes up |

| | | |
|---|---|---|
| | | essential focuses. |
| 11 | **Student-Response System** | Spare time and cut down on paper costs with a Student reaction framework. Incredible for Educational-room with numerous understudies. These frameworks help assess understudy aptitudes precisely inside a couple of moments. |
| 12 | **Student-Response System** | Spare time and cut down on paper costs with a Student reaction framework. Incredible for a study hall with countless understudies, these frameworks help assess understudy aptitudes precisely inside a couple of moments |
| 13 | **Valuation Tools** | AnswerGarden, Ask3, and Animoto are famous Feedback evaluation instruments that are ideal for web-based conceptualizing or surveying. Educators can utilize these Apps to dissect an understudy's musings or survey answers to explicit inquiries |
| 14 | **Edu-Software** | Here is a lot of instructive programming that bolsters the essential scholarly educational plan. This product additionally empowers instructors to smooth out the understudy confirmation measure, robotize participation, set test timetables, and numerous such exercises |
| 15 | **Computerized-Podium** | An advanced platform is a cutting-edge address stand outfitted with different media segments/gadgets that empower a continuous learning meeting. |
| 16 | **Printer** | A printer is an essential piece of making beautiful tasks, reports, or specialties, and understudies are more excited about observing their work in the entirety of its great wisdom. |
| 17 | **OMR-Scanner** | OMR scanners are utilized for filtering OMR sheets or structures, incredibly valuable while leading assessments for an enormous gathering of understudies. |
| 18 | **Cloud-Based Communication Systems** | Utilizing cloud-based correspondence frameworks in advanced study halls through video conferencing and brought together interchanges stages can change understudies into virtual field trips they wouldn't take in any case. |
| 19 | **Skype** | Skype has upset the universe of video conferencing, and it's "In the Classroom" program empowers instructors to extend their educational plans past homerooms. Skype likewise goes about as a stage that permits understudies to collaborate with global speakers and instructors |
| 20 | **iThoughts** | I thought is Apple's psyche planning App that permits teachers to outwardly observe and see how understudies think while examining thoughts or concocting arrangements. |
| 21 | **Google-Knowledge** | Google Knowledge Graph gives live online instructional exercises, exercise plans, intelligent class materials, and |

| | | |
|---|---|---|
| | **Graph** | numerous teachers' assets. New improvements in Google Knowledge Graph, for example, Voice Search and Carousel, have made this item significantly more comfortable to use. |

## 4. The Positive and Negative Impact of Smart Classroom SLA-Analysis

The most crucial factor of the smart learning involved the bond between teacher and student. The survey has been taken in the IoT-smart learning environment the rating has been placed on no, yes, and maybe for "Do you think the teacher-student bond is prevailing in online teaching?" while in the class.

Figure 2 shows the result of the Teacher-Student Bond. The income and cost of smart learning have been interconnected with each other [11]. Smart education's partial setup has been achieved by the smart phone or other technology described in section 3. The survey has been taken based on the questionnaire related to smart learning with the respondents of 100 individuals, "As a parent, how much percentage of your income do you have to spend for online mode of learning materials/activity for your child?". Figure 3 shows the result of percentage-wise. Figure 3 depicts the usage of the Internet over the purposes other than the online classes.

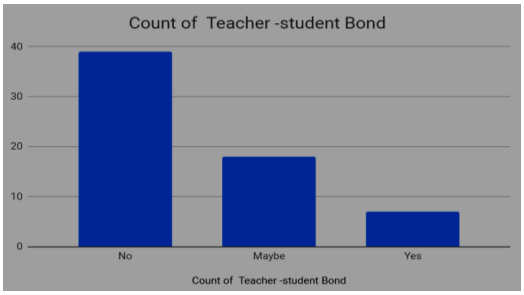


**Figure 2: Teacher –Student Bond**

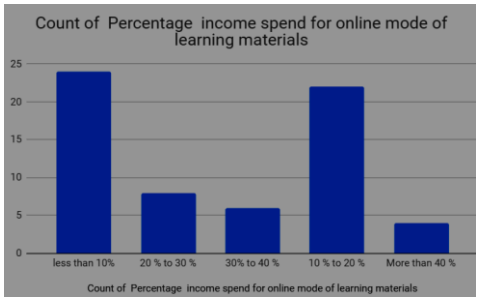


**Figure 3: Income spend on online mode of learning materials**

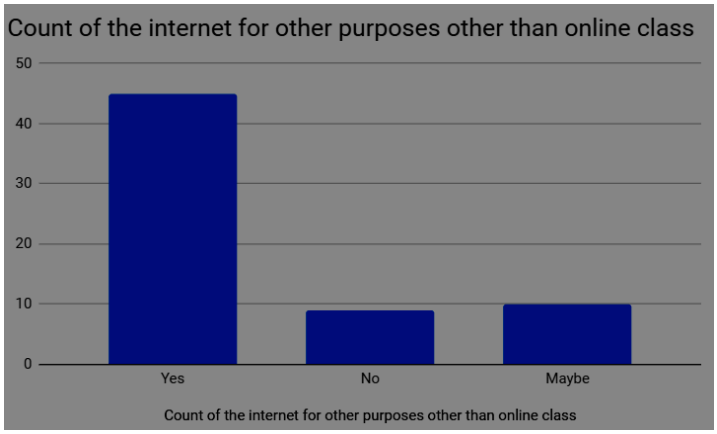


**Figure 4: Usage of the Internet other than an online class**

## 5. Conclusion

Innovation and the Internet are not all awful. The Internet has numerous complimentary credits, too. The first is internet realizing, which has opened up various open doors for youth. This remembers taking classes for the Internet for entertainment only and secondary school and school credit. In any case, internet learning has expanded advanced education, with more than 7 million understudies taking an online course. The paper analysis the smart leaning mechanism and reviews the smart leaning application development tool. The survey has been taken based on the questionnaire related to smart learning with the respondents of 100 individuals. The paper also highlights the smart classroom integrated technology development towards smart learning architecture. The analysis includes the negative and positive impact of smart application-based learning and cost-effective leaning for the middle-income sectors.

## 6. References

[1] Rivera J, van der Meulen R. Gartner Says the Internet of Things Installed Base Will Grow to 26 Billion Units By 2020. Gartner. (2013).

[2] Sundmaeker H, Guillemin P, Friess P, Woelfflé S. Vision and challenges for realizing the Internet of things(2010).

[3] Buhalis D, Amaranggana A. Smart tourism destinations. Paper presented at Proceedings of the 2014 International Conference on Information and Communication Technologies in Tourism(2014).

[4] Vermesan O, Friess P. Internet of Things: Converging Technologies for Smart Environments and Integrated Ecosystems. Aalborg, Denmark: River Publishers,(2013).

[5] Sintef OV and Norway PF, eds. Internet of Things–From Research and Innovation to Market Deployment. Aalborg, Denmark: River Publishers,(2014).

[6] Rose K, Eldridge S, Chapin L. The Internet of things: An overview. Reston, VA: The Internet Society (ISOC). (2015).

[7] Al-Fuqaha A, Guizani M, Mohammadi M, Aledhari M, Ayyash M. Internet of things: a survey on enabling technologies, protocols, and applications. IEEE Commun Surv Tutor.vol17,no.4, (2015), pp.2347-2376.

[8] Stankovic JA. Research directions for the Internet of things. IEEE Internet Things J. (2014).

[9] Chen S, Xu H, Liu D, Hu B, Wang H. A vision of IoT: applications, challenges, and opportunities with China's perspective. IEEE Internet Things J,vol.1 no.4,pp.349-359.

[10] Khan R, Khan SU, Zaheer R, Khan S. Future internet: The Internet of things architecture, possible applications, and key challenges. Paper presented at:2012 10th International Conference on Frontiers of Information Technology (FIT); (2012).

[11] Palanivel k, Suresh Joseph K, Service-Oriented Reference Architecture to Smart Education, International Journal of Advanced Scientific Research and Engineering Trends. Vol 5, no.2, (2020).