TEACHING THROUGH SMART CLASS FOR DEVELOPING CONSTRUCTIVIST TRENDS FOR QUALITY EDUCATION

FIELD OF THE INVENTION

This invention relates to the field of education. In this invention, an intelligent class strategy is an innovative approach used in language and other subject classrooms to teach content engagingly. Smart learning environments allow students to learn flexibly and collaboratively, fostering personal and collective intelligence. Personalised learning support could also improve student expectations.

BACKGROUND OF THE INVENTION

A learning hypothesis found in psychology attempts to explain how individuals gain information and learn new skills. As a result, it has direct application in the field of education. Constructivism encourages students to design their own learning experiences. Constructivism education is concerned with developing excellent learners rather than merely imparting knowledge to pupils. Students in a Constructivism classroom study topics naturally and organically. They are encouraged to build on their views and support their points of view with facts and proof.

Smart classrooms are electronically enhanced lecture theatres and classrooms. These rooms create new opportunities in teaching and learning by integrating computer, multimedia and network technology. The smart classroom is highly technological concept where presentation of content is optimal, interactive, convenient access of learning resources. It is also helpful for contextual awareness, classroom layout and management.

SUMMARY OF THE INVENTION

An intelligent class strategy is an innovative approach used in language and other subject classrooms to teach content engagingly. The conventional classroom's interior structure and arrangements do not match the educational system’s digital changes, technique, and social environment. Smart classrooms rethink learning space, student expectations, and teaching and learning resources. This is a new paradigm in educational development. Innovative education aims to improve learners' lifelong learning quality. Learning in intelligent environments is based on contextual, personalised, and seamless learning. Technology advancements, modern society, and pedagogical theory will impact innovative education. We expect intelligent learning environments to reduce cognitive load, allowing learners to focus on sense-making and ontology construction. Also, students' learning experience could be deepened and extended, promoting holistic development (affectively, intellectually, and physically). Intelligent learning environments allow students to learn flexibly and collaboratively, fostering personal and collective intelligence. Personalised learning support could also improve student expectations.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig.1 Depicts the Smart Model.

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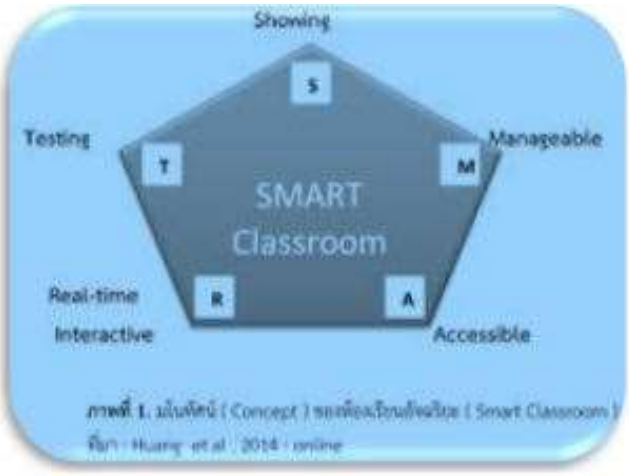

Fig. 2 Depicts the Smart classroom.

Fig. 3: Depicts the View of A Smart Classroom**.**

BRIEF DESCRIPTION OF THE INVENTION

Constructivism is a learning theory found in psychology that explains how people might acquire knowledge and learn. It, therefore, has direct application to education. Constructivism allows students to construct their learning. Constructivism teaching is about making good learners instead of simply giving students the information. In a Constructivism classroom, students organically explore concepts. They are encouraged to elaborate their ideas and use evidence to bolster their opinions. Using constructivism in the classroom can encourage students to work as a team. More and more group activities such as group discussion or debate can promote teamwork and collaboration. Group discussion promotes peer learning. Encouraging students to participate in several activities will make them neither active learners nor passive. Thus teaching through innovative classes involves all the Constructivist trends and quality education. Education doesn't mean feeding the students the bookish knowledge but helping them understand the true meaning of Education. The role of the teacher in the Constructivist social classroom is to help students build their knowledge & control the existence of students during the learning process in the school. Constructivist teachers do not take the role of the "Sage on the Stage"; instead, teachers act as a "Guide on the Side", providing students with opportunities to test the adequacy of their current understanding. Finally, the teacher concentrates on students' learning rather than teachers' performance.

TEACHING THROUGH SMART CLASSES FOR QUALITY EDUCATION:

Smart classrooms are electronically enhanced lecture theatres and classrooms. These rooms create new opportunities for teaching and learning by integrating computer, multimedia and network technology. The smart classroom is a highly technological concept where content presentation is optimal, interactive, and convenient access to learning resources. It is also helpful for contextual awareness, classroom layout and management. It may be summarised as Showing, Manageable, Accessible, Real-time Interactive and Testing, nicknamed "SMART". The five dimensions embody the wisdom of an intelligent classroom feature, which can be referred to as the "SMART" concept model,

This aspect represents the teaching material and its presentation capabilities of the classroom, which needs to show the contents and be clearly and attractively visible. It is also showing content suitable for learners. The existing research indicates that multi-screen displays can decrease the cognitive load and improve learners' achievement. The multi-screen is far better than the single-screen for academic improvement and achieving good learners' accomplishments.

Manageable – This dimension signifies diverse layouts and the convenience of management of the Smart classroom. The equipment and apparatus, systems and organisation, various resources and aids of the Smart classroom should be easily managed, including the classroom layout, equipment, physical environment, electrical safety management, network management, etc.

Accessible - This dimension shows the convenience of resources procurement and apparatus access in the well-arranged Smart classroom, including resource selection, content and text distribution and access speed. The rich and vast network of learning resources is favourable and conducive to independent self-learning, interactive, cooperative learning, and modified learning. Hence, the implementation of this approach is for the betterment of educational socialisation.

The Interactive real-time - This feature represents the ability and calibre to support the teaching-learning interactions and human-computer interactions of the Smart classroom, which involves essential convenient operation, smooth interaction**,** and interactive tracking among teachers and students in a timely process. Generally, the Smart classroom should be able to support the specific and ordinary interactions between man and machine. Their interactive equipment and interface with a simple, fully-featured, vibrant navigation, consistent with the operative habits and their characteristics, touch, visual and voice interaction can quickly improve the interaction between man and machine.

Testing –This aspect explains the perception of the physical environment during the classroom interaction and students' learning behaviour in the Smart classroom.

SMART CLASSROOMS

The class's physical environment, including air, temperature, light, sound, colour, odours, area, etc., affects teachers' and students' physical and mental activities and actions in the intelligent class.

ADVANTAGES OF SMART CLASSROOMS

Updating with online information: Teachers can utilise various online information such as knowledge databases, online audio-video and worldwide news items to strengthen their lessons and classroom teaching. Students and Learners can quickly access the wide range of powerful and resourceful tools in their respective fields and resources to conduct their academics.

Comprehensive connectivity in different fields and locations: Interactive technology tools and techniques allow for extensive connectivity in various areas, making ideal linkages and collaboration and providing a distance learning environment.

Improved thoughtful skills: It shifts the classroom experience to a more collaborative environment so that learners start thinking in a more logical and improved way.

Linking the urban/rural gap: The smart classroom generates another opening to fill the link /bridge for the urban/rural divide by giving the exposure of technology to students in a classroom setting.

Different style of imparting knowledge: Incorporating technology tools into the classroom environment positively changes the way of teaching. It gives an excellent opportunity for teachers to impart knowledge to students, and at the same time, it also simplifies the teaching-learning process for students and teachers.

Student involvement is increased: Students who usually do not raise their hands in class or the backbenchers who are generally sleeping, or somewhat if they are weak, now can take an interest to learn something new as these modern age tools provide more understanding to them as all the senses begin to involve in the bright classrooms. By fostering discussions and developing new and out of the box ideas, technology also helps improve the student-teacher bond.

Interact and share: The interactive nature of technology tools allows learners to share and participate in the teaching-learning process. Bright classrooms provide a platform for students and teachers to demonstrate their hold of the subject through touching, drawing, and writing. Every student has an opportunity to participate or contribute to the presentation and discussion.

Offers Flexibility: Interactive technology tools allow various forms of media – including photos, illustrations, snapshots, maps, graphs and charts, games, and video, to be displayed. In addition to this, technology and tools make learning more dynamic as the different methods of offering information are readily available.

Teachers can do more pedagogy experiments: As academic professionals, teachers learn more about how to design and execute a class guided by technology effectively. He will learn something new in modern academia, whether it's a dramatic change such as teaching with a flipped classroom or just adopting a single tool for a specific project or term. Being well-versed in technology can also help build his credibility with students and colleagues.

Globally many countries have participated in projects focused on intelligent education. Malaysian innovative schools aim to help their country to foster the workforce of the 21stcentury by utilising and enabling the leading-edge technologies in schools. And the intelligent schools not only focus on stimulating thinking, creativity, and caring for the students but also consider the individual differences and learning styles among their learners. Innovative education in Singapore also emphasises the role of technology. Their goal is to foster an engaging learning experience to meet the diverse needs of learners through the creative use of information and communications technology. To realise this, Singapore created an enriching and personalised learner-centric environment and completed a nationwide education and learning architecture for educational institutions and lifelong learning. Korea carried out the innovative education project to provide customised and adaptive learning for students to foster self-directed learning and have fun using various resources and technology. Individualised instruction and creativity-centred education are considered the main keyword of intelligent education. Australia aims to build an innovative, multi-disciplinary student-centric education system using the following strategies: adaptive learning programs and learning portfolios for students, collaborative technologies and digital learning resources for teachers and students, computerised administration, monitoring and reporting, and online learning resources. New York proposed the keys to achieving Smart School: embracing and expanding online learning, utilising transformative technologies, connecting every school using the high-speed network, extending connectivity between inside and outside of the classroom, providing high-quality, continuous professional development, and focusing on fostering 21st-century skills. Finnish innovative education uses user-driven and motivational learning solutions to pro21st-century try learning. They proposed a pedagogical network of educational institutions called a "value network" that is the program's centre. It has five categories as follows: to understand user experience and usability, to receive expert feedback, to indicate learning outcomes, effects and quality of learning, and to develop skills and expertise. United Arab Emirates (UAE) aims for the education system to be student-centred by applying world-class teaching science and the latest tech technology. They encourage learners to develop creativity, analytic thinking and innovation. Their approach encompasses learning both inside and outside the classroom. The students can control an active participant in their learning process in interactive, engaging and enabling learning environments.

We can find some generalities by analysing these innovative education projects as follows. The goal of intelligent education is to foster a workforce that masters 21stcentury knowledge and skills to meet the need and challenges of society. Intelligence technology plays a vital role in the construction of intelligent educational environments. In innovative educational settings,

learning can happen anytime and anywhere. It encompasses various learning styles, such as formal and informal learning and personal and social understanding, and aims to realise the continuity of the learning experience for learners. In this, learners are provided with personalised learning services and adaptive content according to their (learning) context and abilities and needs. So generally, 'smart' in intelligent education refers to intelligent, personalised and adaptive. But for different entities and educational situations, 'smart' has various definitions.

For learners, 'smart' refers to wisdom and intelligence. Wisdom is defined as using your knowledge and experience to make good decisions and judgments. According to Confucius, who is the most famous educator of China, wisdom can be achieved by three methods: reflection (the noblest), imitation (the easiest) and experience (the bitterest). In addition, intelligence is the ability to solve practical problems in one or more cultural settings. According to the concepts of wisdom and intelligence, we comprehend that being competent for a learner means an ability to enable people to think quickly and cleverly in different situations.

For educational technology, 'smart' refers to accomplishing its purpose effectively and efficiently. The technology includes hardware and software. 'smart' refers to a much smaller, more portable, and affordable smart device for hardware. It is practical to support learners taking the learning anytime and anywhere with intelligent machines. And some hardware (e.g., smartphones, laptops, Google glass, etc.) has functions to recognise and collect the learning data to engage the learner in contextual and seamless learning. For software, 'smart' refers to adaptive and flexible. It is efficient to carry out personalised education for learners according to their difference with adaptive learning technologies (e.g. cloud computing, big data, learning analytics, adaptive engine, etc.).

For the educational environment, 'smart' refers to engaging, intelligent and scalable. An intellectual, educational background can provide tailored and personalised learning services (e.g. context awareness, adaptive content, collaborative and interactive tools, rapid evaluation and real-time feedback, etc.) to engage the learner in effective, efficient and meaningful learning. And the open system architecture is required to support better the integration of increasing interfaces, smart devices and different learning data.

Based on the generalities of different countries' innovative education and the meaning of bright, the concept of creative education is proposed. He and Zhu stated that "the essence of intelligent education is to create intelligent environments by using smart technologies so that intelligent pedagogies can be facilitated as to provide personalised learning services and empower learners, and thus talents of wisdom who have better value orientation, higher thinking quality, and more robust conduct ability could be fostered.

And based on this definition of intelligent education, a research framework is proposed in Fig. 1. This framework describes three essential elements in innovative education: intelligent environments, thoughtful pedagogy, and competent learner. Innovative education emphasises the ideology for pursuing better education and thus had better be renamed more innovative education, which addresses the needs for intelligent pedagogies as a methodological issue and intelligent learning environments as a technological issue and advances the educational goals to cultivate competent learners result. Innovative environments could be significantly

influenced by thoughtful pedagogy. Smart pedagogies and intelligent environments support the development of intelligent learners.

Smart Pedagogies

With the rapid development of technologies, students' increasingly flexible and efficient learning methods are developed. Research in cognitive science has indicated that knowledge and skills are closely intertwined. It needs to mix content knowledge and process skills to produce the learners' understanding. Then learners execute their commands in practice to make their performances. Critical thinking and learning skills are crucial, but these skills cannot be taught independently and s. Some proper factual understanding to be taught t in a particular domain and context. Using deliberate instructional or learning strategies can be related to cultivating learners' knowledge and skills. So to foster different abilities of competent learners, we searched the literature about related pedagogies or learning strategies using the conventional subject searching methods in some databases. Through analysing the literature, we summarised and adopted appropriate practical methods.

Students usually accept basic knowledge and core skills in the classroom. Learning goals and processes always are the same for each student in a traditional classroom. But students with different backgrounds have different needs. Every student deserves a rigorous education matched with content and performance standards that promote understanding. The classroom should be differentiated and responsive to learners' readiness levels, interests and learning profiles. Differentiated instruction emphasises the different needs of each student and cultivates the basic knowledge and core skills for students.

Whether learning happens in the classroom or online, students with different performances often need to learn together in a group or team to fulfil a common task or achieve a common goal. In the collaborative process, learners can foster comprehensive abilities, including critical thinking and problem-solving. Students in cooperative teams can keep knowledge longer by sharing information and engaging in discussion at higher levels of thought to take responsibility for their learning.

Learning processes should be tailored according to the student's learning needs, including requirements, background, interests, preferences, etc. In particular, personal interest is more important than external motivation because students' passion drives it. Interest-driven personalised learning emphasises students' interests and can foster intrinsic motivations and promote personalised expertise for students.

Intelligence is an ability to get things done that matter. Sternberg describes the three essential aspects of successful intelligence: analytical thinking, creative thinking, and practical application. As mentioned before, we facilitate abilities including problem-solving, decision making, creative thinking and interest-driven learning for learners. We need to integrate these abilities to generate intelligence. It is similar to the transfer of learning, or something in which we have been learned in specific situations that are intentionally applied in other different related conditions. Learning is a generative process. In such a process, the learner is an active recipient of the information who works to construct a meaningful understanding of information found in the environment). Generative learning can enable learners to apply the intelligence they have learned and generate it for relevant future situations.

So, to foster the learners' performances, we propose four instructional strategies as a demon, as stated in Fig. 2. These strategies include class-based differentiated instruction, group-based collaborative learning, individual-based personalised learning (interest-driven predominantly) and mass-based generative learning (through online interactions essentially). These strategies encompass formal and informal education in both the real and the digital world. The four levels of innovative approaches are presented in detail as follows.

IMPLICATIONS*:*

The present study is conceptual about its implications for Students, Teachers, Society, Parents, Book Writers etc. for each one of them, implications are written separately as follows:

Educational Implications for Students:

The present research will help students to understand the importance of the Smart Class Strategy. It will build confidence among the students. Current research will help students guide middle and lower grade students with the extent of the Smart Class Strategy. Students will learn to manage the lower classes through different activities in the teacher's absence.

Educational Implications for Teachers: The present research will make teachers aware of the Smart class Strategy and its importance. This research will guide the teachers to implement a Smart class Strategy with their curriculum. It will help the teachers develop Smart class Strategies for the constructivist trend for quality education.

Educational Implications for Society: The present research will help society adopt different strategies for Quality education. It will make the community aware of the changes brought forward by CBSE in its curriculum.

Educational Implications for Parents: The present research will make parents aware of Smart Class Strategy. They will be able to understand the new concept. They will also motivate students to teach innovative ways of gaining knowledge in different subjects.

Education Implication for Book Writer:

The present research will develop standards for e-Textbook and e-Schoolbag. This research paper gives theoretical guidance, teacher training, and application assessments. It is expected that this research paper will help test different architectural models of intelligent learning environments and try out the brilliant learning strategy mentioned above.

ABSTRACT

The current study focuses on the necessity and approaches of using the Smart Class Strategy in teaching and learning to build constructive trends for an excellent education. Our current education system stresses bookish information, whereas kids nowadays seek more knowledge to develop their intrinsic abilities and overcome problems. The study's primary goal was to emphasise the relevance of the Smart Class Strategy in building Constructivist trends for excellent Education. We live in a digital world. The traditional teacher-centred learning technique emphasises rote learning. This article outlines the need to reframe education to incorporate critical thinking abilities and new teaching and learning approaches to provide excellent education to students. The smart class idea is innovative and may inspire students to study. ICT and other educational technologies in teaching and learning are also creative. Teachers and students may benefit from intelligent schools and classes. Systematic use of computers, multimedia, internet, projectors, and whiteboards in blended learning. This notion is used well in all fields of education, from primary to higher school.

CLAIMS

1. The class's physical environment, including air, temperature, light, sound, colour, odours, area, etc., affects teachers' and students' physical and mental activities and actions in the intelligent class.
2. The role of the teacher in the Constructivist social classroom is to help students build their knowledge & control the existence of students during the learning process in the school.
3. Smart classrooms are electronically enhanced lecture theatres and classrooms. These rooms create new opportunities for teaching and learning by integrating computer, multimedia and network technology. The smart classroom is a highly technological concept where content presentation is optimal, interactive, and convenient access to learning resources.
4. Incorporating technology tools into the classroom environment positively changes the way of teaching. It gives an excellent opportunity for teachers to impart knowledge to students, and at the same time, it also simplifies the teaching-learning process for students and teachers.
5. Intelligence is an ability to get things done that matter. Sternberg describes the three essential aspects of successful intelligence: analytical thinking, creative thinking, and practical application.
6. Learning processes should be tailored according to the student's learning needs, including requirements, background, interests, preferences, etc. In particular, personal interest is more important than external motivation.
7. Critical thinking and learning skills are critical, but these skills cannot be taught independently and s. Some proper factual understanding to be taught t in a particular domain and context.