

Unlocking Potential: A Review Of Self-Monitoring Approaches For Enhancing Working Memory In Slow Learning Individuals

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ABSTRACT:

In recent years, several research studies have focused on technology-based education for children with exceptional needs. The broad spectrum of impairments included by the phrase 'special needs', along with the educational demands of the children afflicted, offer a massive interdisciplinary challenge for the research community. We give a comprehensive evaluation of technology-enhanced and game-based learning systems and methodologies used on children with special needs in this paper. The article examines the state-of-the-art in this field of study by choosing a collection of primary papers and answering a set of research questions. Despite past rigorous evaluations, What the finest resources, games, or academic subjects are is still up for debate. Technology-enhanced, game-based learnings are among those that have had positive outcomes with children with exceptional needs. the variety of educational topics offered and the nature of the games used to teach. Research opportunities identified in the original studies are also summarised in the article. Keywords systematic evaluation. Intellectual Performance is crucial to education and lifelong learning because Individuals' ability to comprehend, evaluate, synthesise, and utilise knowledge in diverse situations is impacted. The foundation of education and lifelong learning is intellectual ability. It gives people the ability to think critically, learn quickly, adapt to change, create, communicate clearly, and support their own, others' and society's progress. Fostering intellectual growth is crucial for producing well-rounded people who are ready to take on the possibilities and challenges of a constantly changing environment. Including individuals who are slow learners or have intellectual disabilities, these study articles explore techniques, ideas, and practises to improve the educational experiences of students with disabilities. They provide insightful advice on how to develop inclusive, productive learning environments for all pupils.

Keyword: Cognitive load theory; Design; Education; Learning; Measurement, Slow Learner.

1. Introduction :

“Educationists should build the capacities of the spirit of inquiry, creativity, entrepreneurial and moral leadership among students and become their role model.”

-Late APJ Abdul Kalam

The search for efficient methods to meet the various learning needs of individuals in the realm of education has sparked the development of cutting-edge techniques that make use of technology. Slow learners, who may have issues with gathering, processing, and retaining knowledge, are among those who confront problems in the learning process. Their ability to manage and manipulate knowledge requires a high level of working memory, which is a cognitive skill that slow learners frequently struggle with. In response to this challenge, the majority of researchers are provided with unmatched opportunities to enhance their personal growth and self-awareness within the rapidly evolving technical landscape. One such strategy is "self-monitoring," which entails using technology aided self-monitoring practices. It has emerged as a potential way to improve the working memory of slow learners.

2. Rationale and Significance of the Study

The goal of this study is to determine how technology-assisted self-monitoring can help slow learners meet their unique learning needs and enhance inclusive and productive learning environments while also helping these learners increase their working memory capacity. Technology improvements have been ingrained in the fabric of education as the digital world continues to change. Digital devices, software and internet platforms have completely transformed the way people interact with information and educational materials. (Korikana, 19) Technology has the ability to offer specialized help that meets the unique cognitive needs of slow learners, who frequently struggle with processing speed, attention deficiencies, and memory issues. (14)The gap between cognitive problems and improved working memory can be closed by educators and students alike by utilising the possibilities of technologically enabled self-monitoring tools.

3. Research Objectives

The Research objectives of the study are as follows

1. The aim of the present study is to enhanced students' intellectual performance using self-learning & self-monitoring.
 2. Identifying the specific learning style of the learners.
- Disabilities And Learning Approach

Slow Learner :

Identification of Slow Learners: Slow learners among typical classroom students is challenging since low IQ, youngsters sometimes excel in extracurricular activities rather than academics. But in a typical classroom, a teacher may be recognised by his observation and based on the students' academic performance. So, one of the methods listed below can be used to spot slow learners. (21) Most identification technique is the achievement test. So, the researcher identified the slow learner through the achievement test. Different test can be performed by the teacher / counsellors

- ✓ Observation method
- ✓ Achievement test
- ✓ Personality inventory and case study.

In many cases researchers have understood that Slow learners cannot concentrate for a long time due to short attention spans. They do not remember what they learn as they have the problem of short memory. It leads to feeling bored and develops no interest in the learning process. (all J. D., 20) as per the researchers research the Slow learner students are always find difficulty while studying in the group, they always refer to study in their own space . Teachers may assist slow learners become more engaged in their own education, enhance their learning outcomes and gain useful skills that will aid them in both their academic and personal life by implementing self-monitoring approaches.

Data Collection :

Data was collected through the Case study method. Counselling was used as a tool for their enhancement. The major finding was that slow learners were more successful by providing suitable conditions and educational opportunities to them. Also, by doing the experimental method or of before test and after test result.

4. LITERATURE REVIEW

II-Background and related work

Self-monitoring: In education for slow learners, the process of helping these students become more conscious of their own learning strategies and progress is called self-monitoring. It comprises teaching students how to assess their own work, monitor their development, and adjust their learning strategies as needed. Slow learners may take control of their education and become more independent in the classroom with the aid of this technique. (Screen M. Jubran, 5) (Cronin-Golomb, 6). Working memory capacity is the term used to define the range of information that humans can simultaneously process in order to do complex tasks, according to experts. (all J. L.) Researchers created a design where participants were divided into various groups using game structures, and they discovered that exposing students to various digital educational games and apps can help to improve their learning capacity by holding various training sessions. The selection of training exercises focuses mostly on the individuals' working memory capacity, inhibition function, and refreshment function. (all D. Z., [2]). Today the premise of technology-assisted self-monitoring rests on the idea that slow learners can actively participate in their own learning process. Through interactive platforms, cognitive exercises, and adaptive applications, slow learners can engage in activities designed to target and strengthen their working memory capacities. Cognitive Load Theory (CLT). This takes a scientific approach to the design of learning materials, so you can present information at a pace and level of complexity that people can easily understand. Cognitive Load Theory builds upon the widely accepted model of human information processing shown in figure 1.1 (Team, [3])

Information Processing Model

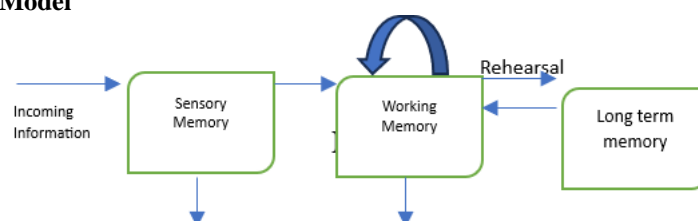
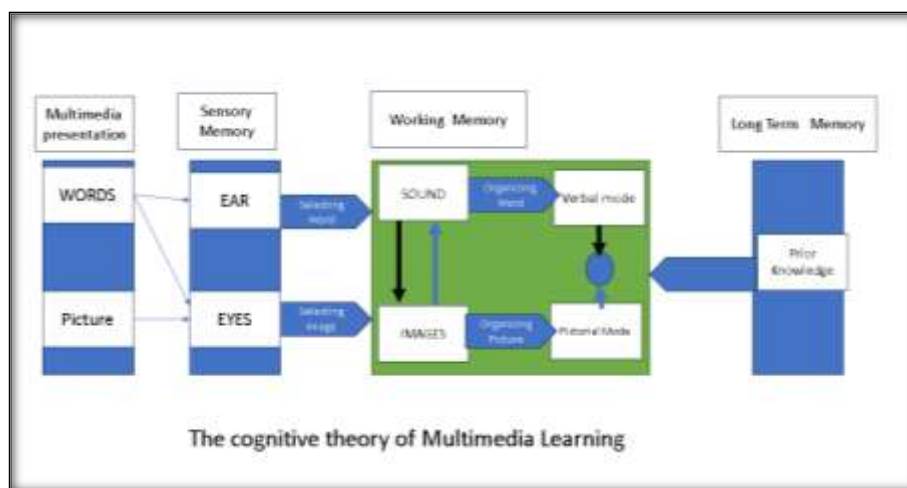


Fig. 1.1

II- : PRACTICAL IMPLICATION

Cognitive Theory of Multimedia Learning: In this researcher has observed that using multimedia lesson and technology learner actively participate and select relevant information, organizing it in working memory. this was the successful working. the multimedia principle, which states that people learn more effectively when instructional materials include both words and pictures, as opposed to words alone (Kiersch2, [4]) In an optimized cycle of self-regulation learners first plan their learning activity and then start to learn by using cognitive strategies to actually deal with the task at hand and thereby monitor their learning behaviour. Thus, this phase is characterized by the simultaneous use of cognitive and metacognitive strategies. (Seufert, 26)



Different methods used as Teaching Learning Model :

Storytelling :

Latest research shows that the different development has been done in the field of developing model for regular student to understand the basic concept of the subject in that the author has mainly focus on the Mathematic using game-based theory and story based in Talk to the Ghost -is mainly focusing the storytelling, methodology for faster development and using storytelling chat box conversation during the evaluation different training method using live session. (David Jackson, 6) researcher have also used the different method of storytelling using the application based like 'Talk to the Ghost' structuring the conversation around the story (all D. D., 24)

Game : The researchers has mainly focus on a Game Based Learning Approach to Enrich the Special Education students by using the different modules based on the games. Different types of intelligent tutoring system model have been developed to increase the understanding level of the student. (Pise, 7) (Nur Rahmah Zulkifli, 9) the researcher also found The concepts of Digital Game-Based Learning (DGBL) and gamification motivates students to stay engaged for a longer period of time and experience everyday situations by playing roles or by performing simple practical exercises. Also, author has researched on how student can achieve the learning ability using the ICT (K. Stančin, 18)

Web Based e-learning tool: This system is a student-centered one and the progress in student's learning process depends on his/her effort. (Ocak, 8) in this Practical Based/Experiment. Web development environments for disabled authors and learners especially with mobility impairments (all S. T., 10). Also, researchers studied that special educators use various tools for assessment, but the process currently followed in India is primarily manual. Thus, the special educator must spend much of his/her time for writing reports, drawing graphs/charts etc. Reference of past records and micro level analysis of children are practically impossible in the manual system. (K. Stančin, 18)

Multimedia : Some researchers have proposed and done the research on Methodological development model and modules of the courseware are presented in this paper. Macromedia Flash, Adobe Illustrator and Adobe Photoshop for interfaces and graphics design are used. (Saya, 11) (12)

Automatic detection of learning styles for an e-learning system

A desirable characteristic for an e-learning system is to provide the learner the most appropriate information based on his requirements and preferences. (e-learning, 13) The main aim of the TUTOR project is to develop and test an Intelligent Tutoring System (ITS) to increase the autonomy of people with cognitive disabilities in labour and daily life activities,

These tools not only provide personalized challenges but also offer real-time feedback, allowing learners to track their progress and gain insights into their cognitive strengths and areas needing improvement. (Tutoring, 14). In this researchers had studies the different types of students in class and also observed that they required special educational treatment. Besides the specific applications of measurement, counselling, and clinical psychology, psychology contributed to education through studies of cognition, information processing, the technology of instruction, and learning styles. (Korikana, 15) researchers also has thought of the analysing the state-of the-art of technologies used to support the learning process of people with special needs. The term Technology-Enhanced Learning (TEL) refers to the use of technology to enhance the students' learning process. The foundations and assumptions of technology enhanced student-centered learning environments are presented in teaching numeracy in primary school. From a technological perspective, the usage of digital games in the learning experience of students with Intellectual Disability (ID) is discussed in Technologies can be used to assist students with disabilities in accessing the information required to perform the learning process successfully. For instance, Audio Link is an interactive audio-based virtual environment for children with visual disabilities that supports science learning (all J. A., 16) In this study authors has worked on the different types of technique to improve the learning ability of the student by using the different flash cards and other way of learning the small words of different field where they found the learning ability of the student can be improve. (all J. D., 20) (Areekkuzhiyil, 22) These tools not only provide personalized challenges but also offer real-time feedback, allowing learners to track their progress and gain insights into their cognitive strengths and areas needing improvement.

Universal access Over the years, those working to promote access for people with disabilities have learned two important lessons. First is the cost-effectiveness of incorporating universal accessibility features at the outset of a project (e.g., Connell et al., 1995; Ekberg, 1999; Jacobs, 1999; NODE Networking, 1998). These ideas are exemplified in the seven principles of universal design for computer technologies proposed by Connell et al. (1995). These researchers also show how these principles can be applied to both hardware and software design to ensure accessibility not just for people with disabilities but also for the safety and comfort of all. (25)

The Centre for Applied Special Technology (CAST) defines UDL as a research-based set of principles that together form a practical framework for using technology to maximize learning opportunities for every student (Rose & Meyer, 2002). Centre for Applied Special Technology (CAST) has developed a framework called —Universal Design for Learning that applies universal design principles to curricular materials and instructional strategies to support student learning. (22) Furthermore, technology provides an objective means of measurement, offering quantifiable data about the effectiveness of different strategies and interventions. This data-driven approach empowers educators and learners to make informed decisions about which self-monitoring techniques are most impactful. Through continuous tracking and adjustment, slow learners can refine their cognitive strategies, leading to gradual improvements in their working memory. (23)

In this paper, we embark on an exploration of the symbiotic relationship between technology-enabled self-monitoring and working memory enhancement for slow learners. By delving into the existing literature, examining practical applications, and critically analyzing the implications, we aim to uncover the potential of this innovative approach to transform the educational experiences of slow learners. Through this investigation, we hope to contribute to the ongoing discourse on inclusive education, providing insights that empower educators, researchers, and stakeholders to create a more accommodating and supportive learning environment for all learners, regardless of their cognitive profiles.

“spotlight” that selectively shines on relevant information from one moment to another to actively keep relevant material in mind as needed for processing. Students with poor working memory are less successful at completing complex tasks, exhibit greater distractibility and forgetfulness, and need teacher redirection or reteaching more often than their peers. Students who forget what they are doing or become easily distracted when performing complex tasks are likely to experience undetected but repeated disruptions that result in disjointed learning and confusion.

Proposed Intelligent Learning model : Different researchers as implemented the different style of the learning model in personalized e-learning scenario, every learner learns at different place and at different time. Every learner has different characteristics, needs, abilities, prior knowledge and learning Style. Learner model captures these differences and facilitate personalized learning experience, mainly slow learner students feel good and confident when they learn at their ease and place independently.

Data Collection: Data collection has done with the different ways by different researchers where few has used the questionnaire method survey based and the observation method in our proposed study, we are going to have the different observation stages where the student will be observed by their class performance and the class test before and after using the different test of the study. Google form will be the main resources for the survey method. Most of the researcher have work on the different types of games based theory data collection here

Social validity: This study assessed social validity at the conclusion of the final intervention phase to measure the usability and efficacy. In the proposed work the researcher will form the different types of tests and the method to make the self-learning method to find out the in the previous work the.

Conclusion :

In summary, intellectual performance is a cornerstone of education and lifelong learning. It empowers individuals to think critically, learn efficiently, adapt to change, innovate, communicate effectively, and contribute to personal, professional, and societal growth. Encouraging the development of intellectual abilities is essential for fostering well-rounded individuals who are prepared to face the challenges and opportunities of an ever-evolving world. In this paper we proposed the self-monitoring tool where the student will be able to monitor their progress in real time. With reference to the different classification here we have proposed to identify the different progress of the student who are slow learner and has a difficulty for learning and understating the portion and the concept in this study we have explain the study course level and the understanding level where we are referring the material used in the open school study material for slow learner and also for the daily based social activities uses the different test and real time result where student and the parent will be able to examine their pupils using the learning tool

We conclude that many researchers have used the different method for teaching and learning method at the basic level of the student where the student are mainly using the E-learning method for their leaning not for the self-monitoring and real time basic for slow learners students very few researcher have partially implemented but that to not for slow learner students .

Future work includes the study and analysis for the slow learner based on the level of their understanding using the open schooling also including the self-analysis .

This review paper synthesizes existing research on the use of self-monitoring techniques to enhance working memory in slow learners. Working memory deficits often pose challenges for individuals with learning difficulties, and self-monitoring strategies have shown promise in addressing these deficits. The paper presents a systematic review of studies that have investigated the effects of self-monitoring interventions on working memory performance among slow learners. Additionally, a meta-analysis is conducted to provide a quantitative assessment of the overall impact of self-monitoring on working memory improvement.

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