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A Study of Effectiveness of ICT Technology Towards Learning and Teaching Procedure Methods for Computer Application

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ABSTRACT

Integration of Information, Communication, and Technology (ICT) will help educators to the worldwide prerequisite to supplant conventional showing strategies with an innovation based instructing and learning apparatuses and offices. Discoveries show that educators' well-furnished planning with ICT devices and offices is one the principle factors in accomplishment of innovation based instructing and learning. . It was additionally discovered that professional improvement preparing programs for instructors likewise assumed a key job in upgrading understudies' quality learning. For the future examinations, there is a requirement for thought of different parts of ICT integration particularly from the executives perspective with respect to key arranging and strategy making. The primary goal of this paper is to show a lot of new Procedure applied in the educating of Computer Science utilizing ICT. The Procedure are confined in the applied premise of the accompanying sciences: Psychology, Education and Computer Science. The hypothetical system of the examination is bolstered by Behavioral Theory, Gestalt Theory. Hereditary Cognitive Psychology Theory and Dialectics Psychology. In light of the hypothetical system the accompanying Procedure were created: Game Theory, Constructivist Approach, Personalized Teaching, Problem Solving, Cooperative Collaborative getting the hang of, Learning ventures utilizing ICT. These Procedure were applied to the showing learning process during the Algorithms and Complexity – A&C course, which has a place with the region of Computer Science. The course builds up the ideas of Computers, Complexity and Intractability, Recurrence Equations, Divide and Conquer, Greedy Algorithms, Dynamic Programming, Shortest Path Problem and Graph Theory. The fundamental estimation of the exploration is the hypothetical help of the Procedure and their application bolstered by ICT utilizing learning objects. The course previously mentioned was based on the Blackboard stage assessing the activity of Procedure. The consequences of the assessment are introduced for every one of them, demonstrating the learning results accomplished by understudies, which checks that Procedure are practical.

1. Introduction

In this 21st century, the expression "innovation" is a significant issue in numerous fields including training. This is on the grounds that innovation has become the information move expressway in many nations. Innovation integration these days has experienced developments and changed our general public that has completely changed the manner in which individuals think, work and live. As a major aspect of this, schools and other instructive foundations which should plan understudies to live in "an information society" need to consider ICT integration in their educational program. Integration of Information, Communication, and Technology (ICT) in training alludes to the utilization of PC based correspondence that joins into day by day study hall instructional procedure. Related to planning understudies for the current computerized period, educators are viewed as the central participants in utilizing ICT in their day by day study halls. This is because of the ability of ICT in giving dynamic and proactive educating learning condition. While, the point of ICT integration is to improve and expand the quality, openness and cost-proficiency of the conveyance of guidance to understudies, it additionally alludes to profits by systems administration the learning networks to confront the difficulties of current globalization. Procedure of appropriation of ICT is certainly not a solitary advance, yet it is progressing and ceaseless advances that completely bolster educating and learning and information assets.

ICT integration in training for the most part implies innovation based instructing and learning process that intently identifies with the use of learning advances in schools. Because of the way that understudies know about innovation and they will learn better inside innovation based condition, the issue of ICT integration in schools, explicitly in the study hall is imperative. This is on the grounds that, the utilization of innovation in instruction contributes a ton in the academic viewpoints wherein the use of ICT will prompt compelling learning with the assistance and supports from ICT components and parts. It is all in all correct to state that practically all scopes of subjects' beginnings from arithmetic, science, dialects, expressions and humanistic and other significant fields can be learned all the more viably through innovation based apparatuses and hardware. What's more, ICT gives the assistance and reciprocal backings for the two educators and understudies where it includes compelling learning with the assistance of the PCs to effectively learn helps. PCs and innovation doesn't go about as substituting devices for quality instructors yet rather they are considered as an extra enhancements required for the better educating and learning. The requirement for ICT integration in instruction is essential, on the grounds that with the assistance of innovation, educating and learning isn't just occurring in the school condition, yet in addition can happen regardless of whether educators and understudies are truly in separation. In any case, ICT integration is certifiably not a one-advance learning process, yet it is a constant procedure of discovering that gives proactive instructing learning condition. ICT can be utilized in different manners where it helps the two educators and

understudies to find out about their separate branches of knowledge. An innovation based instructing and learning offers different intriguing ways which incorporates instructive recordings, incitement, stockpiling of information, the utilization of databases, mind-planning, guided revelation, conceptualizing, and music, World Wide Web (www) that will make the learning procedure all the more satisfying and significant. Then again, understudies will profit by ICT integration where they are not limited to the constrained educational program and assets, rather hands-on exercises in an innovation based course is intended to assist them with stimulating their comprehension about the subject. It additionally encourages educators to structure their exercise plans in a powerful, innovative and fascinating methodology that would bring about understudies' dynamic learning. Past explores demonstrated that utilization of ICT in instructing will improve the learning procedure and expands the understudies' capacities in dynamic learning.

2. Teachers' Belief on Technology-Based Teaching and Learning

With the advancement of learning advances in the late twentieth century, instruction framework has changed quickly. This is because of the ability of innovation to give a proactive, simple access and far reaching educating and learning condition. These days, Ministry of instruction in everywhere throughout the world has give a ton of offices and preparing so as to improve the utilization of trend setting innovations in the nations' instructing and learning process. A high financial plan has been put in request to give the gear required by instructors to improve the training framework. In spite of the considerable number of endeavors, a large portion of the nations are confronting comparative issue whereby the educators are not augmenting the utilization of the innovation gave. This has gotten a genuine issue the same number of past explores have demonstrated the use of ICT in instructing and learning procedure could improve understudies' accomplishment. Many, analysts have required a push to investigate the variables that influencing instructors' acknowledgment of ICT use in the study halls. It shows that, the significant boundary of the usage was the instructors' conviction as the educators are the individual who actualizes the adjustment in their educating and learning process. In addition, past exploration shows that the connection of instructors' conviction and the utilization of ICT are high. Educators' job is getting more significant particularly in utilization of ICT in teaching method which could expand the accomplishment of the understudies, their innovativeness and thinking abilities. Be that as it may, instructors' adequacy in urban schools changes as the long stretches of understanding of working and time of educators. It shows that the educators' adequacy are diminishing as the long periods of experience and age increments yet some way or another the decline and the viability conviction rely upon the school the executives. School the board here methods the open doors for collegial collaboration, and the utilization of the instructional assets. Schools that could give chances to instructors to think about educating and learning with their associates and for chairmen and educators to work together and impart, just as help the utilization of instructional assets. From this examination, the instructors viability conviction is rely upon the school the executives and culture. Along these lines, if the school has consistently embed the way of life to change and educators are constantly sent for preparing for overhauling themselves, and afterward the integration of ICT in study hall will be simpler to be improved in the homeroom.

3. Integration of ICT In The Indian Context

The integration of ICT in study hall is getting more significant as it help understudy in upgrading their community oriented learning abilities just as creating cross-over aptitudes that invigorates social aptitudes, critical thinking, confidence, duty and the limit with respect to reflection and activity. Every one of these components are fundamental beliefs that understudies need to accomplish in a functioning instructing and learning condition. Also, in India the legislature has executed the integration of ICT in learning and training process in mid 1970's. This is because of the significance of innovation proficient which produce basic deduction workforce to confront and include the nation in the worldwide economy. In like manner, numerous schools were updated with PC's lab, the web association, brilliant white sheets, LCD and other ICT instruments and gear. In spite of all these, the issue confronted was the instructors' expertise and fitness, specialized help and dependability of the framework so as to actualize the arrangement effectively. Nonetheless, the legislature is as yet improving and updating the frameworks to be completely using by ICT. As a creating nation, investigation of the components that influencing Indian instructors' ICT utilization in schools can assist with expanding the integration of ICT in nation's instructing and learning process.

The Ministry of Education propelled a thorough audit of the instruction framework in India in October 2011. So as to increase the training expectations, government built up another national instruction outline; the most recent one is the Education Blueprint 2013-2025. This outline gives the arrangement to the practical instructive change of the Indian training framework until 2025 (Ministry of Education, 2012). This record additionally incorporates the arrangement to raise the job of ICT in the entire training framework. So as to finish the change crucial, proposed 11 vital and operational movements. ICT has been referenced on the seventh move , which requires scaling up quality learning in India by giving web get to and virtual learning condition by means of for all schools in India by 2013 (Ministry of Education, 2012). It guarantees prospects of boosting the usage of ICT for independently directed learning. In accordance with worldwide endeavors on the more profound needs of instructive execution, ineptitude of instructors and deficiency of equipment and software was additionally perceived by the Indian training authority. It shows that the ICT culture in schools ought to be improved with utilizing ICT among educators as far as preparing. The fundamental objective of ICT execution in instruction broadcasted the vision and missions of the administration to advance ICT in training.

The new time of ICT in training ought to be grown quickly to fitting degree so as to coordinating the ability of understudies just as educators in instructive experience because of the advancement of new information innovation. Aftereffects of an examination by Abd Rahim and Shamsiah (2008) recommend that learner instructors in India have certainty to incorporate ICT in their educating rehearses. Furthermore, the male instructors are more certain than female educators in utilizing

ICT integration in educating. In addition it shows that professional instructors are more certain to coordinate ICT in educating, in light of the fact that they can deal with specialized subjects and their experience empower them to incorporate ICT successfully in instructing. Besides, just minority of instructors in Indian professionally know the essential of ICT. Most of them simply had normal information in ICT, and even a gathering of the instructors are poor in the related information on ICT in India. It demonstrates that degree of ICT information among educators is one of the key elements for Indian culture to make effective selection of ICT in its training.

4. Development Of Procedure supported By ICT Platform

The improvement of the Procedure proposed in this exploration paper will be applied utilizing the virtual course Algorithms and Complexity – A&C, planned and customized in the Blackboard stage. Being developed notice that the course – A&C was planned in Web_CT; yet as Web_CT was procured by Blackboard, the virtual course – A&C is as of now running on this stage. The showing procedure of the subject Computers, unpredictability and recalcitrance – CCI is Game hypothesis which depends on the behaviorist methodology. The Game has the accompanying advances: 1) Presentation of the subjects of CCI. 2) Activation of drill and practice games, organized on learning objects inside the Blackboard stage. 3) Operation of the object of learning by the understudy. 4) Evaluation of the understudy learning or Assessment. 5) Reinforcement given to the understudy by means of the learning object. 6) Decision fair and square of understudy learning. This choice permits: 7) Browse again learning objects or then again 8) proceed with the following module of the course of A&C. It ought to be borne as a top priority that each game has a trouble level, which speaks to the most elevated or least learning accomplishment obtained by the understudy during the game.

Covetous calculations module was created dependent on the Gestalt hypothesis, applying the system of critical thinking in virtual situations. The means of this technique are: 1) Student applies past information to new circumstances. 2) State the issue to be tackled algorithmically. 3) Use the fundamental aptitudes for the development of avaricious calculations. 4) Define the figure and ground of the goal of the issue (Human Computer Interface). 4) Translate the calculations in elevated level dialects (Java). 5) Run the program (JAVA). 6) Evaluate the outcomes created by the program. 7) Improve the program as far as reaction time and memory space utilized.

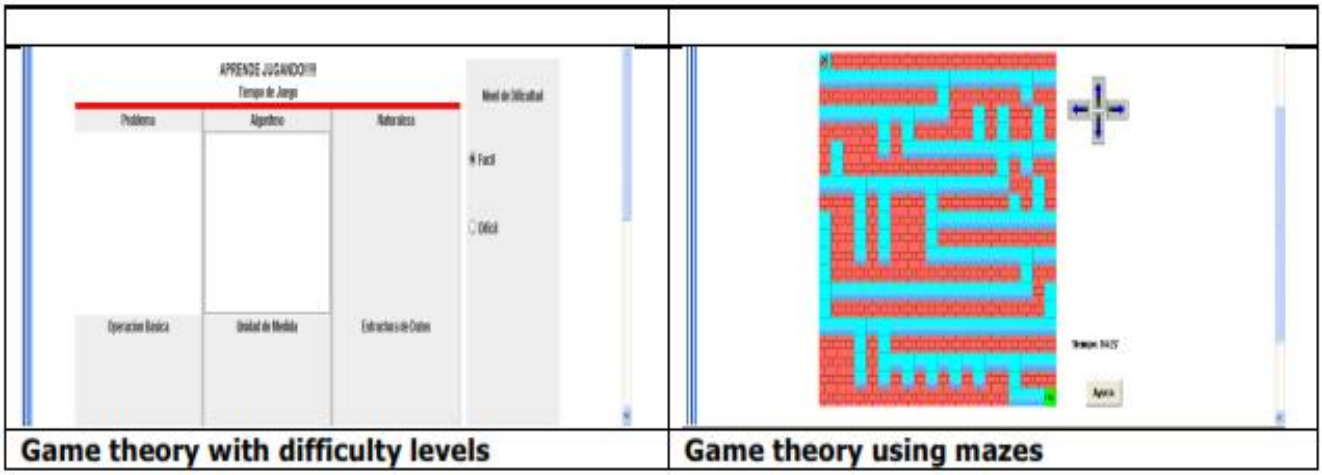

Figure: 1 Virtual learning using Game Theory

The results of the interfaces for the problems solved by Greedy Algorithms: Make Change and Memory Management in Operative systems are shown in Figure 2.

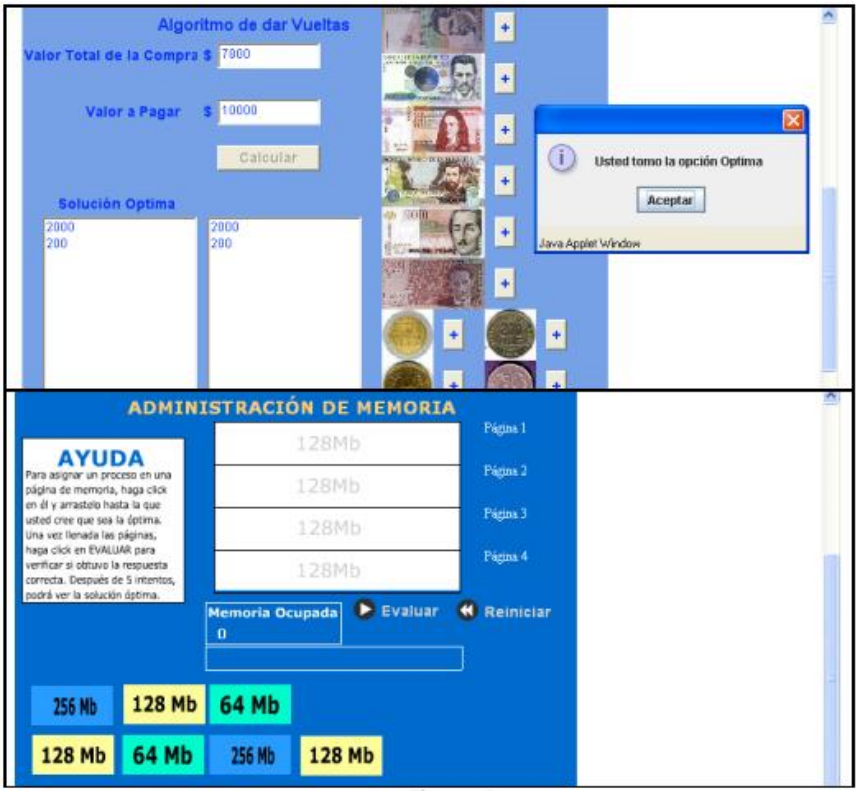

Figure: 2 Methodology of problem solving in virtual environments

The issue of the most brief way in A&C was created dependent on the hypothesizes of Piaget's hypothesis, and the instructing system utilized was the customized showing bolstered by ICT. The means in this approach are: 1) Organization of the learning structures in the virtual seminar on the issue of the briefest way. 2) Explore the understudy's previously established inclinations on the subject of algorithmic instances of the most limited course issue, or understudy's solid information structure. 3) Interaction of understudies with learning objects identified with the subject. 4) Assimilation and convenience of the virtual condition content structures with understudies' intellectual structures. 5) Self-evaluation of understudy's information structure change through a similar learning objects. 6) Assessment of the understudy's learning by the professor. 7) Design the understudy's getting the hang of improving arrangement in the virtual condition.

The proof of the utilization of the customized showing utilizing ICT is spoken to by: 1) Conceptual guide of the association of the shorter course issue on the virtual course (Figure 3) Test investigating understudy's previously established inclinations. 3) Use of learning objects for the most brief course (Figure 4). 4) Check the digestion of information structures in the understudy, through the development of a Java program (Figure 5). 5) Assessment and improvement of understudy's learning procedure.

Figure: 3 Learning object for the study of the Shortest Path Problem

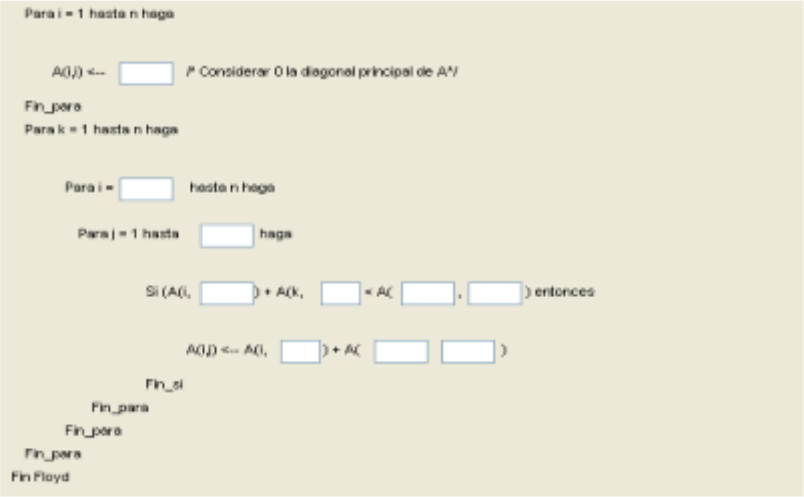

Figure: 5 Check students learning using personalized teaching (Communication interface in JAVA for the Shortest Path Problem)

Task put together methodology has its establishments with respect to the Dialectical Psychology and Vigotsky's proposes, and it was utilized in the Module Graphs Theory with the accompanying advances: 1) Navigate the substance of the virtual module Graph Theory applications. 2) Interact with learning objects (Figure 6) module identified with the shading of diagrams and Ford and Fulkerson's calculations. 3) Review research articles of the Association for Computing Machines and the IEEE Computer Society (ACM/IEEE-CS) related with the advancement of the module. 4) Write an agent exposition of the hypothetical and handy piece of the checked on article. 5) Socialize the composition by setting it in the gathering of the Blackboard virtual stage. Now understudy's learning improves because of the collaboration with their companions and professor in the virtual course. 6) Build a second form of the composing dependent on the outcomes got in the discussion. 7) Assessing understudy learning content in the last composing exposition. This not just speaks to the understudy's examination level in Graph hypothesis yet additionally information limit applying Dialectical Psychology ideas in virtual spaces.

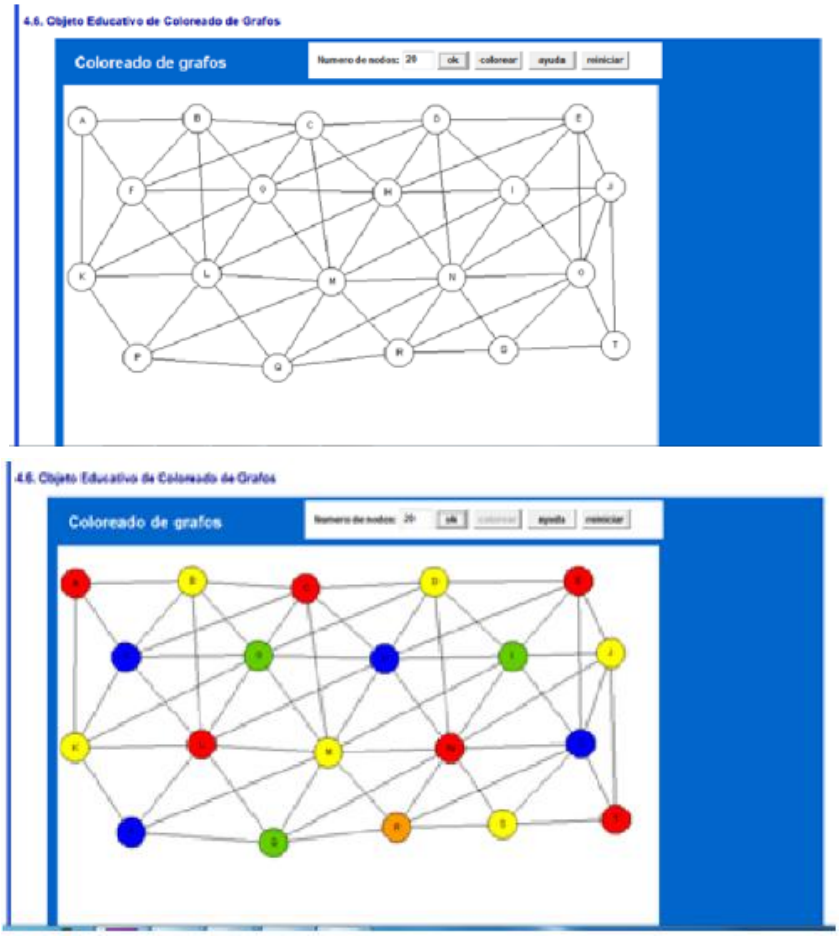

Figure: 6 Learning object representative of Graph Coloring

The constructivist approach was executed in the showing philosophy of the module 'Repeat Equations' with the accompanying advances: 1) Interaction of the understudy (knowing subject) with the virtual course.2) Exploration of the underlying understudy information structures. 3) Interaction of understudies with repeat conditions learning objects (Figure 7).. 4) Constructivist exercises execution (social talk among members utilizing the system so as to comprehend and change understudy learning with their friends and educator). Socialization of virtual study hall exercises bolstered by ICT. 5) Generation of intellectual awkward nature in the understudy. 6) Socialization of the module learning through the system and between peers. 7) Assessment of understudy learning in the virtual module. The aftereffects of the advancement in the understudy's learning in illuminating repeat conditions are appeared in Figure 8 (Difficulty levels by unraveling the conditions: I) Easy O(n) , ii) Intermediate O(2n+1) , iii) Difficult O(n2)). Fathoming repeat conditions by constructivism, permitted understudies recognizing the assumptions of this sort of conditions, exploring the hypothetical strategies for unraveling repeat conditions, and getting the arrangement of the condition (T(n)) and the request for multifaceted nature (O(n)).

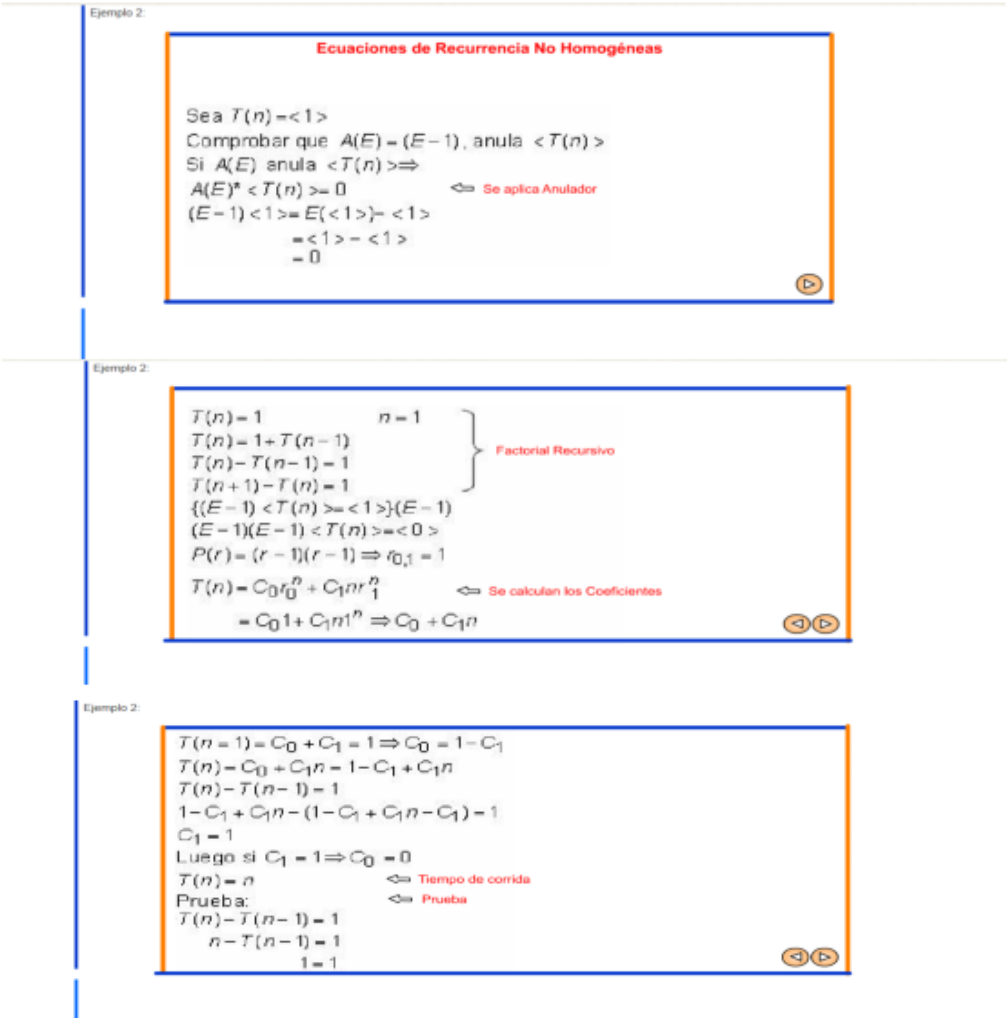

Figure: 7 Learning object supporting the resolution of recurrence equations

$T(n)=T(n-1)+1, Si\ n>1$ $T(n)=1, Si\ n=1$	$T(n)=4*T\left(\frac{n}{2}\right)+n, Si\ n\geq 2$	$\sqrt{a_n}$ $=\sqrt{a_{n-1}}+\sqrt{a_{n-2}}$ $a_0=1 \quad y \quad a_1=1$
$T(n)=n$	$T(n)=2n^2-n$	$T(n)$ $=C_02^n+C_1(-1)^n$
$T(n)\cong O(n)$	$T(n)\cong O(n^2)$	$a_n\cong O(2^{n+1})$

Figure: 8 Student progress using the constructivist approach

5. Conclusion

The examination procedure to make and test educating learning Procedure applied to the learning in virtual spaces upheld by ICT, The execution of the task based system in calculations course permitted the beginning of exploration forms in algorithmic multifaceted nature. This is one of the most troublesome virtual Procedure. The trouble is legitimized by the exploration level as well as for innovative assets required. In light of the previously mentioned, the subjective examination of the task based system permits in virtual training: Review the

cutting edge of the subject of the venture that the understudy is for all intents and purposes creating. Rouse the understudies since they themselves chose algorithmic point to investigate in intricacy. Composing an examination paper from the undergrad produces multidisciplinary connection among undergrad and graduate level preparing in light of the fact that understudies take an interest seriously for the best paper at the hour of mingling research brings about the virtual study hall as a major aspect of Psychology Vygotsky rationalization. Understudies at that point anticipate that criticism should produce a second form of the examination paper. At long last this virtual learning approach requests a high measure of time for the instructor to control and right the condition of advancement of all exploration papers of understudies. Applying the constructivist approach bolstered by ICT is a test when it is utilized in Algorithms. The test is to get understudies biases develop from a condition of early figuring out how to a last snapshot of learning. Prior to beginning the virtual module, all understudies have various previously established inclinations. These are bolstered by the numerical information. The structure of the procedure is that this information is distinctive in all understudies. At that point, beginning from various bases all understudies must accomplish a similar reaction to tackle the condition of repeat. In this way, the methodology application time is high, and it is likewise high the decent variety of scientific ways to deal with arrive at a similar reaction. This was the motivation behind why the headway of learning level was not as high as it was normal. The degree of learning accomplished in the methodology was 22.3%. Shared tasks procedure actualized in the virtual Dynamic Programming module delivered the accompanying outcomes in subjective terms: Students incorporated hypothetical and reasonable qualities in venture gatherings. Advancement season of tasks in the JAVA writing computer programs was shorter than when customized exclusively. Taking care of issue results are best. The hour of conferences to virtual coach and educator diminished significantly when making virtual joint effort ventures.

References

1. Anh, D. T. K., &Marginson, S. (2013). Global learning through the lens of Vygotskian sociocultural theory. Critical Studies in Education, 54(2), 143-159.
2. Capacho, J. (2004). Design: Course of Algorithms and Complexity supported by ICT. Universidad del Norte (Barranquilla, Colombia). Department of Systems Engineering.
3. Cure, V., &Fandiño, E. (2005). Programming: Course of Algorithms and Complexity supported by ICT. Universidad del Norte (Barranquilla, Colombia). Department of Systems Engineering.
4. Dabbagh, N., &Kitsantas, A. (2012). Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. The Internet and higher education, 15(1), 3-8. Dalgarno, B., & Lee, M. J. (2010). What are the learning affordances of 3-D virtual environments? British Journal of Educational Technology, 41(1), 10-32. De Freitas, S., Rebolledo-Mendez, G., Liarokapis, F., Magoulas, G., &Poulovassilis, A. (2010). Learning as immersive experiences: Using the four-dimensional framework for designing and evaluating immersive learning experiences in a virtual world. British Journal of Educational Technology, 41(1), 69-85. Fung*, Y. Y. (2004). Collaborative online learning: Interaction patterns and limiting factors. Open Learning: The Journal of Open, Distance and e-Learning, 19(2), 135-149. Hipsky, S. (2008). Piaget's Developmental Stages. Information Resources Management Association.
5. Hughes, G. (2007). Diversity, identity and belonging in e-learning communities: some theories and paradoxes. Teaching in higher education, 12(5-6), 709-720.
6. Ingram, N. R. (2014). Time past: impacts of ICT on the pedagogic discourse in the Interactive project. Technology, Pedagogy and Education, (ahead-of-print), 1-18.
7. Keane, T., Keane, W. F., &Blicblau, A. S. (2014). Beyond traditional literacy: Learning and transformative practices using ICT. Education and Information Technologies, 1- 13.
8. Kotsilieris, T., & Dimopoulou, N. (2014). The evolution of e-learning in the context of 3D virtual worlds.
9. Linaza, M. T., Gutierrez, A., &García, A. (2013). Pervasive augmented reality games to experience tourism destinations. En Information and Communication Technologies in Tourism 2014 (pp. 497-509). Springer.
10. Lyashenko, M. S., &Frolova, N. H. (2014). LMS projects: A platform for intergenerational e-learning collaboration. Education and Information Technologies, 19(3), 495- 513.
11. Melero Gallardo, J. (2014). Design and implementation techniques for location-based learning games.
12. Mukama, E. (2014). Bringing Technology to Students' Proximity: A Sociocultural Account of Technology-Based Learning Projects. International Journal for Research in Vocational Education and Training, 1(2).
13. Pérez, A. (1995). Los procesos de enseñanza-aprendizaje: análisisdidáctico de las principalesteorías del aprendizaje. En J. Gimeno, y Pérez, A. Comprender y transformar la enseñanza, (pp. 34-62). Madrid, España: Ediciones
14. Morata, S. L. Rua, M. (2015). Learning object: Matrix Chain Product. Assistant Professor of A&C, Universidad del Norte (Barranquilla, Colombia). Department of Systems Engineering.
15. Sergis, S. E., & Sampson, D. G. (2014). From Teachers' to Schools' ICT Competence Profiles. En Digital Systems for Open Access to Formal and Informal Learning (pp. 307-327). Springer.
16. Sergis, S., Zervas, P., & Sampson, D. G. (2014). Towards Learning Object Recommendations Based on Teachers' ICT Competence Profiles. En Advanced Learning Technologies (ICALT), 2014 IEEE 14th International Conference on (pp. 534-538). IEEE.
17. Shieh, R. S. (2012). The impact of Technology-Enabled Active Learning (TEAL) implementation on student learning and teachers' teaching in a high school context. Computers & Education, 59(2), 206-214.

