International Journal of Innovative Technology and Exploring Engineering (IJITEE)
ISSN: 2278-3075 (Online), Volume-9 Issue-2, December 2019

A Design of a Patient-Customized Healthcare System for Learning Blood Circulation System (*I*-Lbcs) by Game - Learning Environment (G-Le)

P.Harikumar, K.P.K.Devan, K.M.Anandkumar , R.Arunprakash

Abstract: ***An Improved-Human Blood Circulatory System (I-LBCS) is critical to educate.Be that as it may, it is hard to get it. Thisi-LBCS method to comprehend through LA. This application will give the i-LBCS progressively intuitive and intriguing, in which game -player engaged with the game. The plan and build up a game method on Android Studio (AS) that can assist a student with understanding configurations and standards of significant cells in the Human (HUM) Circulatory and Immune System (CIS) in Human Body (HB). These games generally focused on science subjects for grade HSC Students (STDNT).***

Keywords*: *Circulatory System, Game-Based Learning, Human Body, Human Blood, Immune System, Medical Science,

I. INTRODUCTION

A Game-Learning Environment (G-LE) is likewise expanding the premium and inspiration of members in investigating and participating in learning (LEARN) exercises. When contrasted with conventional study venue LEARN, G-LE is increasingly dominant and empowering on its instructive worth. The player effectively controls their advancement, and G-LE strengthens STDNT to defeat difficult issues. Planning the science experience as the G-LE is expected to STDNT interest and contracts the intricate term of the HUM CIS [1].

The job of a Learning Animation (LA)subject is significant. For the most part,it manages the ideas of the question that require a specific degree of comprehension and are hard to pass on in Programming Language (PL). The themeof the HUM CIS is to pass on with hard words.

Revised Manuscript Received on December 30, 2019.
***** Correspondence Author
P.Hari Kumar*, Department of CSE, Easwari Engineering College, India. Email: haridavidwil@gmail.com.
K.P.K.Devan, Department of CSE, Easwari Engineering College, India. Email: devan2421975@gmail.com.
Dr.K.M.Anandkumar, Department of CSE, Easwari Engineering College, India. Email: kmanandmss@gmail.com.
Dr.R.Arunprakash, Dept of Computer Science and Engineering, University College of Engineering, Ariyalur .Tamil Nadu, India. arunitvijay@yahoo.com

We are separating HB into HUM CIS. They split lymphocytes, neutrophils, eosinophils, basophils, monocytes. These are the principle substance of the HUM blood and are assume a key aspect in HUM lives. This information is utilized to build up the game [2]. An application significant to education (ed) that has long-lasting, dynamic, creative, and essential LEARN ability investigated that empowers humans to discover the scholastic substance by relating to world extra educationally. It gives the intelligent application for HUM blood CIS.

II. LITERATURE REVIEW

Science is a part of Medical Science (MS), which has challenging terms, including animal creatures, plants, and HUM.Similarly, understanding the facts of life that encourage HUMs to see how to think about themselves, animal creatures, and plants in the exact method. Be that as it may, there are many specialized terms that are troublesome and difficult to recollect for STDNT, particularly the principle frameworks of HB [3].

To manage the trouble for STDNT to recognize the HUM CIS and its components, a great deal of material has planned and found on the Internet. Informative animated clips explaining the fundamental procedures of the HUM blood are plentiful on video-sharing online platforms, and such content seems concentration, as per the high number of viewpoints. Good games are another type of content freely and effectively accessible [4].

A. Circulatory and Immunity System

We are separating HB into HUM CIS (figure 1). They divided lymphocytes, neutrophils, eosinophils, basophils, monocytes. The lymphocytes are B-lymphocyte, T-lymphocytes. The CIS made out of the blood vessels, including arteries, veins, and vessels [5]. The CIS is the key organ in the heart. As a hollow, its fundamental capacity of the muscular pump is to urge blood throughout the body.

The i-LBCS generally beats from 65 to 99 Minute; however, it can go a lot quicker when vital. Every day it beats around 110,000 times, over 30 million whole years, and about 2.15 multiple times in a 75-Year lifetime [3]. Blood is a body fluid that gives essential substances, for example, nutrients and oxygen to the cells and transports items from those same cells.

White Blood Cells (BC) are a portion of the HUM CIS. It helps body infection and illnesses. Kinds of white BC are granulocytes-neutrophils, eosinophil's, and basophils, monocytes, lymphocytes – T/B cells. Scrutiny, the measure of white BC in the blood, is generally a piece of an aggregate BC [6] count.

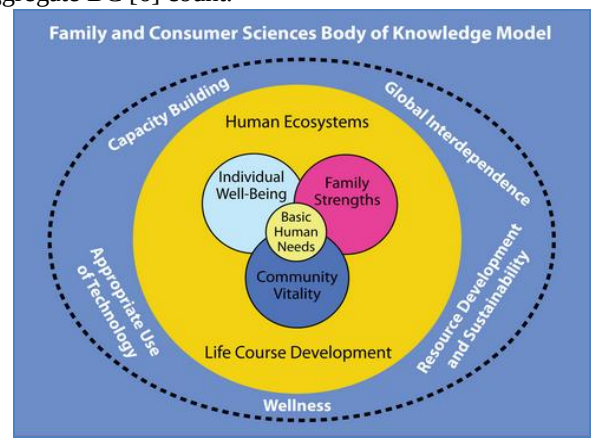

Figure 1.A Knowledge model of Human Body

The HUM CIS is the body's maintain in contradiction of irresistible creatures and altered attackers. It wills attacks organisms and organs that attack body frames and foundation infection [7].

B. Game-Based Learning (G-LE)

G-LE is a LEARN technique that uses the game as its intermediate. G-LE additionally utilized in ed purposes. Games have possible as a LEARN tool; for example, games can assist users can easy learning the area. It incorporates a test strategy. So players can improve their aptitudes and critical thinking [8].

C. BCLifespan Game for LEARN

The material in the study hall for Portuguese ed framework in tenth grade. It permits the students to communicate with the G-LE in five smaller than regular games and quizzes and created by Futscher [9].

Yung developed LEARN MS with the energized professional in G-LE. The game application offers the HUM CIS content, which constructs and creates information on the students by cooperating with the animated agent [[10].

Sekhar created a movement location science-based LEARN game for kids. The game encompasses the MS substance as quizzes, and the students respond to the inquiries by getting student's development utilizing Microsoft Kinect performance [14] [15].

III. PROPOSED METHOD

i-LBCS in a G-LE are primarily concentrating on HUM CIS and a significant portion of the body. This application is helpful for entrance planning STDNT. Application advancement has two phases. Character design and mode of the game [11].

A. Characters of HB

- **Doctor:** The game master–it will lead the game
- **Aorta:** The enormous artery that moves oxygen-rich blood from the left ventricle of the heart to additional parts of the HB-- guide and details of the game have explained.
- **Neutrophil :**The white BCin HB found in Neutrophil
- **Virus:**A virus is a genetic agent that replicates inside the cells of living hosts -leads to infection and causes illness.

B. Circumstances of G-LE

The Article states and Query state are the two states in G-LE

Article State: The doctor of the game is the player.On the off chance that any issue in the patient blood that treats the doctor by white BC and removes the virus [12] [13].

Query State: Knowledge can increase the player by query state and quizzes.

C. Proposed G-LE Design

The G-LE is a significant factor which incorporates techniques used to accomplish architect objectives. For instance, creators who need to attain user participation can structure a cell requiring the help of different personality classes. The G-LE must be actualized with cautious thought since it influences game equalization. Certain G-LE can include the measure of vitality users deduct from anadversary during a fire occurrence, the recurrence and amount of the things users can utilize, and the sorts of action players can take part in to get recompenses. These devices guarantee the smooth working of the virtual ecosphere (refer figure 2).

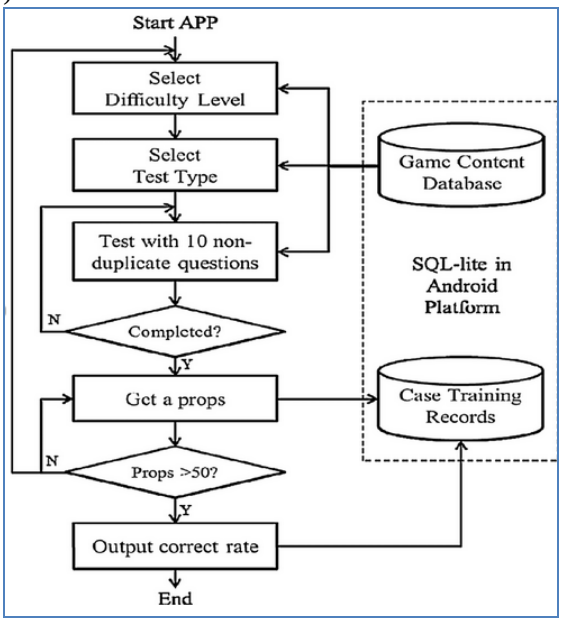

Figure.2 Proposed G-LE Design

D. Algorithm G-LE Design Elements

Step1: Depicts the game fundamental objective and point, and every control game thought is imagining design steps and its information configuration.

Step 2: Represents the game beginning up VDT parts.

Step 3: Shows how the trouble expands, how a version finishes. Each finished version must accomplish a learning sub-objective.

Step 4: Purposes of the game at which the user corrected.

Step 5: Clarifies what ensues when the user fails, acquires a great groove.

Step 6: The learner's communication with the game. The evasion input gadgets are a console, mouse.
Step 7: The calculation game illustrations must delineate the qualities of its information arrangement. For instance, a block can be utilized to envision one component of information construction, while a lot of squares used to imagine an exhibit.
Step 8: Key sounds that play at game objective audio effects that play at other game circumstances.
Step 9: An assortment of visual/sound segments that depict the condition of the game at any one time during the game life span.

```
Import Event
Import Game Utilise
        Event= Event. Control ( )
        Event. Initialize ( )
While True
        S,T = Event. Get State ( )
IfT: Break
        A = Game Utilise.Creator. Actions ()
        Event. Makeactions (A)
        Event.Close ( )
Import
        Indexes Settings from Event
Import
        E= Create ()
While True
        A = E.Action.Trial ( )
        S, T, R, I = E. Step (a)
IF
        T:Break. Close ( )
END IF
END
```

IV. RESULT AND DISCUSSION

This G-LE created in AS.The PL is C# with Visual Studio. Games segment factors, however, showing tools in unique fields (e.g., education) vary mostly (refer table 1). No standard exists for providing teaching materials; subsequently, even though GBL consolidates games and training, the model offered in this examination was talked about for game features. It esteemed that the game-structure component is a vital task. Creating materials is simple for instructors; however, joining them with a game isn't. The model indicated in figure 2 expresses a reasoning procedure and can help to learn game designer's tools with their game.

Table 1.Demographic Features

Demographic characteristics		Frequency	Percentage (%)
Gender	Male	77	51.3
	Female	73	48.7
Age (years, mean = 26.6, SD = 5.8)	20–29	82	54.7
	30–39	21	14.0
	40–49	31	20.7
	50–Above	16	10.6
Education	High school	27	18.0
	College/University	66	44.0
	Graduate school	57	38.0
Relationship to developmentally disabled child	Parent	54	36.0
	Rehabilitation therapist	21	14.0
	Medical paraprofessional, intern (student), or other	75	50.0

(n = 150).

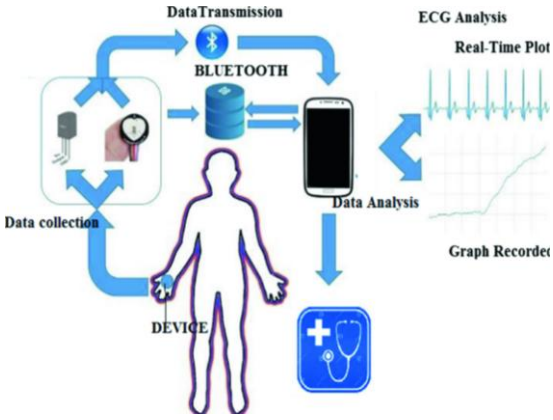

Figure 2. G-LEDesign Prototype

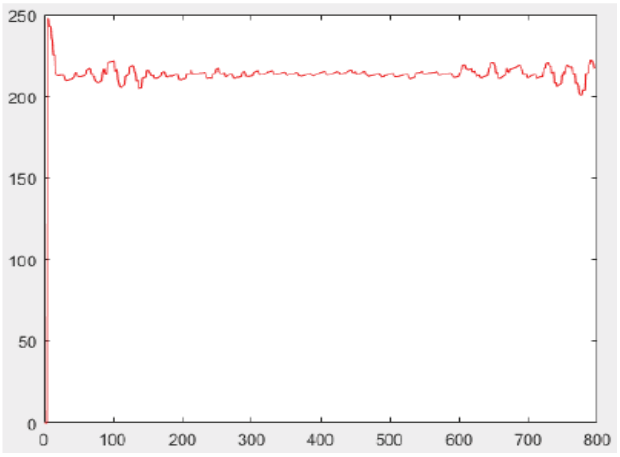

Figure 3. The Test analysis of*i*-LBCS

Finally, freedom, mystery, and game importance are the unique issues only existent in games, and they are the leading causes of why learnersadore this game.
We observe this model from the perspective view on teaching; the main thing is to choose the coaching purposes, which is the game objective. At that point, the game imaginary boosts understudies to take an interest in this game (refer figure 3). The LEARN activities are the significant complications in the game, the awareness is the introduction of training quantifiable, and the game mechanism impacts the LEARN technique. Since the educator is not present when the learners are playing the game, the game guide rule makes them finish this activity. The instructor should likewise think about whether they require joint effort or collaboration in this action. At long last, the freedom, mystery, and game significance are the unexpected factors just ongoing in games, and they are the principal reasons why learners like this game.

V. CONCLUSION

This work gives the application and system design of the *i*-LBCSin a G-LE for AS. The users able to add awareness about the principles and roles of the HUM-CIS. The app has been created to make sure that it's didactically purposeful altogether aspects of LEARN. A conventional textbook with high-tech options is superb with multimedia. System capability; enriching STDNT' LEARN.

The application tested with STDNT. They solve the queries. The highest average (AVG) score is 6;the Lowest AVG Score is 1,AVG Score is 5.17. in Pre-Test. In the post-test, the number of correct answers increased. Requests can be used quickly, with an AVG% of performance speed of 84.91%. The AVG player is satisfied with the form used, with an AVG of 91.19% personal agreement%.

This paper gave the experiment and proposed design of the i-LBCS in a G-LE for AS. The patients ready to gain information about the principles and roles of the HUM-CIS. The application has been made to ensure that it's didactically purposeful altogether aspects of LEARN. A predictable course-book with high-tech options is excellent with multimedia system capability; enhancing STDNT' LEARN. The application verified with STDNT. They solve the questions. The highest average (AVG) score is 6;the Lowest AVG Score is 1, AVG Score is 5.17. in Pre-Test. In the post-test expanding the number of right answers. Applications can be utilized rapidly, with an AVG level of performance speed of 84.91%.

The AVG player is happy with the application used, with an AVG of 91.19% demonstrative fulfillment rate.

REFERENCE

1. Game Based Learning of Blood Clotting Concepts Anurag Deep, Prajish Prasad, Soumya Narayana, Maiga Chang, Sahana Murthy IDP-Educational Technology, IIT-Bombay School of Computing and Information Systems, Athabasca University.
2. Work in Progress: Integrating Game Design and Development into Undergraduate Biology Education Yunkai Liu, Mary Vagula, and Stephen Frezza Gannon University, Erie, PA, United States.
3. Development of Interactive Learning Media for Simulating Human Blood Circulatory System Kristo Radion Purba, Liliana, Yohanes Nicolas Paulo Kwarrie Department of Informatics Petra Christian University urabaya, Indonesia.
4. Adventure-Style Game-Based Learning for a Biology Lab Vasilis Zafeiropoulos Hellenic Open University Dimitris Kalles Hellenic Open University,Argyro Sgourou Hellenic Open University.
5. Wikipedia, “Circulatory System” (2016, May).
6. Kwanchanok Kaewsee, “Game-Based Learning: Educational Media” (2012, June).
7. T.F.De Deus and P.F.Lopes, "A game about biology for biology students cell lifeas1alearningtool", Proceedings of the 2013 8th IberianConference on Information Systems and11Technologies (CISTI), Lisboa, -2013, pp. 1-6.
8. H.I. Yung, "Learning Biology with the Animated Agent in Game Ba Learning Environment," Proceedings of the 2010 10th IEEEInternational Conference on Advanced Learning Technologies, Sousse, 2010, pp. 409-410.
9. N.S. Hore, "A Motion-Detection Biology-Based Learning Game for Children,"IEEE Potentials, vol. 33, no. 6, Nov.-Dec. 2014.
10. G. Zichermman, “Gamification by Design: Implementing Game Mechanics in Web and Mobile Apps,” Sebastopol, CA, EUA, O’Reilly Media, 2011.
11. Y. Liu, T. Alexandrova, T. Nakajima, “Gamifying Intelligent Environments,” in Ubi-MUI ’11 Proceedings of the 2011 international ACM Workshop on Ubiquitous meta user interface, Scottsdale, Arizona, USA.
12. J. Kim, “MHealth apps can drive patient engagement for physicians” , in 09May 2016.
13. S.T. Ludwig, “Um estudo da doação voluntária de sangue emhospitais de Porto Alegre,” RS, Porto Alegre:
14. Faculdade de Administração, Contabilidade e Economia, Pontifícia Universidade Católica do Rio Grande do Sul, 2011.
15. J.Hamari, V.Eranti, “Framework for Designing and Evaluating Game Achievements”, InDiGRA 11.
16. E.Carson, I. Parberry, and B. Jensen, “Algorithm explorer:visualizing algorithms in a 3d multimedia environment,”in SIGCSE ’07: Proceedings of the 38thSIGCSE technical symposium on Computer science education,Covington. ACM Press, 2007, pp. 155–159.
17. T.L.Naps, “Jhave: Supporting algorithm visualization,”IEEE Computer Graphics and Applications, vol. 25,no. 5, pp. 49–55, 2005.