International Journal of Scientific Research and Engineering Development– Volume 3 Issues 1 Jan- Feb 2020

Available at www.ijsred.com

RESEARCH ARTICLE OPEN ACCESS

Open Innovation based Gamified Learning Framework for Corporates to up skill Student's Employability Index

Vivek S[1], Smita Gupta[2]

[1]Product Management Group, Samsung R&D Institute, Bengaluru, India

[2]Open Innovation Group, Samsung R&D Institute, Bengaluru, India

----------**********----------

Abstract:

In today's fast-changing environment, the student passing out of college is expected to deliver from day one. Gone are the days where the Indian IT service industry used to invest in 9 months of training for recruits. There is an innate need in the industry for an original way of thinking right from software development & product management to sales & business development. The gap between what is expected in the industry and what academia is producing has widened by more than 10x. In this paper, we suggest a framework that combines the Open Innovation based approach with Gamification of Learning to offer the Corporates and Educational Institutions a way to enhance the employability index of students.

The bigger problem thriving in today's fast paced Industry is how do you deliver a large proportion of the student population to be industry ready right from the day they pass out from the University. Very often in large corporations we could see that new recruits are given tasks to complete courses from Coursera, EdX or other platforms to strengthen their concepts on Java, Data structures, Design thinking etc. to bridge the gap between academics and industry requirements. Gamification of Learning has been proven to be an effective tool in the Indian K-12 Education System with start-ups such as Byju's, Toppr, Simplilearn, etc. offering gamified courses leading to improvement in the interest level & memory capacity among students. Similarly, Open Innovation is another concept which has been widely adopted by Corporates to drive innovation through Outside-In approach where Corporates collaborate with Academia, Start-ups & Government to strengthen the research quotient of the ongoing projects eventually ending up with a much broader knowledge base.

The framework we propose is an amalgamation of Open Innovation and Gamification thereby harnessing the best of both frameworks. It explores Corporates working with Academia to design gamified learning methods as part of their curriculum utilizing technologies such as Cloud, Virtual Reality, Augmented Reality & Real Time simulation games. If learning is offered in such immersive environments, the potential interest among the students to indulge in extensive learning is expected to grow exponentially. Some example scenarios that the framework suggests include:

1. A conquest game for programmers with real-world problems faced by corporates integrated into the game enabling students to code algorithms to clear every level
2. A simulation game of real-world business problems for managerial roles where students are expected to perform actual sales, data analytics, etc. to reach the end goal

The framework is expected to provide a playbook of best practices on the gamification methods catering to students across all academic backgrounds from programmers to strategists eventually enhancing their employability index directly out of college. The same framework can also be applied by the Corporates to enhance the learning cycle of their existing employees.

Keywords **—Gamified learning, Open Innovation, Engagement model, Technology-driven, Cloud framework, Learning 2.0**

----------**********----------

I. INTRODUCTION

The Indian education system has undergone a sea of changes over the past few decades. In the medieval ages, India had the Gurukul System of education where the teacher and the pupils used to live together and the students would be taught philosophy, arts, science, administration and self-defence techniques along with various life-skills. From the Gurukul system, the modern education system in India has come a long way now led by Central & State Governments as well as autonomous institutions. The education system is divided into primary, middle/secondary and higher/tertiary levels of education. The Higher Education system forms the most important part of the student's learning journey as it helps in landing the much-coveted job which will set his/her career path.

India's higher education system is the third largest in the world, next to the United States and China. As per the 2011 Census, about 8.15% (68 million) of Indians are graduates. Indian higher education system has expanded at a fast pace by adding nearly 20,000 colleges and more than 8 million students in a decade from 2000–01 to 2010–11. As of 2016, India has 799 universities, with a break up of 49 central universities, 402 state universities, 124 deemed universities, 334 private universities, 5 institutions established and functioning under the State Act, and 75 Institutes of National Importance which include IIMs, AIIMS, IITs, IIEST and NITs among others. Colleges may be Autonomous, i.e. empowered to examine their own degrees, up to PhD level, or non-autonomous, in which case their examinations are under the supervision of the university to which they are affiliated.

TABLE I
GRADUATION MARKET IN INDIA, CENSUS 2001

Degree	Holders
Total	**37,670,147**
Post-graduate degree other than technical degree	6,949,707
Graduate degree other than technical degree	25,666,044
Engineering and technology	2,588,405
Teaching	1,547,671
Medicine	768,964
Agriculture and dairying	100,126
Veterinary	99,999
Others	22,588

The emphasis in the tertiary level of education is influenced a lot by technology. The steady increase in the use of technology has inspired student-centric approaches and garnered government's attention on developing a system shaped up in alignment with global-level evolution of education system. The country's economic growth is also directly affected by factors that are influenced from the quality of education and the way it is delivered. Education can be defined as the process of learning that promotes mobilisation of knowledge and helps people develop skills towards jobs and creates productive efficiency.

In the last 30 years, higher education in India has witnessed rapid and impressive growth. The increase in the number of institutions is, however, disproportionate to the quality of education that is being dispersed. Unplanned over-expansion is often criticized as one of the biggest downfalls of Indian higher education. As a result, there is huge common pool of graduates who aren't immediately employable. The reasons might be due to excessive focus on theoretical learning than practical or even due to mismatch between the university curriculum and the corporate requirements.

II. DRAWBACKSIN THE TRADITIONALLEARNING METHODOLOGIES

The current learning system followed in universities focuses excessively on the theoretical aspect of education. Although, the educational curriculum has tried to bring along the hands-on practice via inclusion of practical schedule in the curriculum, but a laboratory-based simulation stays far off from a real-life corporate environment. When a new corporate recruit steps out of this student shoes and has to deliver in the high-paced corporate environment, he/she finds it difficult to comprehend and match the learnings of the educational curriculum with the deliverables of the corporate environment & this is where the employability index takes a fit. The formulas and frameworks, which hold true within the bounds of the classroom environment, find difficult to the implemented as-is in solving the problems, encountered in the corporate world. Key drawbacks can be summarized into 2 buckets [both being interrelated to each other]:

TABLE III
LEARNING REALITY MATRIX

Hard Skills	Soft skills
Adoption of the theoretical concepts in corporate world	Adaption to the corporate work environment vis-à-vis the university culture
[Theory vs real-world implementation]	[Student vs employee]

III. CURRENT LEARNING SYSTEM: STATUS QUO

In an attempt to overcome the drawbacks of the traditional learning methodologies, universities have devised new learning strategies. These systems attempt to bridge the gap between university and corporate working environment, without any direct involvement of the corporate. These initiatives are driven entirely by the universities. Although, to an extent they do bridge the gap between both the worlds, still the corporate disconnect exists, primarily due to the lack of involvement from the corporates.

Some of the methodologies adopted include:

1. ***Market simulation games***: Such simulation games offered by third party firms simulate the market conditions and providing a risk-free environment to the students to put their theoretical knowledge to practice.

E.g. Markstrat, marketing simulation software used by MBA students for testing brand portfolio management, segmentation, product positioning knowledge.

2. ***Business simulation games***: Such simulation games offered by third party firms simulate an entire industry environment and aim at testing the end-to-end business knowledge of the candidates.

E.g., Capstone, business simulation game offered by Capsim simulates different industry environments for testing the knowledge acquired across all disciplines of business.

3. ***Online training courses/MOOCs***: Massive online courses or MOOCs as they are referred popularly are free online courses which can be availed by anyone. These courses are the flexible and cost-effective way of acquiring skills and knowledge at one's own convenience. While some students use these courses as the means to supplement the classroom education, many other opt for MOOCs to acquire new skill sets which are not offered in the classroom programs.

E.g. Platforms like Udemy, Byju's etc. offer courses cutting across domains such as engineering, medical and other advance concepts.

On the other end of this funnel are the Corporates who invest huge capital to bring up the skillsets of the new recruits to match the requirements of on-the-job needs. Some call it the Induction, some call it the mandatory training but we would like to word it as the "9th term" in the student's learning journey where he/she works towards turning employable. A

recent survey conducted by Institution of Engineering and Technology of over 120 large and mid-sized companies says that about 23% of the training offered to address need gaps could be attributed to upskilling employees for new product development and another 20% to bring them up to speed with industry innovations as well as to cover up for in-house talent deficits in areas such as Mechatronics, Machine learning, AI, IoT, etc. As per industry insights, the corporate training market is estimated to be worth about INR 25,000 million and technical skill development accounts for about 60% of this market.

Some of the key initiatives adopted by Corporates include:

1. Workshops through External trainers
2. Online training courses
3. Competency tests

What lacks in the above systems is a close collaboration between Corporates and Universities to bridge the gap in upskilling as well as making the student's employability ready. A more comprehensive way of looking at this is a selected partnership engagement between Companies and Academia with an alignment of product development strategies and the technical assets/research programs of a university.

IV. PROPOSED OPEN INNOVATION BASED GAMIFIED LEARNING FRAMEWORK FOR CORPORATES AND UNIVERSITIES

A. What is Open Innovation?

Open Innovation is defined as "a term used to promote an information age mind-set toward innovation that runs counter to the secrecy and silo mentality of traditional corporate research labs." In other words, Open Innovation can be understood as a powerful tool of collaboration and engagement for creating win-win situation for all the involved parties.

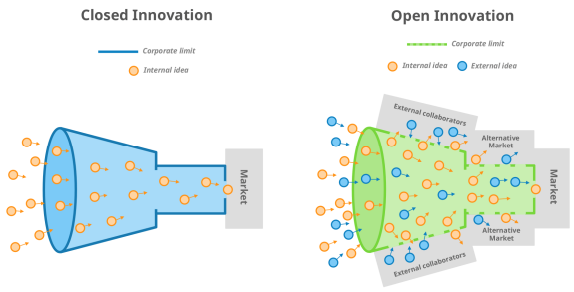

Fig. 1 Schematic representation of Open Innovation when compared to Closed Innovation

B. What is Gamified Learning?

Gamified Learning is an educational approach to motivate students to learn by using video game design and game elements in learning environments. The goal is to maximize enjoyment and engagement through capturing the interest of learners and inspiring them to continue learning. In other words, gamification is the introduction of game elements in a non-game situation.

C. Proposed Learning 2.0 Framework

The upcoming technological era of the VUCA (Volatile, Uncertain, Complex & Ambiguous) world demands a whole new learning system which is difficult for any individual university or a 3rd party service provider to fulfil through a simulated learning platform corresponding to the problems faced by corporates in the real-world. In the Learning 2.0 framework, we define a collaborative learning system comprising of 2 major components which will impact the future of learning. First, is the engagement model between Corporates and Universities based on successful Open Innovation techniques prevailing in the Industry. Second, is the playbook for a gamified learning platform developed by close collaboration between Corporates and Universities.

D. Corp-Univ Engagement Model

The Corporate University Engagement Model acts as the bridge between the two organizations, creating win-win situation for both the parties. At one end, the universities are able to secure job opportunities for its students and on the other hand, corporates get access to skilled talent, which can deliver from day1 at work.

This engagement model involves SPOCS identified from both the parties, referred as the relationship managers/engagement managers. Generally appointed by the HR departments of the organizations, these managers are responsible for engaging with the internal stakeholders and delivering on the engagement commitments.

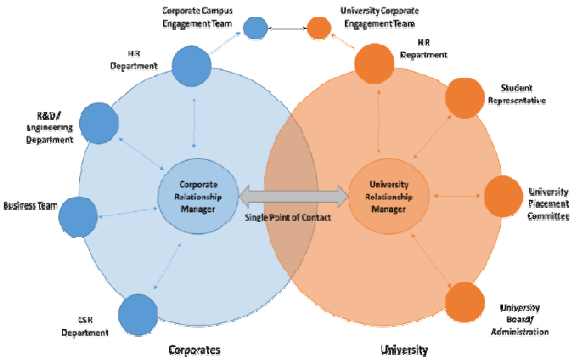

Fig. 2 Corporate University Engagement Model

E. Gamified Learning Platform

The Gamified Learning platform is basically a system/model that enables the Corporates to work closely with the Universities following the above engagement model to gamify the existing curriculum in 2 ways. One, is to include real time problems which the students would work on right out of the University. And the other, the gamified mode of delivering the content to students. This blended approach of digitisation of the curriculum enables students to learn the way they like as well as on the real-world problems faced by corporates eventually maximising the employability index & eliminating the need for pre-job training. The blended approach also maximises the effectiveness of instructor-led and virtual instructor-led training modules in a format that is scalable and measurable. This type of blended model caters to the needs of distance learning students as well.

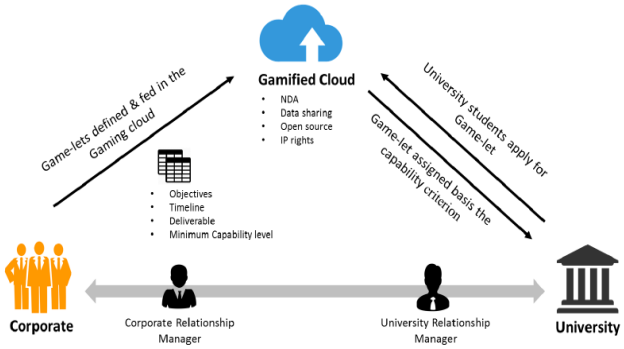

Fig. 3 Gamified Learning Platform

The platform primarily comprises of 3 entities – Corporate, University and a Game Cloud. The game cloud is a capability-based system which assesses the student competency based on skillsets/completion rate of game-lets and offers rewards in the form of points/power level-ups. The corporates define the game-lets and feed it into the game cloud. Each game-let has objectives, timeline, deliverables and minimum capabilities. For a student/group of students to apply to the game-let, they should clear the minimum capabilities criteria which is defined in terms of skillsets. For ex, it can be knowledge of C, C++ for a coding game-let or can be knowledge of supply chain for an operations game-let or a simple power level criterion. Every game-let is bound to a course in the curriculum and is mentored by a professor. The game-let can be exclusive to a university or can be assigned to multiple universities.

The game cloud follows the engagement model defined above and hence is bound to policies such as NDA, Data Sharing, Open Source and IP rights which are integrated as part of the game cloud itself. The game cloud maintains individual profiles for every student and university enabling corporates to design the game-lets with right complexity and collaborate with the right course/professor in the curriculum. The confidentiality and IP protection enables seamless exchange of data between Students and Corporates. Since the game cloud is a real time solution, it runs in sync with the university

timelines allowing the students to benefit from the best of both the worlds.

Based on the power level of the students, corporates can extend offers such as PPI, PPO, internships, certificates etc. to the students. The Student's skillset compiled using the gamified platform will act as an equivalent to a CAT or GRE score of their capabilities leading to a decrease in the capability gap and hence reduce the requirements of on the job learning/training eventually resulting in a budget cut to the Corporates. The increase in the PPI and PPO's emerging from the game cloud would be proof of the model's success and shall be measured on a yearly basis.

The cloud-based platform (game cloud) enables the curriculum to be attended on multiple end devices of choice such as tablets/laptops/smartphones. Or it can also be delivered via augmented reality (AR) and virtual reality (VR) based simulators which show greater potential in delivering effective content. The platform not only caters to engineering & business students but to various streams of learning including arts, commerce etc. It can also be adopted internally by corporates to enhance employee competency.

V. CONCLUSION

Corporate engagement offers a University a unique opportunity to equip its students with the latest skillsets needed in the Industry adopting a gamified technological approach, which typically includes collaborative curriculum, technology enabled learning systems and real-world problems. While the goals of universities and businesses have inherent differences, their interests can align productively to upskill the student employability index benefiting both in terms of costs and necessary skills eventually bringing down the current latency in employability. Gamified learning is one of the best delivery methods as it adopts the latest technology and also appeals to the now millennials/the coming gen z offering an immersive learning environment to enhance the involvement/time spent in coursework. Best practices proposed by the Learning 2.0 framework when implemented by corporates/universities collaboratively would bring in a robust ability to compete in the thriving/fast paced industry through an established open-innovation based engagement model and also lay out a concrete roadmap for the future of learning empowering India's vision of a $5 trillion economy by 2024. The future workforce of corporate India is young and dynamic. It is, therefore, imperative for Indian Corporates and Universities to invest in learning that can deliver technology-enabled blended education that provide a win-win for students as well as corporates.

REFERENCES

[1] Network, digital L. E. A. R. N. I. N. G. (2019, April 8). The Evolution of Indian School Education. Retrieved December 1, 2019, from https://digitallearning.eletsonline.com/2019/04/the-evolution-of-indian-school-education/

[2] Higher education in India. (2019, November 5). Retrieved from https://en.wikipedia.org/wiki/Higher_education_in_India

[3] Strategic Marketing Simulation with Markstrat: StratX. (n.d.). Retrieved from https://web.stratxsimulations.com/simulation/strategic-marketing-simulation/

[4] Unforgettable Business Learning. (n.d.). Retrieved from https://www.capsim.com/

[5] Understanding the Corporate Learning Landscape in India. (n.d.). Retrieved from http://www.theiet.in/understanding-corporate-learning-landscape-india

[6] Open innovation. (2019, December 5). Retrieved from https://en.wikipedia.org/wiki/Open_innovation

[7] Isomäki, A. (2019, November 27). Open Innovation – What It Is and How to Do It. Retrieved from https://www.viima.com/blog/open-innovation

[8] Gamification of learning. (2019, December 7). Retrieved from https://en.wikipedia.org/wiki/Gamification_of_learning

[9] Garber, R. (2017). Academic-Corporate Engagement: Strategic and Organizational Best Practices. Research Management Review, 22(1). Retrieved from https://files.eric.ed.gov/fulltext/EJ1161538.pdf

[10] Online, F. E. (2019, January 7). Why India Inc must invest in corporate training. Retrieved from https://www.financialexpress.com/education-2/india-inc-must-look-to-invest-in-corporate-training/1435320/

