Assessment of the Dropout Percentage in Indian Schools and Application of Gamification and Incentives to Reduce the Dropout Rate

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Abstract

The paper seeks to examine the current dropout rate in school education in India, and to propose a novel method to improve engagement and motivation in schools. The dropout rate study reveals that there is a strong requirement to improve the school education engagement for students, especially Secondary students. The paper is based specifically on application of Gamification and Incentive plans to improve the engagement and motivation in schools. A framework on applying incentive structures in the primary and secondary schools is laid out and a few examples of incentive plans have been provided. If the framework and plan is applied as indicated, it is expected that the student performance will increase significantly and help in reducing the current dropout rate in Indian schools.

Keywords

Schools, India, Incentive, Gamification, dropout, Secondary, Framework

I. Introduction

The education sector in India is poised to witness major growth in the years to come. The government spent more than INR 293,000 crore on Education in 2011 (~4% of GDP). With human resource increasingly gaining significance in the overall development of the country, it is important that the current resources are utilized effectively to generate better outcomes. Figure 1 below shows the student enrolment trend in primary and secondary schools.
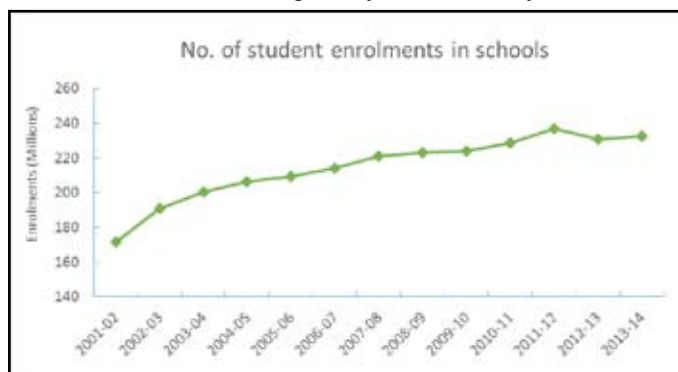

Fig. 1: Number of student enrolments in primary and secondary schools in India

While the overall upward trend can be mostly attributed to the population increase in India, the steady increase in secondary school enrolments (Figure 2) shows that factors other than just population increase are influencing the students to enrol in secondary schools.
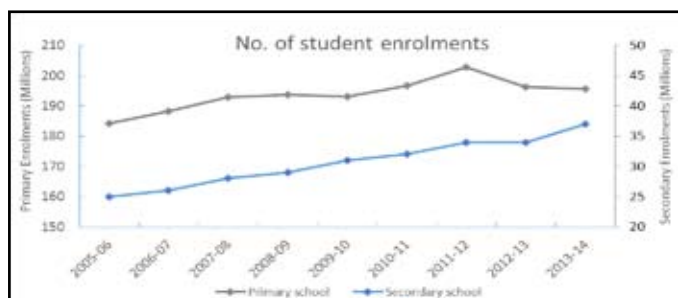

Fig. 2: Number of student enrolments in primary and secondary

schools in India

While the increasing enrolment in schools across primary and secondary is encouraging, the dropout rates are still very high, especially in the higher classes. Figure 3 below shows a trend of dropout rates since the early 2000's.
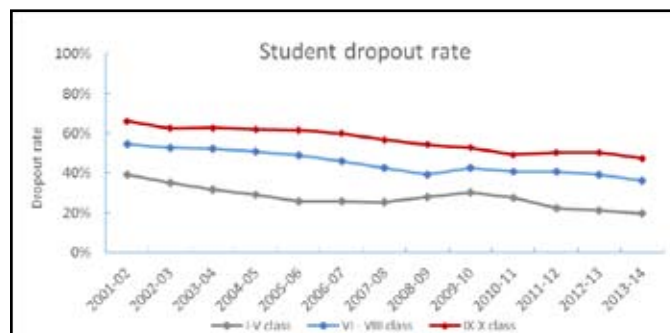

Fig. 3: Dropout rate of students in different school sections

As revealed in a study, on an average nearly 58% of students drop out by the time they reach upper primary level and 79.95% by Secondary level each year. With the increasing monetary and other resource investments in the Education sector, the schools should put more emphasis on the Secondary education and try to take some measures to decrease the dropout percentage further.

The dropout rates depend upon multiple factors such as socio-economic situation, demographics, student disengagement and monetary pressure. This paper is focused solely on student disengagement and presents a framework to engage students better using gamification and Incentives.

Gamification is the use of game elements and game design techniques in non-game contexts. Below is a simple example of application of gamification –

Nike makes a lot of running shoes model and therefore, wants people to run more. To encourage and engage people in running, Nike built a set of applications around it that made the experience of running more game-like. The Nike Plus Application has some functions like telling how far you've run, the fastest run you've

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ever had, the longest run you've ever had, various kinds of actual run tracking. You can also compare yourself to previous times, establish goals and compete against your friends. Overall, it makes the experience of running more immersive and rewarding, thus encouraging people to run more.

An incentive program is a formal scheme used to promote or encourage specific actions or behaviour in people by providing some tangible awards. Incentive programs are particularly used in business management to motivate employees and in sales to attract and retain customers. The incentive structure is used heavily in some industries like pharmaceuticals in which billions of dollars are spent on incentives to just encourage the right set of actions.

II. Application of gamification & Incentives in schools

While incentives can be applied on multiple sections in the education industry, this paper is limited to the application on students, particularly in secondary school.

Inclusion of Gamification and Incentives in schools will require a solid framework with continuous feedback and compliance mechanism. The framework will need historical performance as an input and application of gamification / incentives techniques to facilitate current & future semesters. Figure 4 below shows a framework and structure for an incentive plan setup in schools.
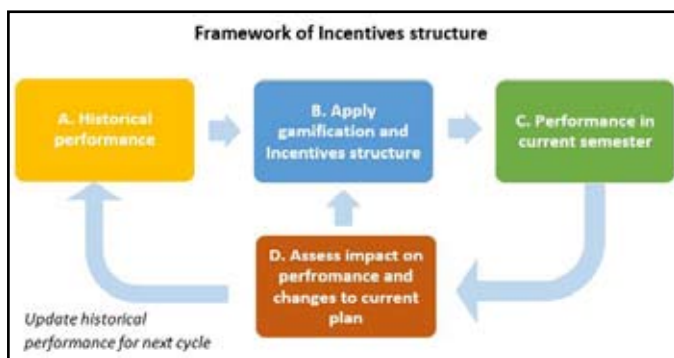

Fig. 4: Process flow for gamification and Incentive plan in schools

A. Historical Performance

It is important to collect and use the historical performance of each student to serve as a reference point. This will help assess improvement in performance and make future changes in the incentives plan. Data of at least 3-4 semesters for the same subject is required to establish the past calibre of the student in a particular subject. This data can be easily available from the marks record created each year by the school and can be collated to form a database, either on paper or in soft copy e.g. Microsoft Excel. It is important to keep performance separate across subjects as a student might be excellent in one subject but struggle with another.

B. Apply Gamification & Incentives Structure

This is the most important stage in the framework. At this stage, the school needs to apply the incentives structure to the past data. This stage in itself composes of the following two steps:

1. Designing an Incentive Plan

The incentive plan should be created carefully based on the behaviour or outcomes that are to be encouraged. For example, if the students are performing very badly on English, an easy

incentive plan can be % growth in marks as compared to past performance. A simple score goal can be assigned to each student for the next semester based on his past performance e.g. if the past score was 20 out of 40, the score goal can be set to anything between 20 and 30. It is important to take care that the goal is realistic for the student to attain and the % required growth is achievable, otherwise this exercise might have a negative impact on the student engagement and motivation. Based on the performance on this goal, students can be rewarded accordingly.

The rewards for the performance can vary based on social situation and the monetary resources available to the school. The rewards such as monetary benefits, vouchers, felicitation in a ceremony, books, kindle etc. can be used for the plan. The reward is as important as the incentive plan itself. It is important to make sure the reward is equally coveted by most of the students in the school, otherwise the plan will be effective for a small section of students and not create the desired results.

A very popular incentive structure currently used in the schools is the Scholarship award. However, a major flaw with the current plan is that it rewards and motivates only the top performers and not 'top improvers'. The low performing students are not encouraged with this incentive as they feel it is very unlikely they will ever win the scholarship.

2. Execution using Gamification

Once the incentive plan is ready, the next critical step is communication and tracking. The plan structure along with rewards should be clearly communicated to the students at the start of the exam cycle/semester. The plan should be communicated to the students in a gamified manner and it should be ensured that the details/targets are very clear to the students. This will not only generate excitement among the students early in the semester, but also help set the right expectations and targets for each student. The communication can be made either as an official document to all the students or in a joint meeting where students and student guardians are present. If the guardians are aligned with the plan, they can help push and engage the students better in the whole process.

Once the communication is made and the plan is successfully rolled out, the next step is effective tracking. The score and rankings should be tracked continuously during the whole process and mass communicated (probably on a display board). The scores can be communicated during certain milestones in the whole process e.g. midterm exams, mini projects, quizzes etc. This will further enhance the whole process by gamification of results and keep the momentum going during the complete cycle.

C. Performance in Current Semester

The performance in the final exam along with the final score can be communicated to the complete school together. This mass communication will have a lot more impact as compared to the individual performance cards and no high performer student felicitation.

D. Assess Impact on Performance & Changes to Current Plan

Once the semester is complete, the final step is to 'health check' the complete plan. This can be done by comparing the results with the outcome that was decided upon/expected during the plan creation phase. If the actual outcome was not as expected, the feedback should be used and appropriate changes can be made

to the plan in the next cycle.

III. Examples of Incentive plans for schools

Mentioned below are some examples of incentive plans that can be employed in the school:

a) Score based plan

This is a simple plan where the scores for all the exams will be aggregated and the student with the highest score will be rewarded. This is somewhat similar to the current education system and can be easily implemented. While this plan can be used to further motivate students who are already engaged, this plan will not work for the low scoring students. The low performing students will be demotivated from the plan from the very start due to low probability of winning the reward.

b) Score target plan

This is a slightly modified version of the Score based plan. In this plan, the performance is assessed on the attainment of the targets that are set for each student. The targets should be created based on the past performance of the student and the expected improvement.

c) Disciplinary plan

This plan should be used for cases where the outcome required is not better performance, but other factors e.g. attendance, assignment deadlines etc. A specific score can be assigned to all these activities and the collated score can be used for calibrating the final performance.

IV. Conclusion

The incentive plans, if executed appropriately, can compensate for the personal attention that the teachers are not able to provide in the current scenario. With slightly higher effort executing the the plan and a little monetary support, the incentive plans can create a huge impact and keep millions of students from dropping out of school. With a very low teacher to pupil ratio (3.57%) and high dropout rates (as high as 50% in secondary) in the schools, Incentive plans and Gamification are not just an optional layer, but a "must have" performance regulators in the current school system.

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