

Strategies to Increase Participation in Massive Open Online Courses

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1

Summary



In this article we will explain how, over the years, the Inter-American Development Bank has been implementing strategies to encourage Bank audiences to engage in and take advantage of its Massive Open Online Courses (MOOC).

MOOC are very powerful learning tools because they are open courses that, in most cases, can be taken at a student's own pace, thus making them ideal for people with busy lives. They also have a broad scope, since they can provide training to thousands of people at the same time at a low cost per participant. However, MOOC also have certain limitations, such as the need for suitable devices; access to high-quality internet; or limited access to certificates, which usually have to be paid for. Another big challenge that we encounter regarding MOOC is that, as they are open and free of charge, a high percentage of registrants who enroll in a course do not take it.

This document analyzes the evolution of engagement indicators, i.e., students' commitment to a course. It also measures the success of the IDB's MOOC in maintaining students in courses. Moreover, the document describes the different strategies that we have implemented over time to ensure that people who register for these courses actually take advantage of them.

Even though engagement has been a concern throughout the history of the IDBx Program and actions have been taken to maintain participation at stable levels, since 2019, a greater effort has been made to understand the reasons why registrants did not ultimately participate in the courses, so as to devise strategies to mitigate that behavior in our audience.

As of April 2020, courses only had 39.21% participation, i.e., the percentage of registrants who had accessed the courses was lower than during the same period in previous years. In order to explore the possible reasons behind this figure, we conducted a survey to ask registrants why they did not participate in these courses. Based on the analysis of this information, we launched three innovative action plans with the objective of increasing participation.

These action plans included different elements, such as the evolution of participant support; the improvement of mechanisms used to communicate with students; and didactic aspects, which sought participant retention by making content attractive and entertaining.

This document explains the context in which this initiative was carried out, the methodology used, the challenges and opportunities that arose during the implementation of the action plans, and lastly, the results obtained.

2

Introduction



The Inter-American Development Bank (IDB or the Bank) launched its first massive open online course (MOOC) in 2014 within the edX platform. This platform is a massive-training tool that emerged from Harvard University and the Massachusetts Institute of Technology (MIT) in 2012. At that time, the New York Times labeled 2012 “The Year of the MOOC.” Rapid growth and change in the sector were expected to democratize access to education (Pappano, 2012). Nine years later, even though MOOC have become a powerful training tool, more moderate growth rates are also observed. There are higher entry barriers, connectivity issues, new content trends, and channels that can alternatively fulfill educational needs. The growing demand for online content requires formulating differentiation strategies, with added value and assertive communication.

Compared with educational institutions, multilateral organizations such as the IDB are defined with a different purpose, which includes improving the competencies of individuals and strengthening the institutional capacities of the organizations in which they work, thus seeking to promote economic and social development by changing knowledge, behavior, attitudes, and practices. MOOC offer specific solutions to certain problems in order to achieve more homogeneous training for development stakeholders with a much wider reach. We went from training a few thousand participants a year to hundreds of thousands, at a much lower cost per participant and with open access to content. However, MOOC pose other challenges for such institutions as the IDB, including high dropout rates and the cost of certificates, which part of their audience cannot afford.

One of the main concerns for institutions that develop massive open online courses is getting registered students to participate in these courses. Registering for a MOOC is as easy as the click of a button. However, completing the course and taking advantage of it takes between 10 and 30 hours of effort, so finishing a course can take several weeks. Securing MOOC students’ commitment, or engagement, is a major challenge that all institutions are facing. Therefore, the IDB has been implementing strategies and experimenting for years to improve engagement in its training offer.

This document explains how the IDB, through its IDBx Program,¹ has been working to increase its students’ engagement in online courses—especially in 2020—, by developing a series of action plans for this purpose.

In order to assess course engagement improvements, we must have clear indicators and data analysis methodologies that enable us to measure them. Therefore, the IDBx Program has defined several indicators to measure students’ commitment, or engagement, in its courses.

Note 1. This program’s objective is to leverage the benefits of MOOC to strengthen the capacities of development stakeholders, especially public officials, thus supporting the development agenda in Latin America and the Caribbean.



- **Number of Registrants:** This is the number of students who register for a course. It includes all those people who intend to take the course or explore its content.
- **Percentage of Participants:** This is the percentage of students participating in the course out of the total number of registrants. This indicator measures the number of people who actually start the course. These participants may be interested in part of the content, in the entire course, or they may only be interested in exploring the course.
- **Percentage of Advanced Participants:** This is the percentage of people who consume 50% or more of the course content. This indicator includes people who are completing either several modules or the entire course. This value was established because often in MOOC people do not want to consume all the information but are rather looking for specific content. Therefore, consuming 50% of the resources in a course shows that these people already have a high level of interest or commitment to the course. This is particularly important if we consider that only those who have paid to opt for the certificate have the possibility to pass the course, and they are a small group among IDBx Program students. Therefore, advanced participants are those who are taking the whole course but who, by not paying, are not opting for a certificate.
- **Percentage of Verified Students:** This is the percentage of registrants who have opted for the verified track, i.e., those students who opt for a verified certificate.
- **Percentage of Certified Students:** This is the percentage of students who pass the course out of the total number of registrants. They are verified students who have obtained at least a 65% score in the course. As we mentioned above, only students in the verified track have the possibility to pass the course and obtain a certificate.



Figure 1 · MOOC Engagement Continuum



This publication focuses on the analysis of the “percentage of participants” indicator. For the IDBx Program, participation in the course represents the second step in the student’s commitment to the MOOC, after registration. This is considered a turning point for increasing commitment with the course, so specific strategies need to be put into practice to help people move from registering to actually taking advantage of the course. Without minimizing the difficulties between moving from one variable to the next, it is considered that the more people who start the course, the more likely they are to move to the next level of commitment, either by consuming at least 50% of the content without paying to opt for the certificate, or by passing the course when they opt for the verified track.

Instructional design efforts and educational and technological innovations are not going to achieve student engagement unless students take the step of starting the course and navigating its content. This is the most difficult step, which not even half of the registrants manage to take. Therefore, from the start of the program, this indicator is taken as a key to success. In addition, since 2019, it has been added as a strategic objective in the IDBx Program’s annual plan, so action plans have been designed to achieve it.

3

**The Evolution of Engagement
in the IDBx Program**



When the IDB launched its first MOOC between 2014 and 2015, students' commitment to IDB courses was significantly high and a large percentage of students obtained certificates. At that time, any student who completed the course, regardless of whether or not they had opted for the verified track, could obtain a certificate. Many were already Bank followers, and they were pioneers who were seeking new tools to enrich their training, without fear of potential technological difficulties. Over time, the profile of the people who registered for these courses began to change, as did their numbers, thanks to the audience's recognition of edX, the translation of the platform into Spanish, and the IDB's improved social media campaigns.

A decline in course participation was seen in 2017. Registrations increased by 48.5% compared with the previous year, but the number of participants only increased by 31.3%. This represented a 6% drop in participation compared with 2016. In an attempt to increase the number of active participants, the first version of the Learning Engagement System (LES) was introduced. Among other features, the LES sends messages customized to each student's progress and reminds them of the main activities and dates of the courses in which they are registered.

Due to the large amount of information collected in the courses, the first interactive dashboard (IDBx Analytics Dashboard) came into operation in 2018. This tool made it possible to identify more precisely, and in a shorter time, those courses in which efforts should be increased to improve the percentage of participation. Using the dashboard, sporadic audits of the percentage of participation were implemented with the aim of applying concrete measures to increase participation in courses with below-average data. Ad hoc campaigns were set up and proved to be effective. For example, one course went from 18% to 42% participation in two weeks thanks to an incentive-based campaign. That year, the number of registrations decreased by 17%, but the number of participants only decreased by 13%. This meant that participation increased by 2% compared with 2017. However, there was still no routine monitoring system or any preset action measures.

During these early years, some limitations to participation also emerged. Since the end of 2018, only those who paid to take a MOOC in the verified track could opt for a certificate. In addition, students who opted for the audit track lost access to the course once the implementation period was over (in just a few weeks). These circumstances made it difficult to maintain student participation and commitment in the courses and led to a reduction in the percentage of those students who obtained certificates, because, in order to do so, they had to opt for the verified track, which implied a cost.

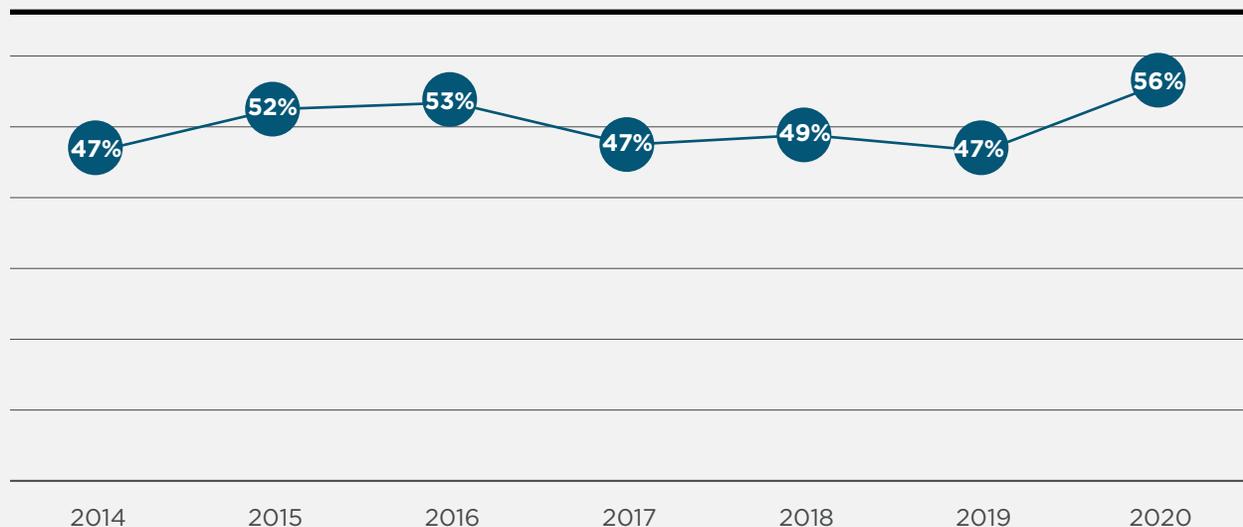
With the intention of continuing to strengthen the capacities of development stakeholders and trying to mitigate the effects of the change in course access tracks mentioned above, in 2019, the IDBx Team defined the increase of engagement in its courses as one of its strategic objectives. A first action plan was put in place, in which a system was established to monitor the percentage of participation in critical weeks, with clear indicators that showed when to intervene and which actions could increase participation. Tests were also carried out with different technologies, methodologies,



and such differentiating activities as: scaffolding, scenario-based activities, branching scenarios, communities of practice, gamification, and authoring tools, as well as a loss-of-engagement map. As a result, the ratio between registrants and participants was maintained, but with 26% more registrants than in 2018.

In 2020, strategies for constant monitoring of the indicators were consolidated and more specific action plans were implemented, which made it possible to achieve a historic participation in the Bank's MOOC.

Chart 1 · Changes in Percentage of Participation for IDBx Courses per Year



The chart above shows the evolution of the average percentage of participation in courses throughout all the years of the program. On different occasions, we can observe that, if no specific action was implemented, the trend in the curve was always downward. We can also observe that in 2020 the curve had a clear upward trend for the first time. There have even been some specific courses that, with tens of thousands of registrants, have achieved 90% participation.

4

Initial Strategies for Maintaining Engagement



4.1 Participant Support Strategies

Identified Need

In any online course, participants need to become familiar with the platform used and the course methodology. In case of queries or the need for support, getting an answer may take too long depending on the time course managers take to respond, even more so if there is a time zone difference. As a result, this delay may cause participants to drop out of the course, especially if their queries affect their progress.

When the IDBx Program was launched in November 2014, this issue was taken into consideration and a system was implemented to answer participants' questions, initially through forums and email. However, this system did not guarantee quick responses, and it could lead to a decrease in participant commitment.

Proposed Solution: Ticketing System Improvement and Chatbot Implementation

After analyzing the data from this response system in 2018, we enabled an area in our courses, in which participants could find predefined answers to frequently asked questions. A ticketing system was also adopted, in which students who could not find the answers to their queries were able to submit a completed form. Once submitted, a message with a unique code was generated and sent to the person responsible for implementing the course. This way, the person could respond to the same participant as many times as necessary within a string of messages that were logged into the system. Therefore, no message went unanswered, student frustration was avoided, response time was shortened, and the amount of work for the implementation team was streamlined. This system is still in use today.

Subsequently, the IDBx Team considered a solution to further reduce response time. At this point, we began to investigate how a chatbot could work using the IBM Watson® artificial intelligence system. We wanted to provide participants with immediate support, at least regarding the most basic and repetitive questions. For example, the course end date, the deadline to opt for the certificate, etc. This would enable the team to improve its support to participants and focus its response efforts solely on more complex questions within the ticketing system.

This chatbot research, learning, and testing process was carried out with the support of the entire IDBx Team. Using historical participant-support data, which consisted of all the questions and answers that had been collected in the ticketing system, was crucial for creating a database with the most frequently asked questions and the answers provided to participants. It was also important to train the chatbot to answer these queries in the most appropriate manner. Thus, XiBOT was born, and it is already being implemented on a pilot basis in several of our courses.



XiBOT's development was carried out in four phases:

- **Phase 1.** Identifying needs via the analysis of frequently asked questions and knowledge gathering.
- **Phase 2.** Designing the database and dialog tree in the IBM Watson® Assistant platform.
- **Phase 3.** Testing and troubleshooting in several ways: randomly and through people/user stories.
- **Phase 4.** Reviewing answers' style and grammar.

Results

The chatbot was integrated as a pilot project in the Gestión de proyectos de desarrollo course. First it was tested with a small group of students, and then it was rolled out to all registrants. The chatbot was embedded in course pages via HTML code linked to the IBM Watson® API.

Only a few students interacted with XiBOT, but 81.8% of those who did thought it was helpful for answering their queries. Although the tool has to continue to be tested, it seems to be a good solution that will significantly improve user experience.

4.2 Communication Strategies Between the Course Team and Participants

Identified Need

Since 2014, users who were registered in our courses were sent weekly reminders about the content and activities of the courses in which they were enrolled. Initially, these messages were sent through the edX platform messaging system. This weekly system worked for instructor-paced courses, in which a content module was released each week and participants received specific information about that module. However, the IDBx Program gradually migrated from an instructor-paced modality to a self-paced modality, as this would better meet market demand.

Instructor-paced courses did not allow students to self-manage their time and access content whenever they wished because students had to wait for content to be released. This time lag could result in some students not returning to a course when content was released. On the other hand, courses were only open for a few weeks, and students interested in them had to wait a year until the start of the next edition to reregister.



The self-paced modality, however, meant that courses were available almost all year round and students were able to consume them at their own pace, without having to wait for content to be released. The weekly message system that was being implemented was not compatible with this new modality because each student had different registration and progress dates. Therefore, there was a need to develop a communication strategy that would allow for students to be segmented according to their particular progress in the course and personalized messages to be used.

Proposed Solution: IDBx Learning Engagement System (LES)

The Learning Engagement System (LES) was created in 2017. It was an automated system for sending personalized messages to students based on predetermined criteria, such as their registration date, course modality (audit or verified), their progress in consuming learning resources, and any reported downtime. The system also allowed for keeping records of message click rate and open rate, as well as unsubscribing from campaigns if students wished to do so.

In 2020 some adjustments were made to the messaging scheme to better align it with the edX platform business model. Registration tracks, access times, and message style and content were taken into consideration. A more standardized structure was also developed to measure the impact of each group of messages across all courses.

The following table summarizes the simplified message scheme.

Table 1 • LES Messaging

Message Group	Audience	Description
Weekly Messages	Audit Track (access to the course for a limited time)	Reminders about the content of each module.
General Messages	Verified Certificate Track (access to the course for as long as it is open)	More general content (students have longer access to the course and more freedom to customize their schedule) and motivational texts regarding their progress.
Inactivity Messages	All registrants	Reminders in the event of lack of activity in the course. Auditing students are also sent a reminder as the date in which they will lose access to the course approaches.



Some of these messages included an incentive campaign offering scholarships. The objective was to boost email effectiveness, as well as facilitate access to a certificate at no cost, which encouraged participation in courses and enabled students with lower purchasing power to obtain a certificate.

Thanks to this system, the messages a person receives are personalized to his or her status and participation in the course. For example, if a person who is registered in the course has had no activity over the past week, he or she will receive a reminder message with this type of subject line: “Sara, we’ve missed you in the course.” The body of the message will have specific information about the person’s progress and particular activities to motivate him or her to continue to participate.

Results

Since it was introduced, the LES has been used not only to replace the way we communicate with students, but to provide more personalized and specific communication with each participant. This messaging system enables us to segment students, adjust our communication plans, and optimize our answer to each student. This, in turn, encourages greater participation in the course and a higher level of certification. The data that the system provides about student performance is currently used to review and create more efficient messages. Participation percentage results, both overall and in most courses, suggest that the LES enhancements made in 2020 have helped improve student engagement.

4.3 Changes to Module 0, or the Participant’s Guide

What is Module 0: Start Here?

In IDBx courses, Module 0: Start Here is an introductory section that enables students to learn about the platform, course structure, and assessment methodology. It introduces general information that is useful to participants as of the beginning of the course, and it is designed to meet Quality Matters (QM) standards.

The objective of Module 0 is to provide guidance to students about the course. This module concentrates all the information needed to make participants’ learning experience easy and effective.



Identified Need

At the end of 2019, we launched an advanced data analysis exercise to observe the behavior of those users who dropped out of courses between modules 0 and 1, who accounted for most dropouts. To this end, we took a sample of the activities carried out by individual users in eight randomly chosen courses and we observed that the number of students registered in those courses in module 0 was 21,962, whereas in module 1 it was only 14,630. This reflected an average dropout rate of 37% of participants between the two modules.

Looking at each course separately revealed that, in the best of cases, 86% of students who had started the course in Module 0 had reached Module 1, while in other cases the percentage was only 46%.

Proposed Solution: Shorten Module 0

Based on these results, we identified the need to reduce the size and quantity of elements included in Module 0. The objective was to shorten the module and restructure it with the most important information, so that users could reach course content faster, while still meeting the QM criteria.

Before changes were made, Module 0 had a greater number of units and information. It had eight units, and each tab could display more information. The redesigned Module 0 has three drop-down units, and information is presented in a more orderly manner and classified according to participants' essential needs, as shown in image 1 below.



Image 1 • Comparison Between Original Module 0 and 2020 Module 0

Before	After
<p>▼ Module 0: Start Here</p> <p>0 Destacados de la sección</p> <ul style="list-style-type: none">▶ Initial Survey▶ About the course▶ Course Modes▶ Navigating the course▶ Welcome▶ Course guide▶ Guidance resources▶ Coffee Forum	<p>✓ Start Here</p> <ul style="list-style-type: none">✓ 0.1 Welcome to the course 12 min✓ 0.2 How the course works 12 min✓ 0.3 Tell us about yourself 1 min + 2 activities

Results

The objective of the changes made to Module 0 was to increase participation in the training content of the course, i.e., from Module 1 onwards. The following table shows that, once adjustments were implemented, the course dropout rate in 2020 decreased by an average of 11.62% compared with data from 2019.



Table 2 • Percentage of Participation in Courses by Registration Date

Course (dropout rates were analyzed for 8 different courses)	Participant Dropout BEFORE Module 0 Was Updated (2019)	Participant Dropout AFTER Module 0 Was Updated (2020)	Decrease in Dropouts
Course 1	32%	20.65%	11.35%
Course 2	53%	46.28%	6.72%
Course 3	31%	17.26%	13.74%
Course 4	34%	24.53%	9.47%
Course 5	24%	17.46%	6.54%
Course 6	34%	17.35%	16.65%
Course 7	42.5%	19.15%	23.41%
Course 8	36%	30.90%	5.10%
Total	37%	24.20%	11.62%

4.4 Changes to the Course Dissemination Strategy

Identified Need

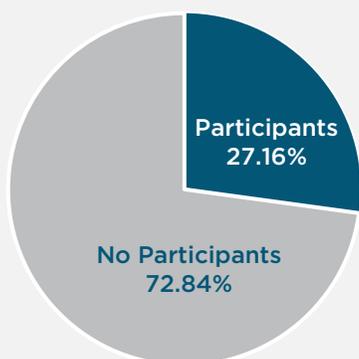
Since 2014, following the recommendations of the platform managers, course promotion began approximately one month before the start date. However, audience attitudes and behavior have changed very quickly since then. In 2019 the context had significantly changed, and people wanted to consume information instantly. In view of this paradigm shift, the IDBx Program conducted an analysis of enrollment and participation data, which confirmed that 72.84% of students who enrolled in a course prior to its start date never accessed the course. We also observed that 55.41% of the students who enrolled after a course started did access its content. This meant that the audience actually wanted to access the course at the time of enrollment and that, if course content could not be accessed immediately, in many cases students did not access the course after it started, which significantly affected the percentage of participation in courses.



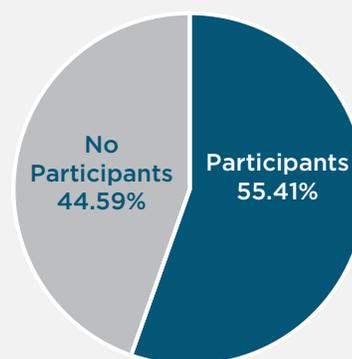
The charts below show this behavior.

Chart 2 • Percentage of Participation by Course Registration Date

Participation of those who signed up before the start date



Participation of those who signed up after the start date



Proposed Solution: Change of Communication Strategy

Following the results of the analysis, we decided to test a new course promotion strategy that involved starting the campaign on the day that a course opened.

The test was conducted with the first edition of the course *El valor de la creatividad y la innovación: la Economía Naranja*. The course started on April 24, 2020, with 1,662 registrants, and that same day the promotion campaign was launched via the IDB's several social media accounts. Emails were also sent to the Bank's databases and there was internal dissemination and communication with collaborators, among other actions taken. After the promotion campaign, the number of registrations on April 25 rose to 9,275 in a single day.

Results

The course ended with more than 19,000 registrants and an 85.85% participation rate, a record number for our courses to date.

Thanks to the successful results attained with *El valor de la creatividad y la innovación: la Economía Naranja* course, we decided to apply this strategy to all courses from that point on. Despite our initial fear that this would not work, we found that courses



received the expected number of registrants and more, and overall participation in all courses increased considerably, to an average 56% in December 2020.

As a lesson learned, we should note that this change in strategy had less positive results in some instructor-paced or shorter courses, which had an increase in percentage of participation, but a decrease in registrants. This resulted in the number of final participants being lower than in previous editions.

In order to implement this change of communication strategy, it should be noted that it is not possible to intervene in all courses in the same way, especially when dealing with short courses. The course type should be analyzed, and the strategy tailored to the course's audience and its specific content to ensure that we maintain or exceed the expected number of registrations and, consequently, participants.

5

2020 Action Plans



5.1 Reasons for Students' Low Engagement rates in MOOCs

The four initiatives explained above were developed from needs that had been empirically observed, in order to generate solutions to concrete problems reflected in the IDBx Program's performance indicators or expressed directly by students in course evaluation surveys or via email. However, at the beginning of 2020, the need to evaluate the reasons why students in the program enrolled in courses and then did not start them became more apparent.

In order to better understand this phenomenon, we conducted a specific survey to find out students' rationales. The plan was to implement action proposals that would encourage students to actively engage in courses once the reasons for their lack of participation had been identified.

Target Population

For this analysis, our target population included students enrolled in three IDB MOOC that were being delivered on the edX platform at the time of the survey. The courses were:

- *Big Data sin misterios*; the survey was sent to 7,776 registrants.
- *Gestión de riesgos en proyectos de desarrollo*; the survey was sent to 3,984 registrants.
- *Desafíos y oportunidades de la economía digital*; the survey was sent to 1,585 registrants.

The population selected for the study consisted of students who had registered for one of these courses but who had had no participation or interaction with the course's learning resources prior to the survey.

In all three courses mentioned, the total number of inactive students was around 13,354. In order to have a representative sample with a 99% confidence level and a 5% margin of error, at least 630 respondents were required.² In total, 1,073 responses were obtained, significantly exceeding the minimum required.

A brief structured survey was implemented. It comprised a close-ended item and an open-ended question. The first question focused on identifying some of the causes that led to respondents' lack of participation in the course. Respondents could select one or more of the following answer options:

Note 2. Data extracted from the SurveyMonkey Margin of Error Calculator.



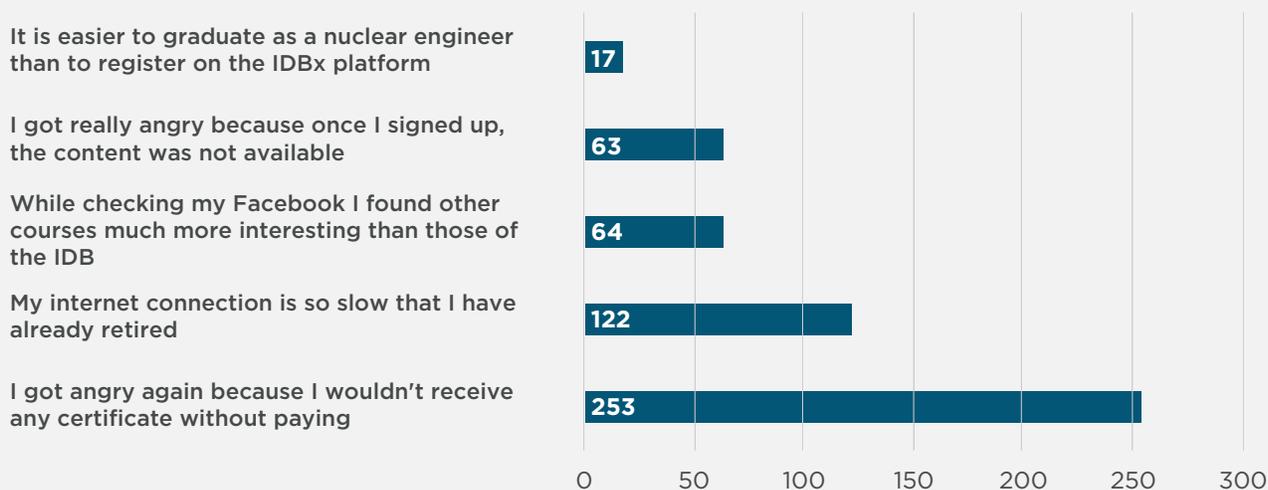
- My internet connection is so slow that I have aged a hundred years.
- It is easier to become a nuclear engineer than to register on the IDBx platform.
- While I was browsing Facebook I found other courses that were much more interesting than the IDB's courses.
- I got very angry because once I registered, the content was not available, so I looked for other courses.
- I got angry again because I would not receive a verified certificate without paying.
- Other.

The second question focused on eliciting participants' opinions in greater detail.

Results

With regard to the close-ended items, results indicated that the main reason respondents did not access the course was annoyance regarding the registration tracks on the edX platform, which do not enable participants to obtain a free verified certificate (without paying the fee specified in the course). Other reasons why respondents did not start the course after they registered were internet connection problems and having found other courses on social media that were more interesting to them.

Chart 3 • Results to the Close-Ended Item: Main Reasons for the Lack of Participation



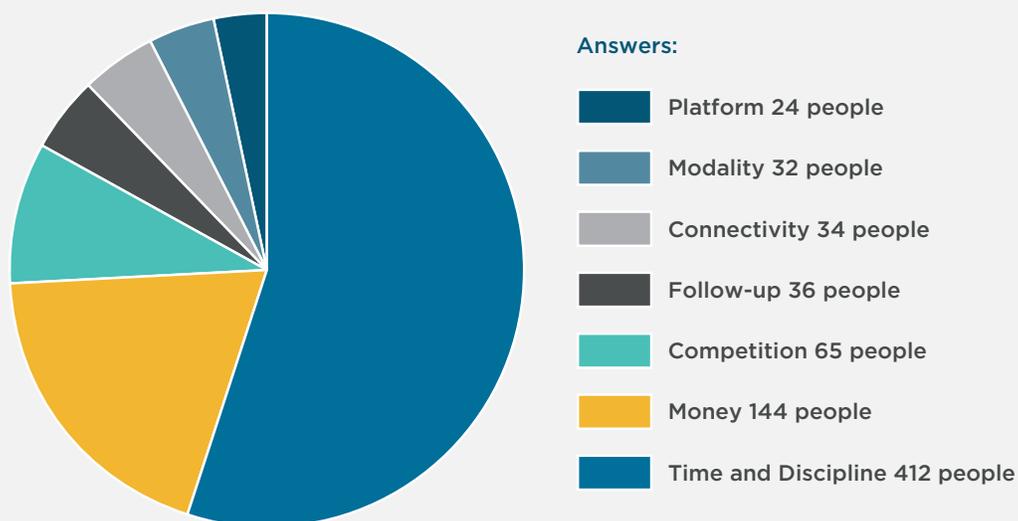
Note: Created in-house. Respondents were able to select more than one option; data presented are the sum of the individual options selected.



Chart 3 shows that 48,75%, i.e., 253 respondents, stated that the main reason for not participating in the course was having to pay to obtain the verified certificate. This is interesting because, even though courses are open, motivation seems to be focused on obtaining a document that certifies the knowledge acquired. This contradicts the information obtained in our courses' initial surveys, in which on average only 5.46% of participants wish to obtain a verified certificate. The second most voted option among close-ended answers was centered on users' internet speed: 23.51%, i.e., 122 respondents.

On the other hand, respondents' open-ended answers were centered around several issues. Based on a qualitative analysis in which each answer's focus was examined, they were divided into eight categories, each subdivided into specific subcategories as shown in Chart 4 and developed in Table 3.

Chart 4 • Main Categories of Causes for Lack of Participation in MOOC, Open-Ended Question



Note: Created in-house.



Table 3 • Categories and Subcategories Based on Open-Ended Answers

Category	Subcategory	Answers
Time and Discipline	I do not have time / I have other priorities (family, work, etc.)	266
	I find it difficult to manage my time	116
	I lack discipline (social media distraction)	30
Follow-up	I need reminders	34
	I need a course schedule	2
Money	I have no money to pay for the certificate	109
	I want to get a scholarship (coupon)	35
Platform	I do not understand the platform (interface)	24
Competition	I chose a different course	65
Modality	I want assessments in Audit modality	9
	The course in Audit modality is incomplete	3
	I am not interested in taking a course without obtaining a certificate	20
Connectivity	I had internet connection issues	34

Note: Created in-house. Respondents' answers could include more than one category at a time; data presented are the sum of each subcategory reflected in the total number of open-ended answers.

Qualitative Analysis Reflections

In a qualitative analysis of open-ended answers, the essential information is what people express. Therefore, counting the number of answers that address a specific topic is not entirely representative, but it does provide information on trends.

It must be noted that answers provided could address more than one category in the table. For example, one respondent indicated that lack of time and, in addition, poor internet connection prevented him or her from continuing the course. These types of answers were therefore recorded under more than one category.

According to several answers obtained, focusing on work, family, other courses, social media, or other daily activities ranked among the main distractions when starting an online course.



5.2 Action Plans That Stemmed from the Student Survey

Based on the categorization performed and the number of responses obtained, we established the following priorities to try to reverse the trend and take motivating actions to encourage students to access the course.

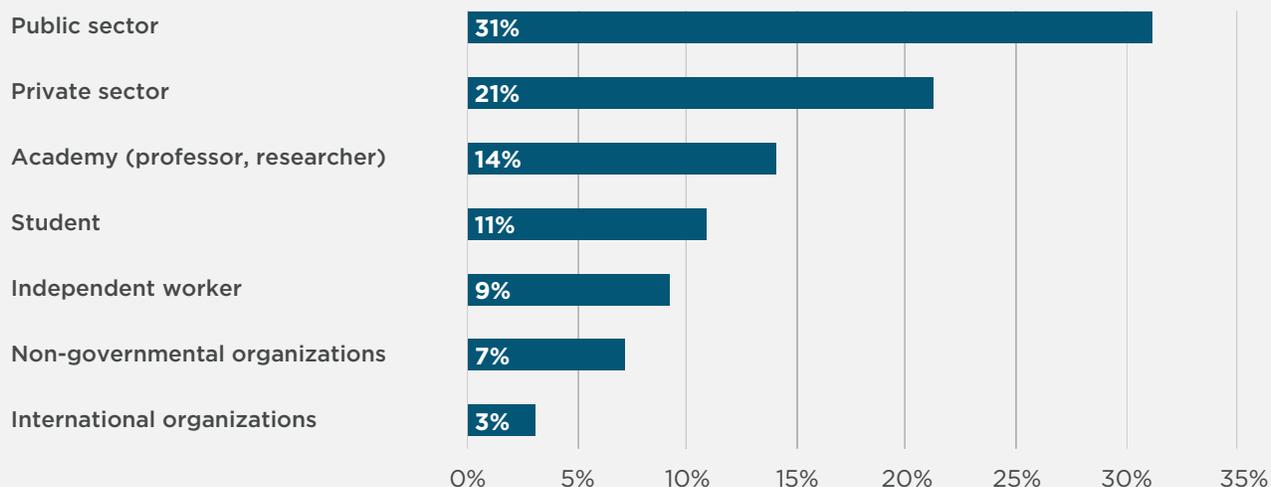
Table 4 • Priorities Based on Answers to the Open-Ended Question

Priorities	Survey Subcategories
1 - Time Management	I do not have time / I have other priorities / I find it difficult to manage my time / I lack discipline / I need reminders / I need a course schedule
2 - Payment for Certificate and Access to Assessments	I have no money to pay for the certificate / I want to get a scholarship (coupon) / I want assessments in Audit modality / The course in Audit modality is incomplete / I am not interested in taking a course without obtaining a certificate
3 - Course Offering Compared with Other Stakeholders' Online Training Offering	I chose a different course / I do not understand the platform (interface) / The course was not what I had expected
4 - Internet Access Quality	I had internet connection issues

Priority 1 was related to self-management and use of time. Taking into account that, as shown in the chart below, most students who registered for the IDB's online courses had other responsibilities, such as work or study, time management emerged as the priority to be addressed by the program.



Chart 5 • Average Sector or Activity of IDBx MOOC Audience



IDBx courses offered tools for self-managing work during the course and had the LES send students personalized reminders; however, according to survey respondents, lack of time and self-discipline continued to limit their access to courses.

Priority 2 was related to the edX platform's business model, so the IDB had limited room for maneuver. Thanks to the input from the survey, a scholarship system was implemented to benefit more students and thus help improve this indicator.

Priority 3 was related to market competition. The IDBx Team interpreted these answers as a positive development. Fortunately, there were increasingly more open and free courses in Spanish, Portuguese, and French for Latin America and the Caribbean, so participants sometimes preferred courses from other providers. Registering for a MOOC, especially if the person already has an account on the platform, is free and very easy. The user could register for our course, continue browsing, and find another course that better suited his or her needs.

Priority 4 was related, on the one hand, to digital infrastructure, and on the other hand, to accessibility, in which the IDBx Program has been making efforts from the start. Continuing to work on improvements to the mobile application and using smaller or lighter resources were lines to be further developed.

Activities were developed based on inputs from all answers. However, in order to develop action plans, the IDBx Team decided to focus on actions that fell within the



first priority, because it found that it could make its greatest impact on this priority, which could also be more quickly measured. As a result, the following actions were developed:

Table 5 • Initiatives Developed

Priority	Initiative
1	Student Motivational Chart
1	Campaign on Procrastination
1	Temptation Test

Based on the selected priorities, three actions are presented and described below.

5.2.1 Motivational Chart Campaign

Identified Need

This initiative was based on the frequency and priorities table mentioned above, “Priority 1: I do not have time / I find it difficult to manage my time / I need reminders.”

Its main objective was to encourage participants to access the course and advance through its different modules, helping them manage their time and successfully finish the course in a fun way.

Proposed Solution: Motivational Chart Campaign

A campaign was created with an appealing message to participants sent via email. The message was drafted using an analogy between the time and effort needed to complete a course and the speed of certain animals. A cheetah, a rabbit, and a turtle were chosen.

First, an image was designed to show all three animals and their different paces. Then, participants were told that if they chose the pace of a cheetah—considered one of the fastest animals in the world—, they would be able to complete the course in about two weeks, but if participants chose the pace of a turtle, completing the course could take about ten weeks. Image 2 below shows the final design using these animals.



Image 2 • Image Model for the Motivational Chart Campaign



To supplement the image, the message said: “Did you know that if you keep the pace of a cheetah you can learn the ropes of managing a partnership in just two weeks?” Or “did you know that if you keep the pace of a cheetah you can finish the Big Data course in just two weeks?” Image 3 shows the final version of the message and the image that were sent to participants by email.



Image 3 • Email Template Used in the Motivational Chart Campaign



We welcome you to the Big Data course!

Did you know that we spent more than 7 hours scrolling our cell phone screen?
We suggest you use those hours to complete the Big Data course.

Choose one of these animals to determine how long you can finish the course
without procrastinating



You dare?

Go ahead, we wait for you in the course!

[Click here to access the course!](#)

The target audience for this campaign were newly registered participants and participants who had not been active in a long time. In order not to overwhelm participants, these messages replaced those that had already been programmed within the LES messaging system.

Messages were sent on June 17, 2020, with adjustments depending on each participant's registration date, within five different courses. These courses were selected based on an analysis of the percentage of participation, with a 40% average, using IDBx Program metrics. Based on this, we identified that some courses with several editions showed a decrease in percentage of participation compared with previous editions, including *Big Data sin misterios*, *Alianzas: un vehículo para alcanzar el desarrollo sostenible*; *Desafíos y oportunidades de la economía digital*, *Gestao de projetos de desenvolvimento* and *Gestao de Riscos em projetos*.



Results

To measure and compare results, we sampled six standard messages from those courses that had been sent before the campaign in February, March, and April 2020, and we compared them with six campaign messages sent in June, July, and August. Two indicators were used to compare effectiveness: the open rate, to identify the number of people who opened the message, and the click rate, to determine if the message motivated participants to click on the links that redirected to the promoted course.

Open Rate Analysis Results

The success of the open rate in the campaign helped us analyze the effectiveness of changing the subject line. Comparing the subject line of a standard message with one from the campaign, it was clear that the campaign's subject line sought to be more eye-catching, so as to pique the recipient's interest and invite him or her to open the message and see what it was about.

Table 6 • Subject Line Examples for Welcome Message and Inactivity Message

Subject Line Example for the *Big Data sin misterios* Course Welcome Message

Scheduled Standard Message	* NAME *, discover the elements of a successful Big Data project
Motivational Chart Campaign Message	* NAME *, are you up for completing the Big Data course in two weeks?

Subject Line Example for the *Big Data sin misterios* Course Inactivity Message

Scheduled Standard Message	* NAME *, we miss you at the Big Data course
Motivational Chart Campaign Message	* NAME *, Big Data in two weeks? You can do it! Don't procrastinate today if you can procrastinate tomorrow

However, the following chart shows that the open rate for both the welcome message and the inactivity message that had the campaign's subject lines was not as successful as expected.

It should be considered that the sample of standard messages corresponds to the months of February, March, and April, dates when a strict quarantine began in many countries in the region due to COVID-19, and this could have affected the positive results of these standard campaigns. In those three months, a total of 143,982 persons registered for our courses, compared with 115,618 registrations over the three months of the campaign.



Chart 6 • Comparison Between the Open Rate of Standard Messages and Campaign Messages



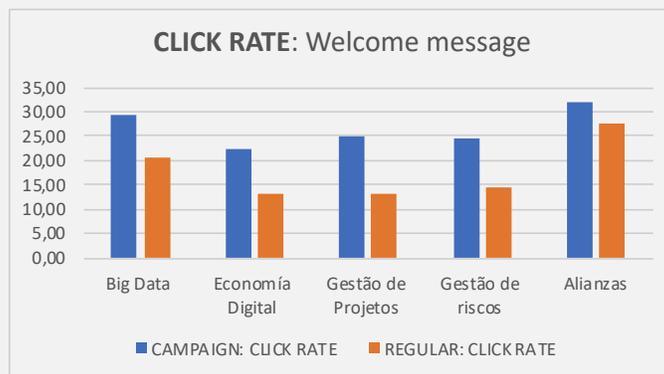
As noted above, we can conclude that the subject line chosen was not effective enough, or that at least we cannot obtain sufficient data to show its effectiveness due to increased interest in courses on the dates mentioned.

Click Rate Analysis Results

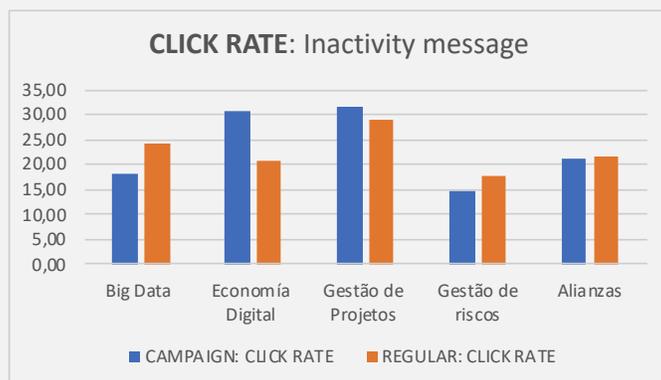
The click rate helped the IDBx Team measure whether the body of the message was attractive enough for people to access the course. The following charts compare this rate for the different messages (standard campaign versus motivation campaign).



Chart 7 • Comparison Between the Click Rate of Standard Messages and Campaign Messages



The welcome message of the new campaign proved to be more effective than the standard one, given that the click rate was higher for all courses.



However, regarding the inactivity message of the new campaign, the click rate improved in just two courses.

In addition to analyzing these two variables, we also analyzed the increase in participation after messages had been sent for the courses in which the campaign was being implemented.

The following table shows how participation increased with the Motivational Chart campaign regarding welcome messages, i.e., for people who had recently registered for the courses. Meanwhile, in the case of the campaign aimed at registrants who had not accessed the course in the past week (i.e., who received the inactivity message), there was no clear trend, as some courses showed an increase in participation, but others did not.



Table 7 • Increase in Percentage of Participation for Courses in Which the Campaign Was Implemented

Percentage of participation for new registrants

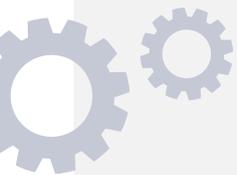
Course	Participation Increase %
Big Data sin misterios	+ 8.8
Desafíos y oportunidades na economía digital	+ 9.4
Gestao de projetos de desenvolvimento	+ 12.0
Gestao de riscos em projetos	+ 10.0
Alianzas: un vehículo para lograr el desarrollo sostenible	+ 4.5

Percentage of participation for inactive registrants

Course	Participation Increase %
Big Data sin misterios	- 5.8
Desafíos y oportunidades na economía digital	+10.0
Gestão de Projetos de desenvolvimento	+2.8
Gestão de riscos em projetos	- 2.9
Alianzas: vehículos para lograr el desarrollo sostenible	- 0.3

In conclusion, this proves that the campaign worked better for new registrants than the inactive public. In addition, we determined that for welcome messages it was more appropriate to maintain the subject line of the standard message, which was more effective than that of the specific campaign. We also recommend that the Motivational Chart campaign, which is very attractive, be implemented in other dissemination channels, such as social media.

When comparing two course editions at different times, the context may change—as it did this time around, during the pandemic. This could influence results, so we recommend that the campaign be applied by taking samples in one same edition of the course, generating different cohorts of students, and defining a control group to which standard messages continue to be sent.



5.2.2. Zero Procrastination Campaign

Identified Need

This campaign, like the Motivational Chart campaign, arose from priority 1, which was identified to be the lack of time expressed by respondents. The survey enabled us to identify that more than 13% of these respondents postponed starting the course.

The objective of the Zero Procrastination initiative was to show registrants, in an entertaining and clear manner, that rather than lack of time, the problem was often the lack of time management and the use of time in other activities that distract them from their tasks, such as hours spent on social media or checking their cell phones.

Proposed Solution: Zero Procrastination Campaign

This campaign's components were designed with high graphic content. They were designed and planned for their use on social media. We created:

- Several clear, eye-catching infographics in different colors, with one goal: Representing the main activities that are time-consuming even though the person does not realize it, such as surfing the web, checking email and social networks, or even drinking more coffee than necessary.
- Different short, direct messages, with real data on how much time one wastes on average checking one's cell phone or browsing the internet in a week, so that participants felt identified.
- A hashtag to start a conversation on how to end procrastination with the audience of each course, #ZeroProcrastination (#ProcrastinaciónCero in Spanish).

The campaign was launched on June 11, 2020, on all the IDB's social media accounts, so as to motivate enrollment and participation in the *Big Data sin misterios* course, as shown on Image 4 and the message that appears below.



Image 4 • Template for the Social Media Publication of the Zero Procrastination Campaign

Did you know that we spend more than seven hours a week swiping our cell phone screens? We assure you that in just two hours a day you can complete our open online #BigData course in less than two weeks. Are you up for it? #ZeroProcrastination



* Links to the social media campaign: [Facebook](#); [LinkedIn](#); [Twitter](#)



Results

The Zero Procrastination campaign was well received on social media, mainly on Facebook, as shown in the data collected:

- On Facebook, the post reached 67,965 people, with 4,433 interactions, 813 likes, 20 comments, and 318 shares.
- On LinkedIn it had 757 likes and 20 comments.
- On Twitter it had 73 likes and 39 retweets.

Compared with other social media posts about MOOCs, this campaign's performance stood out, especially for its engagement in social networks, which tends to reach 2% on average, while in this case it reached 4%.³

In addition, this initiative succeeded in increasing the number of new registrants to the course by 390, organically, in one week, i.e., at no additional cost. We also observed that increased registrations did not cause participation to decrease. Although we cannot objectively state that registrants participated more in the course because of this initiative, we can state that participation also increased during that week, without there being any other initiative implemented.

The campaign's successful results in this first course led to its implementation for promoting such other courses as *Administración pública y fiscal: cómo se gestiona un gobierno*, *Líderes para la gestión en seguridad ciudadana y justicia*, *Gestao de riscos em projetos*, *Gestao de projetos de desenvolvimento*, *Desafíos y oportunidades na economía digital* and Project Management for Development Projects.

All these courses also experienced an increase in registration and participation rates.

5.2.3. Temptation Test and Temptation Game Campaign

Identified Need

As with previous campaigns, the Temptation Test initiative addressed respondents' feedback indicating that their lack of participation in courses was partially due to time management and, despite the LES's weekly messages, the claim that they lacked reminders. The objective of the campaign was to challenge registrants to answer a gamelike questionnaire about the content of a course in which they were enrolled to pique their curiosity and nudge them to access the course.

Note 3. Data taken from the network management platform used by the IDB: Social Studio.



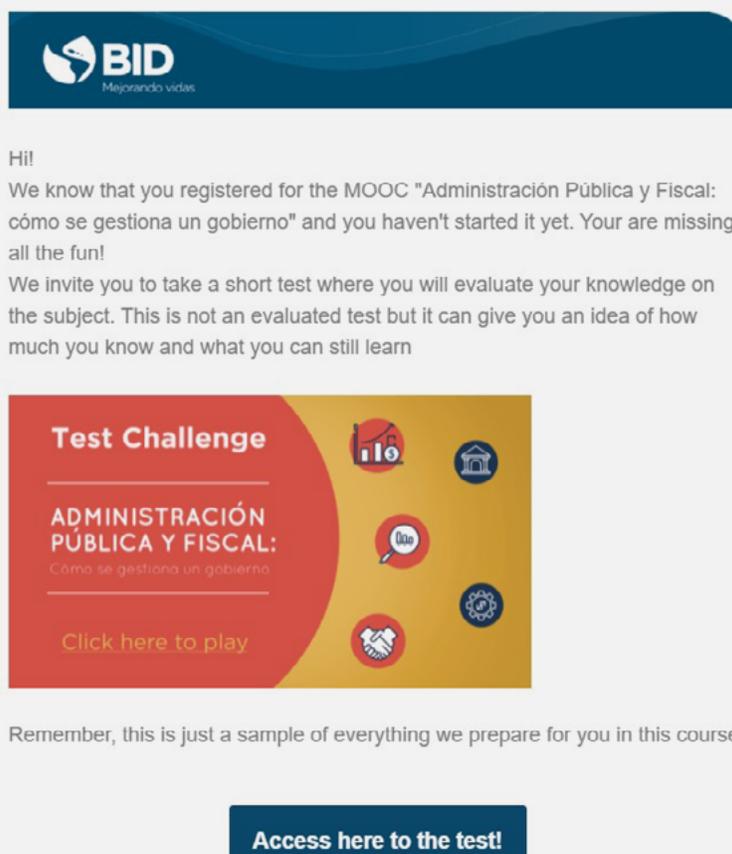
Proposed Solution 1: Temptation Test

This initiative was not only about sending students an email to remind them to access the course, but challenging them—through a brief, attractive test—to participate by showing them the resulting benefits:

- If the results of the questionnaire showed that registrants were very familiar with the subject, they were told that taking the course could be straightforward and they could consider obtaining a verified certificate.
- If the results showed that registrants did not know much about the subject matter, taking the course could help them update their knowledge.

Image 5 below shows an example of the email sent in July 2020 to registrants enrolled in the *Administración pública y fiscal: cómo se gestiona un gobierno*.

Image 5 • Email Template Used in the Temptation Test Campaign





Results

To gauge the campaign's success, the open rate was measured; it was 20.3%. Compared with the average open rate for all messages sent regularly for this course throughout June 2020—which was 27.74%—this email was found to be less effective than regular messages.

The click rate was also measured; it was 4.5%. In this case, compared with the average click rate for all messages sent regularly for this course throughout June 2020—which was 4.13%—the click rate was found to be slightly higher than average.

To measure the ultimate success of the campaign, participation data for this course were analyzed, and we observed that participation increased by 3% in mid-July 2020.

To improve the effectiveness of the Temptation Test initiative and achieve better open rate results, we recommend:

- Testing a different subject line than the one already used for the message accompanying the questionnaire.
- Determining whether there is a day of the week when students open their email more frequently than other days, i.e., when the open rate is naturally higher. This way, messages related to these initiatives can be sent on those days.

To achieve a higher-than-average click rate with a greater margin, we suggest:

- Using a shorter accompanying message consisting of one or two phrases, so that registrants who open the email are more inclined to read it.
- Testing this initiative for courses in different languages, for example, courses in Spanish audiences are different, so results may be different as well.
- Applying different banner styles to emails that will be sent and determining whether any of them will have a better impact on the click rate.
- Potentially connecting the completion of this test with receiving some kind of incentive to help improve participation in the course. For example, a scholarship to opt for the verified certificate.

Proposed Solution 2: Temptation Game

While the Temptation Test campaign was being developed there was another proposal to use the same idea differently: Emailing a game with which registrants could interact. That is how Initiative 2: Temptation Game came about, and it was developed as follows:

1. The Project Management for Development course (in English) was selected for implementing a pilot game. The course already had 10,448 registrants and 6,119 participants.



2. A game was developed using interactive resources, such as animations. The topic that would be covered in the initiative was one of the key topics in the course: project management tools.
3. The game was placed in the course on the edX platform.
4. The link to access the game was emailed to registrants who had never participated in the course, i.e., a total of 2,954 registrants.

Image 6 below shows an example of the email sent in July to registrants enrolled in the Project Management for Development course.

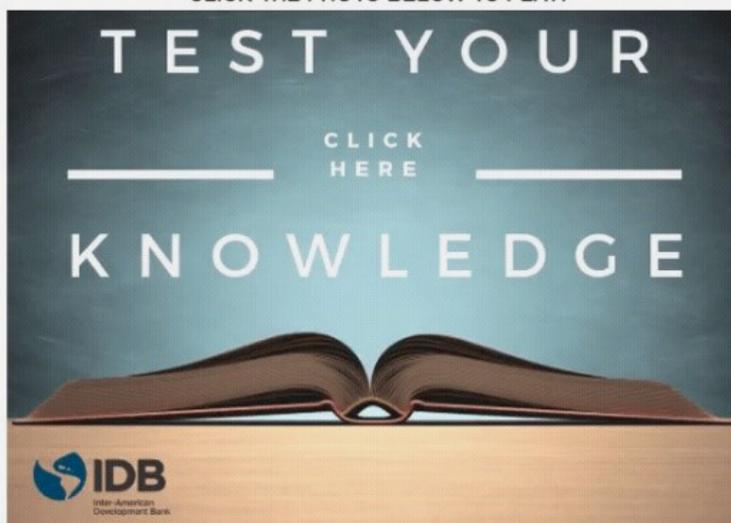
Image 6 • Email Template Used in the Temptation Game Campaign

Hi << Test First Name >>,

Having registered for the **Project Management for Development MOOC**, you have access to this brief 'knowledge game'.

The top project management tools required by employers across various industries will be revealed as you play!

CLICK THE PHOTO BELOW TO PLAY!



if you can't see the image, click on the button below to play

[Click to play!](#)



Results

To gauge the campaign's success, the open rate was analyzed; it was 28.2%. The average open rate of all messages sent regularly for this course throughout July 2020 was 38.18%, so we concluded that the open rate was below the average mentioned in both cases.

Regarding the click rate, the situation was no different, since there was only a 3.3% click rate for people who had never participated in the course, while the average click rate of all messages sent regularly for this course throughout July 2020 was 5.3%. To measure the ultimate success of the campaign, participation data for this course were analyzed, and we observed that participation increased by 1.2% in mid-July 2020.

Due to the initiative's limited success, we will propose ways to improve its effectiveness below. To achieve better open rate results, as we did for the Temptation Test we recommend:

- Using a different subject line for the message accompanying the game.
- Determining whether there are days when, for all messages sent by the IDBx Team, the open rate is generally higher, and trying to send messages associated with these initiatives on those days.

To improve the click rate, we suggest:

- Drafting the accompanying message differently because, in this case, the length of the message is limited. Therefore, registrants who open the email will be more willing to read it.
- Testing this initiative for courses in other languages, for example, courses in Spanish. Audiences are varied among courses in different languages, so results may be different.
- Testing new message designs, as well as using banners within the emails that are sent.
- Connecting the completion of the game with receiving an incentive in return. For example, entering sweepstakes to opt for a verified certificate.

As a result of the analysis of our research and the strategies and actions carried out, we can conclude that, in order to improve the impact on student participation, we must take into account that courses and audiences are different, but there are also similarities. We recommend that a preliminary analysis be conducted before preparing and implementing action plans to increase or improve student engagement in courses.

6

Conclusions and Recommendations



Between 2014 and 2017, engagement in IDBx Program courses was monitored ex post facto, i.e., participation was analyzed after courses had ended. As of 2018, somewhat unstructured and ad hoc monitoring began, which, while helping to solve certain problems and mitigate the decline in the percentage of participation, it did not have specific processes and action plans.

Since the beginning of 2020, the percentage of participation indicator has been analyzed on a weekly basis, both individually, for each course, and globally. Therefore, we have achieved better monitoring of this variable, developing proactive strategies while courses are still open to encourage student participation.

Some of the findings from this research, which explain the positive results of the engagement strategy and action plans, are as follows:

- One of the essential tools for fostering engagement has proven to be a good strategy for communicating with participants. Thanks to the Learning Engagement System, the IDBx Program offers more personalized and specific communication with each participant, and this has positively influenced course participation results.
- Implementing a chatbot reduces the time and effort needed to help participants; it is a useful tool for answering participants' frequently asked questions.
- Shortening Module 0 increases student participation in courses. We observed that, thanks to the changes made to this module, more students continue to take the course in which they enrolled.
- It has been proven that, in most courses, starting promotion when course content is available has a positive effect on those courses' engagement indicators.
- Email campaigns to motivate student participation should be simple and graphic; they should make participants feel identified and give them reasons to access or continue a course. Adding a prize or reward, for example, can improve the outcome of these campaigns.
- During the pandemic, the consumption of online courses increased. Therefore, we recommend that these campaigns be carried out again, to check the validity of observed changes.
- Analyzing surveys to better understand participants' profiles and behavior is a very important source of information for designing future action plans and further increase participation. Thanks to the research presented in this document, it is possible to identify some reasons why registrants do not participate in courses, which should be considered when designing initiatives in the future, for example, lack of time, lack of discipline or procrastination, lack of financial resources to participate in the verified certificate track, or saturation of internet offerings—not only for training, but also for entertainment.

It is important to mention that the initiatives outlined in this document are only some of the several actions we have implemented to increase engagement in IDBx Program courses.

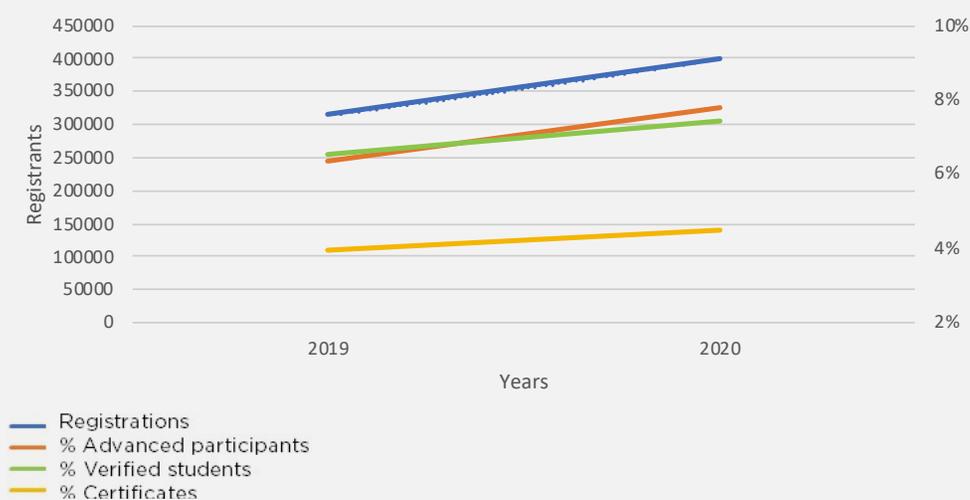


In the instructional design of our courses, we have also continuously incorporated diverse pedagogical strategies so that, once participants register for a course, they feel motivated to complete it. Some examples include diversifying course formats between MOOC and NanoMOOC (i.e., massive, yet shorter, courses); using digital badges as a supplement to Blockchain-based certification; establishing learning paths aimed at different audiences; introducing gamification, storytelling, and scaffolding; implementing case-based learning; and incorporating authoring tools to dynamize content retrieval. In addition, course design promotes a gender and diversity approach to the content and resources presented in order to ensure that the audience can feel more identified and that differences are respected and valued in a multicultural environment.

Thanks to all these initiatives, the percentage of participation indicator for IDBx Program courses saw a significant increase during 2020. According to the data collected, in April 2020 the overall percentage of engagement in courses was 39.21% and in December 2020 it was 56%, i.e., a 16.8% increase throughout the year. Compared with 2019 data, this indicator increased by 20.25% between 2019 and 2020.

Returning to our starting hypothesis, we need to measure whether the increase in the percentage of participation has had a ripple effect and has helped improve the results of the other IDBx Program engagement indicators as well. Comparing the data of all engagement indicators (registrants, percentage of advanced participants, percentage of verified track students, and percentage of certified students) between 2019 and 2020, we observe that all indicators have significantly improved. Therefore, our starting hypothesis has been proven.

Chart 8 • Comparison of Other Engagement Indicators Between 2019 and 2020





Comparing the percentage of advanced participants between 2019 and 2020, we can see that this indicator increased, even though 2020 had 27.38% more registrants than 2019. This indicator rose from 6.39% to 7.8%.

Similarly, the percentage of students who opted for the verified track also increased between 2019 and 2020, from 6.51% to 7.43%.

Lastly, the number and percentage of students who obtained a certificate was also higher in 2020. In 2019, the percentage of students on the verified track was 3.55% compared with 4.11% in 2020. Moreover, in 2019, only 54.7% of students on the verified track obtained a certificate, while in 2020, 55.27% obtained a certificate.

All in all, we can conclude that participation in courses represents a crucial milestone in the engagement continuum of IDBx students. Moreover, working to improve this indicator has had a highly significant effect on improving the rest of the program's indicators.



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8

Glossary



1. **API:** An Application Programming Interface (API) is a set of subroutines, functions, and procedures that a certain library provides for use by another software as an abstraction layer.
2. **Audit Track (edX):** In this modality, a student has access to all course materials for the duration of the course, except for assignments that carry a score, and he or she does not obtain a verified certificate at the end of the course.
3. **Authoring Tools:** They are multimedia tools that allow for combining digital documents, images, sounds, videos, and interactive activities from within the tool to create learning objects (LO) that can be embedded in virtual learning environments.
4. **Click Rate:** It is the measurement of the number of people who look at an item or a webpage and then follow a link to another page or website, in our case, to IDBx courses through the Learning Engagement System.
5. **Communities of Practice:** They are groups of people who have a common learning interest and who meet online or in person with the objective of developing their knowledge. Through constant interaction, the members of these groups are able to broaden their knowledge and experience in this topic of interest, further strengthening their relationships.
6. **Digital Badges:** They are an online acknowledgment of the skills or knowledge acquired in a course. These credentials enable students to transform the way they share their academic and professional accomplishments. Unlike traditional certificates, which can be issued by any institution and whose verification is complex, digital badges allow for easily identifying the level of certification, the institution from which it comes, and how to quickly verify its authenticity. This makes it possible to guarantee a person's level of expertise to an employer, organization, etc.
7. **Gamification:** Gamification seeks to incorporate such features as challenges or competition into tasks, aiming to promote student participation and thus increase the probability that students will achieve a given objective. The use of gamelike, challenging, or competition-incentivizing activities seeks to deeply involve individuals in problem solving or learning processes.
8. **IDBx Analytics Dashboard:** It is a web page that displays a dashboard with the main management indicators of the courses delivered on the edX platform, such as number of registrants, numbers per country, etc.
9. **Interface:** In general systems theory, the term interface defines the space in which two different systems interact with each other by exchanging data or information. The set of elements that enable a user to enter data into or provide instructions to a computer and obtain information from a computer are known as a graphical user interface or GUI. Thus, the items that a user sees on the screen, such as icons,



windows, cursors, menus, and buttons are part of the computer's GUI. In a broader sense, a computer's interface is made up of all those elements that provide the user with information and that the user can perceive through his or her senses (mainly sight, hearing, and touch). Therefore, error sounds or the vibrations of a game controller are also part of the interface.

- 10. Learning Engagement System (LES):** It is software implemented in the Python programming language that allows for classifying students who have registered for courses provided by the IDBx Program according to certain criteria and sends them personalized email messages.
- 11. MarylandOnline, Inc. Quality Matters Standards:** They are a series of rubrics and standards created to contribute to the development of courses, design, assessment, and their respective improvement. They are based on quality criteria for courses in different modalities.
- 12. MOOC:** Massive Open Online Courses (MOOCs) aim to share and disseminate knowledge based on materials developed by content experts, as well as through practical activities that are presented on platforms in which thousands of people can participate at the same time.
- 13. Open Rate:** It is the measurement of the number of people who successfully open an item. In this case, people who opened LES messages.
- 14. Scaffolding:** Instructional Scaffolding refers to the support that an instructor provides a student throughout the learning process, whether synchronous or asynchronous. This can be facilitated through ongoing interactive assessments, learning aids, guides, and templates, among others. This support is phased out as students develop autonomous learning strategies, thereby promoting their own independent cognitive, affective, and psychomotor learning skills and knowledge.
- 15. Storytelling:** It refers to the action of rendering and sharing information, usually in prose, which is the natural way of speaking, not subject to poetry's meter and cadence. In e-learning, storytelling is a useful tool for providing context to learning activities and generating an emotional connection with the subject matter to be learned, thus helping students grasp the relevance of what they are learning more easily.
- 16. Temptation Game:** It is a learner participation strategy based on the ARCS Motivational Model of Instructional Design. ARCS stands for Attention, Relevance, Confidence, and Satisfaction. Gamification elements are used to design interactions that appeal to students' intrinsic and/or extrinsic motivations. Its ultimate objective is to promote students' persistence in the learning process until completion and, therefore, increase the likelihood of achieving favorable learning outcomes.



- 17. Temptation Test:** It is the title assigned to an action plan focused on motivating a course's registrants. The plan consists of assessing their knowledge with a brief test that they must answer correctly to identify whether or not they are proficient in the course's subject matter, and thus motivate them to access the course and continue to learn.
- 18. Ticketing System:** Since 2018, the IDBx Program has implemented an online ticketing system that enables it to address its students' queries and needs. Each course in the program has a form that channels queries to the ticketing system, as well as one or two people responsible for answering those queries. All messages are centralized in a single database, which allows for tracking and resolving each request received. The system also has a workspace that allows for assigning the ticket to other people, attaching images, recording query types, and indicating resolution stages.
- 19. Verified Track (edX):** In this modality, a student has unlimited access to all course materials, including assignments that carry a score, and he or she may obtain a verified-identity certificate upon passing the course.
- 20. Virtual Assistant:** Also called chatbot, it is a computer program that simulates a conversation or dialog in natural language, i.e., not a programming language but the user's everyday language. The conversation is usually conducted via voice or text, in response to user commands (questions). In addition, chatbots usually have algorithms (artificial intelligence) that enable them to learn, so as to offer increasingly better conversation and solutions to the user who interacts with them. According to IBM Watson® Assistant, a chatbot is a question-and-answer system that provides dialog interaction between the conversation system and users through artificial intelligence.

