STUDENT RETENTION IN TIMES OF COVID-19

AI SOLUTIONS

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THE ENIGMA OF STUDENT DROPOUT IN TIMES OF COVID-19

Today, the retention of university students is perhaps one of the most explored issues in higher education worldwide since, over time, education has been experiencing different problems that hinder the efficiency and effectiveness of its processes. Among the most well-known problems currently, the ones that stand out are: retention and low levels of learning and student performance. As we begin to explore understanding retention, it is important to note that over the past 50 years there has been an evolution in the way the problem was perceived and studied. It went from being attributed to purely psychological factors related to a student's ability, to encompassing notions about environmental influences, concepts of success, integration and social interaction. Currently viewed from a broader perspective, it is possible to highlight the complex interaction of internal and external factors of the educational context such as cultural, social, institutional and economical dimensions, which influence a student's decision to drop out of university (Stephenson et al., 2020).

In addition, most of the research on retention has focused on understanding why students drop out of the academic program and how they can be helped, to ensure they remain in the institution. It is a fact that student desertion results in an uncertain future for the student and a loss for the university, that is in thousands of dollars from tuition, fees and alumni contributions that end up affecting the financial health of the institution, and represent the fall in quality of educational systems in the different teaching modalities around the world, especially in developing countries. For this reason, identifying, analyzing and predicting the occurrence of these problems has become a priority for educational institution, in order to devise effective strategies to counteract them.

STUDENT DESERTION RESULTS IN AN UNCERTAIN FUTURE FOR THE STUDENT AND A LOSS FOR THE UNIVERSITY THAT END UP AFFECTING THE FINANCIAL HEALTH OF THE INSTITUTION, AND REPRESENT THE FALL IN QUALITY OF EDUCATIONAL SYSTEMS

It is important to recognize students at risk as early as possible so that appropriate interventions can be initiated to help prevent dropouts. According to the National Center for Educational Statistics, only about 60% of students who began their studies in 2010 with a standard 4-year program of study earned a bachelor's degree from the same university in a 6-year period. Furthermore, about 80% of the students who started their studies in 2015 remained in the following year. On the other hand, due to the current COVID-19 pandemic, online learning has been rapidly adopted by institutions and educational organizations. Despite its many advantages, including 24/7 access, high flexibility, rich content and low cost, hampering the results of pedagogical and economic objectives. This is certainly a significantly higher percentage than on-campus course rates. Recent studies have concluded that the problem of university dropout generally arises during the early years of college. The first critical period occurs in the admissions process, when a student enters college for the first time. The second critical period occurs during the first semester of university, when the student begins the process of social and academic adaptation.

This report seeks to go further to consider the holistic factors that affect retention in higher education, and assess ways and measures to improve persistence. By taking into account what drives some students' decision to stay, when others in similar conditions leave, it is possible to determine the factors that affect retention and student progression. Finally, a retention model called Foresight is proposed, which seeks to prevent student dropout and identify areas that are potential barriers for a student to achieve success. Our goal is to provide tools to university administrators and academics to predict dropouts when students fail their courses, take a partial program, or earn below-average GPAs, in order to reduce the dropout rate.

Dropout rate worldwide

42,6%

AVERAGE RETENTION RATE

Overall the average retention rate for for-profit undergraduate programs is 46.2% (National Student Clearinghouse Investigation Center, 2014). In the UK, for example, dropout rates range from 19% to 25%, while in Germany they range from 25% to 30%.

64,2%

RETURN FOR THE SECOND YEAR

Data from the US indicates that only 64.2% of students from public institutions return for the second year. Additionally, data from 2015 shows that the percentage of students earning a bachelor's degree in five years stands at a mere 52%, suggesting that nearly half of American students dropout (American College Testing, 2015).

37%

DROPOUT OF THE HIGHER EDUCATION SYSTEM ENTIRELY

In Latin America, about half of citizens between the ages of 25 and 29 have not established a career. Only Mexico and Peru have a completion rate close to that of the United States (65%).
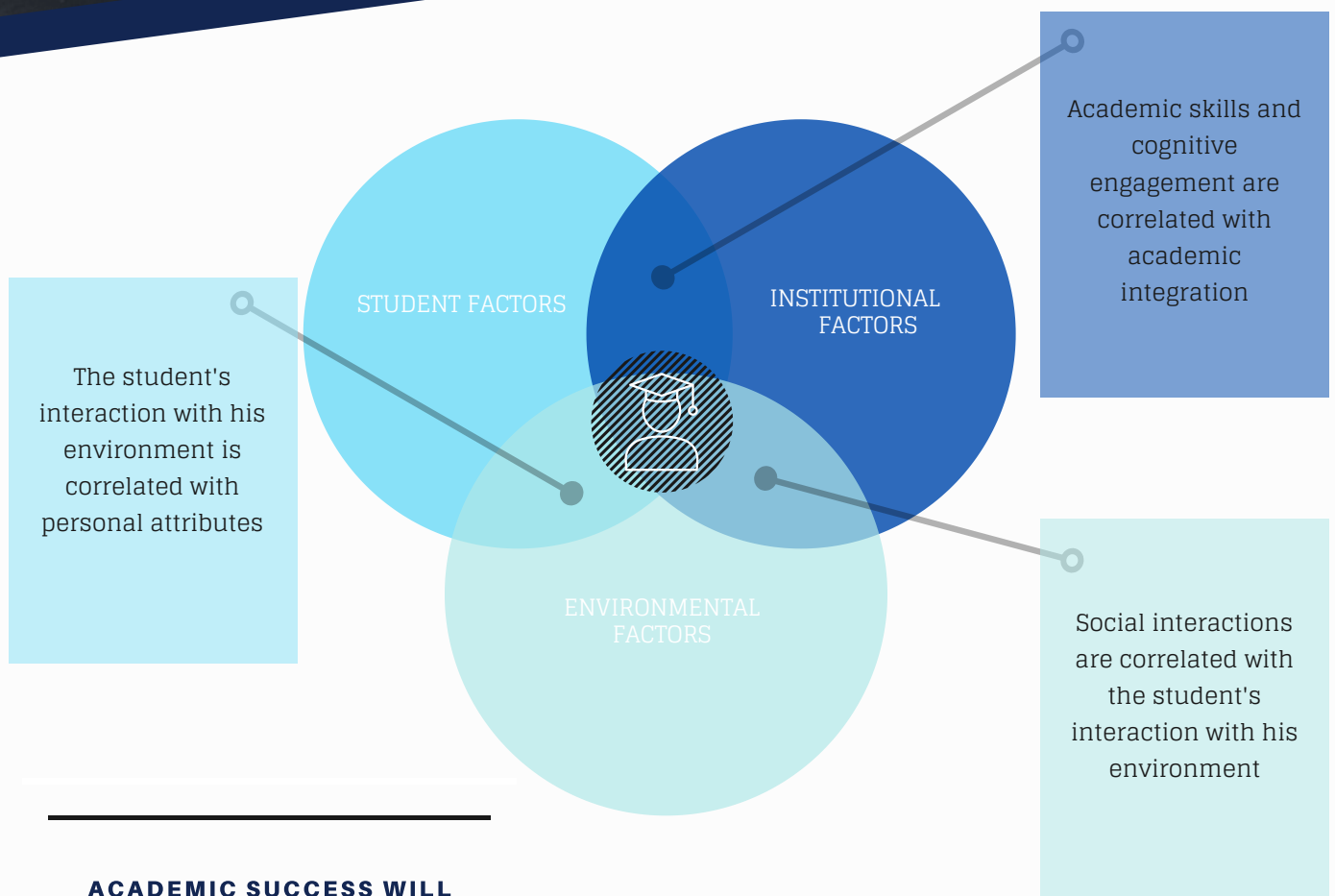
SECTION 1

Holistic factors affecting fetention

HOLISTIC FACTORS AFFECTING FETENTION

IN ADDITION TO ACADEMIC FACTORS, OTHER NON-ACADEMIC FACTORS HAVE BEEN IDENTIFIED THAT CONTRIBUTE TO STUDENT DROPOUT

There is no doubt that there are numerous challenges for the higher education students, which vary from student to student depending on individual circumstances, characteristics and prior experiences. In addition to academic factors, other non-academic factors have been identified that contribute to student dropout. Today, most institutions have opted for online learning, despite the fact that retaining students in distance education represents a significant challenge for many institutions. The decision of students to remain and complete their academic studies determines their persistence. However, successful student persistence occurs as a result of the interaction between student, institutional and environmental factors. These factors can affect student success and subsequent retention in college. Understanding academic success in a more holistic way involves going beyond academic achievement. In other words, it means that universities must take into account factors that involve the development and well-being of students to reduce the risk of dropping out in their first year (Casanova et al., 2021).

HOLISTIC FACTORS AFFECTING RETENTION

STUDENT FACTORS

INSTITUTIONAL FACTORS

ENVIRONMENTAL FACTORS

Academic skills and cognitive engagement are correlated with academic integration

The student's interaction with his environment is correlated with personal attributes

Social interactions are correlated with the student's interaction with his environment

ACADEMIC SUCCESS WILL DEPEND ON THE SUCCESSFUL INTEGRATION OF THE 3 FACTORS

1.1. Student factors

1.1.1. Academic skills and cognitive engagement

One of the causes of student dropout is linked to the academic workload and course related issues. We refer to the skills that need to be acquired in response to the challenges confronting first-year students, such as the impact of transition from one academic setting to another. As students move to higher education from another previous academic culture, this transition requires the student to develop self-directed learning skills, in addition to investigating new sources of information, and developing skills related to study time management (Railton & Watson, 2005). In today's context, in order to persist in an online program, students need good time management skills to balance their courses and also to address social and family issues.

A significant relationship has been found between online students' time management skills and their level of motivation towards their academic goals; which means that this ability can contribute to the improvement of student performance, and consequently to the persistence in distance education (Yang et al., 2017). On the other hand, there is also the cognitive engagement, which is important since they are variables related to the student's learning strategy to remain active, seek help and solve exercises. It should be noted that students who begin college often bring with them learning strategies developed in their secondary education that contrast with the teaching style of the university. Academic requirements and a more self-directed learning need can result in students feeling unprepared for such a transition and dropping out of college.

1.1. Student factors

1.1.2. Personal attributes

Personal attributes underly the ability of students to persist, since they tend to influence the decisions they make regarding the tasks and activities in which they must participate; for example, how much effort to put into these tasks and how much time to spend on them. These attributes reflect their characteristics, emotional patterns, behavior and thought processes. This means that the students' decision to stay in the course may be influenced by their personality attributes, as this reflects what they will do in response to different circumstances as opposed to what they can do (cognitive skills). Therefore, personal attributes predispose students to act in a particular way through different life events.

One of the most important personal attributes is optimism, since it embodies the ability of an individual to use coping strategies more focused on the problem, reframing and reinterpreting facts in a positive way in face of academic and social challenges. Students who are optimistic will likely seek academic support from family, friends and college tutors. These students are likely to handle negative results in a positive way. In addition, open individuals tend to be intellectually curious, adapt easily, and constantly seek new opportunities. It has been shown that student persistence is enhanced by the ability to handle disappointment or failure, as they seem to have developed resilience strategies to overcome them, or took steps towards solving difficult situations (Gabi & Sharpe, 2019). This is how the personality of a student is linked to the experiences within the institution to adapt their behavior and think about new challenges, ideas and situations.

1.1. Student factors

"Growth mindset it is believed that improvement is possible rather than confirmation of failure".

Freshmen and sophomores tend to respond negatively to challenges, unlike seniors, who better cope with stress factors and learn to turn challenging situations into opportunities for improvement. Another important attribute is linked to the mentality of the student, since the fixed mindset responds negatively to change or challenge, while if they have a growth mindset it is believed that improvement is possible rather than confirmation of failure. It also generates a positive attitude towards obstacles and challenges, and consequently the student is more likely to persist in their studies and achieve success.

1.1.2.1. Psychological and behavioral factors

As part of personal attributes, psychological and behavioral factors are related to higher levels of self-efficacy, personal resilience and coping strategies, which make students better able to handle the challenges of higher education and difficulties in their academic transition during the first year. Students who feel that their academic reality does not allow them to meet their initial expectations, who do not have sufficient personal resources or institutional support, may experience negative or anxious emotional states, mental health problems, sadness or anxiety, and symptoms such as pain or tiredness. All this can lead them to make the decision to interrupt their studies (Gabi & Sharpe, 2019).

1.1. Student factors

1.1.3. Demographic characteristics

Demographic characteristics such as gender, race, and socioeconomic status moderate student relationships in their first academic year. These characteristics are variables that are a function of the student's profile.

1.1.4. Socioeconomic barriers

Studies have found that students from low socioeconomic backgrounds are more likely to drop out of higher education, since they not only face academic challenges, but also need to face the pressures of employment having to manage their time to be able to work and earn money in times of financial hardship while continuing to study. These socioeconomic barriers pose a significant problem, especially for those whose parents cannot afford to subsidize college tuition fees. It should be noted that a large percentage of the dropout rate is concentrated in students belonging to vulnerable groups, who are forced to abandon their studies due to lack of economic and technological resources, thus widening the existing gap in university education.

1.2. Institutional factors

Freshmen thinking about dropping out are often the least connected to the institution and least satisfied with the college experience.

1.2.1. Sense of belonging to the institution

Numerous studies have shown that first-year students who report that they are seriously considering dropping out of their studies are often the ones who feel least connected to the institution and least satisfied with the college experience. Developing a sense of belonging is generally defined as the perception and feelings of students to be accepted, respected, valued and part of a group or institution. Taking into account the complex interplay of intrinsic and extrinsic factors, and the demands of university life, the success of students depends on how well they adapt and integrate into the institutional environment. Therefore, it is not surprising that if a student enters an institution and feels that he does not fit in, he may be more inclined to withdraw. The sense of belonging goes hand in hand with the degree to which students consider themselves to be part of something larger, to be identified with the institution and integrated into the university system.

1.2.2. Academic integration

Institutional practices and processes impact students in their academic integration and consequently in their decision to stay. Students who feel academically integrated are likely to show commitment to their studies and institution. In addition, the importance of academic integration is directly related to tutors and their feedback related to improvement of student work. This may also be related to students feeling that they have sufficient support for their tasks. It can be argued that timely, formative evaluations, constructive feedback, and feedback assistance, in addition to general improvement of learning strategies, allows students to develop a positive work ethic, self-discipline, academic performance and persistence (Gabi & Sharpe, 2019).

1.2. Institutional factors

Teacher-student interactions have been associated with fostering student engagement, motivation, and learning.

It is worth mentioning that some students decide to drop out of the university as a radical response to the pressures exerted by academic regulations regarding failures such as repetitions of courses and additional tuition that only manage to retain the student's progress. Administrators and teachers are often the ones who provide solid academic foundations to create these regulations in the quest to maintain certain academic standards (Silva et al., 2020). Another aspect to take into account are academic factors such as lack of academic aptitude, training or orientation, poor choice of career or institution, and low academic performance (Silva et al., 2020).

1.2.3. Social interactions

In the transition period for the student to higher education, social interactions with academic staff play a vital role in supporting the adaptation of new students to the new university environment, which will therefore help them be successful academically and personally. Furthermore, teacher–student interactions have been associated with developing student engagement, motivation and learning. Having frequent and meaningful interactions with staff often makes it easier for students to participate in the learning process. The student's social interactions with their peers, teachers and social environment are of vital importance, since it is essential to achieve a balance between adaptation and social support.

1.2. Institutional factors

First-year grade point average (GPA) has been shown to be a highly significant predictor of retention.

On the other hand, teacher-student interactions can promote motivation as they influence experiences of competence and affinity. In this sense, if the social interactions are positive, this promotes the relationship or the feeling of connection with others when the student feels valued and respected in an educational context that promotes motivation in learning. Moreover, students can perceive an interest on the part of teachers in their educational progress and personal development, thus facilitating their social development and academic integration. Teacher-student interactions are vital in the first year of university since they improve the individual sense of belonging and participation of the student (Gabi & Sharpe, 2019).

1.2.4. Previous academic achievements

Previous academic achievements comprise high school and university data that help better understand retention and predict college dropout. It has been demonstrated that the first-year grade point average (GPA) is a highly significant predictor of retention, and that the effects of student performance in their first year diminish the effects of high school education on academic achievement and aptitude. For this reason, it is important to be able to analyze how relationships change after the student has completed his first academic year.

1.3. Environmental factors

Environmental factors can play an important role in student retention.

1.3.1. Student's interaction with their environment

Currently the student has a new academic environment different from the traditional university campus. The external attribution in the progress of the distance education student is related to the coexistence with relatives, events that make study difficult and distractions from the environment. These new conditions are related to the potential for student dropout of higher education (Elder, 2021).

In the current situation, in which many students are taking virtual classes, due to the COVID-19 pandemic, environmental factors can play an important role in student retention. For example, students' feelings of social isolation, lack of support from work, family or friends turn into difficulties or limitations that can have a major impact on the student's persistence in online education. Therefore, such influences must be taken into account by the institution in order to incorporate strategies to counteract them.

Students' decision to remain and complete their academic studies determines their persistence; but also the successful persistence of the student is given as a result of the correlation between student, institutional and environmental factors.

Summary of factors that influence student persistence in higher education.

STUDENT FACTORS	INSTITUTIONAL FACTORS	ENVIRONMENTAL FACTORS
• Academic skills and cognitive engagement • Personal attributes - Psychological and behavioral factors • Demographic characteristics • Socioeconomic barriers	• Sense of belonging to the institution • Academic integration • Social interactions • Previous academic chievements	• Interaction of the student with their environment

SECTION 2

Challenges that Universities face to measure and improve retention

As previously mentioned, desertion is a process rather than an event, and as a result it can be caused by a combination of intrinsic and extrinsic factors. Therefore, it is important to understand the reason why students drop out of university, and to anticipate who may be at risk in order to offer them additional support (Sorensen & Donovan, 2017). Retention will depend on the interaction of student, institutional and environmental factors, which will eventually lead a student to complete or not complete the academic program. This is why certain methods should be considered to measure and improve retention.

2.1. Strengthen academic commitment

Those students who succeed in organizing and managing their time will be able to face academic challenges, meet deadlines and be successful in their studies. Academic commitment is linked to the results of the formative evaluation and the teacher's feedback when providing support in areas of improvement, which will result in an increase in academic performance and the consolidation of previous learning to improve the quality of the student's learning process. The institution could create an academic environment that encourages students to consider their own career aspirations and establish goals and plans of action for their future career. This will require constantly instilling and reinforcing the long-term value of completing the academic semester. Undoubtedly, employability skills must be integrated into the higher education curriculum and assessment tasks so that students can make connections between their academic and career goals. This will ensure that they find greater relevance and value in the content of the academic program. These strategies will help students to project the outcome and continue working towards their ultimate goal for the sake of the perceived future benefit, thus making a decision to persist in their studies despite numerous challenges (Sorensen & Donovan, 2017).

2.2. Need for a support network

Colleges should promote support for students on their path to persistence. A support network is an important factor both inside and outside the institution as it helps them to gradually integrate and strengthen the sense of social and academic belonging, particularly in their first academic year where students probably feel lonely or find it difficult to integrate. Fostering a learning community created by the institution alongside those created by the students themselves is likely to enhance their qualities of persistence. The development of meetings that put the lives, needs, and aspirations of students in dialogue with broader socio-cultural, economic and political issues in relation to their studies, plays an important role in improving the persistence of students (Gabi & Sharpe, 2019). Providing support by working together and sharing difficult times with students enhances a sense of belonging and academic commitment.

2.3. Need for a relational approach

The quality of teacher support in terms of interaction, advice, feedback and involvement is directly related to the probability that students persist. In this sense, relational pedagogy in terms of positive associations and interactions between teaching staff and students is vital in terms of student participation and success (Pearce & Down, 2011).

SECTION 3

Foresight Retention Model

WHAT IF YOU COULD ANTICIPATE WHICH STUDENTS ARE AT RISK TO OFFER THEM ADDITIONAL SUPPORT?

THE ABILITY TO PREDICT THE OCCURRENCE OF EDUCATIONAL PROBLEMS SUCH AS AVOIDANCE AND FAILURE WITHIN A PRE-ESTABLISHED INTERVAL, PLAYS A DIRECT ROLE IN ENHANCING OUTCOMES

With the exponential growth of data generated by users, devices and systems associated with Big Data, new opportunities for analyzing, understanding, modeling and predicting student dropout are presented. In the educational field, different technologies and educational approaches have been incorporated into these scenarios that generate more and more data, but also require a more detailed analysis aimed at implementing strategic actions. The ability to predict the occurrence of educational problems such as avoidance and failure within a pre-established interval, plays a direct role in enhancing outcomes as it can help online learning providers to better manage the risks of student dropout (Coussement et al., 2020). Artificial intelligence represents an instrument of this type since it is a tool that provides analysis based on large amounts of data accumulated in universities that use sophisticated data processing technologies through predictive models of machine learning. In this way, the Foresight retention model is presented, which helps predict college dropout and reduces the probability of desertion, thus improving the student's experience at university using machine learning (Baranyi et al., 2020).

3.1. RETENTION MODEL

FORESIGHT

In order to address the holistic factors mentioned above that affect the persistence of the student, and have a comprehensive framework to examine academic, psychosocial, non-cognitive factors and other related background factors, it is important to understand that each student, program and institution are unique (Sorensen & Donovan, 2017). College dropout is an enigma that institutions face on a daily basis. However, the early identification of students who have a profile that indicates the tendency to abandon their university studies can be a solution, since corrective measures can be applied before the student considers leaving the course (Martins et al., 2017).

WHY CHOOSE FORESIGHT?

Foresight is a retention model that provides a comprehensive view of the ecosystem of the student experience, which integrates six dimensions for a quick and effective impact on key retention indicators: higher number of students, level of satisfaction and return on investment. (ROI). This will help implement a machine learning approach to predict student academic outcomes.
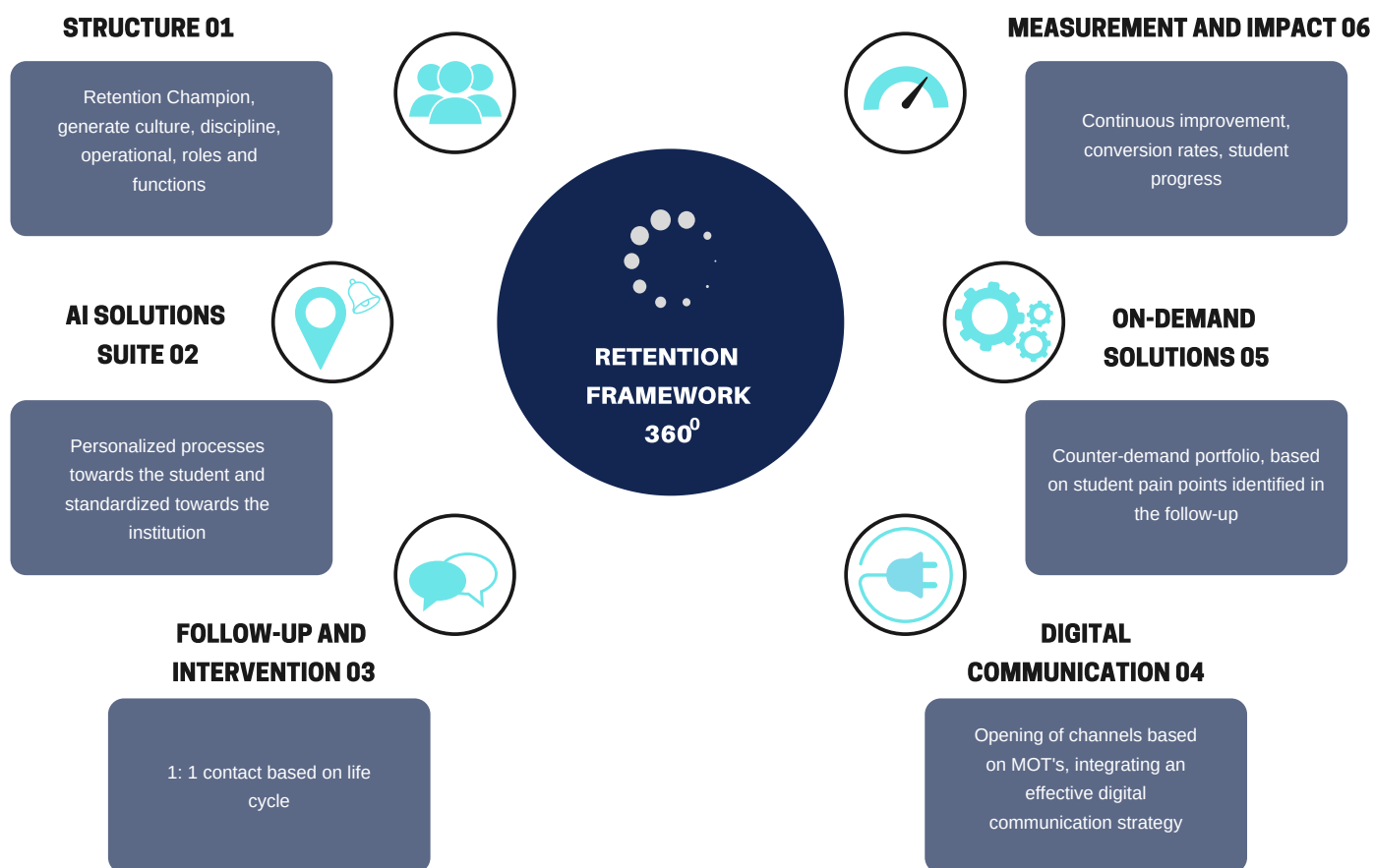
FORESIGHT IS A RETENTION MODEL THAT PROVIDES A COMPREHENSIVE VIEW OF THE ECOSYSTEM OF THE STUDENT EXPERIENCE, WHICH INTEGRATES SIX DIMENSIONS FOR A QUICK AND EFFECTIVE IMPACT ON KEY RETENTION INDICATORS

RETENTION MODEL

THE COMPREHENSIVE VIEW OF THE RETENTION FRAMEWORK

STRUCTURE 01

Retention Champion, generate culture, discipline, operational, roles and functions

MEASUREMENT AND IMPACT 06

Continuous improvement, conversion rates, student progress

AI SOLUTIONS SUITE 02

Personalized processes towards the student and standardized towards the institution

ON-DEMAND SOLUTIONS 05

Counter-demand portfolio, based on student pain points identified in the follow-up

RETENTION FRAMEWORK 360⁰

FOLLOW-UP AND INTERVENTION 03

1: 1 contact based on life cycle

DIGITAL COMMUNICATION 04

Opening of channels based on MOT's, integrating an effective digital communication strategy

How does it work?

Integrating the academic, financial, demographic profile, commitment, and personality data, the individual probability of student dropout can be determined. Through the SAAS software, an advanced analytics solution based on a cloud service is proposed, which interlocks connectors for automated ingestion as well as automated hosting, storage, calibration and running.

[1] Diego Dávila Viteri-Student Experience Director. Creator of the comprehensive vision of the Retention Framework.

RETENTION MODEL

FORESIGHT HAS 3 KEY INDICATORS: RISK, ENGAGE AND SUCCESS. WHICH HELP TO IDENTIFY THE PROBABILITY OF DROPPING OUT OF A STUDENT INCLUDING THE INDIVIDUAL VARIABLES OF RISK

3.1.1. Risk

Decrease the churn rate using artificial intelligence methods. From the integration of information from different sources, we create a unique profile per student based on which it is possible to generate models that calculate the probability of a student's dropout at a specific time. With this analytical input, early retention strategies can be designed to reduce the dropout rate.

3.1.2. Engage

It exposes the level of commitment of each student with the institution. We use information that determines identifies the commitment that a student has with the university beyond their academic performance to generate an index. It is possible to identify vulnerable students with high commitment to the institution to establish intervention strategies.

RETENTION MODEL

3.1.3. Success

Provides an X-ray of each student's personality to understand their potential for success based on personality traits. We use texts that they have written (essays, assignments, tests) to understand their personality and calculate the potential for success they can have from different perspectives. Based on these understandings, the university can help its students reach their full potential. Each institution is unique and the variables that will feed the Foresight model will also be limited to relevance according to the institution's request.

Contact our specialists for a free demo to guide you through our solution. We will be happy to get back to you soon.

REQUEST DEMO

FIVE RECOMMENDATIONS FOR EDUCATIONAL INSTITUTIONS TO ACHIEVE THE PERSISTENCE OF THEIR STUDENTS

GUARANTEE A HIGHER LEVEL OF SUPPORT FOR STUDENTS, ESPECIALLY IN THE FIRST YEAR, AND IDENTIFY STUDENTS AT RISK OF DROPPING OUT OF COLLEGE IN TIME

1. Ensure that college advisers have a manageable number of students and are well informed about all academic programs.

2. Make sure that teachers are not only content experts, but also have a passion for teaching and focus on the student.

3. Offer additional training on topics such as time management and organization for students with multiple priorities to create their own habits and pace.

4. Incorporate a predictive model that addresses factors other than academic performance, since it cannot be assumed that all students tend to dropout solely due to poor academic performance.

5. Guarantee a higher level of support for students, especially in the first year, and identify students at risk of dropping out of college in time so that the institution can launch early intervention efforts.

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