LALA Project

Building Capacity to Use Learning Analytics to Improve Higher Education in Latin America

Learning Analytics
Application in Latin America
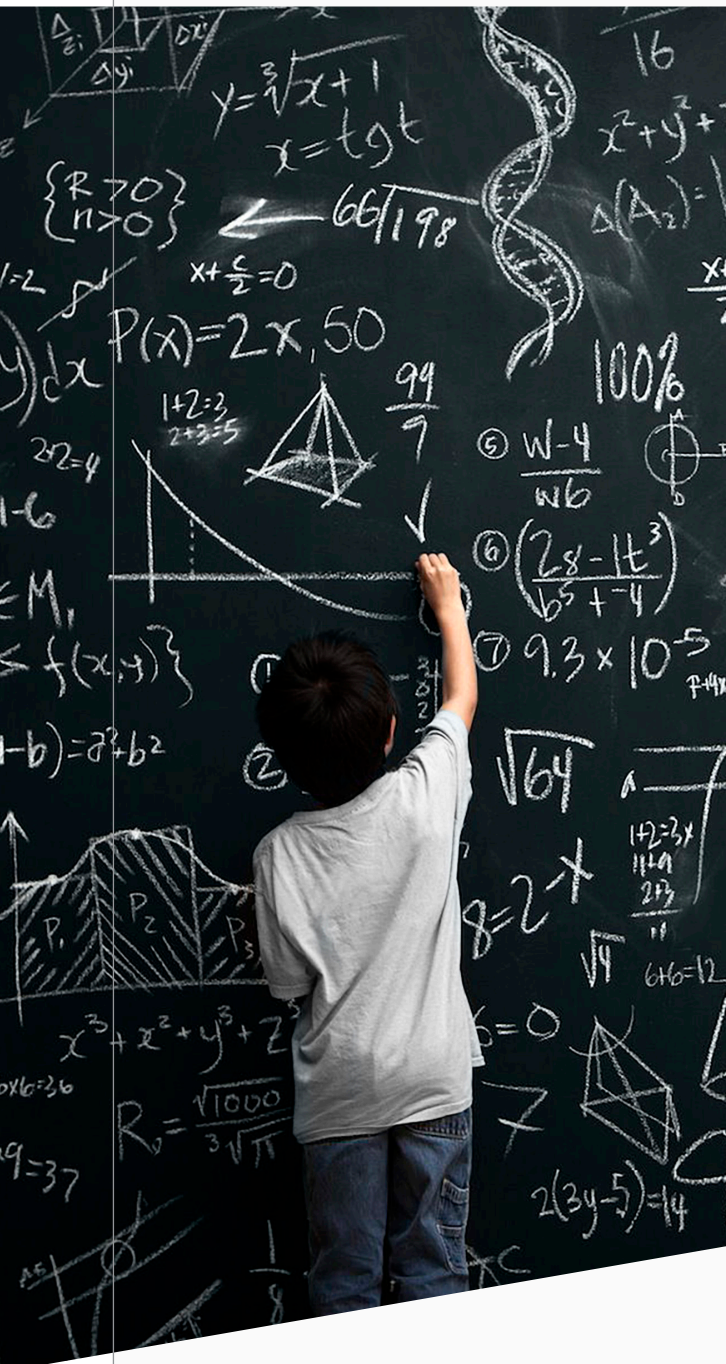
04 INFORMATIVE BULLETIN

Learning Analytics
Application in Latin America

In the process of adopting learning analytics, once a baseline has been established in relation to the reality and need of the Higher Education Institution, tools are designed that meet the requirements established by the target group *(teachers, students , institutional leaders).*

Within the framework of this project, learning analytics tools developed in the European context have been adapted to the four Latin American institutions that are regular partners of the project. Fundamentally, two tools have been adapted: a **counseling tool** composed of visualization panels to support decision-making when deciding which subjects to take; in addition to another to automatically support student work in online learning contexts, and another **tool for early warning of academic dropouts**.

Once the tools have been designed and are available for use, some pilots were developed to be tested in the institutions. The main objective of this bulletin is to briefly describe some of the pilot experiences carried out with learning analytics tools.

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![Universidad Austral de Chile logo]

Universidad Austral de Chile

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SUMMARY OF PILOT RESULTS

CONTEXT:

The four Latin American universities that make up the LALA consortium: **Universidad Austral de Chile** *(UACh)*, **Pontificia Universidad Católica de Chile** *(PUC-Chile)*, **Escuela Superior del Litoral** *(ESPOL)* and **Universidad de Cuenca** *(UCuenca)*, have worked mainly during the year 2019 and 2020 in piloting the **Learning Analytics** *(LA)* tools developed during the project. During these pilots, real users have been involved in their real use contexts. Specifically, more than **478z users** *(counsellors, principals and teachers)* have used the tools to make decisions and provide counselling based on data on the academic activity and risk of dropping out of their students. These pilots have benefited almost **9000 students**.

The results of the pilots reveal that the incorporation of LA tools, aligned with institutional needs and focused on the impact on decision-making, has positive effects. These effects are evident in terms of the creation of institutional capacities, support for improving student performance and user satisfaction. Perhaps most importantly, its incorporation has established a starting point to foster LA adoption at participating universities.

In summary, **ESPOL** implemented new learning analytics in **SiCa** *(System of Academic Counselling)*, an existing tool used in the academic advising process already institutionalized throughout the university. Counsellors positively evaluate new visualizations to support decision making during counsellor-student sessions. In the case of the **UACh**, **TrAC** *(Academic and Curricular Path)* was implemented, a new tool separated from the existing academic information system, to be used by counsellors *(school directors)* supporting the decision on a special request for enrolment or dropout. of subjects. Counsellors indicated that TrAC makes their work easier, reduces time, and allows them to better support their decisions. **UCuenca** implemented **AvAc** *(Academic Advancement)*, a new tool in a new counselling process. To this end, enthusiastic teachers were motivated to begin the academic advising process, although the process has not been without resistance from teachers. Both they and the students consider that the tool is useful and facilitates the understanding of the recommendations provided by the counsellors *(see Guerra et al. [1])*. The case of **PUC-Chile** differs from the aforementioned cases, the **NoteMyProgress** *(NMP)* and **DaP-MOOC** tools have focused on improving the engagement and performance of students in digital learning environments *(MOOCs)*. Students positively value the tools and how they stimulate reflection, efficiency and effectiveness in the way of working during the courses *(see Pérez-Álvarez et al. [2])*.

DECISION MAKERS

	478	300
	Involved	Meta

STUDENTS

	8924	5000
	Involved	Meta
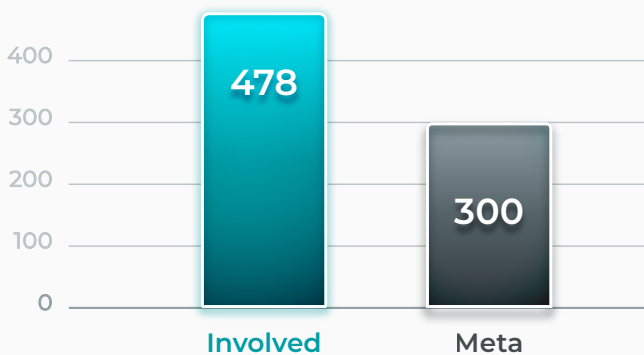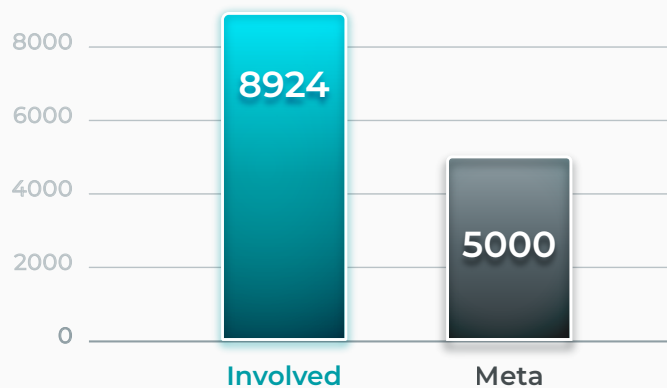
During the piloting, surveys, interviews and group discussions were carried out to measure, among others, aspects such as usability and usefulness of the tools, and their impact on the intervened processes. In addition, the logs of the tools were analysed to determine their use and how their use impacts student performance. Some of the most relevant results related to these aspects are listed below:

Institutional adoption of the piloted LA tools

The results of the surveys and the usage logs analysed in the four universities show that there is an interest in continuing to use the tools after the pilots. With regard to the institutionalization of the tools and therefore as concrete evidence of the cultural change that has been promoted with this project, the authorities have allocated resources to incorporate them.
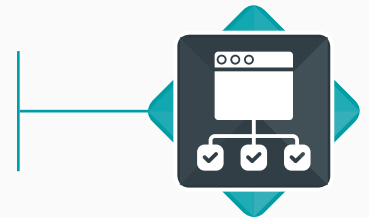
Usability and utility with LA tools

The surveys and guided discussions conducted during the pilots reveal that users are satisfied with the tools and that they are highly usable. In addition, from the perspective of utility, the tools have contributed to users being able to explain the decisions they make with greater confidence, better guide students when planning their dedication to courses and use their time more efficiently. Likewise, the usage logs show that the vast majority of users have actively used *(thousands of accesses, queries and clicks)* the tools.

69%
AvAc
2960
actions

90%
SiCa
26032
actions

100%
TrAC
7000
actions

26%
NMP
52318
actions
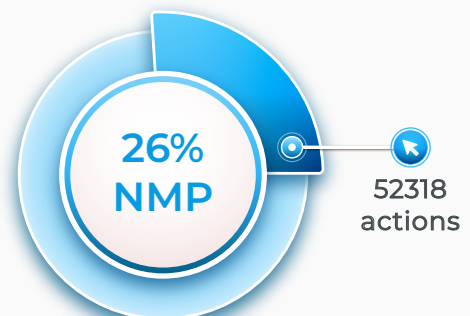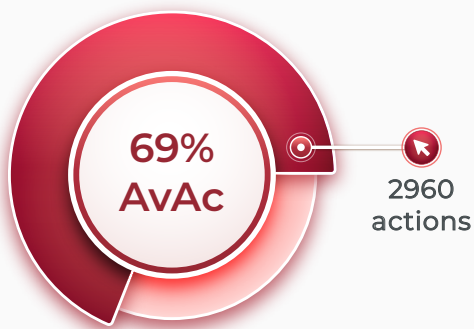
LA tools piloted as the engine of new ideas and implementations

These pilots have made it possible to improve the tools and design new ones. For example, **UACh** originated **TrACE**, a tool similar to **TrAC** but intended for students to plan the courses to enrol. In the case of **PUC-Chile**, it is expected to implement visualizations for the teacher in which what is happening in relation to the weekly planning of the students is summarized and to support the students in this planning. In the case of **UCuenca**, two visualizations were implemented that will complement **AvAc**. In the case of **ESPOL**, the data set for the calculation of the prediction has been expanded and its visualizations have been improved to include explanatory information.

Impact on student performance

Positive effects were obtained on the performance of students who received advice with the LA tools. For example, in the **UACh** the tool contributed to the students involved being in a better position with respect to the ranking of their cohort. In **PUC-Chile**, the tool helped the students involved complete the courses *(see Pérez-Álvarez et al. [2])*. At **ESPOL**, the tool helped students improve their grades and better balance their academic load. Note that these improvements can be attributable to multiple factors, among which the incorporation of LA tools is considered.

Although the results obtained in the pilots are not generalizable to any institution, because the adaptations and pilots were adjusted to the different contexts, they can be applicable to similar contexts. In fact, the cases of **UACh**, **UCuenca** and **ESPOL** represent a wide spectrum of different realities with respect to the academic counselling processes and tools in Latin America. Furthermore, the case of **PUC-Chile** serves as an example for those universities that wish to strengthen their initiatives in MOOCs.

The results of the pilots reveal that the incorporation of LA tools, aligned with institutional needs and focused on the impact on decision-making, has positive effects. These effects are evident in terms of the creation of institutional capacities, support for improving student performance and user satisfaction.

The main lessons learned that have been gathered during the pilots are listed below.

DATA AND PROCESSES

All piloting experiences highlight the importance of introducing an LA tool that draws on existing learning data *(ex. academic records)*. Although, during the needed assessment activities, multiple ideas arose to design the tools, restricting themselves to the data currently captured by the institutions has allowed a more effective implementation and piloting. Likewise, universities that introduced LA tools into more mature existing processes faced less resistance compared to institutions with nascent or completely new processes such as UCuenca.

EQUIPMENT

The formation of a multidisciplinary team that encourages the socialization and involvement of key actors in the universities is essential for the success of the project. Therefore, it is recommended to form stable teams with technical and managerial skills and with knowledge of the educational and institutional context.

INVOLVEMENT AND COMMITMENT OF THE AUTHORITIES

This aspect can be considered the most challenging. All the universities presented difficulties in: **i)** obtaining the commitment of the university authorities to actively participate and allocate resources in the institutionalization of the tools; **ii)** materialize the exchange of data between existing applications in the university; **iii)** support in the management of dilemmas related to data management, the possible interpretations of them and their impact on the intervened processes *(counselling and self-monitoring)*.

PILOT PREPARATION

A strategy used in most of the universities participating in the pilots has been to establish bonds of trust with enthusiastic users, to spread the use of the tool among peers. These ties of trust are strongly related to the quality of the tools and information they provide. Consequently, it is recommended to analyse the data and results delivered by the tools prior to any intervention with end users. In addition, it is crucially important to carefully define the messages and recommendations that the tools deliver.

USER SUPPORT

The design of tools with the active involvement of users allows to considerably reduce training efforts. However, during piloting, efforts should be made to provide the necessary guidance so that users can make effective use of LA tools. In this way, possible biases can be avoided and that users transform the information into decisions and / or actions that positively influence learning and consequently the institution.

SOCIALIZATION

At the beginning of the piloting, the importance of socializing and communicating the results obtained within each university was underestimated. Therefore, it is recommended to continuously socialize and disseminate the results of the pilots with users and authorities of the universities.

ADAPTABILITY

Due to the fickle Latin American social context, where strikes and social conflicts are frequent, it is essential to create the necessary adaptive capacity to address changes in institutional priorities and / or needs for updates in the tools. Therefore, it should be borne in mind that the needs to meet the changes in the context *(educational and social)* and the previously planned objectives must be reconciled.

IMPORTANCE OF PILOTING

The piloting of an LA tool is more than experimentation, it is a key activity for the adoption of innovations. Through piloting, the foundations for effective adoption are laid; during this, the true applicability of the tools and the specific uses that stakeholders give them can be understood. You can even identify the culture of the institution, its operation, its needs and the changes that need to be promoted to incorporate a process of improvement in making data-based academic decisions

REFERENCS

[1] Guerra, J., Ortiz, M., Zúñiga-Prieto, M.A., Scheihing, E., Jiménez, A., Bross, T., De Laet, T., Verbert, K. Adaptation and evaluation of a learning analytics dashboard to improve academic support at three Latin American universities. Accepted in special issue Applications of Learning Analytics in Latin America or the British Journal of Education Technology (2020).

[2] Pérez-Álvarez, Ronald, Mar Pérez-Sanagustín, and Jorge J. Maldonado-Mahauad. NoteMyProgress: Supporting learners' self-regulated strategies in MOOCs. European Conference on Technology Enhanced Learning. Springer (2017).

Pedro J. Muñoz-Merino, Carlos Delgado Kloos, Pedro Manuel Moreno-Marcos, Jon Imaz Marin.

PILOTS OF THE EARLY DROPOUT PREDICTION TOOL

After the development and implementation of the different dropout risk early warning systems at the Latin American partners of the **LALA project**, the first pilots of the tool have taken place. The tool was designed and available at the four Latin American partners of the project with the support of **Universidad Carlos III de Madrid (UC3M)**. In addition, the tool has also been adapted in an external partner to the project, **Universidad Politécnica Salesiana del Ecuador (UPS)**.

The early dropout prediction tool enables to detect students at risk in an early stage at a course level applied at **Pontificia Universidad Católica de Chile** (PUC) or at a degree level, for the rest of Latin American partners, i.e. **Escuela Politécnica Superior del Litoral** (ESPOL), **Universidad de Cuenca (UCuenca)**, **Universidad Austral de Chile (UACh)** and **Universidad Politécnica Salesiana (UPS)**.

The **Pontificia Universidad Católica de Chile** application of the early dropout prediction tool is for MOOCs (Massive Open Online Courses), thus trying to detect students at risk of dropping out of the courses. Tests and analyses with real data of students have already taken place. A pilot including a dashboard is also planned in a few weeks.

The application of the early dropout prediction tool for undergraduate degrees based on data from different courses is the purpose of the other Latin American partners. **ESPOL**, **UPS** and **UCuenca** are running pilots at present with the tool. It is planed that **UACh** runs pilots in a few weeks.

PILOTING IN DEGREES

For the case of the prediction tool in university courses, the methodology followed by the pilots is quite similar, although each institution has adapted it to its context. After the development of the counselling tool, a panel for the visualization of the prediction tool has been installed in the dashboards of all universities, integrating it with the counselling tool. Once the implementation of the tool was completed, the counsellors, teachers *(which were normally degree directors)*, and users of the tool received some training sessions to learn to use the tools effectively. In this case, as the prediction system is included in the counselling tool, the training was joint and was carried out at the same time as the training of the counselling tool.

After the training phase, the pilots of the tools started. In **UCuenca** and **UPS**, the counsellors have free access to the data analysis systems and can observe the behaviours of the different students who have been assigned to them anytime. Although the tools were mainly designed for the analysis of student data to support and guide their learning at university, they are mainly used in times of subject selection before the beginning of each semester. This way, professors and degree directors can personally advise students who wish to receive advice or who are asked to carry out counselling, which subjects to take. For this reason, in the case of **ESPOL**, counsellors can access the information of each student only while counselling at the beginning of each semester. While the counselling sessions are being done, the system collects all the actions that counsellors carry out in it for a future evaluation of its use.

> The pilots include the measurement of three indicators for a subsequent evaluation of the tool. These indicators are the utility, the impact, and the performance of the tool. To measure these indicators, usage logs of counsellors will be collected and a survey will be made, among others.

Once the counselling period has ended, degree directors and teachers who have used the abandonment prediction tool will receive a survey that they will voluntarily complete in order to assess their opinions, make improvements and reach conclusions from the use of the tool.

An important aspect is that the early dropout prediction tool is refined and adapted based on the analysis of the pilots. For example, the visualization panels changed their location so that they can be more accessible.

PILOTING IN ONLINE COURSES

The dropout prediction tool will be used to detect students with a high probability of dropping out a **MOOC** in **18 different courses** offered by **PUC**. Students are grouped into three main groups, depending on their probability of dropping out, for which personalized messages have been designed that can be sent to each risk group through the **Coursera MOOC platform**.

In this case, the prediction tool dashboard has its own web page where each teacher will be able to access their courses. In each course, they will be able to view the different risk groups along with the number of students that belong to the group. In the case of the prediction tool in courses, the training of the prediction tool will be independent of the counselling tool.

As the courses update the information and collect the assignments of the students weekly, the dropout prediction algorithms will be run once a week to update the dropout probabilities of the tool in the dashboard.

During the piloting, the teachers will have a button to download the identifiers of the students of the group in which they want to intervene and another button to view the standard messages that can be sent through Coursera.

INSTRUCTOR EXPERIENCE IN USING ONTASK

One of the challenges in the adoption of **OnTask** is to convince the instructors to engage with the tool. In the Brazilian face-to-face courses, the instructors usually provide oral feedback in class instead of sending written messages. This type of feedback is useful, but more personalized messages could increase the students' final performance and enhance their self-regulation skills.

In this context, **OnTask** implements a mechanism to write personalized feedback messages to students. It consists of a friendly interface that allows instructors to create a set of rules that can activate personalised texts according to the academic features of students, their interactions with activities, and learning performance.
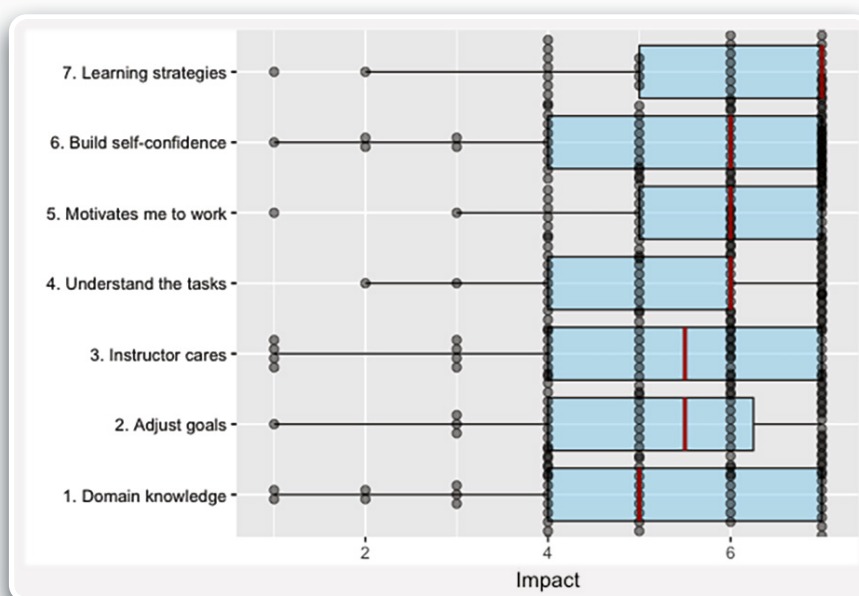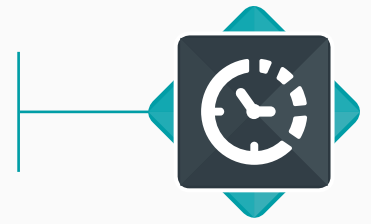
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The instructors' first concern is about the new activity that they will have to perform, as preparing feedback messages isa time-consuming activity. In our pilot, the instructors dedicated **60-130 minutes** per week to write feedback using **OnTask**. However, it is important to note that for the majority of the instructors, it was the first time they used **OnTask** to construct feedback. The lack of experience with the tool could have influenced this time. On the other hand, the feedback generated with **OnTask** is reusable and potentially reduces the overload of the instructors in the long-term.

The instructors found **OnTask** useful, especially in saving time and providing feedback in a higher frequency/timely manner. For instance, one of them had a **class with 56 students**, which is a large cohort of students for the Brazilian context. This instructor indicated that the effectiveness of the feedback provided could be noticed by the **increase in students' classroom interactions** after the use of **OnTask**. Another instructor found the tool useful in freeing up time to focus more on constructing the content of effective feedback. Moreover, she/he stated that several students expressed their appreciation for the feedback received.

We surveyed the students at the end of the semester to evaluate impact and usefulness of **OnTask-generated feedback** on self-regulated learning *(n=48; response rate=42.8%)*. The results show that in **terms of impact** *(Figure. 1)*, the students tended **to agree strongly** that the course feedback:

◆ Helped them develop and adjust their learning strategies *(item 7)*, and

◆ Motivated them to work towards a desired goal *(item 5)*.

Fig. 1 **Results in terms of impact**

In **terms of usefulness** *(Figure 2)*, the students tended **to agree strongly** that the course feedback:
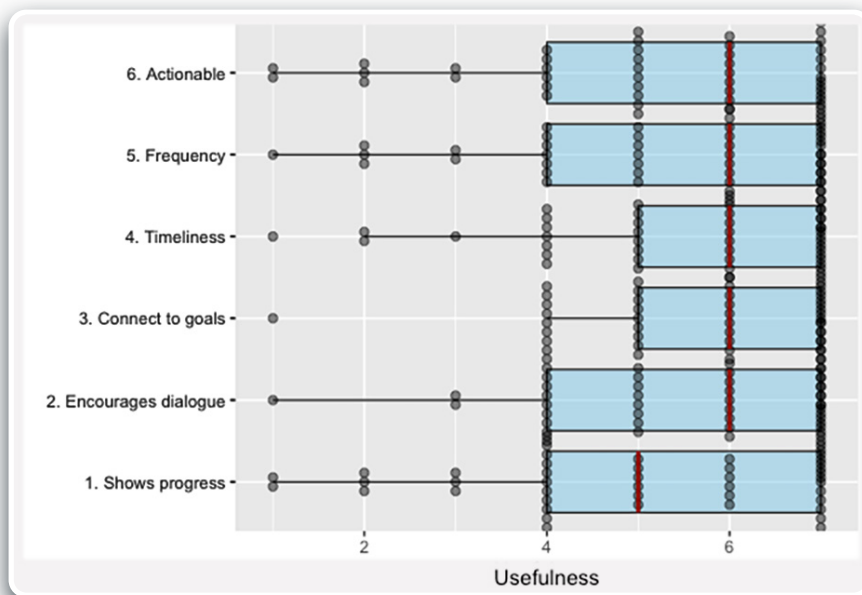
◆ Was timely *(item 4)*, and that they could connect the course feedback with the desired goals *(standards)* of their course tasks *(item 3)*.

Fig. 2   **Results in terms of usefulness**

Student perceptions of the impact and usefulness of **OnTask-generated feedback**. **Medians** are denoted by the **red solid red lines**, **boxes** represent **interquartile ranges** *(IQR)*, **whiskers** are **1.5 IQR**, and **data points** are marked with **grey dots**. Answers to N/A are not counted.

The instructors involved in this pilot were initially concerned about increasing more workload to their activities. However, at the end of the semester, all of them were satisfied with the students' engagement improvement in performance after the adoption of **OnTask**. The instructors' concern became enthusiasm, and now we are recruiting more colleagues for the next phase of the pilot.

If you are interested in piloting OnTask in your institution, you may access at:

https://www.ontasklearning.org/

If you are interested in evaluating the pilot using our survey instruments, please contact Rafael Ferreira Mello (rafael.mello@ufrpe.br) and Yi-Shan Tsai (yi-shan.tsai@ed.ac.uk).

espol

iCoRa provides students with personalized course recommendations in the form of performance predictions and visualizations.

GOAL

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INTERACTIVE COURSE RECOMMENDATION ASSISTANT (ICORA)

CONTEXT:

The selection of courses is a crucial decision for students, because it influences their academic performance. Currently, this decision is made with the counselor through the academic counseling system, during the 15-minute sessions they have. LALA researchers decided to go one step further and facilitate the work of the counselor, as well as give more responsibility to the student, by designing a subject selection tool whose main user will be the student. The idea is that this system be used before the counseling sessions with the teachers, so that this time is used to discuss the pros and cons of the decisions made.

TOOL DESCRIPTION:

PART A: Curriculum Path

It shows the student's academic program. The courses are organized in four categories: **Basic Sciences**, **Humanities**, **Professional Training** and **Electives**, and are **color-coded** according to this classification. In addition, each course is shown with the grade obtained by the student; Grades are shown in green for approved courses and in red for failed courses. Repeated courses are represented as groups of stacked rectangles, according to the number of times the subject was taken.
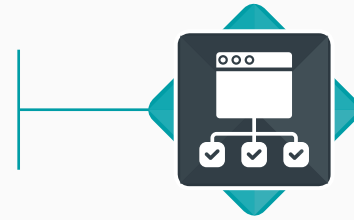
PART B: Subject information

Clicking on a course displays **general and historical course information**: number of credits, weekly workload, difficulty estimators, grade distribution, and historical performance. This data can be filtered by time using an interactive range slider.
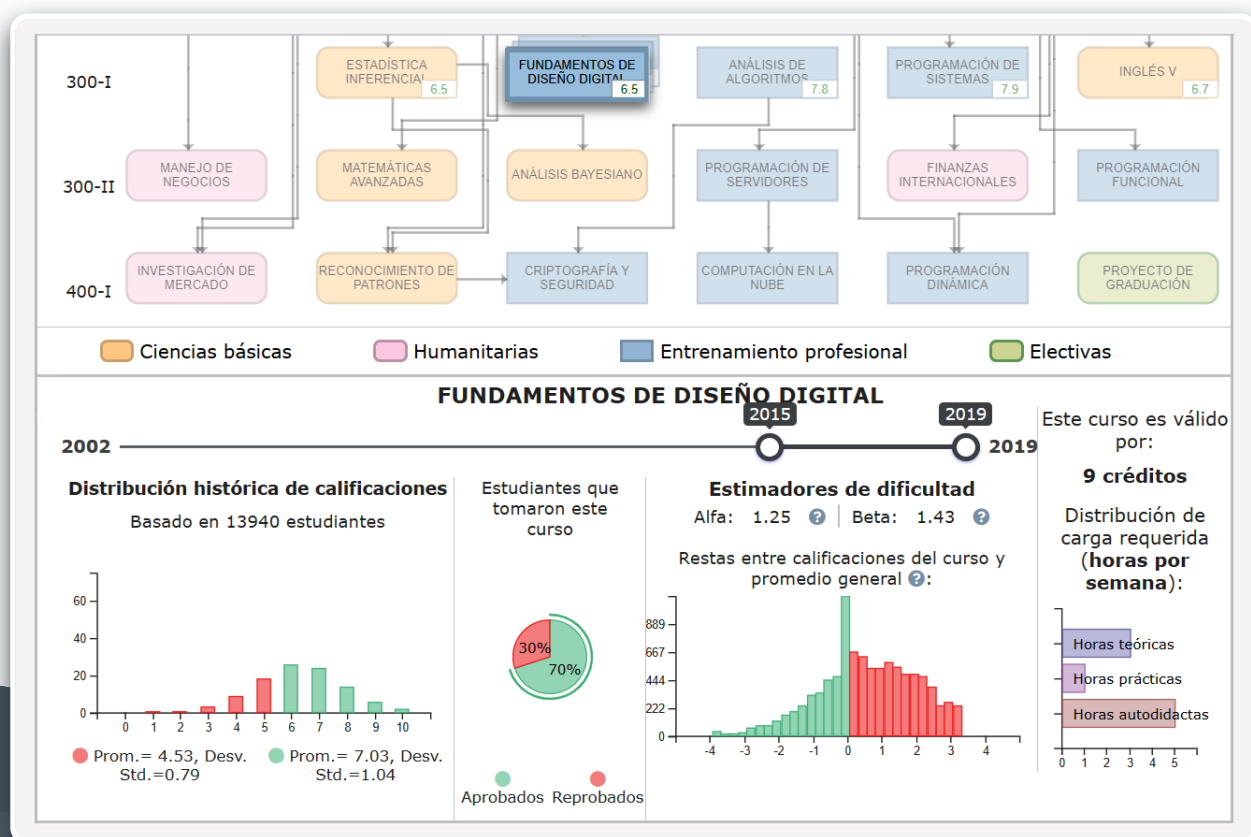

Fig. 3   Curriculum Path and subject information.

PART C: Selected course set and performance prediction

In **prediction mode**, the available courses in the academic grid can be dragged to the panel to compose one or more course sets. These interactions trigger the execution of academic performance prediction models and update the content of the panel. The prediction of the performance of each course is shown as a range, on a horizontal scale between 0 and 10 in accordance with the **ESPOL** rating system. The range is displayed on a red-yellow-green diverging **color scale** with a zero value of 6 (*ESPOL's minimum passing grade)*.
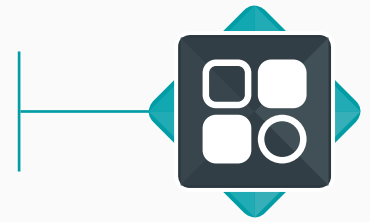
PART D: EXPLANATION

Additionally, clicking on "**why?**", provides explanations of the input characteristics used by your prediction models. These explanations combine text, visualizations, and mathematical formulas. Also shown is a pie chart whose pie sectors are colored to indicate the positive or negative influence of the input characteristics on the expected result. The calculation of the expected GPA is also explained, mainly through the text.
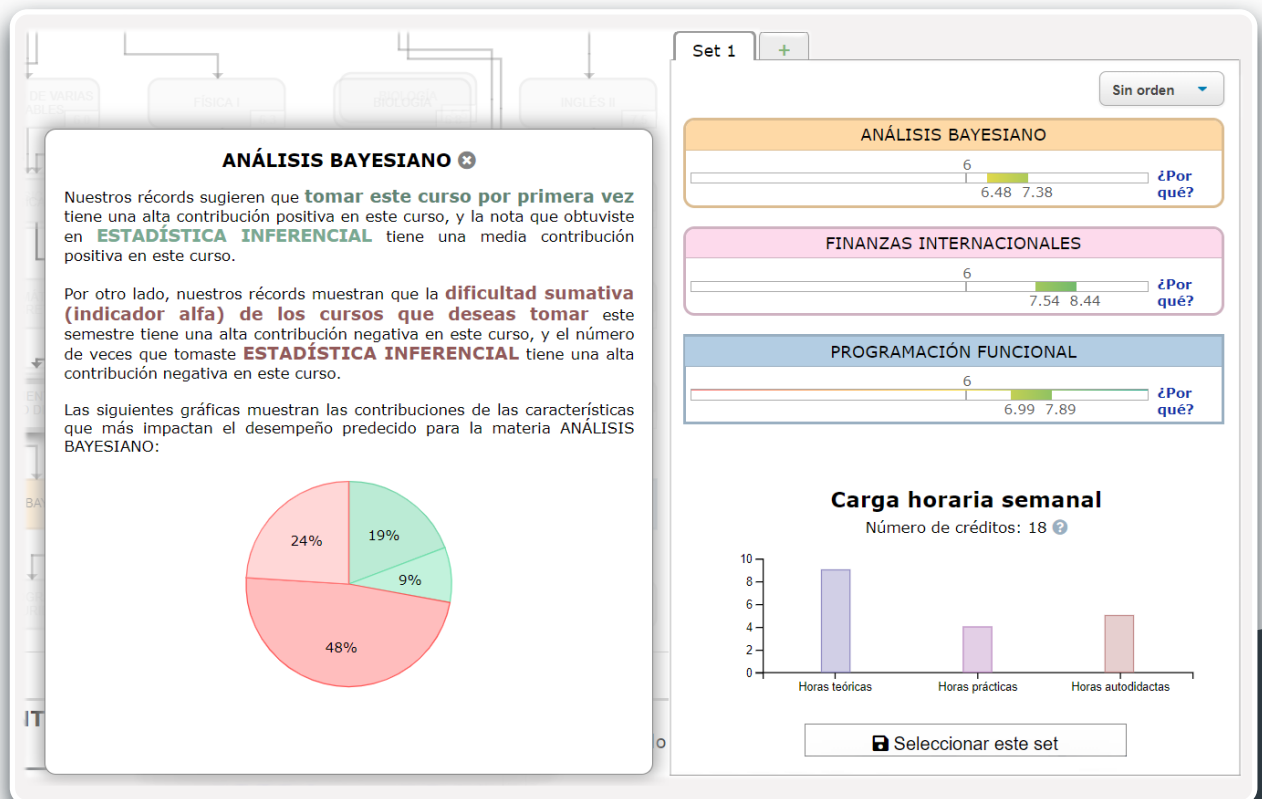
Fig. 4   Selected course set and performance prediction.

CURRENT STATUS
We are currently doing user tests to test its effect in terms of usability, utility, among others.

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FROM THE LALA COMMUNITY TO THE LALA SIG: CONSOLIDATING THE SUSTAINABILITY OF THE LALA PROJECT FOR LATIN AMERICA

A COOPERATION NETWORK FOR THE DEVELOPMENT OF LEARNING ANALYTICS IN LATIN AMERICA

Learning Analytics *(referred to in this document as LA for Learning Analytics)* is the measurement, collection, and analysis of educational data in order to understand and optimize learning and the environments in which student learning occurs. This area has been developed extensively in regions such as North America, Europe and Oceania, where lot of research, development and implementation activity has taken place. In other regions, and specifically in Latin America,

initiatives around this activity are scarce. Although initiatives have emerged in the region to design and implement LA with the purpose of improving and optimizing processes in **Higher Education Institutions** *(HEI)*, these initiatives are isolated. Therefore, a community capable of coordinating and promoting the exchange of good practices in this area at the Latin American level was required.

In order to support the development of this community in the region, one of the objectives of the **Erasmus+ LALA** project is to generate a cooperation network on Learning Analytics in Latin America. The main objective of this network is to guarantee the sustainability of the project's results, as well as to initiate the development of a space for cooperation and exchange that promotes study and research in the area of LA beyond the 3-year duration of the project.

The development and articulation of the cooperation network in LA has been carried out through two concrete actions:

◆ The **creation of the LALA Community**, which was set up with the start of the Erasmus+ LALA project and is maintained during its implementation period, and

◆ The **creation of the LALA Special Interest Group** *(LALA-SIG)* associated with the **Society for Learning Analytics Research** *(SoLAR)*. The LALA SIG aims to give continuity to the LALA Community, in order to give sustainability to its cooperation network after the end of the Erasmus+ LALA project.

The LALA Community is therefore the seed that has set the foundations for the development of the LA cooperation network for Latin America during these three years *(2017-2020)*, and the LALA-SIG will be the catalyst that will ensure the continuity of the community's activities, and will favor the development of new initiatives beyond the LALA project.

THE LALA COMMUNITY, THE SEED OF LA'S COOPERATION NETWORK IN LATIN AMERICA

The **LALA Community** *(Learning Analytics Latin America)* - is created in 2017 and seeks to promote research and knowledge sharing to develop local capacity within Latin American HEIs to **create**, **adapt**, **implement** and **adopt** LA tools to improve their processes

The **LALA Community is therefore the seed that has set the foundations for the development of the LA cooperation network for Latin America during these three years (2017-2020), and the LALA-SIG will be the catalyst that will ensure the continuity of the community's activities, and will favor the development of new initiatives beyond the LALA project.**

THE MAIN OBJECTIVES AND FUNCTIONS OF THE LALA COMMUNITY ARE THE FOLLOWING:

01 To provide training on methodological processes optimized for the design and im-plementation of LA in Latin American HEIs.

02 To promote and facilitate the advising of HEIs in Latin America in the implementation and adoption of LA.

03 To facilitate the exchange among its members of information, good practices, suc-cess cases and experiences related to Learning Analytics.

04 To promote the training of professionals, teachers and researchers related to the processes of creation and administration of Learning Analytics.

05 To promote and encourage training programs on the construction of Learning Analytics capacities for the transformation and modernization of decision-making in Latin American Higher Education Institutions.

06 To ensure the periodic organization of the LALA Conference, as a meeting point for the exchange of experiences and research results in the area of LA.

The **LALA Community**, in its Foundational Statutes is defined as an international grouping of free access formed by Higher Education Institutions and companies from Latin America and other regions of the world. In this way, any institution, company or independent researcher can join the community through a letter of application sent to the community coordinator. Both the statutes and information on the membership process can be found on the project's website.

zSince its creation in 2017 to date, the **LALA Community** has integrated **83 Latin American Higher Education Institutions** into its cooperation network, with more than **350 researchers** associated to its activities. To date, members of the LALA community receive monthly newsletters summarizing the main activities of the project, as well as activities and events organized around the project in the region and worldwide. The next event to be organized by the community is the III LALA 2020 Conference, which will be held at the University of Cuenca *(Ecuador)* in a semi-presential way and will have online activities for participants who cannot travel.

STATUTES
https://bit.ly/386cUUj

LETTER OF APPLICATION
https://bit.ly/3camM2u

III LALA 2020 CONFERENCE
https://www.lalaproject.org/conferencia2020

THE LALA-SIG, THE CATALYST OF THE COOPERATION NETWORK AND ITS SUSTAINABILITY

To ensure the continuity of the activities of the **LALA Community**, and to promote new activities to foster the cooperation network of Learning Analytics in Latin America, the **Special Interest Group - LALA SIG** - is created in 2020.

350 researchers
registered in total

26 countries
of Latin America

83 Institutions
of Higher Education

This interest group is part of **SoLAR**, the **Society for Learning Analytics Research**, an international society that promotes research in the area of Learning Analytics. This community organizes the annual **International Conference on Learning Analytics & Knowledge** *(LAK)*, the leading international conference in the area of Learning Analytics, and coordinates the **Learning Analytics Summer Institute** *(LASI)*. In addition, SoLAR offers financial support for the development of stakeholders to promote research in Learning Analytics at a regional level. In 2019, the LALA project team applied for stakeholder funding from SoLAR to create the LALA SIG.

Currently, the coordinators of the LALA Community are working on the definition of the statutes of the LALA SIG based on the following foundational objectives:

◆ To facilitate the **exchange of information** related to Learning Analytics between Latin American Higher Education Institutions and other international communities

◆ To offer **support for the development of initiatives** related to Learning Analytics in Latin America

◆ To offer a **space for the sharing** of good practices for the development of Learning Analytics research in Latin America

◆ To **promote the development** of research and practice in learning analytics in Latin America

SOLAR
SOCIETY for LEARNING ANALYTICS RESEARCH

Within the statutes, it is planned that the current members of the **LALA Community** will automatically become members of the LALA SIG, in order to ensure the sustainability of the community. In addition, the statutes establish the following working groups:

GOVERNANCE

The objective of this working group is to define the structure, policies and management actions of the LALA SIG and to update the Statutes accordingly.

MEMBERSHIP AND RECRUITMENT

The objective of this working group is to recruit members for the LALA SIG and to energize the group for the exchange of knowledge between Latin American institutions within an international LA-related community.

COMMUNICATION

The objective of this working group is to oversee the internal and external communications of the LALA SIG in order to facilitate the exchange of knowledge between Latin American institutions within an international community related to LA.

EVENTS

The objective of this working group is to encourage and support the community that organizes LA-related events to further the mission of society by expanding this field in Latin America.

EDUCATION

the objective of this working group is to develop, implement and share initiatives directed towards the SIG goal of LALA to promote, elevate, disseminate and foster LA literacy in the region through the SIG community.

We invite you to join the LALA SIG, both to receive and share practices on learning analysis, and to participate in the various initiatives of its working groups. You can find information about the LALA SIG on the SOLAR website, and from October 2020 onwards on the LALA project website.

LALA SIG
https://bit.ly/3jIPew9

LALA PROJECT WEBSITE
https://www.lalaproject.org/

LALA EVENTS:

III Conferencia Latinoamericana de Analíticas de Aprendizaje

October 01-02, 2020

www.lalaproject.org/conferencia2020

Fig. 4   III Conferencia LALA 2020 - I LASI Local

The **Consortium of European and Latin American Universities** of the ERASMUS + project "Building Capacity to Use Learning Analytics to Improve Higher Education in Latin America - LALA" invites different Higher Education Institutions and the general public to participate in the **III Latin American Conference on Learning Analytics and I LASI-Local - LALA 2020.**

The conference aims to create a space that facilitates the exchange of experiences between institutions and experts from Latin America about how the analysis of academic data of students contributes to the improvement of educational processes. Likewise, this space will serve to analyze current challenges, good practices, recent research and recommendations in the area of learning analytics. The event is aimed at researchers, academic managers, teachers, information technology managers and students.

Due to the importance of the conference topic in current educational conditions, this edition is free. The event will take place virtually on **October 1 and 2, 2020.**

Miguel Angel Zuñiga, Marlon Ulloa,
Lorena Sigüenza, Lizandro Solano Quinde

LEARNING ANALYTICS AS A SUPPORT TOOL FOR TEACHERS

AN EXPERIENCE AT UNIVERSIDAD DE CUENCA (UCUENCA)

The implementation of Learning Analytics at the **University of Cuenca** is being carried out by applying the guidelines suggested in the **LALA framework** *(LALA Framework)*. Where, in the first instance, executed during the period from January to September 2018, a survey of the needs was made on the use of Learning Analytics in the university; applying interviews, focus groups and surveys to teachers, students and authorities.

As a result, the need to implement tools that make it easier for teachers to monitor the academic performance of students who take the subjects taught by each teacher was identified.

At the **University of Cuenca**, currently, teachers do not have tools that facilitate the monitoring of the academic performance of their students. Having at their disposal only tabular reports of the grades obtained by the students in the different contributions. Where depending on the knowledge and skills of teachers in the use of computer tools, they create visualizations that help them to monitor and analyze the academic performance of their students.

Based on the results obtained from the execution of the Institutional Dimension of the **LALA Framework** *(The LALA Framework)*, the work team of the **University of Cuenca** identified the need to design and implement a visualization tool *(Dashboard)* that provides the information teachers about the grades obtained by students. Information that allows them to analyze the academic evolution of their students during an academic period. The tool creation process consists of four phases called Initiation, Prototyping, Piloting and Scaling.

INITIATION PHASE:

During the Initiation Phase, the key stakeholders for the success of the project *(academic directors, teachers and information technology staff)* were identified and, through interviews, relevant problems were identified, the scope of the project was established and obtained their commitment and collaboration for the project.

The priority for the project was to support teachers with a computer solution with which they can analyze the evolution in the academic performance of students during an academic period. This with the aim not only of identifying students who might require support; but to analyze the effect of the contents of the subjects, the requirement of the evaluations, and the workload of the students on the grades. Then, the requirements were obtained by applying an approach that combined multiple iterations of interviews and focus groups in which career directors, teachers and technicians participated with knowledge of the data available at the university. During the initiation, a common understanding of what learning analysis tools are was built among the participants, transmitting a clear idea about what Dashboards are and how they can be used; avoiding that the participants have different interpretations of the expected results of the project. The main question for obtaining the requirements was: **¿what do teachers need to monitor the academic performance of students in the subjects they teach and what information / data would help teachers to monitor?**

PROTOTYPING PHASE:

During the Prototyping Phase, two sub phases were executed, the subphase of elaboration of low fidelity prototypes and the subphase of elaboration of high fidelity prototypes.

SUBPHASE 1: Elaboration of Low Fidelity Prototypes

Generated in different iterations with career directors and teachers, taking as a starting point the conclusions and suggestions obtained in the interviews and meetings held. The prototype was generated in Power Point.

SUBPHASE 2: Elaboration of High Fidelity Prototypes

After several iterations with the stakeholders, High Fidelity prototypes were designed that allowed simulating interactions, so it was explained to the stakeholders that it was not an already built system. During the execution of this phase, and at the end of it, we counted on the collaboration of visualization experts from KU Leuven whose feedback generated improvements to the design while maintaining the information required by the interested parties

PILOTING PHASE:

This phase is in progress and a version of the dashboard has been implemented according to the designed prototype *(See. Figure 5)*. During this phase, the hypothesis about the use, acceptance and interpretation of the information presented in the dashboard will be tested. This phase has been planned to be executed only in the Faculty of Engineering, and then, once positive results have been obtained, escalate to other faculties. During the piloting, tests with real data of the academic performance of the students will be carried out. Evaluations prior to the introduction of the Dashboard will be included, in order to establish a baseline for comparisons; and subsequent evaluations, in order to measure the impact. Additionally, data related to use will be automatically collected.
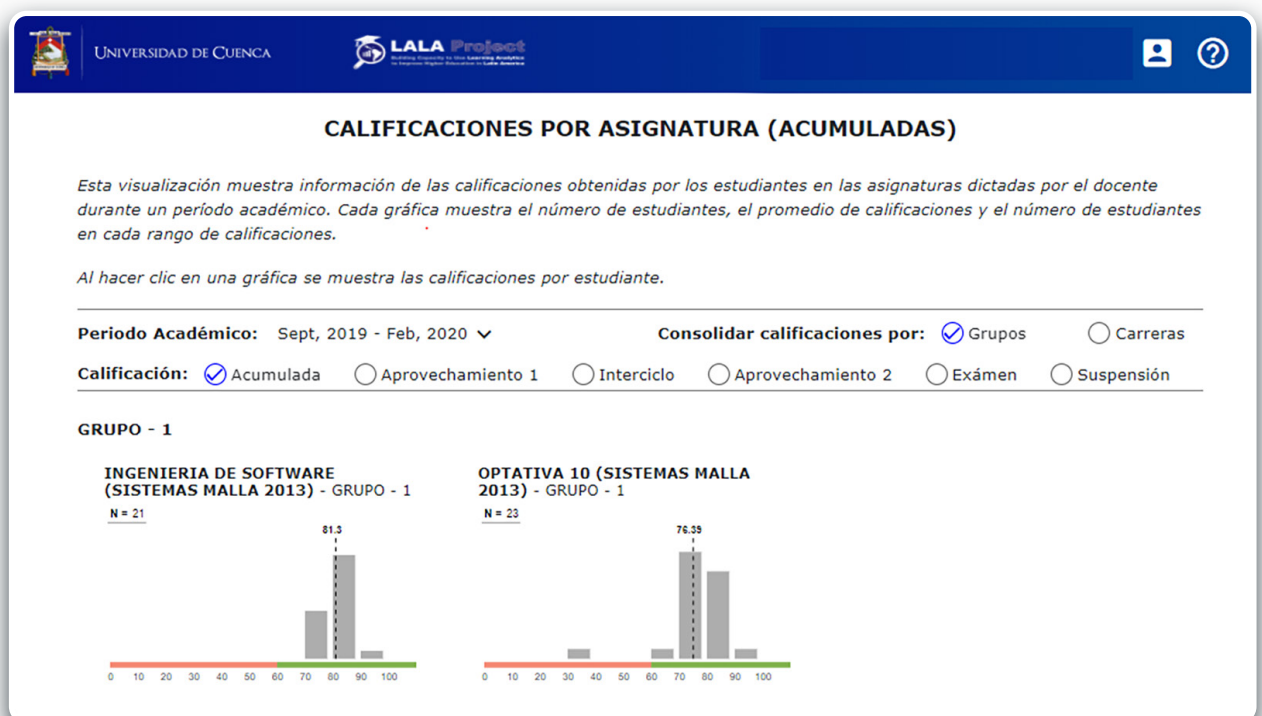

**Fig. 5**   Subjects dictated by the teacher in the academic period.

SCALING PHASE:

Finally, regarding the Escalation Phase, it has not started yet. The objective of this phase is to offer the Dashboard to the entire university. This requires future adaptations according to the specific requirements of the different faculties.

RESULTS:

The tool is in operation with real data from the university, so only specific teachers have access to it. **Figure 5** shows graphs that visualize the distribution of grades in the different subjects taught by a teacher in the selected academic period. Grades that can be filtered according to contribution *(for example, grade: accumulated, achievement, exam).*
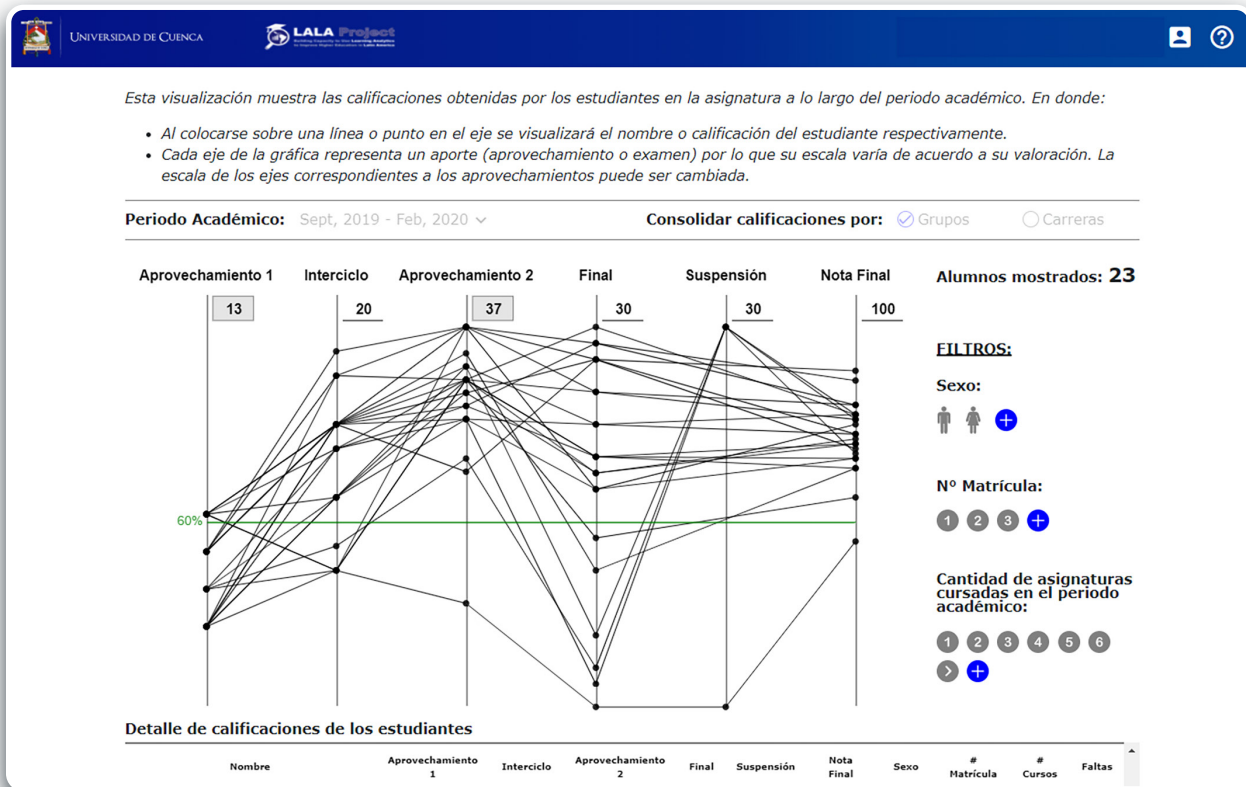
Fig. 6   Grades in the academic period.

Fig.6 shows a parallel coordinate graph that shows the grades obtained by students in the subject throughout the academic period. Where: Each line represents a student, and when placed on each of these, the name or grade of the student will be displayed respectively. On the other hand, each axis of the graph represents a contribution *(achievement or exam)* so its scale varies according to its evaluation This graph allows analyzing the evolution of the students› grades and in this way the Teacher could identify the students. students who required more support. Likewise, teachers could use the information provided to analyze whether the content included or the form of the evaluation had an impact on the grades obtained. The students, represented in the graph, can be filtered or grouped according to various criteria, such as the number of times they have taken the subject *(No. Enrollment)* or the student›s workload during the academic period *(determined based on the number of subjects he is studying simultaneously).*

LALA Project

Building Capacity to Use Learning Analytics to Improve Higher Education in Latin America

This project conforms to the priorities established for Latin America within the so-called Erasmus Plus Project for capacity development; and, in particular, "Improvement of the management and operation of Higher Education Institutions" and "Quality assurance processes and mechanisms", since this project seeks to create local capacity in Latin American HEIs to design and implement Learning Analytics tools.

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