

Messages from university teachers to their students with low academic performance during online teaching necessitated by COVID-19

Mensajes emitidos por docentes universitarios a sus estudiantes con bajos desempeños académicos durante la enseñanza en línea por COVID-19

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Abstract

COVID-19 generated new forms of student-teacher interactions, and it increased the use of virtual educational environments. Electronic messaging is one of the most

widely used forms of communication between teachers and students. However, few studies on how teachers provide feedback motivate and encourage students to engage in academic activities in online learning environments. This study aims to characterize messages sent

by university teachers to their students with low academic performance during the emergency remote teaching in the COVID-19 pandemic context. The electronic messages were obtained through the snowball sampling technique. The sample consisted of eighteen email threads facilitated by six universities. Ethical requirements for this type of research were met, and discourse or text analysis was used as a methodology with a qualitative approach and hermeneutic orientation. This study shows two main results. First, the necessary data to identify students with low academic performance can be mainly obtained from their teachers and third parties, like university authorities. Second, there are a number of elements to consider when creating messages to improve the engagement of underperforming students. These fundamental elements are: tone of voice, content of the message and moment in which the message is sent. Messages that are explicitly written for each student or group of students and messages that were written with anticipation, showed to be most effective in engaging students.

Keywords: electronic messages, teachers, low academic performance, university students, COVID-19.

Resumen

La COVID-19 generó nuevas formas de interacción estudiante-profesor e incrementó el uso de ambientes educativos virtuales, siendo la mensajería electrónica uno de los más utilizados para la comunicación en las relaciones entre ellos. En este contexto, el modo en que comunica el docente y los mensajes que emite, impactan en variables académicas de estudiantes, sobre todo en estudiantes que tienen bajos desempeños académicos. En la actualidad son escasos los estudios sobre la manera en que el docente retroalimenta, motiva e impulsa al estudiante a involucrarse en actividades académicas en los entornos de aprendizaje en línea; por tanto,

el objetivo de esta investigación fue caracterizar mensajes emitidos por docentes universitarios a sus estudiantes con bajos desempeños académicos durante la enseñanza en línea por COVID-19. Se utilizó el análisis del discurso o de texto como método con enfoque cualitativo y orientación hermenéutica para caracterizar los mensajes, considerando el sentido y significado de estos, lo cual permitió rescatar la riqueza de los mensajes y analizarlos, en particular aquellos que lograron alguna respuesta de compromiso por parte de los estudiantes. Los mensajes de correo electrónico se obtuvieron a través de un muestreo no probabilístico mediante la técnica de bola de nieve. La muestra estuvo constituida por 18 cadenas de mensajes de correo, facilitados por seis universidades, que fueron emitidos durante la enseñanza en línea por COVID-19. Se cumplieron con los requerimientos éticos para este tipo de investigación. El análisis de los datos se realizó a través de tres grandes pasos: (1) revisión de la información; (2) identificación de las unidades de análisis, y (3) categorización. Dentro de los principales resultados se encuentran: (1) docentes y terceras personas (autoridades) son las fuentes de información que permiten identificar a estudiantes con bajos desempeños académicos; (2) los mensajes que utilizan los profesores para comunicarse con sus estudiantes poseen especificaciones en el tono comunicacional, contenido y momento de la comunicación que favorecen el compromiso de aquellos estudiantes que presentan bajos desempeños académicos, siendo los mensajes personalizados, anticipados y con alternativas propositivas los más efectivos, y (3) los mensajes emitidos por docentes que favorecen algún tipo de compromiso de los estudiantes son los que: utilizan un tono comunicacional personal, presentan contenido de preocupación y/o de aliento, comunican tempranamente evidencias de incumplimientos que permiten la detección, y ofrecen alternativas concretas que puede utilizar el/la estudiante para revertir la situación de incumplimiento

o bajo desempeño. Además, se pudo observar que los profesores, en la comunicación con sus estudiantes, utilizan con frecuencia contenidos, evidencias y mensajes instructivos, y la razón fundamental que emplean en el mensaje es la ausencia de registro de alguna calificación. La mayoría de los docentes que participaron de este estudio envían los mensajes cuando aún les resulta posible ofrecer oportunidades al estudiante para revertir su situación académica, con frecuencia utilizan un tono de comunicación personal y el de tercera persona (impersonal), por sobre el tono institucional. Se entregan orientaciones para el diseño de mensajes electrónicos más efectivos que permitan revertir situaciones de desempeño insatisfactorio. Se concluye que para comunicarse con los estudiantes es importante diseñar mensajes con características específicas que los hagan más efectivos.

Palabras clave: mensajes electrónicos, docentes, bajo desempeño académico, estudiantes universitarios, COVID-19.

Introduction

The evidence of the importance of teacher-student interactions in improving students' learning skills and educational outcomes has been strong (Blegur, 2019; Chohan, 2018; Kumi-Yeboah, Dogbey, & Guangji, 2018; Laudadio & Mazzitelli, 2018; Pianta, 2016; Tsai, 2017; Wang & Neihart, 2015). The most relevant and efficient feedback that a student can receive corresponds to the one that is sent by their teacher (Harper, 2018; Lobos, Diaz, & Bustos, 2019; Prewett, Bergin, & Huang, 2019). In this context, teachers must seek pedagogical training in effective communication skills in education. When teachers communicate in an effective way, they can improve students' self-regulation skills (Cardoso-Bello, 2011) and become a role model for their teaching peers (Turabayevna & Xusenovna, 2020).

Education during the COVID-19 pandemic has required a rapid response from educa-

tional authorities to guarantee the right to learn. Teachers worldwide have been forced to continue their classes remotely, this situation is commonly called emergency remote teaching ERT (Giannini, 2020; Xarles & Samper, 2020).

Remote education is perceived as a threat to the teacher-student relationship because both virtual learning environments and learning management systems (LMS) are not always user-friendly for monitoring student's behaviors as compared to traditional face-to-face education (Lobos, Bustos-Navarrete, Cobo-Rendón, Fernández, Bruna, & Maldonado, 2021; Van Der Spoel, Noroozi, Schuurink, & Van Ginkel, 2020). ERT does not replicate face-to-face education, and it is still obscure for teachers and educational managers (Quezada, Talbot, & Quezada-Parker, 2020; Slevin, 2008). However, this teaching modality has benefits that include technological tools, resources, and activities supporting and promoting interaction (Kim, Hong, & Song, 2019).

In the context of ERT, the greater challenge for teachers is to develop strategies that allow them to relate to their students using the advantages of remote education and learning management systems (LMS; Ashrafi, Zarevasan, Rabiee Savoji, & Amani, 2020). These include having quick access to performance information (Godwin-Jones, 2012), such as whether the student is connected, has performed online activities, is viewing resources, handed in assignments, and what grades they have obtained. Another advantage is the varied communication channels it offers, such as videoconferencing, chat, and forums (Crawford, Butler-Henderson, Rudolph, Malkawi, Glowatz, Burton & Lam, 2020; Ramirez-Anormaliza, Sabaté, Llinàs-Audet, & Lordan, 2017). All these interactions between the students and the LMS can be accessed by researchers through files called "tracking-logs". The analysis of this information is usually referred as learning analytics (Aldowah, 2019).

The use of student performance data in virtual educational environments, combined with the opportunities offered by messaging systems has facilitated new communication opportunities in teacher-student relationships (Domonkosi & Ludányi, 2019). The most commonly used intervention method to address students' academic performance involves offering personalized recommendations to students by viewing data on their learning processes through these channels (Wong & Li, 2019). Messaging systems allow sending text messages from one user to one or more users using a communication network. Users can send short or multimedia messages (SMS or MMS) without an Internet connection using their mobile network or instant messages through an Internet connection. Messages can be used synchronously and asynchronously (Iglesias, Lozano, & Martínez, 2013).

In education, messages can be synchronously and asynchronously (Iglesias, Lozano, & Martínez, 2013). Examples of synchronous uses are chats, while examples of asynchronously messaging are emails and discussion forums. The latter being the most used for formal communications in universities (Chavez, Del Toro, & Lopez, 2017; Ladino, Bejarano, Santana, Martinez, & Cabrera, 2018). In the study, Christy-Dale L. Sims (2015), the author proposes that email communication allows for quick responses that help meet students' needs, particularly for high-risk students, improving their chances of success. The author identifies five standards to distinguish between appropriate and inappropriate emails.

- 1) Personal: contains an individualized salutation and signature
- 2) Accurate: has a precise subject line and addresses the topic at hand.
- 3) Prepared: checked responses before sending and included pertinent information.
- 4) Polite: uses a basic formal tone and courtesy such as "please" and "thank you."

- 5) Proof reading: spelling, grammar, accuracy, and tone.

In Sarsar (2017) study, the author verifies the effectiveness of motivational feedback messages from teachers to students in the virtual learning environment. The results show that teachers' feedback regarding students' behaviors and results is the most relevant element for engaging and motivating students to study. The author points out that feedback is fast, fluid, and a constant process of genuine interaction between teachers and students in face-to-face classrooms. Although communication channels for implementing feedback are usually restricted in virtual environments, it is crucial to provide feedback constantly to maximize its effectiveness.

Some studies investigate how feedback messages improve and maintain students' motivation levels (Cheng, Liang, & Tsai, 2015; Maier, Wolf, & Randler, 2016). For example, Sarsar (2017) used a motivational feedback message approach, which provided feedback utilizing achievement recognition strategies and reinforcement or praise. This type of message can motivate extrinsically (as reinforcement) and intrinsically (as an encouragement to learn). Three types of messages have been proved to impact students positively. These three are messages of encouragement, messages of praise or recognition, and messages with instructions (Lobos et al., 2019; Lobos, 2020). The praise or encouragement components must always be accompanied by an instructional message; otherwise, these types of messages are insufficient to promote student motivation. When using encouragement or praise and pointing out exactly what the student did well that deserves recognition or what needs improvement (instructional message), the messages are linked to concrete facts, making them credible and personalized for the learner (Lobos, 2020).

The semantic value of words and their meaning affect students' emotions (Anusha & Sandhya, 2015; Goddard, 2011). Unfortunately, messages sent in virtual learning

environments are primarily composed of text. This means that the only way to add emotion in online feedback messages is to use the meaning of words as a strategy to capture students' attention (Sarsar, 2017). In text-based feedback, emotions are primarily represented by words. Therefore, word selection is critical in creating an emotional response. For example, if a teacher writes "Great job!" it can make students feel glad, whereas "Good job!" might elicit a positive but less intense response (Sasar, 2017).

Previous evidence points out that individualized messages generate higher motivation levels than impersonal messages, especially regarding trust between student - teacher. In addition, students who receive personalized feedback are more satisfied, willing to learn, and achieve high academic performance than those who only receive collective or general feedback (Gallien & Oomen-Early, 2008).

In this context, how teachers communicate and the messages they use, significantly impact students' academic motivation. Teachers are not aware of this impact on the affective, cognitive, and behavioral aspects, especially in students who present higher difficulty for learning (Lobos, Díaz, Bustos, & Sáez, 2018). There are many studies on feedback, emotion, and motivation. However, research that addresses the relation between virtual learning environments and the effectiveness of electronic messaging is still scarce (Sasar, 2017).

Based on the literature, the following assumption is made: the uniqueness (closeness, affective tone, pro-positivity, among others) of interaction through emails between teachers and students affects students' engagement with low academic performance. The present study proposes to characterize teachers' messages to their students with low academic performance during the emergency remote teaching modality due to COVID-19 in the context of higher education. For this purpose, the objectives of the study are defined as:

- 1) to distinguish the sources that allow the identification of low academic performance,
- 2) to describe the qualities of teachers' messages for students with low academic performance, and
- 3) to recognize characteristics of messages given by teachers that favor the engagement of students with low academic performance.

Method

A qualitative approach with a hermeneutical orientation was used (Denzin & Lincoln, 2011/2012). The messages were analyzed considering what was inside and outside of them; that is, their sense and meaning, which allowed the interpretation of their richness, enabling their characterization, particularly of those that elicited some response of engagement by the students.

Sample

The sample consisted of 18 - email thread in the pedagogical interaction of university teachers and students online during the COVID-19 pandemic. The senders and receivers of messages were from six Chilean universities and the first academic semester of 2020, placed in the context of virtualization forced by COVID-19. The final sample size was specified when the theoretical saturation criterion was achieved, at which point the collection of electronic messages was stopped as no new information relevant to this study's objectives emerged. Electronic messages were obtained from communications between teachers and students of physical and mathematical sciences, biological sciences, and social sciences.

Data collection procedure and ethical considerations

Electronic messages were obtained using the snowball sampling technique, in which

initial teachers voluntarily recruited additional users for the study.

Faculty from the six universities participating in the project COVID-1012 were asked to voluntarily provide email threads that they used during the 2020 first academic semester. The messages approached the performance shown by first-year students who were in disadvantage respect to their classmates. The initial teachers requested messages from their teaching colleagues. These professors teach first-year courses in their same disciplines. Eighteen email threads was used, facilitated by nine teachers.

Regulations and ethical principles of the investigation were taken into account; an informed consent signature was requested to make used of the messages and the personal data of both the sender and the recipient of the electronic messages was protected.

Procedure for the analysis of the results

The data analysis was carried out in three steps: (1) review of the information, (2) identification of the units of analysis, and (3) categorization and coding. For the content analysis, units of analysis were identified, categories were generated, a coding scheme was developed, categories were compared, dimensions were identified, and finally it was interpreted.

Table 1
Description of categories and dimensions.

Categories	Dimensions	N	%	Examples of Messages
Forms of identification	Absence of note in official registry	10	55	“I noticed that I do not have your grade for the paper” (email thread 3).
	Failure to send assignments	6	33	“Your paper has not been uploaded to the Teams folder” (email thread 10).
	Difficulty report from classmates	1	5	“Your classmates let me know that you have missed several classes” (email thread 5).
	Difficulty report from managers	1	5	“I have been informed by the Career Director that you are...” (email thread 7).

Content analysis was performed without software support.

The coding and reordering of categories is an iterative process based on a permanent comparison of data, readings, and re-readings. The coding of the messages continued until the theoretical saturation of the categories generated was reached, that is, until the new data no longer added new information (Krause, 1995). The frequency of the messages and their general characteristics were identified in the coding of the content of the messages.

Through descriptive analysis, a range of contents and meanings implied in the forms of identification and support messages used by teachers with their students was obtained. Likewise, this analysis made it possible to identify the main components and organize these contents hierarchically (Denzin & Lincoln, 2012). The analysis process delved deeper into the semantic level of communication.

Analysis of the results

The analysis of the messages sent by teachers to their students made it possible to identify four central categories that allow the characterization of messages from teachers to students with low academic performance (Table 1). The results are presented below based on the objectives established in this research.

Categories	Dimensions	N	%	Examples of Messages
Communicational tone	Informal staff	8	44	“Hello, I am writing to you because of...” (email thread 14).
	Formal staff	10	55	“Along with greetings, I am writing to inform you that...” (email thread 17).
	Institutional	2	11	“At the request of the Head of Career I am contacting you to...” (email thread 1)
Content	Encouragement	10	55	“I know you can re-organize your time and catch up”... (email thread 12).
				“Cheer up, I will help you to review the video...” (email thread 6).
	Praise	2	11	“You always participate in class...that is appreciated especially in this virtual format” (email thread, 4).
	Evidence	16	88	“There are missing grades due to non-delivery of assignments”(email thread 9).
				“Test n°2 and n°5 are unanswered, remember that you have until...” (email thread 10).
	Instruction	15	83	“Check the video for instructions to attempt the test” (email thread, 8).
“Connect through this link... at 12.00 hrs. to attempt the test” (email thread 15).				
Concern	4	22	“If you have any problems, let me know,” (email thread 15). “I am concerned about your absence from class,” (email thread 9). “I haven’t received your work yet” (email thread 16).	
Moment of communication	Anticipated	6	33	“I haven’t received your work yet... the deadline is next Monday” (email thread 1).
	Contemporary	11	64	“I will activate the test in the virtual classroom for you to take on” (email thread 15).
	Extemporaneous	1	5	“You have a minimum grade on the record as you have not turned in the guide.... If you have any justification, send it to the Career Director” (email thread 11).

Note: The percentage refers to the proportion of email thread that present the indicated characteristic out of a total of 18, which would correspond to 100 %.

Forms of identification of students with low academic performance

The results reflect two sources of infor-

mation for identifying students with disadvantaged academic performance. The first is information contained in the messages about the students’ performance, which reflects some

type of non-compliance or low performance that places the student in a disadvantaged position in the subject. For example, the absence of a grade record and the student's failure to send a required academic activity within a certain period: "According to the grade record, you have a summative test pending in..." (Email thread 15); "I have reviewed the deliveries and I have not received your work of..." (Email thread 14). This type of identification reflects the monitoring of student learning with the use of traditional indicators that, although recorded in the learning management platforms (LMS), do not include the use of student interaction information in the virtual classroom.

The second source of information is reports from third parties (peers, other teachers or career managers), who inform the teacher that a certain student is in a risky situation that may affect his/her academic performance: "Your classmates informed me that..." (Email thread 5); both sources motivate the development of personalized messages to disadvantaged students.

Qualities of teaching messages to students with low academic performance

Analysis of the messages reveals three categories of message qualities: (1) communicative tone, (2) content, and (3) timing of communication.

Communicative tone

Three types of communicational tones were found: informal personal, formal personal, and institutional impersonal. The informal personal refers to the tone where the teacher communicates in the first person and delivers the contents of the message revealing an interest in the student's improvement: "Hello XXX, I am concerned about not having received your critical analysis..." (Email thread 15). The second type is where the teacher communi-

cates formally expressing their concern about the student's situation: "Dear Student, I am communicating with you, since I have noticed that your note of..." (Email thread, 8). The third type is characterized by a communication that depersonalizes the intention of the teacher in sending the message and places it in the interest of others, outside the subject: "On behalf of the head of the course, I am communicating with you" (email thread 10).

Content of the message

Three types of content were observed: affective (praise, encouragement, and concern), evidence of academic performance, and instruction for change.

The affective component of a message takes several forms: praise, where the teacher alludes to some aspect of success or positive quality in the student's performance that catches their attention and motivates the performance approach communication: "I'm sure you always do an effort and you keep trying" (email thread 12), of encouragement, where the teacher sends a message of encouragement that seeks to motivate efforts towards improvement: "Everything has a solution. Cheer up and count on me to help you" (email thread 3); and concern, where the teacher lets the student know that they are interested in their situation and opens new possibilities for interaction: "You can ask me questions through this channel," (email thread 2).

The performance evidence component refers to message contents that indicate objective data and information, previously collected, on which the teacher relies to point out the need for improvement in the student's academic performance. This evidence would be related to low grades and/or non-attendance, failure to meet deadlines for academic commitments, and special situations reported by other educational actors: "I am writing to you because I have already uploaded the final grades of ... to the system and I still do not have yours" (email thread 12).

The instruction for change component in the message is when the teacher provides concrete alternatives to revert the situation of non-compliance or low performance to the student. These include indications that guide the student about what to do in their particular situation: “The test will be published tomorrow at 12:00 noon, you will have 30 minutes to answer it” (email thread 15).

Timing of communication

Three temporal dimensions were identified: anticipatory, contemporary, and extemporaneous, which distinguished communication according to its purpose.

Anticipatory messages address an assignment that has not yet become a non-compliance or failure; therefore, the student does not require special treatment to reverse the situation. They function as reminders that place the control of improvement with the students: “I consulted with the assistant and he tells me that he has not received anything from you, but that the deadline has not yet expired” (email thread 2).

Contemporary messages concern non-compliance or poor performance that have already occurred, but where the alternatives to revert the student’s situation are under the teacher’s control: “We are already finalizing the activities in the subject, you can take the pending test the week of” (email thread 5).

The extemporaneous messages address non-compliance and poor performance, which cannot be reverted or cannot be reversed by the teacher, but require the action of third parties (Directors) or other instances of the educational institution: “You should must discuss your situation with the Career Director, since this current condition is NCR [does not comply requirement] and he would be failing on the subject” (mail thread 7).

Characteristics of messages issued by teachers that elicit student engagement

Messages that elicit student engagement

response (e.g., expressing the intention to follow the teacher’s directions or requesting more information to reverse the disadvantaged situation) have the following characteristics:

- The communicative tone is personal, and the greater the number of attempts, the more personal and informal is the communicative tone.
- They communicate early evidence of noncompliance, which allows detection.
- They offer concrete alternatives that the student can use to reverse the situation of noncompliance or under-performance.
- They express concern and/or encouragement.

Regarding the prevalence of the characteristics found in the analysis of the email thread, the absence of recording any note is the most frequent reason for identifying a student with low commitment. In such cases, the evidence and the instructive message is the most used to communicate with students. Most teachers send messages when it is still possible to offer opportunities to the students to reverse their situation, and the prevailing tones of communication are personal and third person (impersonal), over the institutional tone.

Discussion

The overall objective of this study was to characterize messages sent by university teachers to students with low academic performance during the emergency remote teaching modality imposed by the COVID-19 pandemic. The main findings are discussed below, limitations are described, and future research directions are projected.

One of the first objectives of this study was to identify the data sources that allowed identify students with low academic performance. The students’ interactions with the learning management system of their university can be analyzed from the LMS tracking logs. Examples of these interactions are discussion

forum participation or chat use. The teachers can use these analytics to make data-driven pedagogical decisions to increase students' performance and engagement with the course resources (Dias et al., 2020).

Our results show that teachers' motivations to approach students by messages are related to academic noncompliance or difficulty in recording a grade—this teaching traditional approach evidence the absence of other sources of information provided by the ERT context (Saíz-Manzanarez et al., 2019). Different authors justify this situation arguing that teachers do not necessarily know about the existence of learning analytics reports provided by LMS or other institutional platforms (Ashrafi et al., 2020; De la Iglesia, 2020).

The second identified data source for obtaining students' behaviors depends on third parties such as academic authorities. In some cases, they are the only ones with access to the information. In these situations, learning managers urge teachers to pay special attention to students with a higher probability of academic failure.

Another objective of this study was to describe teachers' messages to students with low academic performance. The characteristics found to allude to the communicative tone of the text, different types of content, and the academic situation in which communication occurs. Good communication abilities teachers allow obtaining better results with their students. This ability is considered a fundamental skill, essentials to be an integral teacher (Ibáñez, De Benito, & Carrió, 2014).

Regarding communicative tone, three types were identified: informal personal, formal personal, and institutional impersonal. The first two allude to the teacher's interest in the improvement of the student, as opposed to the third, which is characterized by a communication that depersonalizes the intention of sending the message and places it in the interest of others. The difference between the first two is that the informal personal tone is charac-

terized by a close and colloquial language that communicates a certain familiarity with the student, as opposed to the formal personal tone where serious and prudent language is used and colloquialisms and relaxed phrases are avoided. Dickinson's study (2017) on the use of electronic messaging in an online class highlights the importance of this finding by indicating that a close personal tone in emails is related to better performance in students.

The five types of content can be subdivided into affective-motivational (praise, encouragement, and concern for their academic situation) and informative (evidence of poor academic performance and indications to reverse the situation). The former help the students recognize aspects of themselves that could be a source of motivation for improvement (recognition of skills and confidence in his ability to improve), which transmits high expectations and stimulates their perception of self-efficacy in the face of learning (Hampton et al., 2020; Wang, Rubie-Davies, & Meissel, 2018). Messages of concern, on the other hand, stimulate closer relationships with the student by offering help and conversational spaces. The second subtype gives credibility to the message by revealing objective information that the teacher monitors their academic performance (Lobos, 2020), and the teacher's genuine involvement to improve the student's learning experience by showing concrete alternatives to improve the insufficient performance.

As for the temporality of the messages, three types were identified: anticipatory, contemporary, and extemporaneous. The differences between these are found in their purposes. The first functions as a reminder for the student, helping them to self-regulate their learning, implicitly inviting the student to better organize their time and prioritize activities (Sáez, et al., 2018), and placing the control of improvement in the student's hands, avoiding procrastination and anxiety (Manchado & Hervías, 2021). Contemporary temporality messages are those that report

non-compliance in academic performance and require a response from the student to reverse the situation. In these, the teacher who decides to give students new opportunities. Extemporaneous messages function as notifications, reporting non-compliance and failures in academic performance that can no longer be reversed by the teacher and require external intervention by the educational institution for their solution.

Finally, elements of the electronic messages that elicited a commitment response were identified. The characteristics identified in these messages take the form of evaluative interactions (Lobos, 2020). This type of teacher-student interaction encourages a sense of greater competence and autonomy by distinguishing a teacher who trusts in students' abilities and possibilities of improvement, while promoting a positive emotional bond, greater motivation toward the achievement of academic goals, and greater perseverance on tasks of greater cognitive complexity.

Research in which teachers' communication skills are studied shows three key goals involved in the communication process (Camus, Iglesias, & Lozano, 2019). These objectives are to inform, affective motivate, and self-regulate students. By delivering to teachers concrete instructions on writing compelling messages, they can improve their teaching and learning process (Cardoso-Belo, 2011; Ibáñez, De Benito, & Carrió, 2014).

It is important to note that in this study, the number of cases was limited, which limits the scope of its results. This is particularly noticeable in the analysis of the differences between messages that increase the possibility of students' academic engagement response versus those that do not, given that the number of strings that achieve student response is greater than those that do not. This could be determined by an involuntary selection, made by the participating teachers, of those email thread where there is an exchange of messages with the students.

Future studies should broaden and diver-

sify the sample (for example, students who are not in their first year of study, from different educational levels and from careers in different areas of science) to enrich the knowledge on this subject and improve the effectiveness of teachers' messages. Experimental studies would help establish the impact of these messages on different desirable behaviors in students and on their educational outcomes.

Increasing the type of messaging is also of interest, given that due to the conditions of emergency remote education, teachers have started to use other virtual means of communication with their students, such as chats and forums in virtual classrooms and WhatsApp, among others, which have other characteristics. A good starting point would be identifying whether these are perceived as useful by students to improve their academic performance. Comparative studies between the use of different means of virtual interaction and their relationship with better educational outcomes would help to develop guidelines for educational policies in higher education, associated with the selection of LMS and the functionalities they provide in this area.

Conclusions

This study provides valuable information for higher education teachers willing to invest time in helping their students with unsatisfactory academic performance. In addition, it provides evidence-based guidelines for creating electronic messages to effectively communicate with their students to create engagement with the course and improve unsatisfactory performance. The results show the extreme importance of the personal tone in writing messages to students with low academic performance. In the messages, teachers should explain the situations that justify their concerns and must include precise instructions to reverse students' academic situations. In addition, messages need to be sent promptly to obtain the desired effect. Finally, the results also show the efficacy of

using affective expressions of motivation. These must show genuine concern on the teacher's behalf for the student's improvement and wellbeing.

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