The Well-being Teaching Assistant: A Proactive Approach to Caring for Students with Academic and Personal Difficulties in Massive Courses

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Abstract

Since the covid pandemic, some higher education institutions have promoted a flexible evaluation approach for students who face a variety of problems. Instructors willing to implement such flexibilizations face an important challenge: making themselves aware of students going through hard times. This evidence-based practice paper presents an overview and a preliminary evaluation of the well-being teaching assistant (WTA), an approach to facilitating communication, suggesting and documenting flexibilizations, and providing support for students going through difficult times in high-enrolment courses. WTAs are regular members of the teaching assistant staff, but they use an early warning system to identify potential students at risk of failure, initiate communication using supportive language, and take action by suggesting flexibilization or providing academic support for students facing challenges. WTAs have been incorporated into 27 courses at a large school of engineering in Latin America, during 2022, and have been positively evaluated by students. One of the main current challenges of the approach is scalability.

1 Motivation

Students regularly deal with the effects of health and emotional situations faced by themselves or by family members. Aware of those difficulties, and with the additional challenge imposed by the pandemic, some institutions promoted a flexible approach, suggesting teachers to increase communication with their students and make modifications to course evaluations and deadlines if needed (Marinoni et al. 2020, Joaquin et al. 2020; Khraishi, T., 2021). Caring about the well-being of students is important for a number of reasons, including the fact that it may affect engagement (Chadha et al., 2021; Juntunen et al., 2022) and autonomous motivation for study (Larcombe et al. 2022).

In massive engineering courses, instructors willing to implement such flexibilizations face an important challenge: making themselves aware of difficult situations that students may be going

through. Unfortunately, students facing mental health issues or other personal problems may not initiate communication, or may initiate it once it is very hard to recover.

This paper describes the well-being teaching assistant (WTA), whose main task is to actively initiate communication with students at risk of failing the course, suggesting and documenting flexibilizations, and providing support for students going through difficult times in high-enrolment courses. To discover students at risk of failing the course, the WTA may use a machine-learning predictive model (PM) which aims at predicting the final grade of a student given partial grading. The WTA uses a Protocol of Action and Communication (PAC) with students, whose first step involves sending an email written in a supportive language to establish the causes of the low academic performance. Once the WTA identifies issues with the students, an action is taken according to a set of possible actions defined in the PAC. Every student selected to be a WTA must complete a 4-session training program, which was designed in order to provide WTAs with knowledge of mental health first aid, and to make them aware of the University's student services and procedures for students with serious health issues. Throughout the semester, WTAs receive support from a psychologist with the Engineering Education Unit.

The WTA was first implemented in the fall of 2020 in a School of Engineering of a large university in Latin America. Up to the current second term of 2022, it has been extended to 27 high-enrolment courses. In a previous work-in-progress ASEE paper we described the PAC and an evaluation of the WTA carried out for a single course (Piña et al. 2021). In this paper, we give an overview of the TW, the PAC, and the PM; furthermore we provide statistics and a general description of the interactions between WTAs and students.

We identify three advantages of our approach. First, the proactiveness of the WTAs is very appreciated by students even in cases where no actions are triggered as a result of communication. Second, WTAs document cases, which helps professors of the same course to make consistent flexibilizations through time. Third, since WTAs are coordinated at a school level, lessons learned in specific courses are shared and may be transferred to other courses.

2 Selecting and training WTAs

An important aspect of WTAs is that we require them to be fully qualified as a teaching assistant for the course. The reason for this is that we want WTAs to be fully aware of the academic challenges of the course and therefore able to combine academic and personal support.

WTAs however need additional competencies since they engage in communication that potentially needs to address personal issues of various kinds and complexity. To provide the WTAs with such competencies, we designed a training program which was taught by an educational psychologist working with the Engineering Education Unit (EEU) of the School of

Engineering. To provide WTAs with notions of mental health, the EEU hired an external psychologist who filmed video capsules that were shown and discussed during training.

In the second semester of 2022, the training program had 4 modules. The learning outcomes of the WTA training are as follows.

- Know the role and duties of the WTA
- Know about the support networks available at the University. Specifically, about the procedures for referrals to the Academic Advisors at the School of Engineering
- Identify support/orientation actions for students who have difficulties of academic or other nature.
- Share experiences with other WTAs regarding their work and challenges of this role.
- Share perceptions regarding possible areas of improvement for future versions of the WTA Program.

Throughout the training program we emphasize that WTAs are meant to provide support to students, and that this should be achieved via empathetic communication. We also remind WTAs that the objective of the program is not to relax the learning outcomes of their courses, and therefore if flexibility is provided, such flexibility is not meant to be in sacrifice of learning.

WTA do not work alone, and cannot make decisions all by themselves. Indeed, in many cases, flexibilizations (more details in Section 3) have to be discussed by the WTA and the course instructor. For this reason, instructors in charge of the courses participating in the WTA program receive information about the main guidelines and suggestions regarding actions to be carried out at each stage of the semester. The information's objective is to clarify what are the WTA's duties, what are the instructor's duties, and what are the joint duties to be considered by both the WTA and the instructor. In the future we will also develop training meetings for teachers as well.

While training is carried out at the beginning of the semester, throughout the semester the WTA can obtain support from the EEU's psychologist. Specifically, WTAs should contact the EEU in case they face situations that appear to be particularly more challenging because of their perceived complexity.

At the end of the semester, each WTA is required to submit a record of all cases they managed, providing details of the reason for the request and actions taken. This information allows us to have a perspective on the type of most recurring cases and their complexity, allowing decisions to be made for the continuous improvement of the WTA program.

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Hi <STUDENT NAME>,
How are you doing? I hope you are doing well!
I am <TA NAME>, the well-being TA of <COURSE NAME>. I am writing to ask how you are
feeling about the course. Have you been able to comfortably work on the class
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activities and homework assignments? Is there anything you are having trouble with?
Remember you can count on me if you need support. I will be happy to help you!
All the best,
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Figure 1: Email template used by the WTA to contact students

Table 1: Causes of low academic performance and actions taken by the WTA

Cause	**Possible Actions**
High time demand at the moment due to non-academic compulsory activities (e.g., extra-curricular activities, care taking of a child)	Offer personalized academic help and/or flexibility (e.g.., modify evaluation deadlines).
Personal issues (e,g,, health issues with the students of family members) or anxiety associated with the course (e.g., because the student failed this course in the past)	Inform/connect the student with University Health services and/or academic advisors, if needed. Offer personalized academic help and/or flexibility (i.e., modify deadlines).
Difficulty understanding the material of the course	Offer personalized academic help
Connectivity issues / low-quality study environment	Flexibility (e.g., modify evaluation deadlines).
Isolated/non-recurring situation	No further actions are taken

3 A protocol for taking action

The WTA follows a protocol of action that we describe in this section. At the beginning of the course, we obtain consent from the students, informing them that their academic performance will be monitored during the term as part of the WTA program of the course. After the first course evaluations, the students' grades are fed into a pre-trained support vector machine (SVM) which is trained to predict the final grade based on the grade of preliminary evaluations, using data from previous semesters. We use SVMs since they seem to generalize better on our data.

Every student that is labeled by the model as being at risk of failing the course is contacted by the WTA using an email similar to the one shown in Figure 1. After receiving a response from the student, communication is continued using the most appropriate means (e.g., email, video call, text messaging). Based on this exchange, the TA classifies the causes of the low academic performance and offers help. The categories and actions taken are shown in Table 1. An emphasis is placed on flexibility and offering personalized academic help. Flexibility refers to offering personalized deadlines depending on the severity of the situations the student is facing. Flexibility is not possible in every course and may be dependent on the type of assessment. For example, homework assignments are usually considered by the staff for time extensions, while face-to-face written exams may not. Personalized academic help refers to determining which contents of the course need to be reinforced and suggesting appropriate actions, which range from reviewing written material to one or more tutorial interviews. In case the WTA becomes aware of the existence of mental health issues, the student is immediately put in contact with the school's academic advisors—a team of psychologists at the Undergraduate Office who provide academic counseling. Academic advisors may forward the student to the University's health services and contact the instructors to help them tailor the course to the needs of the student, if

appropriate. Students that directly address the WTA or that fail to submit an assessment at any moment of the semester are also sent emails in the style of the email of Figure 1 and go through the same protocol.

4 Preliminary evaluation

During the final weeks of class of the second semester of 2022, we applied an online survey in three out of the 27 courses. A convenience sample of 202 students voluntarily answered this survey. Most students learned about the existence of a WTA for their course via their teaching team (see Figure 2), while 8% had not heard of the program before answering the survey.

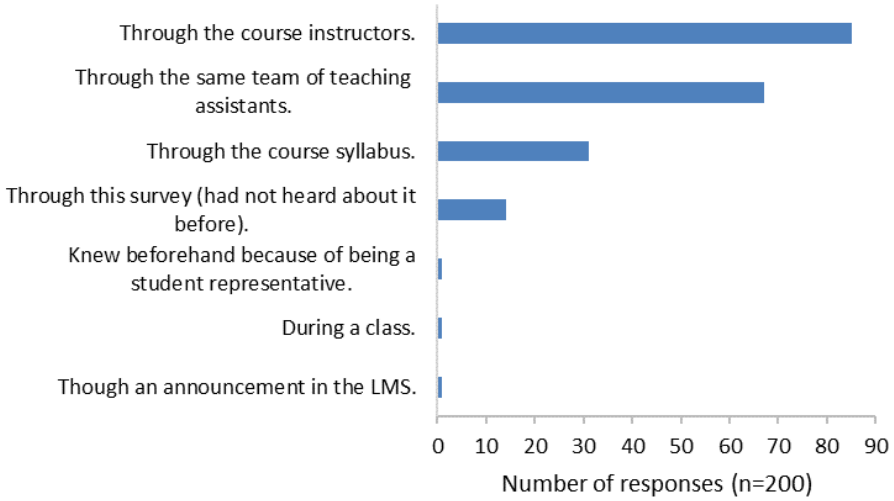

Figure 2: Number of responses regarding they way students got to know about the WTA

Out of the 202 students, 66 had been in touch with the WTA during the semester, and more than 80% of them agreed or strongly agreed with considering a WTA in other engineering courses (55 out of 66).

The reasons for contacting the WTA ranged from difficulties with course workload to personal matters. In an open-ended question, students commented on the perceived benefits of WTAs:

> *'This semester I had a WTA (...) and just knowing that he exists and feeling that he is there just in case, relieves me. I had to contact him a couple of times. He couldn't do much about my situation, but he did everything possible to help me and I felt heard and understood which helped me a lot.'*
>
> *'Sometimes it is difficult to take the initiative to ask for help, so it helped that he sent me an email that at least seemed personalized, to break the ice.'*

Furthermore, 78% of students who were contacted by a WTA suggested implementing this role in first year courses (52 out of 66) , followed by basic sciences courses and large-enrolment courses. However, they anticipated challenges regarding its scalability:

> *'It happens to me that as, in almost all the classes, there are 100 people more or less, the relationship with the teacher is often somewhat distant; in the sense that it is not so much an interaction but rather listening. That's where a WTA could come in as key in making the classroom feel more like a course. Perhaps my idea is not very applicable in the university because there are a lot of people, but it would be good to try to make the courses of the university feel more close.'*

> *'It is a very good initiative to have someone specialized within the course and coordinated with the teacher and teaching assistants. Due to the salary issue, it must be difficult to implement in all courses.'*

As mentioned above, at the end of the semester each WTA was required to submit a report describing interactions with students. 11 WTA submitted the report. Table 2 shows the number of cases, students registered, and the fail rate for the course. A negative ($r = -0.25$) but insignificant ($p = 0.44$) is observed between contact rate (i.e., the ratio between contacted students and total students) and fail rate. We believe the contact rate is influenced by the course's difficulty (for which fail rate is a proxy), but also with the engagement of the instructor with the WTA. We did not measure engagement of the teaching staff with the program but did observe that instructors that were not engaged with the program did not remind students of the existence of the WTA which may have led to lower contact rate.

Table 3 lists the most common topics found on the interactions between the WTA and students. We group them in three categories: *academic issues*, *mental health*, and *personal emergencies*.

Table 2: Contact statistics for some of the courses that had a WTA

Course name	**# registered students**	**# student interactions**	**Fail rate**
Microeconomics	311	3	13.54%
Operations management	115	5	6.88%
Environmental engineering	104	65	1.55%
Hydraulic engineering	112	4	0.00%
Fluid mechanics	399	34	21.50%
Manufacturing processes	25	19	2.56%
Heat transfer	32	26	10.64%
Transport phenomena	99	32	3.41%
Reactor design	76	44	6.76%
Dynamics	239	27	25.86%
Introduction to mining	90	4	0.00%

Table 3: Common topics discussed between WTAs and students

Academic issues	Academic performance Administrative inquiries Request for tutoring session Assessment remarking Proactive contact by WTA (prediction model) Missed deadlines due to health condition Family situation
Mental health	Anxiety symptomatology Distress due to high workload Mental health or ADHD recognized by University's inclusion program Psychiatric treatment affecting cognitive performance Challenging times under treated depression Difficulties due to family member with mental health condition Panic crises/attacks
Personal emergencies	A range of unexpected situations affecting study

5 Conclusions

We presented the WTA program, a practice to provide engineering students with timely support in large-enrolment courses. An important feature of the WTA program is that it is a proactive practice, sometimes supported by a predictive model. As suggested by our results, the program provides true care for students, as they feel heard. Through the support provided by WTAs and teaching staff, some students persist, cope with their difficulties, and eventually approve their course.

Even though WTAs do not directly monitor the well-being of their students in order to proactively take action, they are given basic notions of mental health through a training workshop specifically designed for them, in which they are made aware of the School's and University's student services. A key emphasis of this training program is that communications with students are meant to be supportive and empathetic. As a consequence, in their interactions with WTAs, students open up to WTAs regarding their mental health issues, and feel supported.

Even though we do not monitor the perceptions of students regarding the involvement of the institution in caring for their mental health via our WTA program, recent literature supports that practices like our WTA are perceived as needed to foster well-being in higher education. Indeed,

Baik et al. (2019), who in a large survey to higher-education students with an open-ended question asked what measures can be taken by institutions to improve well-being found that a large proportion of students consider "well-being would be improved if academic teachers – both lecturers and tutors – were more approachable and understanding of diverse student circumstances".

From our evaluation we infer that WTAs may be addressing the loss of connection and closeness between the instructor and their students, typical of large-enrolment courses. While an important focus of the WTA is to provide care for students, the objective of flexibilizations is *not* to relax learning objectives. Being a program centralized at a school level, we have been gathering experiences and thus allowing spontaneous good practices to be documented and potentially incorporated into the program. The documentation carried out by WTAs as part of their regular duty also allows courses to define standards for flexibilization and fairness between cases of similar nature across different terms.

Our early observations show that scaling this initiative to more large-enrolment courses may be challenging. These challenges are associated with a high workload of the WTA. Increasing the ratio of WTAs to the number of students has associated costs. Thus, we are currently studying ways to automate some of the tasks of the WTA, without sacrificing the human connection that is so key to the practice. As a next step, we plan to extend the practice to cover first-year courses like Calculus, Linear Algebra, and Physics. Another key challenge is the engagement of teaching staff; as mentioned above WTAs and instructors need to collaborate. The quality of such collaboration depends strongly on the engagement of teaching staff.

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