

Application Zero Papers for Physics

Florencio PINELA, Eduardo MONTERO

FCNM-ESPOL, Guayaquil, Ecuador

Abstract.

Every year around 300 million tons of paper are produced on the planet. In order to promote among professors a sense of responsibility with the environment, it is essential that the evaluations that are made to the students can be done through electronic files, but the most important thing is that students receive feedback on their evaluations in the shortest time so that they know what they are achieving and what they aren't yet achieved. ESPOL has developed an application called "ZERO PAPERS", which allows direct interaction with students and feedback of their evaluations in a very short time.

1 Introduction

A first problem to solve is the indiscreet use of paper in the tasks assigned to the students. Every year around 300 million tons of paper are produced on the planet. According to the Environmental Protection Agency of the United States-EPA, the main source of consumption are offices and schools. This is an alarming figure if one takes into account the progress of technology and document management applications within companies and educational institutions.

In environmental terms, the paper industry is the fifth largest consumer of energy, consuming close to 4% of energy use. Similarly, it's the industry that consumes the most water for the production of one tonne of paper (from 200,000 to 325,000 liters). The waste paper corresponds in weight to about 35% of the solid waste in landfills; As if it were not enough, an estimated 18 million acres of forest are cleared for paper manufacturing, this corresponds to the area of 20 soccer fields every minute.

The application developed in ESPOL tries to reduce the use of paper using a platform that allows students to send their work through it without having to print anything.

A second problem to solve is the time it takes for students to receive feedback on their work. The benefits of student feedback are deep and wide — but not always recognized.

Students have a comprehensive view of how their teachers educate and motivate. Student evaluations can be collected cheaply, quickly, and regularly, giving teachers the opportunities to make real-time adjustments to their teaching. Teachers may actually learn about their students from feedback questionnaires, too — how they learn, whom they know well in the class, and with whom they work best.

Students benefit from this process as well. When schools create a culture of feedback, they “send a strong signal to students that they care about their point of view, while also creating opportunities to model how to productively receive and respond to feedback,” according to educational researcher Carly Robinson, a Ph.D. student at the Harvard Graduate School of Education.

When schools create a culture of feedback, they "send a strong signal to students that they care about their point of view, while also creating opportunities to model how to productively receive and respond to feedback."

Research developing in ESPOL, show how schools can get the most out of student feedback, and how principals can help teachers get on board with using it creating a more communicative school culture for all.

The following figures show screenshots of the application zero papers (the language used in Ecuador is Spanish)



Fig. 1 Homepage



Fig. 2 Task



Fig. 3 Task qualification