

EDULEARN₂₀

12TH INTERNATIONAL CONFERENCE
ON EDUCATION AND NEW LEARNING
TECHNOLOGIES



CONFERENCE
PROCEEDINGS



EDULEARN₂₀

**12TH INTERNATIONAL CONFERENCE
ON EDUCATION AND NEW LEARNING
TECHNOLOGIES**

**CONFERENCE
PROCEEDINGS**

Published by
IATED Academy
iated.org

EDULEARN20 Proceedings
12th International Conference on Education and New Learning Technologies
July 6th-7th, 2020

Edited by
L. Gómez Chova, A. López Martínez, I. Candel Torres
IATED Academy

ISBN: 978-84-09-17979-4
ISSN: 2340-1117
V-1216-2020

Book cover designed by
J.L. Bernat

All rights reserved. Copyright © 2020, IATED

The papers published in these proceedings reflect the views only of the authors. The publisher cannot be held responsible for the validity or use of the information therein contained.

USE OF WEB APPLICATIONS TO MANAGE AND PLAN A PHD THESIS

T. Boronat, V. Fombuena, J. Ivorra-Martinez, S. Rojas-Lema, R. Balart

Grupo de Innovación de Prácticas Académicas (GIPA) Universitat Politècnica de València (SPAIN)

Abstract

A doctoral thesis is a major work that lasts approximately 3 years. During this period, the doctoral student faces with a large number of tasks that must be planned and structured in order to increase the productivity of work of this nature.

In this paper it is presented an experience of using a set of a free web and mobile application (Trello) for the management and planning of the tasks of the thesis, with the aim of increasing the motivation and productivity of doctoral students in the development of their PhD. With the application of these computer tools in a systematic and planned way during the development of the research work, it has been proven that the results are improved as a result of the structuring, the student assumes more responsibility and is more inclined to take the initiative, the task planning also facilitates the subsequent documentation of results. Therefore, the use of these tools makes it easier to achieve the final objective of the development of a doctoral thesis, which is that the student demonstrates that can generate knowledge.

Keywords: PhD management, PhD plan, web applications, Trello.

1 INTRODUCTION

The development of a doctoral thesis is an experience to achieve the highest qualification that higher education can provide. A thesis is also an opportunity to apply the knowledge and skills acquired during years of undergraduate and master studies. The development of a thesis is not a trivial matter, it can be frustrating as it is required to do a considerable amount of work and the student must assume his/her own responsibility for managing his/her learning. The work to be done during the doctorate is not established by others. The doctoral student is expected to initiate discussions, ask for help when necessary, discuss what he or she should be learning and so on. The doctoral candidate should be self-managing and should decide that he/she should be able to plan his/her work, this should be identified as an opportunity not a deficiency [1].

A doctoral thesis is an individual research project but should not be completed entirely by the doctoral student alone, the student has the guidance of at least one academic supervisor. The thesis supervisor must take the initiative to obtain the physical resources for the correct development of the work, the research topic must be clearly defined to fit the innovative impulse of the supervisor's research program that will establish the limits to the level of creativity of the research. The developments obtained are a co-ownership of the supervisor and the PhD student. There is a strong interest by both the student and the supervisor that the work proceeds to publication of joint papers. Although the ownership of the results is joint, there must be sufficient autonomy for the student to make an original contribution that justifies the award of the PhD.

Ultimately the supervision of a student does not depend on a single supervisor. Doctoral theses are of such importance that they usually affect more than one area of knowledge, which is why it is necessary to have a specialist in the different subjects affected by the study. Teams of supervisors are established with a main supervisor and one or two associate supervisors. To manage the collaborative work between the doctorate and the supervisors, it is necessary to use some tool or protocol that facilitates the interaction between the members. In this paper it is proposed to use a project management tool based on Kanban techniques combined with another note application. The tool allows for daily virtual collaboration on the thesis, allows for assigning tasks, knowing the status of their progress, maintaining conversations, providing constant feedback and finally seeing those that have been completed.

2 OBJECTIVES

The objective of this study is to present the Kanban methodology for the management of a doctoral thesis. Kanban techniques are based on a card system developed by Toyota with the aim of improving the efficiency of the vehicle manufacturing process. Jim Benson and Tonianne DeMaria Barry adapted the methodology to be used by work teams and individuals [2]. They called the adaptation "Personal Kanban".

On the other hand, the tool presented also encourages teamwork among the members of a doctoral thesis (directors and doctoral students) in a way that promotes cooperation and an atmosphere of mutual trust among the components.

3 DEVELOPMENT

The use of technological devices has invaded all facets of life, including education and project management. There is a large market for applications for any purpose. There are several applications that allow the application of Kanban techniques for project management among which are: Kanbachi, Kanbanflow, Archmule, Boards, Asana and Trello. The present work shows the use of Trello as a tool that applies personal Kanban techniques and its application to the management of a unique project such as a doctoral thesis.

Trello is based on the Kanban project management paradigm. Kanban [3] (Japanese kan, meaning visual and ban, meaning card or board) is an information system that harmoniously controls a production process, such as the production of a product or the completion of a doctoral thesis. In this visual system, the cards, which contain information on each of the processes required to achieve the objective, act as witnesses to the workflow. Trello offers functionalities for communication between all the components of a team, the definition of tasks and their assignment to members. In addition, it allows the sharing of information necessary to carry out the assigned task and the results obtained associated with the executed task [4].

In Trello, projects are represented by panels, which contain task lists. A doctoral thesis will be a project. These lists contain cards (corresponding to tasks in which a thesis can be subdivided). Figure 1 shows the panel for a thesis with several task lists. The cards can be moved from one list to another, reflecting, for example, the flow of a task from conception to planning until it has been executed. Each card (Figure 2) allows different attributes to be assigned to a task.

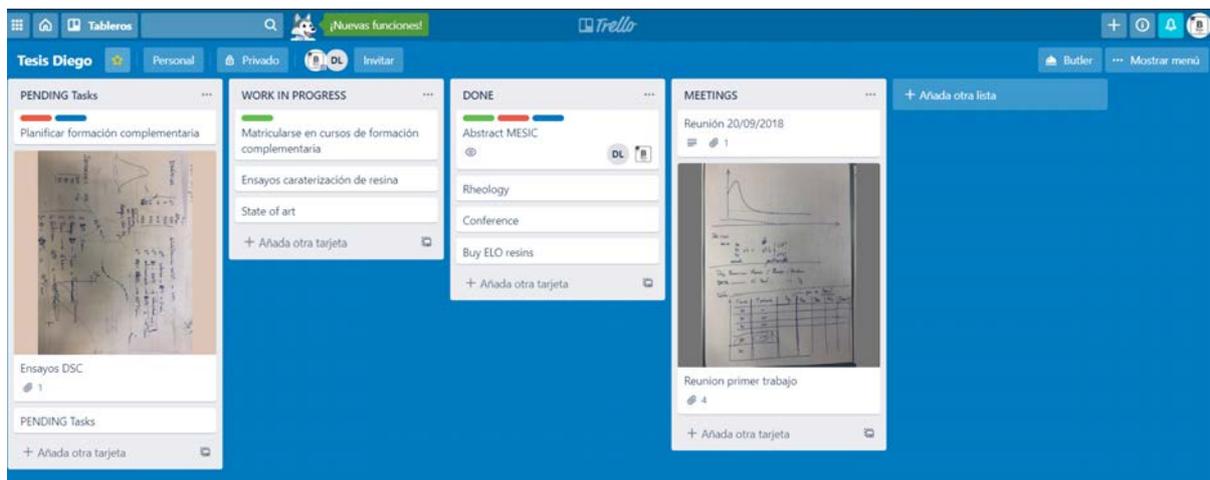


Figure 1. Trello desktop.

The Trello tool has been used as a collaborative platform for the management of a doctoral thesis at the Doctoral School of the Polytechnic University of Valencia. The development of a doctoral thesis in the field of engineering is eminently practical. At the beginning of the doctoral thesis the student was shown the Trello tool and the main functionalities to be used in the daily work are explained.

The management of the thesis is divided into several stages such as "state of art", "experimental", "writing". The experimental stage, which is the main one, is divided into several smaller stages as it is

very extensive. For each stage, the supervisors define the activities to be carried out, the results or deliverables to be obtained and an estimate of the dedication that the doctoral student must make.



Figure 2. Kanban card.

From the first stage, the doctorate configures its working panel as it suits you best. Since Trello is a highly configurable tool, the PhD can take the lead in different ways. Experience has shown that PhD students generally organize their "Cards" (the tasks to be performed) following two main strategies:

- Creation of a task list for each stage. Students who follow this strategy create a list of all the tasks to be performed for each of the stages. The status of each task (created, assigned, in progress, awaiting approval, under review or completed) is indicated by the use of the "Labels" provided by the tool. At the end of the thesis, all tasks are labeled as completed.
- Distribution of the panel to a fixed number of task lists. Students who follow this strategy usually create at least three lists, called pending, in progress, and done. However, some students create other lists, such as review or approval by the supervisor. In this strategy, tasks are moved from one list to another, following a path that starts at the task list on the left and ends at the list on the right of the panel. Tags are used to classify tasks into groups: edit, repeat, memory, final presentation, etc. At the end of the course, the students have been able to move all the tasks to the list of completed tasks.

Regardless of the strategy chosen, during the development of the thesis, supervisors can see how the work is progressing. Using the "Attach a file" function, the doctoral student can link the partial results of the assignment or the final delivery of a stage to a card.

The supervisor's subscription to the doctoral work panels makes it possible to detect the need for some kind of support or guidance to continue moving forward. The procedure that is defined at the beginning of the thesis so that students can indicate the need for support is as follows:

- Students assign the supervisor to the task card on which they have the problem. The tool sends an automated message to the professor, informing him that the doctoral student has a question to ask about a specific assignment.
- The supervisor receives the message and accesses the assignment card. Once the description of the problem has been consulted and in case it is necessary to attach it with the resolution of the task, the supervisor makes his contributions by means of the function "Write a comment" in the task card. The PhD receives an automated message indicating that the supervising member has made a comment on the task.
- Finally, the student accesses the card, modifies its status (changing its label) and removes the assignment to the supervisor of the task in case no further intervention is required from him.

4 RESULTS

The experience of using the Kanban techniques and their application with the Trello tool in the field of teaching has been very satisfactory for both the supervisor and the PhD participant. Below are some of the reflections offered by the participants in this initiative.

4.1 Supervisor

The main benefit observed by the authors of this article is that the supervisor can have direct and continuous contact with the doctorate even when he is abroad. This contact allows:

- To know at any time the progress of the work entrusted. The professor can access the student's work panels to know if the planned dedication to perform the assigned tasks is sufficient. It also allows to know which tasks last longer and those that require less effort.
- Ensure that the thesis is up to date. The supervisor can corroborate that the student is not lost or is rambling about some trivial aspect.
- Trello allows you to solve a specific problem. The supervisor can set guidelines for doctoral students can advance their work.

4.2 PhD student

From the feedback of the doctorates who have used the Trello tool it can be stated that they are satisfied with its use as a support platform for teamwork. These are some of the reasons:

- It allows a clear and structured view of all the work related to the thesis. Not only the work already done, but also the pending work.
- It allows to centralize all the partial results obtained in a single platform.
- It avoids the misuse or loss of documents.

5 CONCLUSIONS

Trello is a well thought out, designed and tested tool that covers the requirements that an integrated platform for the coordination and communication of work teams must meet.

In this pilot project it was not only intended, but not enough, to provide students with a useful tool to carry out their work efficiently. It also sought a way to streamline the process of monitoring student research, mechanizing some basic tasks of validation of partial results delivery.

The simplification of the student follow-up process results in time savings that can be used to provide specific feedback tailored to the specific needs of the doctorate.

One of the problems raised by the authors was whether the tool would be accepted by students. In no case was the learning of Trello intended to be a great effort, since that is not the main objective of the thesis. It should be borne in mind that no problems arising from the use of the tool have been detected, largely because of its simple, clear and intuitive interface.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the support of the Institute of Educational Sciences (ICE) of Universitat Politècnica de València for supporting the PIME reference B18/18.

REFERENCES

- [1] Traver, V.J. and J.A. Traver, ¿Por qué no enseñamos a aprender cooperativamente?, in X Jornadas de Enseñanza Universitaria de la Informática (X JENUI). 2004: Alicante. p. 297-304.
- [2] J, B. and D.B. T, Personal Kanban: Mapping Work. 2011: Modus Cooperandi Press.
- [3] Association, J.M., Kanban just-in time at Toyota: Management begins at the workplace. 1986: CRC Press.

- [4] Delgado, A., A. Lluís-Mesquida, and A. Mas, Utilización de Trello para realizar el seguimiento del aprendizaje de equipos de trabajo, in XX Jornadas de Enseñanza Universitaria de la Informática (XX JENUI). 2014: Oviedo:.. p. 769-822.