About this paper

Appears in:
ICERI2021 Proceedings
(browse)

Pages: 4458-4464
Publication year: 2021
ISBN: 978-84-09-34549-6
ISSN: 2340-1095
doi: 10.21125/iceri.2021.1028

Conference name: 14th annual International Conference of Education, Research and Innovation
Dates: 8-9 November, 2021
Location: Online Conference

Citation download:
(BibTeX) (ris) (plaintext)

Other publications by the authors:
(search)

EXPERIENCING THE TECHNICAL-SCIENTIFIC PRODUCTION PROCESS WITH MASTER'S STUDENTS

J.E. Ribeiro, P.M. Barros, F. Silva

Instituto Politécnico de Bragança (PORTUGAL)

In the current context, much of the information that higher education students need for their academic work is searched on the internet, but they do not always use the proper filtering tools to select it. This aspect, together with the fact that they do not have reading habits of technical-scientific texts, especially when written in English, makes it pertinent in master's courses to challenge students to tasks that allow them to develop these skills. In this sense, within the scope of the Manufacturing Processes course unit of the Master in Industrial Engineering, it was proposed to carry out a group work, which, in addition to the laboratory component, involved the writing of a scientific article in English and peer review. In the practical component, students were asked to idealize (1st phase) and create (2nd phase) a piece in aluminum alloy, preferably with some innovative character. In the first phase, taking into account some restrictions that were imposed in terms of material and maximum dimensions, they had to think and decide with their group colleagues about the characteristics of the part, drawing and dimensioning it in SOLIDWORKS®. In the second phase, the students started by simulating the part's manufacturing process using the CAM (Computer Aiding Manufacturing) module, CNC (Computer Numerical Control) code generation and, finally, they started to manufacture it with numerical control machines. Alongside the practical component, students were encouraged to develop the theoretical component of the work, researching in scientific articles matters related to the design and manufacturing methods of the piece.

Each group had to produce an article in English that focused on the work carried out, both at a technical and scientific level, and to review an article from another group, in addition to the reformulation of its own based on the suggestions of colleagues. In order to know the student's opinion about the process, a questionnaire was applied, in which, among other aspects, their opinion was asked about this entire writing and revision process. From the students who responded, 94.7% agree or totally agree that the elaboration of the article allowed them to develop skills that may be useful to them in the future and 84.2% agree or totally agree that the work of reviewing the article has improved their critical skills. However, the teacher found that students had difficulty in mobilizing their knowledge and creativity to design an innovative piece, so it is important to continue to promote this type of approach so that students develop research and thinking skills associated with practical aspects. As would also be expected, the fact that the article was written in English made the process of writing (57.9% agree or totally agree) and review (63.2% agree or totally agree) difficult, but they were faced with the need to overcome this barrier can be an important contribution to increasing their English proficiency.

keywords: peer review, higher education, writing technical-scientific texts.