Journal of Technology and Science Education

# TECHNOLOGY AND SCIENCE EDUCATION:

# LOOKING AT THE FUTURE

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As usual in JOTSE, the first editorial of the year presents an analysis of our Journal evolution. In this sense, we reflect on the changes undergone and the challenges we will face in the new year 2016.

When analyzing JOTSE's evolution (See Figure 1) we can observe that the objective of steady growth has been accomplished throughout these 5 last years.

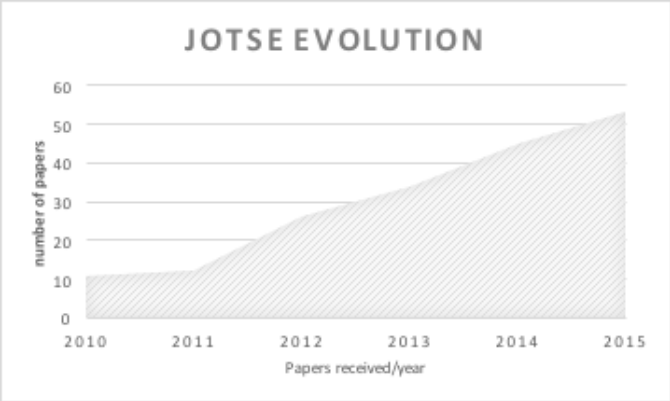


*Figure 1. JOTSE's evolution*

In 2015 volume 4 issues have been published: 2 regular and 2 special, as in 2014. If we observe JOTSE's monthly evolution we can state that July and December are the months with more article submissions as the average increases from 2 to 4,33 or even 5,5 (as seen in Table 1).


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| | Average | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|
| **January** | 3,2 | | 0 | 2 | 1 | 9 | 4 |
| **February** | 2 | | 1 | 4 | 1 | 0 | 4 |
| **March** | 2,2 | | 0 | 1 | 2 | 3 | 5 |
| **April** | 1,5 | 1 | 1 | 0 | 3 | 2 | 2 |
| **May** | 1,33 | 3 | 2 | 0 | 0 | 2 | 2 |
| **June** | 2,33 | 1 | 4 | 0 | 3 | 1 | 4 |
| **July** | 4,33 | 1 | 0 | 7 | 5 | 8 | 5 |
| **August** | 1,33 | 1 | 1 | 1 | 2 | 1 | 2 |
| **September** | 2,5 | 0 | 1 | 3 | 1 | 5 | 5 |
| **October** | 1,83 | 2 | 0 | 4 | 1 | 1 | 3 |
| **November** | 3,33 | 1 | 1 | 1 | 6 | 2 | 9 |
| **December** | 5,5 | 1 | 1 | 3 | 9 | 11 | 8 |
| **TOTAL** | **30,17** | **11** | **12** | **26** | **34** | **45** | **53** |

*Table 1. Article submission evolution from 2010 to 2015.*

We can state that the number of published articles in the last two years keeps constant, in other words, 4 issues per volume. In this vein, if we analyze JOTSE's internationalization as to visits to its website (one of our challenges) we can observe that since 4th November 2015 it has had 2,499 visits. To this respect, 65% of such visits are from foreign countries (In Table 2 we include the 10 countries that visit JOTSE's website more frequently).

| No | Country | Percentage | Number of visits |
|---|---|---|---|
| 1 | Spain | 34,23% | 855 |
| 2 | United States | 14.85% | 371 |
| 3 | India | 5.20% | 130 |
| 4 | United Kingdom | 4.40% | 110 |
| 5 | Portugal | 4.36% | 109 |
| 6 | Turkey | 2.68% | 67 |
| 7 | Indonesia | 2.04% | 51 |
| 8 | Malaysia | 1.84% | 46 |
| 9 | Philippines | 1.68% | 42 |
| 10 | Canada | 1.64% | 41 |

*Table 2. JOTSE's visits from 4th November 2015 to 20th January 2016*

As to Journal's indexation, which is one of our main challenges, we should mention here that JOTSE obtained its ERIHplus entry in May 2015. Moreover, we are about to sign another impact factor indexation within the first term of 2016.

For this 2016 we are foreseeing new challenges, such as the increase in the number of submitted articles as well as making an extra effort to keep our reviewers' fidelity. We honestly think that the task of a good reviewer is not recognized enough and that is the reason why this year we want to focus on the quality of reviews. In other words, we would like to support and enhance the whole process, its quickness, the communication with the authors and editors and, obviously, the quality of the reviews to achieve excellence in the articles published in JOTSE.

With this good purpose in mind we present the new volume of JOTSE, which includes articles closely related with Education Technology, that is to say, the technological resources that facilitate the learning-teaching process.

Therefore, in the first article *the question is whether these educations – their long-term policy documents as well as the standards they provide in particular – address sufficient learning about the nature of technology. This seems to be an important concern that through taking advantage of the philosophy of technology is intended to be discussed throughout this study (***Standards' on the bench: Do standards for technological literacy render an adequate image of technology?** by Mahdi G. Nia, Marc J. de Vries. Delft University of Technology, The Netherlands.

In the second article, the attitude of secondary school teachers towards Information and Communication Technologies (ICT) is discussed. The article gathers the results of a study whose purpose was to determine how a teacher will use and integrate the 'Information and Communication Technologies' (ICT) in inclusive classrooms. This will also identify the factors that promote good educational practices supported by ICT and it prepared a case study of multiple cases. **ICT and inclusive education: Attitudes of the teachers in secondary education** by José María Fernández Batanero Universidad de Sevilla, María Jesús Colmenero Ruiz. Universidad de Jaén, Spain.

The purpose of the third paper is to examine the research that has studied a variety of science, technology, Engineering and Mathematics (STEM) subjects using Project-Based Learning (PjBL**)** in post-secondary classrooms. **Fo**ur themes: content knowledge, interdisciplinary skills, collaboration and skill development for future education and careers**,** were discussed followed fourteen articles (including qualitative, quantitative and mixed methods). **Post secondary project-based learning in science, technology, engineering and mathematics** by Rachel A. Ralph. University of British Columbia, Canada.

In the fourth article, Physics applets are presented as an assessment tool, which has been tested on five physics applets by four secondary-school teachers as experts in first-year students' background. The results show the suitability degree of each of these applets as resources for different teaching/learning environments, as well as the suitability of the evaluation tool itself. In addition, the evaluation tool simplifies the interchange of information on physics applets among teachers and lecturers. **An evaluation tool for physics applets** by Arcadi Pejuan, Xavier Bohigas, Xavier Jaén. Universitat Politècnica de Catalunya, Spain.

The following article deals with the use of e-portfolio as an assessment tool in a linear algebra subject in the first year of an engineering degree. For the realization of the e-portfolio have been used different platforms: Mahara, Exabis, WordPress and Google Sites. Formative assessment of the e-portfolio had been made from different rubrics defined in the course syllabus and known by students since the beginning of the course. **The use of e-portfolio in a linear algebra course** by Judit Taberna Torres, María Isabel García-Planas, Universitat Politècnica de Catalunya, Santiago Domínguez-García, Universitat Rovira i Virgili, Spain.

The last article in this volume also presents an experience within linear algebra subject with first year engineering students. This study emphasizes the development of mathematical abilities primarily associated with modelling and interpreting, which are not exclusively calculus abilities. Considering this, an instructional design was created based on mathematical modelling and emerging heuristic models for the construction of specific linear algebra concepts: span and spanning set. **Mathematical Modelling in Engineering: a Proposal to Introduce Linear Algebra Concepts** by Andrea Cárcamo Bahamonde, Centre for Teaching Basic Science Engineering, Universidad Austral de Chile, Joan Gómez Urgelles Universitat Politècnica de Catalunya, Josep Fortuny Aymemí, Universitat Autònoma de Barcelona, Spain.

We hope that you find them interesting.

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