

# Recommender Systems for Technology Enhanced Learning

Citation for published version (APA):

Manouselis, N., Verbert, K., Drachsler, H., & Santos, O. C. (Eds.) (2014). *Recommender Systems for Technology Enhanced Learning: Research Trends & Applications*. (1 ed.) Springer. <https://doi.org/10.1007/978-1-4939-0530-0>

**DOI:**

[10.1007/978-1-4939-0530-0](https://doi.org/10.1007/978-1-4939-0530-0)

**Document status and date:**

Published: 01/01/2014

**Document Version:**

Other version

**Document license:**

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# Preface

Technology-enhanced learning (TEL) aims to design, develop, and test socio-technical innovations that will support and enhance learning practices of both individuals and organisations. It is an application domain that generally addresses all types of technology research and development aiming to support teaching and learning activities, and considers meta-cognitive and reflective skills such as self-management, self-motivation, and effective informal and self-regulated learning. It was in 2007 when our first efforts to create opportunities for researchers working on topics related to recommender systems for TEL found their way in workshops like the Workshop on Social Information Retrieval for Technology Enhanced Learning (SIRTEL), the Workshop on Context-Aware Recommendation for Learning, and the Workshop Towards User Modelling and Adaptive Systems for All (TUMAS-A).

Still, it was only in 2010 when a really rare opportunity rose: during the same week of September and at the same location (Barcelona, Spain), two very prestigious and very relevant events (the fourth ACM Conference on Recommender Systems and the fifth European Conference on Technology Enhanced Learning) took place, giving us the chance to bring the two communities together. And so we did, by organising a joint event called the *1st Workshop on Recommender Systems for Technology Enhanced Learning (RecSysTEL)*.

Since then, lots of things have happened to mainstream educational applications in recommender systems' research. The most important achievement is an initial pool of datasets that have been collected and can be used to compare the outcomes of different TEL Recommender Systems to create a body of knowledge about the effects of different algorithms on learners. Furthermore, running research projects like Open Discovery Space<sup>1</sup> and LinkedUp<sup>2</sup> aim to create a publicly accessible Linked Data cloud<sup>3</sup> that can be used as a reference dataset for RecSysTEL research. Along these infrastructure improvements various scientific events and publications

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<sup>1</sup> [www.opendiscoveryspace.eu/](http://www.opendiscoveryspace.eu/)

<sup>2</sup> [www.linkedup-project.eu/](http://www.linkedup-project.eu/)

<sup>3</sup> <http://data.linkededucation.org/linkedup/catalog/>

have been realised. The most relevant are the organisation of subsequent editions of the RecSysTEL workshop with bi-annual periodicity; authoring a review article for the Recommender Systems Handbook; expanding it to an introductory handbook on Recommender Systems for Learning; and contributing (as co-editors or as authors) to several relevant Special Issues in scientific journals and specialised books.

We thought that this is a good time to build upon this previous experience and to collect some state-of-the-art contributions to a volume that will give a fresh view of the status of this area. Our interest was to collect a representative sample of high-quality manuscripts that will illustrate some important research trends, identify key challenges and demonstrate some innovative applications. This volume is the result of an open call that helped us collect, peer-review, select and propose for publication 14 articles (out of 49 proposed works; 29 % acceptance rate) that give a very good picture of the current status of research in recommender systems for TEL. The first four chapters (Karampiperis et al.; Cenichel et al.; Dietze et al.; Bienkowski and Klo) deal with user and item data that can be used to support recommendation systems and scenarios. The next four (Hulpus et al.; Santos et al.; Schwind and Buder; Tang et al.) focus on innovative methods and techniques for recommendation purposes. And the last six (Fazeli et al.; Bielikova et al.; Nowakowski et al.; Fernandez et al.; Sie et al.; Petertonkoker et al.) present examples of educational platforms and tools where recommendations are incorporated.

The bibliography covered by this book is available in an open group created at the Mendeley research platform<sup>4</sup> and will continue to be enriched with additional references. We would like to encourage the reader to sign up for this group and to connect to the community of people working on these topics, gaining access to the collected bibliography but also contributing pointers to new relevant publications within this very fast developing domain.

We hope that you will enjoy reading this volume as much as we enjoyed editing it.

Athens, Greece  
Heerlen, The Netherlands  
Leuven, Belgium  
Madrid, Spain

Nikos Manouselis  
Hendrik Drachler  
Katrien Verbert  
Olga C. Santos

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<sup>4</sup><http://www.mendeley.com/groups/1969281/recommender-systems-for-learning/>

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<http://www.springer.com/978-1-4939-0529-4>

Recommender Systems for Technology Enhanced Learning  
Research Trends and Applications

Manouselis, N.; Drachsler, H.; Verbert, K.; Santos, O.C.

(Eds.)

2014, XIV, 306 p. 67 illus., Hardcover

ISBN: 978-1-4939-0529-4