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# PBL 3.0 for problem based learning, semantics & learning analytics

Christian M. Stracke, OUNL

14-17 June 2016, Budapest



[www.pbl3-project.eu](http://www.pbl3-project.eu)

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# Dr. Christian M. Stracke: Open Learning & Education, Innovations, Policies, Quality & Competences, Impact

Open University of the Netherlands



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# INTEGRATING LEARNING ANALYTICS AND SEMANTICS IN PROBLEM BASED LEARNING

**Erasmus+ Forward-Looking Cooperation Projects**

**Call: EACEA/33/2014**

**Project Number: 562236-EPP-1-2015-1-EL-EPPKA3-PI-FORWARD**

**01/01/2016-31/12/2018 (3 years)**



Co-funded by the  
Erasmus+ Programme  
of the European Union

# PROJECT TEAM

- University of Macedonia, Greece - Coordinating partner
- Open University of the Netherlands
- Aalborg University Copenhagen, Denmark
- University of Alcalá, Spain
- BOC Asset Management GmbH, Austria

# MOTIVATION

- The current ever-changing world requires competent workforce with skills to quickly adapt to rapid changes
- The Problem Based Learning (PBL) strategy addresses this challenge. However, PBL in its present mode exploit innovative ways to unleash new capabilities.
- On the other hand, innovative approaches, like Learning Analytics (LA), can be confusing and overwhelming since they are still under-explored and lack structure.

# OVERALL AIM

- Enhance **Problem Based Learning (PBL)** with **Learning Analytics (LA)** and **Learning Semantics (LS)** in order to produce a new educational paradigm and pilot it to produce relevant policy recommendations

# PROJECT GOALS

Construct a new educational approach that combines PBL with LA respecting legal and ethical considerations (termed PBL\_LA). This approach will take into consideration the whole LA lifecycle:

- design a **semantic model** for PBL\_LA for the annotation of learning resources
- adapt **open source tools** to support PBL\_LA and develop an intuitive semantic annotation tool
- create relevant, **semantically annotated educational materials** and perform **trials** to draw evidence-based conclusions
- produce relevant **policy recommendations** that can raise the quality in education and training
- create an **organic ecosystem** of organizations, researchers, learners, etc. with an interest in PBL\_LA



# LEARNING ANALYTICS IN PBL

- **Data gathering** by identifying educational data that is generated in **each and all steps of PBL**
- Information processing by analyzing processes and techniques that transform **educational data to meaningful, multi-modal information**
- Knowledge application by identifying all **intervention mechanisms** that could be put into practice based on all LA feedback during **course design** and **course execution**

# LEARNING SEMANTICS IN PBL

- Design a **semantic model** for PBL\_LA which will indicate all the necessary elements (e.g. learning objectives, learning topic, skills, learning outcomes, type of materials etc)
- A **semantic annotation tool** based on this model in order to enable learning resources annotation by all learning content providers
- Foster content **discoverability** and **linkage** of learning resources with the **Web of Data**

# PROJECT APPROACH

- A new paradigm that will bring about PBL3.0 and will merge PBL with Web 3.0
- Test all the innovative solutions identified and designed in various educational and training settings and derive valuable conclusions on their validity and ability to be mainstreamed
- Propose new innovative pedagogical and technological approaches that will tackle existing issues in education and training and raise their quality

# PROJECT IMPACT

- Educators and trainers will be able to use novel pedagogical approaches
- Learners will be equipped with competitive skills
- Learning resources will be semantically annotated and opened for re-use
- Policy actions will be available for adoption by universities and organizations that carry out trainings
- A culture of collaboration will be developed to foster innovation in the new PBL3.0 paradigm

# CONTACT

- Project website: <http://pbl3-project.eu>
- Twitter: [@PBL3\\_project\\_eu](https://twitter.com/PBL3_project_eu)
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# LINQ

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# Further References

- Stracke, C. M. (2016). Openness for learning quality and change by Open Education in theory and practice - Overview, history, innovations and policies: How can Open Learning, OER and MOOCs achieve impact for earners, organizations and in society? In T. Amiel (Ed.), *Utopias and Dystopias in Education*. Sao Paulo: UNICAMP. [in print]
- Stracke, C. M. (2016). MOOCs are dead! - Open Education and the Quality of Online Courses Towards a Common Quality Reference Framework. In *EDEN Proceedings*. Bucharest: EDEN. pp. 215-221.
- Stracke, C. M. (2015). The Need to Change Education towards Open Learning. In C. M. Stracke & T. Shamarina-Heidenreich (Eds.), *The Need for Change in Education: Openness as Default?*. Berlin: Logos. pp. 11-23.

All also online available at: <http://www.opening-up.education>

# Further References

- Stracke, C. M. (2014). How Innovations and Competence Development support Quality in Lifelong Learning. *The International Journal for Quality and Innovation (INNOQUAL)*, Vol. 2 (3). pp. 35-44.
- Stracke, C. M. (2014). Evaluation Framework EFI for Measuring the Impact of Learning, Education and Training. 华东师范大学学报(自然科学版) *Journal of East China Normal University*. Vol. 2014 (2). Shanghai: ECNU. pp. 1-12.  
[DOI: 10.3969/j. ISSN 1000-5641. 2012.02.012]
- Stracke, C. M. (2014). The Concept of Open Learning for Opening Up Education. In C. M. Stracke et al. (Eds.), *Changing the Trajectory: Quality for Opening up Education*. Berlin: Logos. pp. 15-24.

All also online available at: <http://www.opening-up.education>

# Further References

- Stracke, C. M. (2013). Open Learning: The Concept for Modernizing School Education and Lifelong Learning through the Combination of Learning Innovations and Quality. In C. M. Stracke (Ed.), *Learning Innovations and Quality: The Future of Digital Resources*. Berlin: Logos. pp. 15-28.
- Stracke, C. M. (2013). The Evaluation Framework for Impact Assessment. In *Proceedings of 6th International Conference of Education, Research and Innovations 2013 [= ICERI 2013]*. Madrid: IATED. pp. 4654-4663 [ISBN: 978-84-616-3847-5].
- Stracke, C. M. et al. (2013). Open School Learning. A vision to improve European schools towards 2030 – using the results of the Open Discovery Space project. In *OPEN EDUCATION 2030. JRC-IPTS Call for Vision Papers. Part II: School Education*. Sevilla: JRC. pp. 99-104.

All also online available at: <http://www.opening-up.education>

# Further References

- Stracke, Christian M. (2012): "Learning Innovations and Learning Quality: Relations, Interdependences, and Future"; in: Stracke, Christian M. (ed.) (2012): *The Future of Learning Innovations and Learning Quality. How do they fit together?* Brussels: Gito. p. 13-25.
- Stracke, Christian M. (2012): "Competences and skills for learning-outcome orientation: Competence development, modelling, and standards for human resources development, education and training"; in: 华东师范大学学报(自然科学版) *Journal of East China Normal University*. Vol. 2012 (2). Shanghai: ECNU. p. 115-130.
- Stracke, Christian M. (2011): "Competence and Skills Modelling for European HR and Policies"; in: Stracke, Chr. M. (ed.): *Competence Modelling for Human Resources Development and European Policies. Bridging Business, Education and Training*. Brussels: Gito. p. 12-37.

All also online available at: <http://www.opening-up.education>

# Further References

- Stracke, Christian M. (2011): "Competences and Skills in the Digital Age: Competence Development, Modelling, and Standards for Human Resources Development"; in: *Proceedings of the International Conference on Metadata and Semantics Research Conference (MTR 2011)*, Berlin/ Heidelberg: Springer. p. 34-46.
- Stracke, Christian M. (2011): "Competence Modelling for Innovations and Quality Development in E-Learning: Towards learning outcome orientation by competence models"; in: *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunication 2011 [= ED-MEDIA 2011]*; Chesapeake, VA: AACE. p. 1885-1894.
- Stracke, Christian M. (2010): "Quality development and standards in learning, education, and training: adaptation model and guidelines for implementations"; in: *Информатизация образования и науки [= Информике (Informika), ISSN 2073-7572]*; Vol. 7 (3), 2010. Moscow (Russian Federation), S.136-146.
- All also online available at: <http://www.opening-up.education>

# Further References

Stracke, Christian M. (2010): "The Benefits and Future of Standards: Metadata and beyond"; in: *Proceedings of the International Conference on Metadata and Semantics Research Conference (MTSR 2010)*. Berlin/ Heidelberg: Springer. p. 354-361.

Stracke, Christian M. (2010): "Quality and Standards in Learning, Education, and Training: The Adaptation Model IDEA for the Introduction of Quality Development"; in: *Proceedings of the International Conference on the Past and Future of e-Learning Standards*. Tokyo (Japan). p. 26-36.

Stracke, Christian M. (2007): *Quality Standards for Quality Development in e-Learning: Adoption, Implementation and Adaptation of ISO/IEC 19796-1*. Essen: eLC / Q.E.D.

Stracke, Christian M. (2006): "Process-oriented Quality Management", in: Ehlers, U.-D./ Pawlowski, J. M. (Eds.): *Handbook on Quality and Standardisation in E-Learning*. Berlin: Springer. p. 79-96.

All also online available at: <http://www.opening-up.education>

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# Let us cooperate!



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# Let us connect!



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# Thank you! Questions?

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