

Learning Analytics at the interface between School Psychology and Computational Linguistics

Last update: May 24, 2019

IMPORTANT NOTE: This syllabus is under construction. It will be completed as we start the course depending on the profiles and interests of attendants.

Abstract:

Language plays an essential role in education. It serves as the primary means for communicating content and it is used by teachers to assess achievement and provide feedback. Developing language competencies is therefore a central goal of education, with academic language ("Bildungssprache") being essential for success in any school subject. With an increasing range of language materials becoming available in digital form, from typed essays via discussion boards and homework in online learning platforms and intelligent tutoring systems to transcribed classroom interaction, the question arises how such data can be analyzed to understand and improve learning and teaching. In this seminar, we will start with an overview of the emerging field of learning analytics with a focus on second (or foreign) language learning and on its interface with educational and school psychology. The seminar will include the analysis of learner behaviour and performance in large learner corpora, before exploring analyses ourselves by integrating computational linguistic analysis and statistical analysis using R.

Instructors:

	Detmar Meurers	Martí Quixal
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<i>Office hours:</i>	Wednesdays 10:00–12:00 (arrange a slot by email beforehand)	Tuesdays 13:00–14:30

Course meets:

- Tuesdays, 10:00-12:00, in Institut für Psychologie, Alte Frauenklinik (Wilhelmstr. 19), Seminar room 4326
- Thursdays, 16:00-18:00, in Seminar für Sprachwissenschaft, Blochbau (Wilhelmstr. 19), Room 0.01

Credit Points: 6 CP in MA Computer Linguistics, MSc School Psychology or MSc Psychology (9 CP with term paper)

- active participation in class: $4\text{SWS} * 15 = 60\text{h}$ (2 CP)
 - A prerequisite of active participation is being present in class! Missing more than two classes without real excuses automatically results in failing the class.
- reading and posting of questions: 60h (2 CP)
 - Note: Posting meaningful questions to the forum **before** the class discussing the topic is a crucial component of the seminar. Doing so for less than 60% of the topics automatically means failing the class.

- preparing and holding class presentation: 60h (2 CP)
- optional: term paper 90h (3 CP)

Syllabus (this file):

- html-Version (<http://purl.org/dm/19/ss/la>)
- pdf-Version (<http://purl.org/dm/19/ss/la/syllabus.pdf>)

Course book:

The course will use the following book as a basis for the contents to be discussed:

- The Handbook of Learning Analytics. Editors: Charles Lang, George Siemens, Alyssa Wise, Dragan Gašević. ISBN: 978-0-9952408-0-3
- <https://solaresearch.org/hla-17/> (e-book is free, print on demand)

However, other references will be provided and for your presentation you will be required to go beyond the references given.

Moodle page:

- <https://moodle.zdv.uni-tuebingen.de/course/view.php?id=242>

Nature of course and our expectations: This is a research-oriented Hauptseminar, in which we jointly explore perspectives and approaches on the application of learning analytics to educational contexts taking into account second language acquisition, computational linguistics and psychological aspects of learning. You are expected to

1. regularly and actively participate in class, read the papers assigned by any of the presenters and post a meaningful question on Moodle to the “Reading Discussion Forum” on each reading *at the latest on the day before it is discussed* in class.
2. explore and present a topic:
 - **select one of the sub-topics by mid May**
 - thoroughly research the topic, taking our literature pointers *as a starting point*
 - prepare the presentation with slides, send them to *BOTH* instructors by email and discuss them with one of us in a half hour slot during office hours *at least a week before the presentation*
 - start a new Moodle thread on the “Reading Discussion Forum” specifying what every course participant should read to prepare for your presentation *a week before your presentation*
 - present and discuss the topic in class
3. if you pursue the 9 CP option, work out a project term paper
 - select a topic and submit a one-page abstract *by July 10, 2019* (and a revised version by July 29, 2019)
 - Note for Computational Linguistics students: The term paper must be produced in LaTeX using the ACL conference format or the Computational Linguistics journal format; BibTeX must be used for the bibliography.

Academic conduct and misconduct: Research is driven by discussion and free exchange of ideas, motivations, and perspectives. So you are encouraged to work in groups, discuss, and exchange ideas. At the same time, the foundation of the free exchange of ideas is that everyone is open about where they obtained which information. Concretely, this means you are expected to always make explicit when you've worked on something as a team – and keep in mind that being part of a team always means sharing the work.

For text you write, you always have to provide explicit references for any ideas or passages you reuse from somewhere else. Note that this includes text “found” on the web, where you should cite the url of the web site in case no more official publication is available.

Class etiquette: Please do not read or work on materials for other classes in our seminar. All portable electronic devices such as cell phones and laptops should be switched off for the entire length of the flight, oops, class. Unless you are required to use them for the purpose of the class.

Scheduling

- Tue, April 23: Introduction to the course and course norms (*Detmar*)
- Thu, April 25: Basic concepts in Learning Analytics (I) (*Martí*)
 - Reading: Lang et al. (2017, Chs.: 1,2)
- Tue, April 30: Basic concepts in Learning Analytics (II) (*Martí*)
 - Reading: Lang et al. (2017, Chs.: 3-4)
- Thu, May 2: Basic concepts in SLA (*Detmar*)
- Tue May 7: Feedbook, an interactive language learning tutoring system (*Detmar*)
 - Reading: Ziai et al. (2018); Meurers et al. (2019)
- Thu May 9: Feedbook: A study evaluating its impact (*Detmar*)
- Tue May 14: Feedbook's approach to operationalizing SLA (*Björn*)
- Thu May 16: A first hands-on session analyzing ITS data
 - General R background: Baayen (2008)
- Tue May 21: Measurement in psychology (*Jan Kühnhausen*)
- Thu May 23: Operationalizing SLA concepts in LA (*Martí*)
 - Reading: Chun (2013, 2016) and Link & Li (2015)
 - Further (recommended) readings:
 - * *The Routledge Handbook of Second Language Acquisition* by Gass & Mackey (2013).
- Tue May 28
 - Topic 01: Predictive Modelling in Teaching and Learning (Lang et al. 2017, Ch.: 5 & 19) (*Elizabeth*)

- Topic 02: Explanatory Models of Educational Data (Lang et al. 2017, Ch.:6) (*Maxim*)
- Thu, May 30 NO CLASS (Himmelfahrt / Ascension Day)
- Tue, Jun 4
 - Topic 03: Content Analysis (Lang et al. 2017, Chs.: 8 & 17) (*Sebastian*)
 - Topic 04: NLP and Learning Analytics (Lang et al. 2017, Ch.:8) (*Teslin*)
- Thu, Jun 6
 - Topic 05: Discourse Analytics (Lang et al. 2017, Ch.:9) (*Svea*)
 - Topic 06: Emotional Learning Analytics (Lang et al. 2017, Ch.:10) (*Marta*)
- Jun 11/13: NO CLASS (Pfingsten / Pentecost)
- Tue, Jun 18
 - Topic 09: Providing feedback to learners (Lang et al. 2017, Chs.:14 & 17) (*Anna*)
 - Topic 10: Theory-driven implementations of LA (Lang et al. 2017, Ch.:15) (*Jerry*)
- Thu Jun 20: NO CLASS (Fronleichnam / Corpus Christi)
- Tue, Jun 25
 - Topic 08: Implementation Design (Lang et al. 2017, Ch.:13) (*Sarah*, pending confirmation)
- Thu, Jun 27
 - Topic 11: Learning trajectories (Schulze & Scholz 2018) (*Jingwen*)
 - Topic 12: Learner behavior in online learning courses (Gelan et al. 2018) (*Nina*)
- Tue, Jul 2
 - Topic 14: Teaching presence and student participation in blended courses (Rubio et al. 2018) (*Mihai*)
 - Topic 16: Ethical and privacy aspects in learning analytics (Lang et al. 2017, Ch. 29, Sclater et al. 2016) (*Xuefeng*)
- From **Jul 4** through **Jul 18**: Project work based on the analysis of existing data.
- Tue, Jul 23 & Thu Jul 25: Course wrap-up: presentations and conclusions

References

- Baayen, R. H. (2008). *Analyzing Linguistic Data. A Practical Introduction to Statistics using R*. Cambridge University Press.
- Chun, D. M. (2013). *Contributions of tracking user behavior to SLA research*, CALICO Journal, Equinox Publishing, vol. 10, pp. 256–262.
- Chun, D. M. (2016). The role of technology in SLA research. *Language Learning & Technology* 20(2), 98–115. URL <https://llt.msu.edu/issues/june2016/chun.pdf>.

- Gass, S. & A. Mackey (2013). *The Routledge Handbook of Second Language Acquisition*. Routledge Handbooks in Applied Linguistics. Taylor & Francis. URL <https://books.google.de/books?id=egzZ4PZbLwIC>.
- Gelan, A., G. Fastré et al. (2018). Affordances and limitations of learning analytics for computer-assisted language learning: a case study of the VITAL project. *Computer Assisted Language Learning* 31(3), 294–319. URL <https://doi.org/10.1080/09588221.2017.1418382>.
- Lang, C., G. Siemens, A. Wise & D. Gašević (eds.) (2017). *The Handbook of Learning Analytics*. Society for Learning Analytics Research. <https://solaresearch.org/hla-17>.
- Link, S. & Z. Li (2015). *Understanding online interaction through learning analytics: Defining a theory-based research agenda*, Equinox Publishing, vol. 13 of *Book Series CALICO Journal*, pp. 369–385.
- Meurers, D., K. D. Kuthy, F. Nuxoll, B. Rudzewitz & R. Ziai (2019). Scaling up intervention studies to investigate real-life foreign language learning in school. *Annual Review of Applied Linguistics* 39. URL <http://purl.org/dm/papers/Meurers.DeKuthy.ea-19.pdf>. To appear.
- Rubio, F., J. M. Thomas & Q. Li (2018). The role of teaching presence and student participation in Spanish blended courses. *Computer Assisted Language Learning* 31(3), 226–250. URL <https://doi.org/10.1080/09588221.2017.1372481>.
- Schulze, M. & K. Scholz (2018). Learning trajectories and the role of online courses in a language program. *Computer Assisted Language Learning* 31(3), 185–205. URL <https://doi.org/10.1080/09588221.2017.1360362>.
- Slater, N., A. Peasgood & J. Mullan (2016). Learning Analytics in Higher Education. A review of UK and international practice Full report. JISC Report. Retrieved from <https://osf.io/mp47b/>.
- Ziai, R., B. Rudzewitz, K. De Kuthy, F. Nuxoll & D. Meurers (2018). Feedback Strategies for Form and Meaning in a Real-life Language Tutoring System. In *Proceedings of the 7th Workshop on Natural Language Processing for Computer-Assisted Language Learning (NLP4CALL)*. ACL, pp. 91–98. URL <http://aclweb.org/anthology/W18-7110>.