



## Digitale Medien und Pädagogische Psychologie

WiSe 2019/2020

Thursdays, 12.00 (c.t) – 2.00 pm

Seminarraum 204, Europastraße 6, 72072 Tübingen

### Instructor

Prof. Dr. Christian Fischer

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### Teaching Assistant

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### Course Description

Im Mittelpunkt dieses Seminars steht die Auseinandersetzung mit digitalen Lehr-Lernumgebungen unter Gesichtspunkten von Lerntheorien der Pädagogischen Psychologie. Themenschwerpunkte sind unter anderem:

- (a) Konstruktivismus (z.B. visuelles Programmieren mit Scratch),
- (b) Adaptive Learning (z.B. intelligente Tutorensysteme wie die Cognitive Tutor Authoring Tools oder ALEKS),
- (c) Inquiry-based Learning (z.B. interaktive Simulationen mit PhET oder WISE),
- (d) Gameful Learning (z.B. im Einsatz von Lernplattformen wie GradeCraft) und
- (e) Situated Learning (z.B. digitale Communities of Practice von Lehrkräften in sozialen Netzwerken oder immersive, virtuelle Simulationen wie EcoLEARN).

Die Studierenden sollen sich dabei aktiv-konstruktive mit den digitalen Lehr-Lernumgebungen auseinandersetzen. Auf der Basis von Lerntheorien der Pädagogischen Psychologie und Befunden empirischer Forschung ist das Ziel des Seminars, praxisnahe Empfehlungen über den Einsatz digitaler Medien in diversen Kontexten geben zu können.

## Course Structure and Calendar

Week	Date	Topic
01	24.10.2019	Introduction
02	31.10.2019	Session planning time / No class (Prof. Fischer is in the USA)
03	07.11.2019	Constructionism
04	14.11.2019	Constructionism
05	21.11.2019	Adaptive Learning
06	28.11.2019	Adaptive Learning
07	05.12.2019	Inquiry-based Learning
08	12.12.2019	Inquiry-based Learning
09	19.12.2019	Gameful Learning
10	09.01.2020	Gameful Learning
11	16.01.2020	Situated Learning
12	23.01.2020	Situated Learning
13	30.01.2020	Reflection and Outlook
14	06.02.2020	Blog-Post Feedback Session

## Course Materials

All readings will be uploaded to the ILIAS folder.

Topic	Readings
Constructionism	<p><b>Required:</b> Resnick, M., Maloney, J., Monroy-Hernandez, A., Rusk, N., Eastmond, E., Brennan, K., ... Kafai, Y. (2009). Scratch: Programming for all. <i>Communications of the ACM</i>, 52(11), 60–67.</p> <p><b>Optional:</b> Ted Talk - Mitch Resnick;  <a href="https://www.ted.com/talks/mitch_resnick_let_s_teach_kids_to_code">https://www.ted.com/talks/mitch_resnick_let_s_teach_kids_to_code</a></p> <p>Maloney, J. H., Peppler, K., Kafai, Y., Resnick, M., &amp; Rusk, N. (2008). Programming by choice: Urban youth learning programming with scratch. <i>ACM SIGCSE Bulletin</i>, 40(1), 367–371.</p> <p>Maloney, J., Resnick, M., Rusk, N., Silverman, B., &amp; Eastmond, E. (2010). The Scratch programming language and environment. <i>ACM Transactions on Computing Education</i>, 10(4), 1–15.  <a href="https://doi.org/10.1145/1868358.1868363">https://doi.org/10.1145/1868358.1868363</a></p>

Adaptive Learning	<p><b>Required:</b> Koedinger, K., &amp; Corbett, A. (2006). Cognitive Tutors: Technology Bringing Learning Sciences to the Classroom. In R. K. Sawyer (Ed.), <i>The Cambridge handbook of: The learning sciences</i> (pp. 61–77). New York, NY: Cambridge University Press.</p> <p><b>Optional:</b> Canfield, W. (2001). ALEKS: A web-based intelligent tutoring system. <i>Mathematics and Computer Education</i>, 152–158.</p> <p>Craig, S. D., Hu, X., Graesser, A. C., Bargagliotti, A. E., Sterbinsky, A., Cheney, K. R., &amp; Okwumabua, T. (2013). The impact of a technology-based mathematics after-school program using ALEKS on student’s knowledge and behaviors. <i>Computers &amp; Education</i>, 68, 495–504. <a href="https://doi.org/10.1016/j.compedu.2013.06.010">https://doi.org/10.1016/j.compedu.2013.06.010</a></p> <p>Koedinger, K. R., &amp; Aleven, V. (2007). Exploring the Assistance Dilemma in Experiments with Cognitive Tutors. <i>Educational Psychology Review</i>, 19(3), 239–264. <a href="https://doi.org/10.1007/s10648-007-9049-0">https://doi.org/10.1007/s10648-007-9049-0</a></p>
Inquiry-based Learning	<p><b>Required:</b> Perkins, K., Adams, W., Dubson, M., Finkelstein, N., Reid, S., Wieman, C., &amp; LeMaster, R. (2006). PhET: Interactive simulations for teaching and learning Physics. <i>The Physics Teacher</i>, 44(1), 18–23. <a href="https://doi.org/10.1119/1.2150754">https://doi.org/10.1119/1.2150754</a></p> <p><b>Optional:</b> Linn, M. C., Lee, H.-S., Tinker, R., Husic, F., &amp; Chiu, J. L. (2006). Teaching and assessing knowledge integration in science. <i>Science</i>, 313(5790), 1049–1050.</p> <p>Moore, E. B., Chamberlain, J. M., Parson, R., &amp; Perkins, K. K. (2014). PhET interactive simulations: Transformative tools for teaching chemistry. <i>Journal of Chemical Education</i>, 91(8), 1191–1197. <a href="https://doi.org/10.1021/ed4005084">https://doi.org/10.1021/ed4005084</a></p> <p>Varma, K., &amp; Linn, M. C. (2012). Using interactive technology to support students’ understanding of the greenhouse effect and global warming. <i>Journal of Science Education and Technology</i>, 21(4), 453–464. <a href="https://doi.org/10.1007/s10956-011-9337-9">https://doi.org/10.1007/s10956-011-9337-9</a></p> <p>Wieman, C. E., Adams, W. K., &amp; Perkins, K. K. (2008). PhET: Simulations that enhance learning. <i>Science</i>, 322(5902), 682–683.</p>
Gameful Learning	<p><b>Required:</b> Holman, C., Aguilar, S., &amp; Fishman, B. (2013). GradeCraft: What can we learn from a game-inspired learning management system? <i>Proceedings of the Third International Conference on Learning Analytics and Knowledge</i>, 260–264. Retrieved from <a href="http://dl.acm.org/citation.cfm?id=2460350">http://dl.acm.org/citation.cfm?id=2460350</a></p> <p><b>Optional:</b> Ted Talk – Cait Holman <a href="https://www.youtube.com/watch?v=k0NaJpQbwA0">https://www.youtube.com/watch?v=k0NaJpQbwA0</a></p> <p>Aguilar, S. J., Holman, C., &amp; Fishman, B. (2014). <i>Multiple Paths, Same Goal: Exploring the Motivational Pathways of Two Distinct Game-Inspired University Course Designs</i>. <a href="https://doi.org/10.13140/RG.2.1.2685.6488">https://doi.org/10.13140/RG.2.1.2685.6488</a></p> <p>Gee, J. P. (2005). Learning by design: Good video games as learning machines. <i>E-Learning and Digital Media</i>, 2(1), 5–16.</p>

Situated Learning	<p><b>Required:</b> Shaltry, C., Henriksen, D., Wu, M. L., &amp; Dickson, W. P. (2013). Situated Learning with Online Portfolios, Classroom Websites and Facebook. <i>TechTrends</i>, 57(3), 20–25. <a href="https://doi.org/10.1007/s11528-013-0658-9">https://doi.org/10.1007/s11528-013-0658-9</a></p> <p><b>Optional:</b> Kamarainen, A. M., Metcalf, S., Grotzer, T., Browne, A., Mazzuca, D., Tutwiler, M. S., &amp; Dede, C. (2013). EcoMOBILE: Integrating augmented reality and probeware with environmental education field trips. <i>Computers &amp; Education</i>, 68, 545–556. <a href="https://doi.org/10.1016/j.compedu.2013.02.018">https://doi.org/10.1016/j.compedu.2013.02.018</a></p> <p>Lave, J. (1991). Situating learning in communities of practice. <i>Perspectives on Socially Shared Cognition</i>, 2, 63–82.</p> <p>Metcalf, S., Kamarainen, A., Tutwiler, M. S., Grotzer, T., &amp; Dede, C. (2011). Ecosystem science learning via multi-user virtual environments. <i>International Journal of Gaming and Computer-Mediated Simulations</i>, 3(1), 86–90.</p>
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## Course Assignments

In order to pass the course, the following course components are required.

Components	Format	Requirements
Attendance	Sign on the attendance sheet	<ul style="list-style-type: none"> <li>• Students should come prepared to each course section (e.g., complete the required reading materials for each topic)</li> <li>• Students can skip a maximum of 2 classes without reason.</li> <li>• For the 3rd absence the student is required to submit an additional essay (see Zusatzexzerpt Leitfaden) by the end of the semester.</li> </ul>
Session experts	In-class presentation	<ul style="list-style-type: none"> <li>• Groups are required to meet with Prof. Fischer at least a week before the 1st course session with detailed session plans</li> <li>• 1-Person: Guided exploration of learning platform (with learning theories in mind)</li> <li>• 2-3 Persons: Guided exploration of learning platform (with learning theories in mind) AND learning theory background</li> </ul>
Blog post	Blog post for <a href="https://lead.schule/blog/">https://lead.schule/blog/</a> <ul style="list-style-type: none"> <li>• 750-1,000 words</li> <li>• APA-Style, 6<sup>th</sup> edition</li> <li>• At least 2 references further information</li> <li>• Writing style for a general audience of teachers, educational policy makers, parents, and journalists</li> </ul>	<ul style="list-style-type: none"> <li>• Submit a first draft a week after the second topic session</li> <li>• 1<sup>st</sup> Revision on 30.01.20 (one week before Blog Post Feedback session)</li> <li>• 2<sup>nd</sup> Revision: 06.02.20 (Blog-Post Feedback session)</li> <li>• Final submission: 13.02.20</li> </ul>

## Course Policies

### **Participation**

Learning is a collaborative process, and this course is structured around the assumption of active collaboration and co-ownership. Although I take responsibility for the overall design and direction of the course, you share the responsibility of creating a vibrant intellectual environment and fruitful dialogue. Therefore, please read each assigned reading carefully and come to each class and lab meeting prepared to participate actively and respectfully, to ask questions, to discuss the salient issues and problems that emerge from the readings, and to utilize and contribute your knowledge and professional experiences in addressing the course material. Active, thoughtful, respectful participation and contribution in class and lab activities are required in this course.

### **Plagiarism**

The intentional or unintentional use of the ideas or words of another person or an organization without citing the source appropriately-- is among the most stigmatizing of academic offenses. Plagiarism in any form will not be tolerated in this course and will result in a failing grade on the associated assignment and a report to the appropriate institutional authorities. Please see <https://uni-tuebingen.de/einrichtungen/zentrum-fuer-datenverarbeitung/dienstleistungen/sonstiges/plagiatspraevention>

### **Accommodations for Students with Disabilities**

If you need an accommodation for a disability, please speak with me at your earliest convenience. Some aspects of this course may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work together with the Student Counseling Service ([zsb@uni-tuebingen.de](mailto:zsb@uni-tuebingen.de)) to help us determine appropriate academic accommodations. Please see <https://uni-tuebingen.de/studium/beratung-und-info/studieren-mit-behinderung-oder-chronischer-erkrankung/>

### **Discrimination/Harassment**

No member of this learning community should be subject to discrimination of any kind and/or harassment, as these practices have no place in this community, and in a just society. Please refer to the following websites for Gender Equality and Diversity Committee: <https://uni-tuebingen.de/fakultaeten/wirtschafts-und-sozialwissenschaftliche-fakultaet/fakultaet/gremien/fakultaet/gleichstellungskommission/>

### **Diversity/Social Justice**

It is my intention to facilitate this course in ways that acknowledge and respect all aspects of diversity. This includes respect for ideas and practices related to gender, sexuality, disability, religion, age, socio-economic status, race, ethnicity, and culture. Not only must we have respect for each other relative to diversity, but we must also examine how issues of diversity interact with course themes.

### **Students' Rights and Responsibilities**

Membership in the academic community that is the University of Tübingen affords you a number of necessary rights, as well as a number of essential responsibilities. Please see <https://uni-tuebingen.de/studium/beratung-usnnd-info/>