



Hannover
2018

ZMW
Tagung

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Vom Leuchtturm in die Breite

Empirische Evidenz zu erfolgreicher digitaler Lehre

PD Dr. Malte Persike



persike@uni-mainz.de



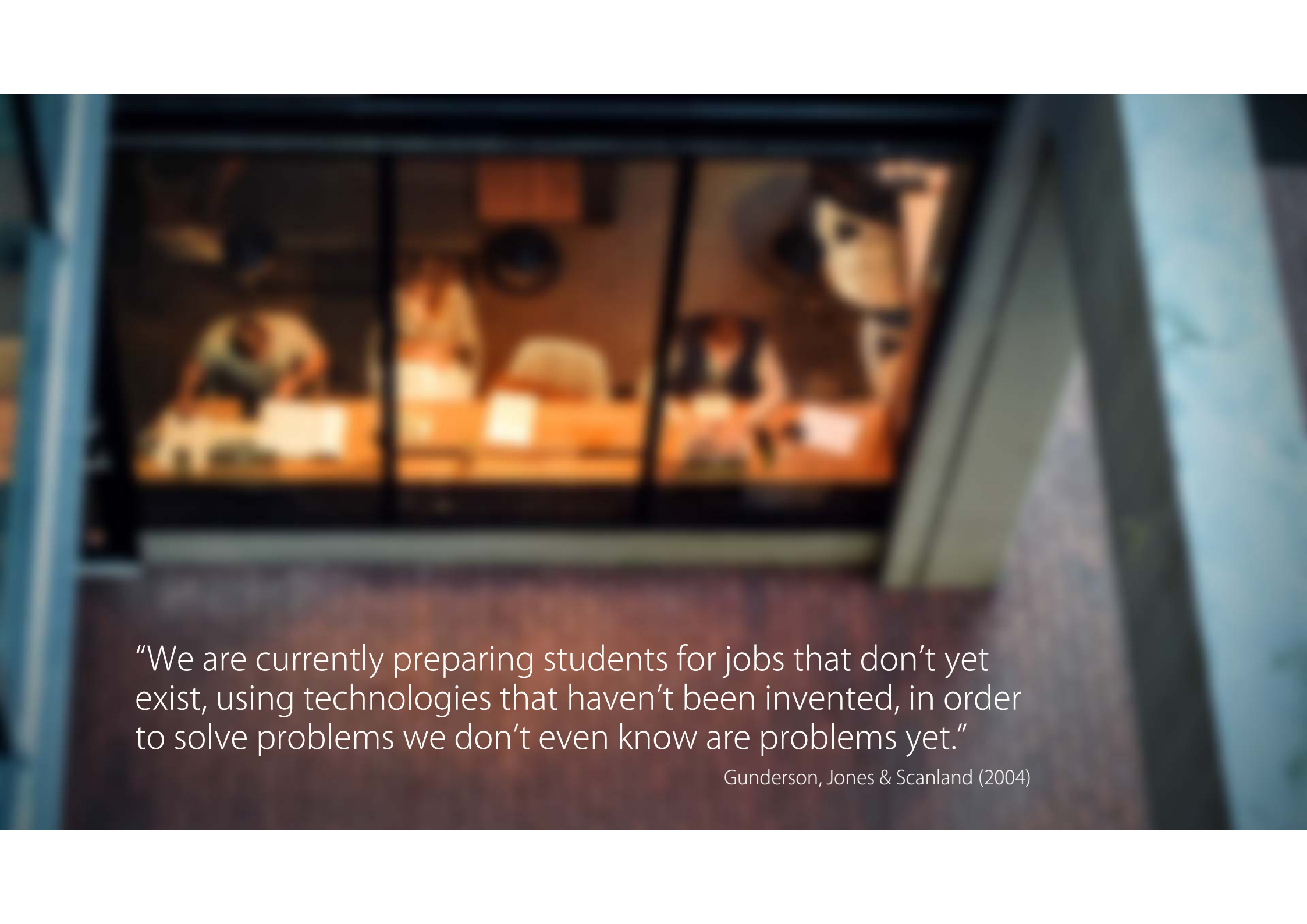
methodenlehre.com



twitter.com/methodenlehre



plus.google.com/+methodenlehren

A blurred photograph showing a classroom through a window. Several students are visible, sitting at desks and working. The scene is dimly lit, with light coming from the window. The image is out of focus, emphasizing the text overlay.

“We are currently preparing students for jobs that don’t yet exist, using technologies that haven’t been invented, in order to solve problems we don’t even know are problems yet.”

Gunderson, Jones & Scanland (2004)

Lernen mit Digitalen Medien

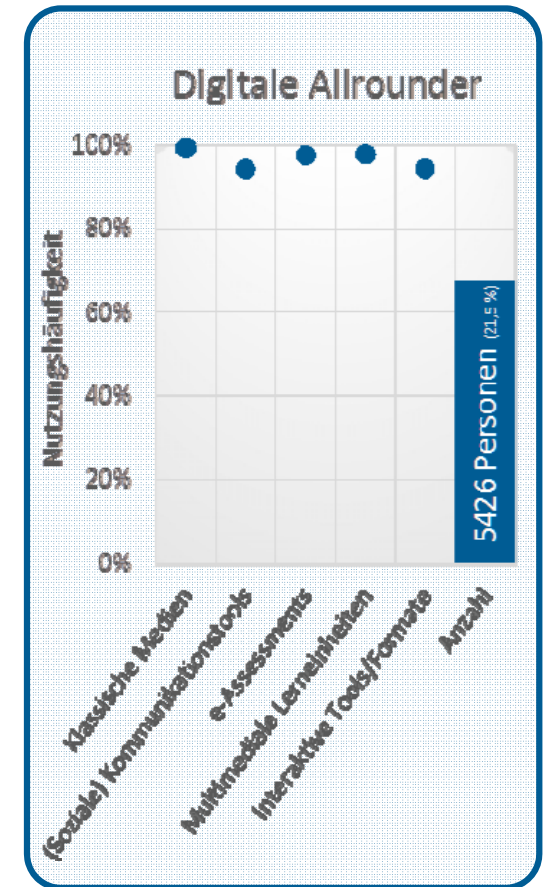
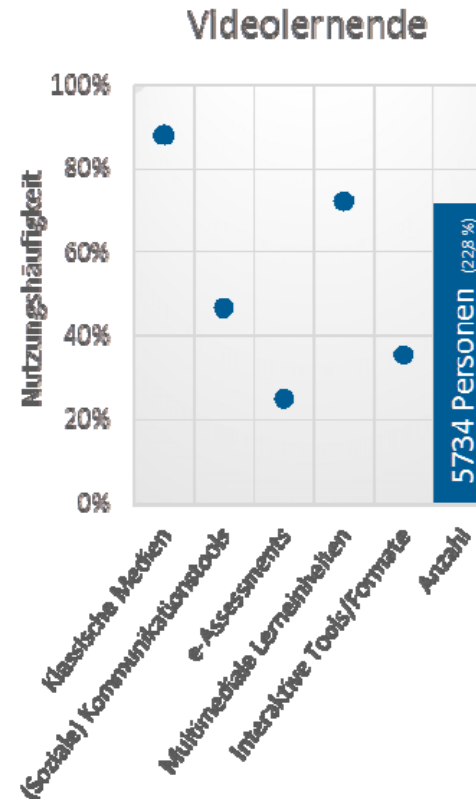
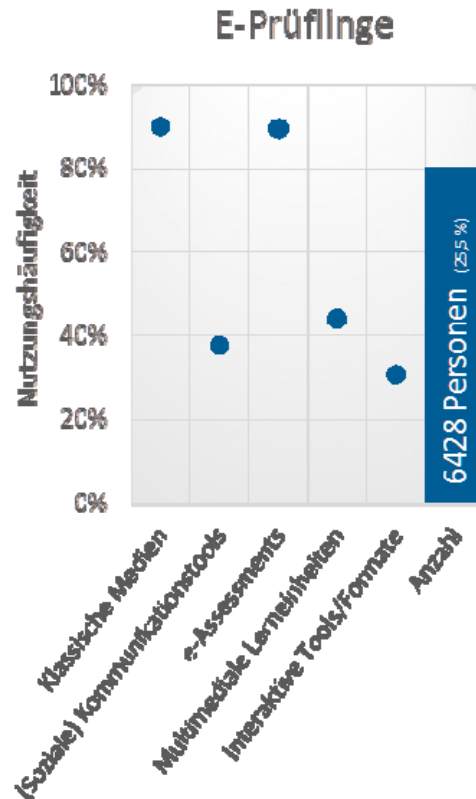
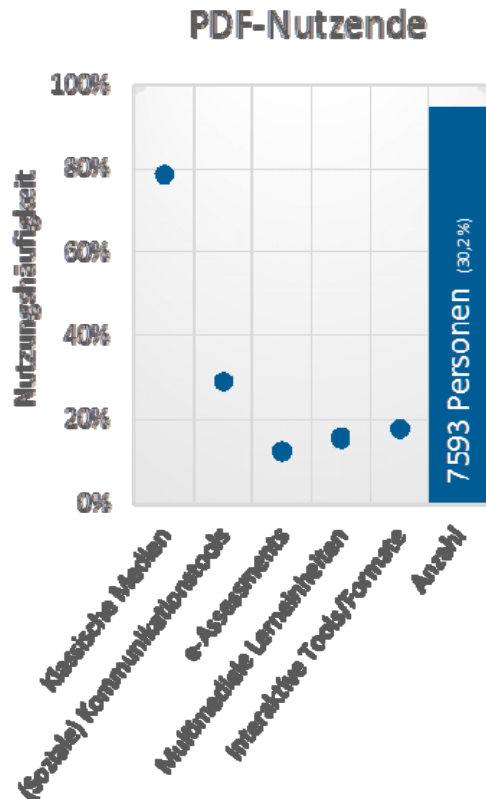
Papier oder Pixel?



Lernen mit digitalen Medien aus Studierendenperspektive

Studie mit n = 27,473 Studierenden

Persike & Friedrich (2016)



Videos in der Lehre

Die digitale Allzweckwaffe





Persike, M. (im Druck). Videos in der Lehre: Wirkungen und Nebenwirkungen. In: Weinberger (Hrsg.). *Handbuch Bildungstechnologien*. Berlin: Springer.



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Digitalisierung
aus Studierendensicht

Online Lernen
Wirksamkeit

Blended
Learning
Anspruch und Evidenz

Präsenzphase
im Blended Learning

Die Lehrenden
Ansichten und Effekte

Videos in der Lehre

„Dann kommt ja keiner mehr!“

Anwesenheitszahlen
sinken leicht, allerdings
selten um mehr als 25%.

Optional student use of online lecture resources: resource preferences, performance and lecture attendance

M. Grabe & K. Christopherson

Department of Psychology, University of North Dakota, Grand Forks, North Dakota, USA

Abstract

One of the most common uses of a course management system in the on-campus environment is to offer lecture resources to students. Few researchers have investigated how students use such resources that offer a representation of the audio recording and the relationship of attendance. The present research is designed to investigate the benefits of providing students with a practical way to apply audio recordings. We suggest audio recordings are less useful than text-based lecture recordings, and examination performance was a significant negative correlation. Students in this study were not successful in compensating for viewing lecture resources, the additional investigation.

Routledge
Taylor & Francis Group

Teaching of Psychology, 35, 91-95, 2008
Copyright © Taylor & Francis Group, LLC
ISSN: 0098-6283 print / 1532-8023 online
DOI: 10.1080/00986280802004660

FACULTY FORUM

If You Post It, Will They Come? Lecture Availability in Introductory Psychology

M. Christina Hove and Kevin J. Corcoran
University of Cincinnati

Web-enhanced educational programs such as Blackboard (2003; <http://www.blackboard.com/>) provide opportunities for instructors to make supplemental course materials available to students. However, little research has investigated the effects of unlimited access to course lectures on achievement and attendance in traditional postsecondary classroom settings. Thus, we investigated the effect of lecture presentation availability on class attendance and academic performance in 2 sections of introductory psychology courses. Students with unlimited access to lecture presentations earned significantly higher grades than students who did not have similar access. Although we did not find significant differences in attendance between classes, attendance moderated the relation between class format and course grade. We discuss further implications and future research.

Educators are increasingly using academic Web sites to supplement information presented in the classroom (Campus Computing Project, 2001). Research suggests that psychology faculty view the Internet as an effective teaching tool (Vodanovich & Piotrowski, 2001). Consistent with these findings, a recent national survey found that 72.1% of college seniors reported the use of presentation software in their classes, 67.4% reported the use of Web-enhanced educational programs in their classes, and 62.2% reported the use of dedicated Web sites in their classes (Katz, 2006). Although previous research has examined the educational efficacy of

Jones, & Hodges, 2005) with online materials, research has not examined the effects of making lecture presentations available via the Web to students in traditional postsecondary classes. As educational technologies, such as the Internet, provide greater opportunities for unlimited access to course materials, professors are left to question whether such increased availability will improve or impede academic achievement.

Previous research regarding the effects of supplemental course materials on academic achievement has produced inconsistent results. Some studies have not found significant academic gains associated with supplementing traditional postsecondary class procedures with online materials. For example, Brothen and Wambach (2001) found a negative correlation between online study questions and quiz scores. Similarly, DeBord et al. (2004) did not find academic gains associated with optional Web site activities supplementary to a traditional college class. Conversely, other studies have demonstrated academic gains associated with the supplementation of traditional classes and class materials. Grimstad and Grube (2004) found that college students who voluntarily completed supplemental online questions related to course content obtained significantly higher grades than students who did not use the supplemental questions. Similarly, Heffner and Cohen (2005) found positive correlations between academic performance and supplemental course-specific Web sites. As these studies demonstrate, it is difficult to come to any conclusions regarding the efficacy of supplementing traditional postsecondary classes

beyond the generation of categories of CMS use could mean many different elements that offer students the opportunity to expand on the lecture rather than just offer files. Included within our CMS to offer files of the lectures on the computer. The student use of the network provided a framework for evaluating

Education Tech Research Dev (2010) 58:19-37
DOI 10.1007/s11423-009-9128-7

RESEARCH ARTICLE

Impact of class lecture webcasting on attendance and learning

Tomoko Traphagan · John V. Kucsera · Kyoko Kishi

Oder auch **nicht**.

^b Educational Communication and Technology Program, New York University, United States



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Online Lernen
Wirksamkeit

Blended
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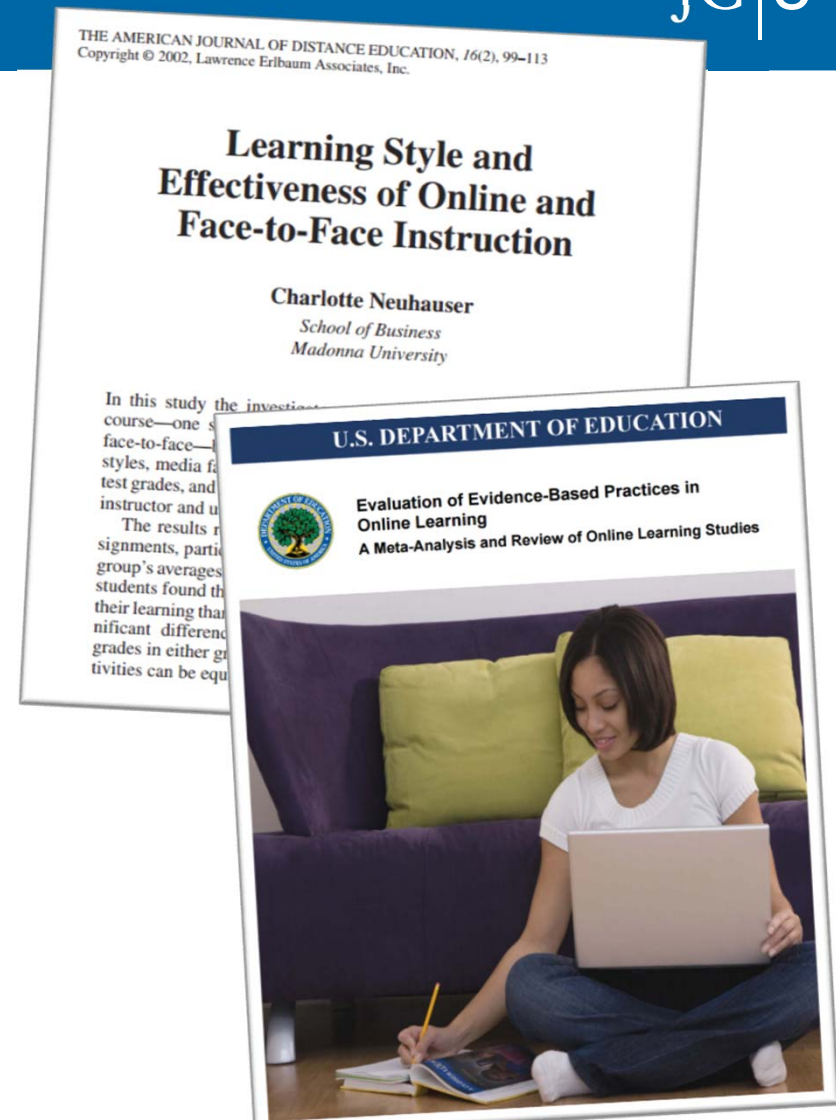
Präsenzphase
im Blended Learning

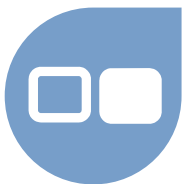
Die Lehrenden
Ansichten und Effekte

Digitales Lernen

Effektivität Digitaler Lernmedien

Lernen mit digitalen
Medien (z.B. Video) zeigt
empirisch **keine**
systematischen
Vorteile gegenüber
klassischen Lernsettings





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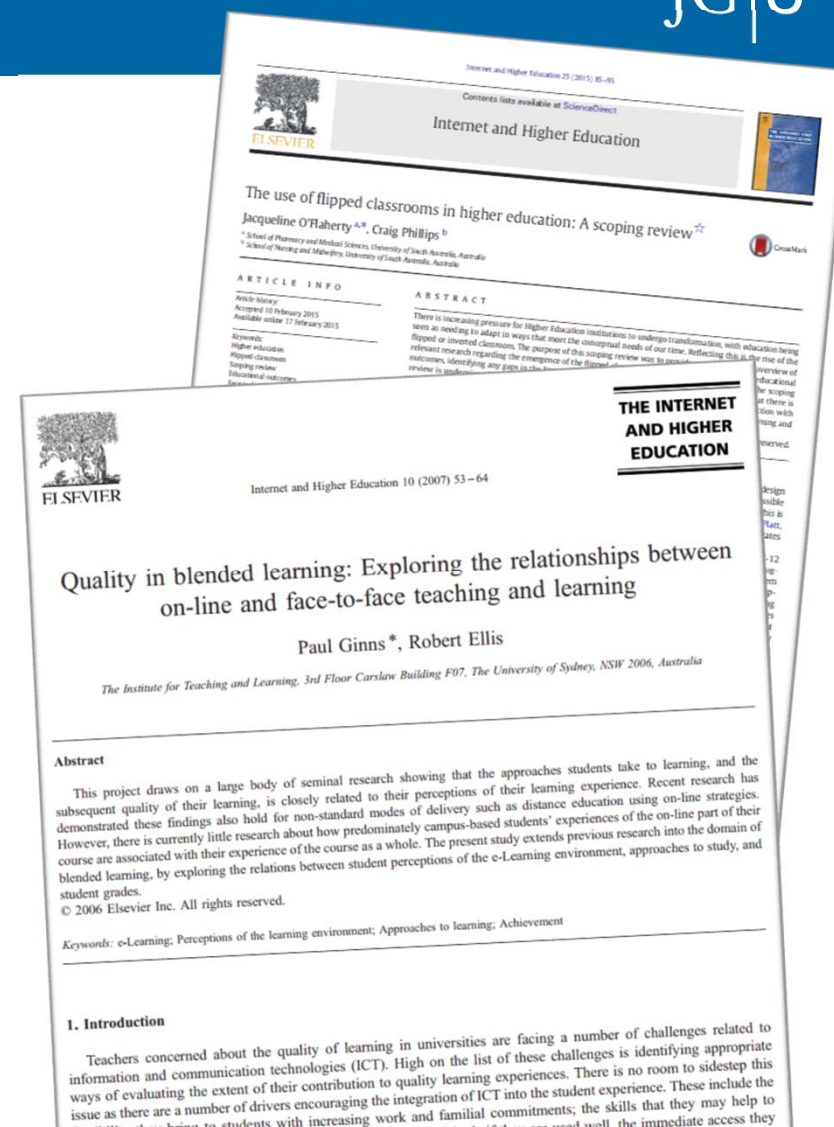
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Die Lehrenden
Ansichten und Effekte

Digitales Lernen

Effektivität Digitaler Lernmedien

„Offloading content and engaging students [...] is more important than the specific resources used”... leading straight to the idea of blended learning



A photograph of a person with long blonde hair, wearing a blue shirt, sitting at a desk and writing in a spiral notebook with a black pen. On the desk, there is a white coffee cup on a saucer, a laptop, and another notebook. The background is slightly blurred, showing a typical office or study environment. The text 'Blended Learning' and 'Primat Präsenzphase' is overlaid on the right side of the image in white.

Blended Learning

Primat Präsenzphase



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Blended Learning

Erwartungen...



Lernen stärker personalisieren und individualisieren

Horn & Staker (2014)



Lernen effektiver und effizienter machen

Garrison & Kanuka (2004)



Engagement und Motivation generieren

Dringus & Seagull (2013)



Anteil kollaborativen Arbeitens erhöhen

So & Brush (2008)





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Die Lehrenden
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Blended Learning

... und Effekte

Workload, gemessen
als Zeitlast, steigt
signifikant an, zum Teil
um mehr als 100%.

International Journal of Software Engineering and its Applications
Vol. 9, No. 2 (2015), pp. 41-46
<http://dx.doi.org/10.14257/ijseia.2015.9.2.04>

Effectiveness of Flipped learning in Project Management Class

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Beomil-ro 579beon-gil, Gangneung-si, Gangwon-do, Korea

Abstract

Students' project management topic is difficult to understand since they lack of practical experiences before the class. To increase the effectiveness of flipped learning, this study examined the effectiveness of flipped learning. Flipped learning is a learning method in which students have no

Lim, D. H., & Morris, M. L. (2009). Learner and Instructional Factors Influencing Learning Outcomes within a Blended Learning Environment. *Educational Technology & Society*, 12 (4), 282-293.

Learner and Instructional Factors Influencing Learning Outcomes within a Blended Learning Environment

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ABSTRACT

Among the many studies focusing on the effect of learner and instructional variables on learning outcomes, few studies have investigated the effect of these variables and their mediating mechanisms influencing students' learning within a blended learning environment. This study examined the influence of instructional and learner variables on learning outcomes for a blended instruction course offered for undergraduate students. Data analysis indicated that age, prior experiences with distance learning opportunities, preference in delivery format, and average study time are those learner antecedents differentiating learning outcomes among groups of college students. From a regression analysis, the influence of learner, instructional, and motivational variables on learning outcomes found to be consolidated around one variable in learning application.

Keywords

Blended instruction, Instructional variables, Learner variables, Learning motivation

Introduction

As a result of the advancement in communication and network technologies, more innovative instructional delivery and learning solutions have emerged in order to provide meaningful learning experiences for learners in academic settings. Blended instruction is one of the various methods being used to deliver meaningful learning experiences. The use of blended instruction is growing rapidly because instructors believe diverse delivery methods may significantly enhance learning outcomes as well as increase student satisfaction from the learning experience. Previous research has indicated instructional delivery methods, reasons that help explain this learning decline include a lack of human interaction (Laurillard, 1993), acute learning curves in adjusting to the new technology tools, delayed feedback, procrastination in learning (Lim, 2002), and lower motivation to read online learning materials (Lim & Kim, 2003). In order to eliminate the deleterious effects associated with the sole use of technology-based learning methods, many colleges and universities have adopted various forms of blended instruction to more effectively deliver instructional content to students and promote their learning.

Research has suggested a number of reasons in support of using blended instruction. Osguthorpe and Graham (2003) found that blended instruction methods improved pedagogy, increased access to knowledge, fostered social interaction, increased the amount of teacher presence during learning, improved cost effectiveness, and enhanced ease of revision. Similarly, Chung and Davis (1995) reported that blended instruction provided learners with greater control over the pace of learning, instructional flow, selection of resources, and time management. In studies involving self-regulated and interpersonal learners, blended instruction was found to be effective in addressing diverse learning styles (Bielawski & Metcalf, 2003). While these findings support the positive effect of blended instruction on individual learner's learning, there is a lack of research to examine what learner and instructional variables within blended learning environment individually or collectively influence student learning especially in academic settings.

A lingering research question in college education is determining if traditional instructional methodologies satisfy high level learning needs like having opportunities to apply, synthesize, and integrate students' learning experiences throughout their learning processes as well as low level learning needs like the acquisition of information, knowledge, and skills. Previous research suggests that reinforcement of learning is amplified when students are given in-class opportunities to practice and apply what they have learned, or see how they can apply what they have learned upon returning to their jobs.



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im Blended Learning

Die Lehrenden
Ansichten und Effekte

Blended Learning

... und Effekte

Lehrevaluation

verändert sich eher
wenig, Zufriedenheit ist
abhängig vom Lernstil.





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Wirksamkeit

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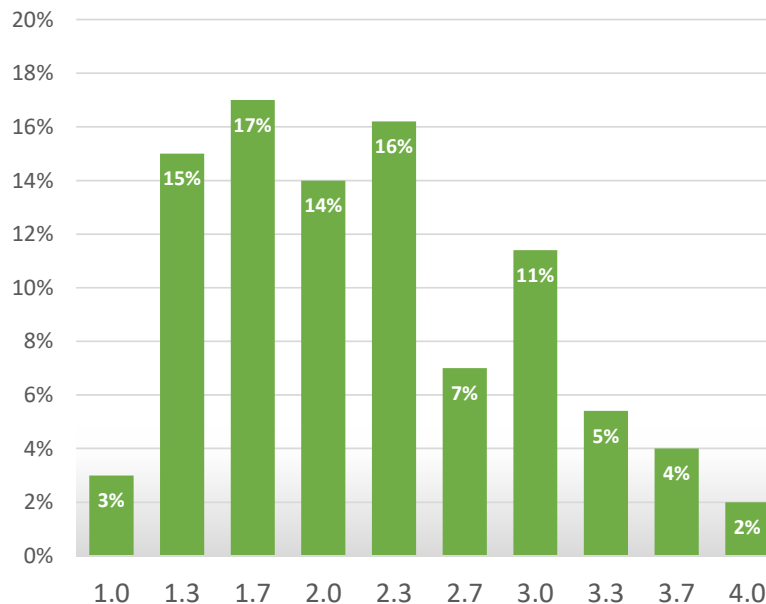
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Die Lehrenden
Ansichten und Effekte

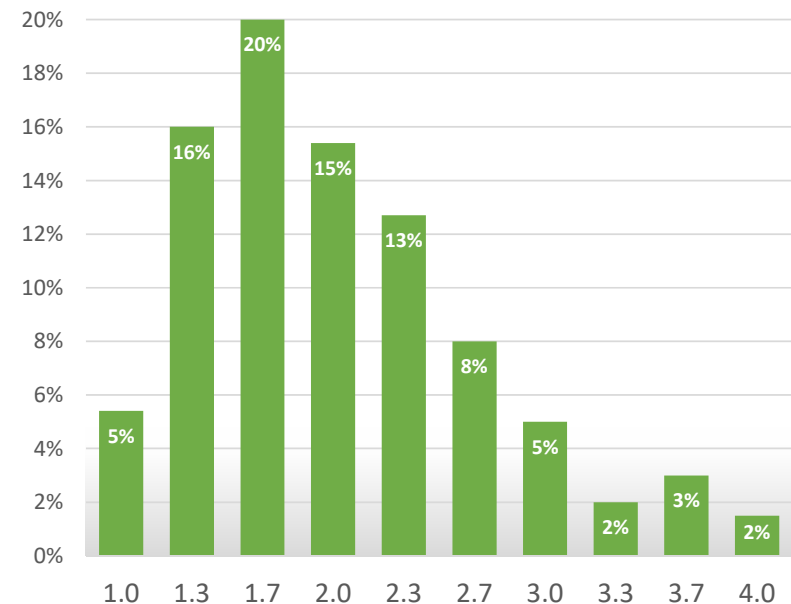
Blended Learning

Anekdotische Evidenz: Der Anti-Matthäus-Effekt im Flipped Classroom

Konventionell (bis SoSe 2012; MW = 2.35)



Blended Learning (ab SoSe 2013; MW = 2.36)



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Online Lernen
Wirksamkeit

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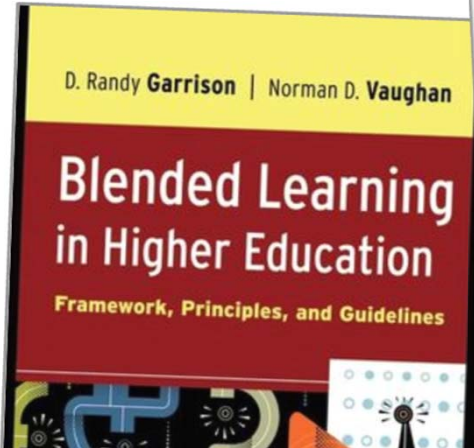
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im Blended Learning

Die Lehrenden
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Blended Learning

Online oder Präsenz - worauf kommt es an?

Der Erfolg von Blended Learning entsteht vor allem in der **Präsenzphase**.



Nicht Anreichern sondern Integrieren – Neue Mehrwerte durch Digitalisierung

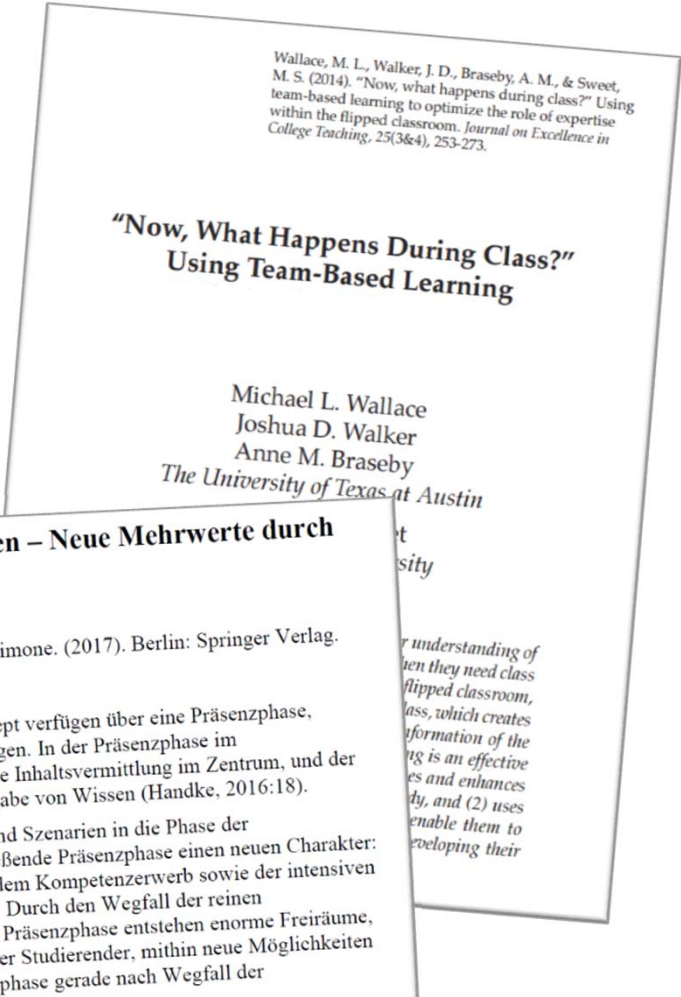
Jürgen Handke

Erscheint in „Handbuch Gute Lehre“ – Kauffeld, Simone. (2017). Berlin: Springer Verlag.

3 Die ‚neue‘ Präsenzphase

Sowohl Anreicherungs- als auch Integrationskonzept verfügen über eine Präsenzphase, allerdings mit völlig unterschiedlichen Ausprägungen. In der Präsenzphase im Anreicherungskonzept (Abb. 1) steht die klassische Inhaltsvermittlung im Zentrum, und der Hörsaal dient primär der lehrerzentrierten Weitergabe von Wissen (Handke, 2016:18).

Bei vollständiger Integration digitaler Elemente und Szenarien in die Phase der Inhaltsvermittlung (Abb. 2) bekommt die anschließende Präsenzphase einen neuen Charakter: Sie dient nun idealerweise der Inhaltsvertiefung, dem Kompetenzerwerb sowie der intensiven Auseinandersetzung mit den jeweiligen Inhalten.¹ Durch den Wegfall der reinen Wissensvermittlung in einer derart ausgestalteten Präsenzphase entstehen enorme Freiräume, und es bleibt mehr Zeit für die Betreuung einzelner Studierender, mithin neue Möglichkeiten der Individualisierung. Dadurch wird die Präsenzphase gerade nach Wegfall der



Die Präsenzphase

Formate und Methoden





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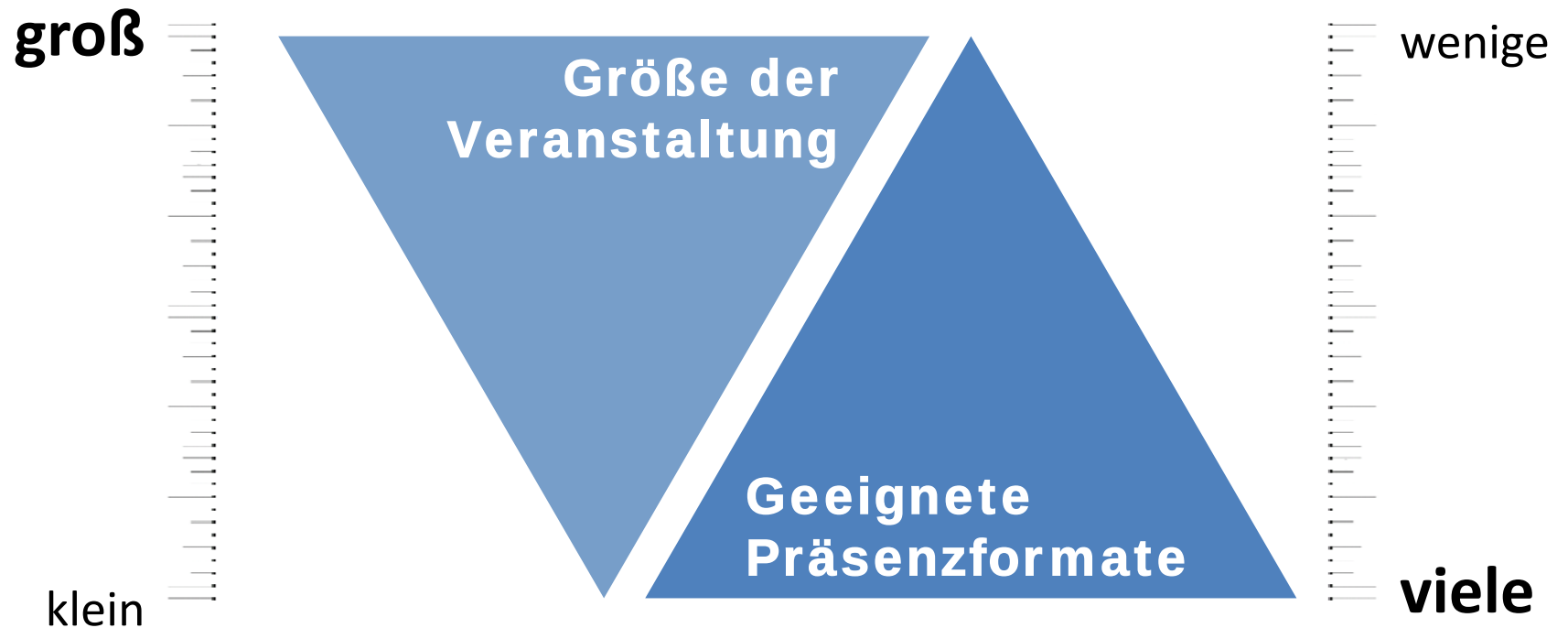
**Blended
Learning**
Anspruch und Evidenz

Präsenzphase
im Blended Learning

Die Lehrenden
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Skalierbarkeit

Das Grundproblem



Think! Pair! Share!

1.

?



überlegen

2.



austauschen

3.



und vortragen



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Think-Pair-Share

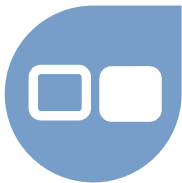
Empirische Evidenz

Probanden in der Think-Pair-Share Gruppe erzielten **signifikant bessere Leistungen** durch die Ko-Konstruktion von Wissen beim kollaborativen Arbeiten.

The effect of pair work on a word-building task

Sasan Baleghizadeh

This paper reports on a study that was carried out to investigate the effect of pair work on a word-building task in two EFL classes. Forty Iranian adult students participated in this study. The participants in the experimental group completed the word-building task in pairs following the Think-Pair-Share technique, whereas the participants in the control group did the same task individually. Results of the data analysis showed that the participants in the experimental group achieved significantly higher scores on the given task than the participants in the control group. This indicates that the students' joint efforts while collaborating with each other are likely to result in co-construction of morphological knowledge.



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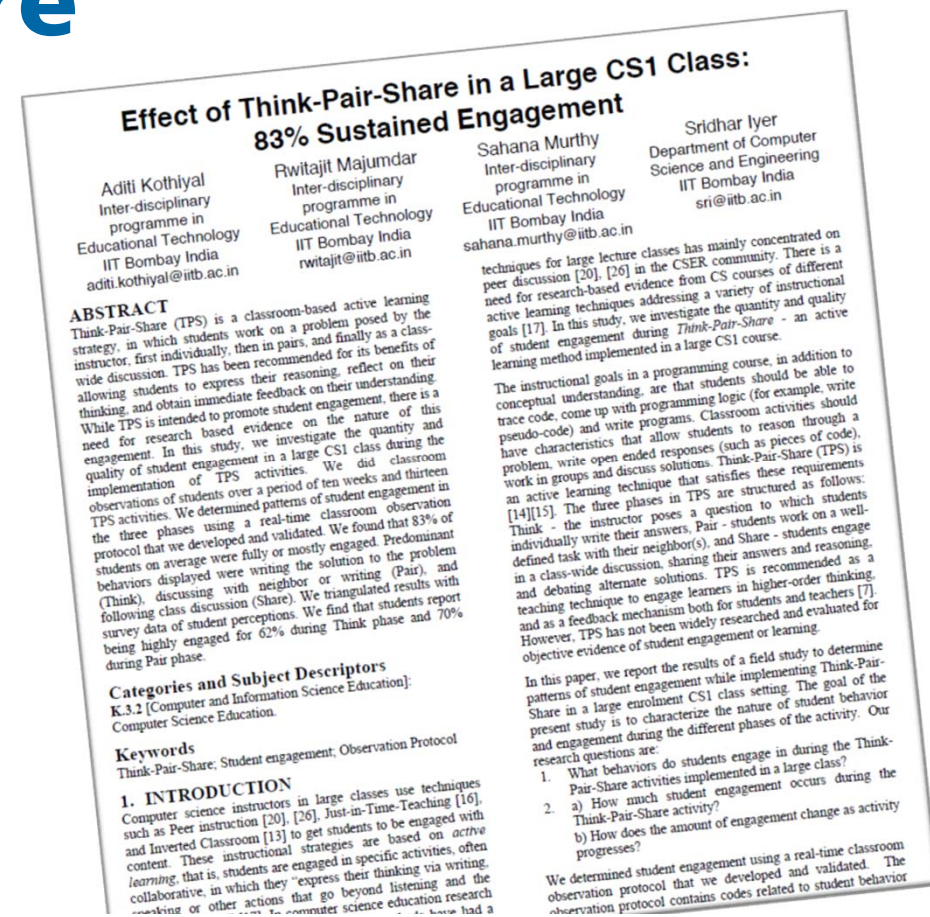
Präsenzphase
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Think-Pair-Share

Empirische Evidenz

Think-Pair-Share erzielt
deutlich höhere **Aktivierung**
der Studierenden und
reduziert mentalen
Absentismus.





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Think-Pair-Share

Empirische Evidenz

Der Erfolg von Think-Pair-Share hängt stark von **dyadischen Beziehungen** innerhalb der gebildeten Paare ab.

Und von einer wirksamen Verhinderung des **Social Loafing**

Language Teaching Research 11,2 (2007); pp. 143–159

Investigating the merits of pair work on a text editing task in ESL classes

Neomy Storch *University of Melbourne, Australia*

Although the literature on language pedagogy encourages the use of pair work in second language classroom, students sometimes seem reluctant to work in pairs. This study investigated the merits of pair work on a text editing task and by analysing the results of individual work on an editing task and by analysing the results of pair work on an editing task.

INTERPERSONAL RELATIONS AND GROUP PROCESSES

Social Loafing: A Meta-Analytic Review and Theoretical Integration

Steven J. Karau and Kipling D. Williams

Social loafing is the tendency for individuals to expend less effort when working collectively than when working individually. A meta-analysis of 78 studies demonstrates that social loafing is robust and generalizes across tasks and S populations. A large number of variables were found to moderate social loafing. Evaluation potential, expectations of co-worker performance, task meaningfulness, and culture had especially strong influence. These findings are interpreted in the light of a Collective Effort Model that integrates elements of expectancy-value, social identity, and self-validation theories.

Many of life's most important tasks can only be accomplished in groups, and many group tasks are collective tasks that require the pooling of individual members' inputs. Government task forces, sports teams, organizational committees, symphony orchestras, juries, and quality control teams provide but a few examples of groups that combine individual efforts to form a single product. Because collective work settings are so pervasive and indispensable, it is important to determine which factors motivate and demotivate individuals within these collective contexts. Intuition might lead to the conclusion that working with others should increase individual effort.

suggest means for devising interventions by which social loafing may be reduced or overcome in everyday groups and organizations. Latané, Williams, & Harkins (1979) even suggested that social loafing is a type of social disease, having "negative consequences for individuals, social institutions, and societies" (p. 831). Perhaps as a result of this characterization, social loafing research has been focused on identifying conditions under which the effect can be reduced or eliminated. No studies have been designed to determine what factors increase social loaf- ing. This emphasis on identifying conditions under which social loaf- ing is reduced or eliminated is a narrow view of the phenomenon.

Wikis in der Lehre

- ⊕ FAQ, Glossar, Skriptum für einen Kurs (kollaborativ)
- ⊕ e-Portfolio (z.B. für Forschungsprojekte)
- ⊕ Aggregation von Web-Ressourcen, Webquests („OER“)
- ⊕ Bereich für Diskussionen und Debatten
- ⊕ Rollenspiel und Peer-Feedback (Author vs. Reviewer)
- ⊕ Download-Bereich

Kollaborative Wissensaufbereitung



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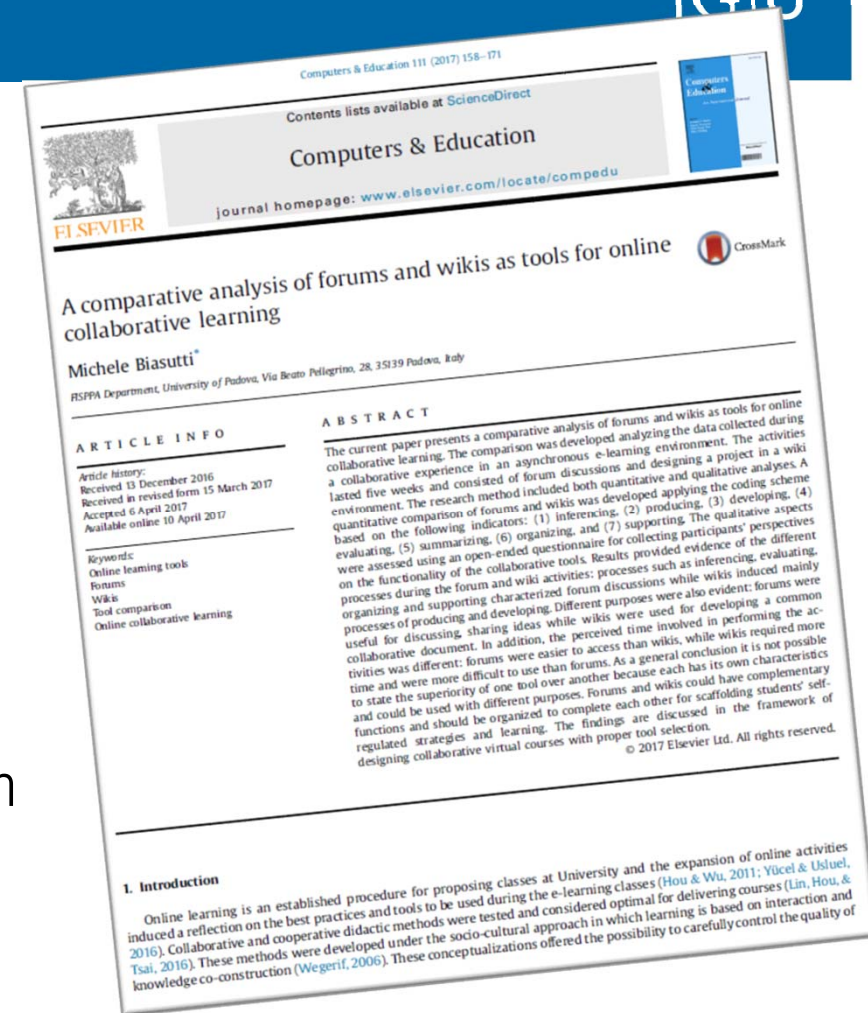
Präsenzphase
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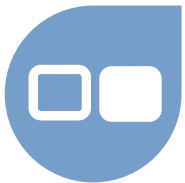
Die Lehrenden
Ansichten und Effekte

Wikis

Empirische Evidenz

Wikis fördern vor allem Prozesse des **Entwickelns** und **Produzierens** von Wissen, weniger reflexive Prozesse wie Schlussfolgern, Evaluieren, Reflektieren, Organisieren und Unterstützen.





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Wikis

Empirische Evidenz

Wirkungen auf Motivation, studentische
Zufriedenheit und die Neigung zur
Zusammenarbeit sind **sehr** durchwachsen.

Typische Probleme:	Time and effort investment
	Task requirements
	Plagiarism
	Lack of communication
	Lack of collaboration
	Validity of interpretations
	Reluctance to edit texts



Wikis and collaborative learning in higher education

Binbin Zheng^{a*}, Melissa Niiya^b and Mark Warschauer^b

^aDepartment of Counseling, Educational Psychology, and Special Education, Michigan State University, East Lansing, MI, USA; ^bSchool of Education, University of California, Irvine, CA, USA

(Received 7 December 2012; final version received 7 January 2014)

While collaborative learning and collaborative writing can be of great value to student learning, the implementation of a technology-supported collaborative learning environment is a challenge. With their built-in features for supporting collaborative writing and social communication, wikis are a promising platform for collaborative learning; however, wiki-supported collaborative learning cannot function without an effective learning design. This article highlights theory and prior research on wiki use in education and uses a design-based approach to develop strategies for using wikis to support collaborative learning in a classroom environment. In order to explore and refine these strategies, an iterative, design-based research method is used to create wiki-supported collaborative classroom activities. The authors discuss the design approach as it relates to wikis and consider the strategies that develop over four design iterations, including suggestions for learning community management, inquiry-based topic selection, teacher scaffolding, student evaluation and supporting wiki technology with other social media. This study demonstrates that while wikis can be a tool for post-secondary collaborative learning, appropriate pedagogical supports are required for successful implementation.

Keywords: collaborative learning; wiki technology; teaching strategies; design-based research

Actives Learning Community
Management

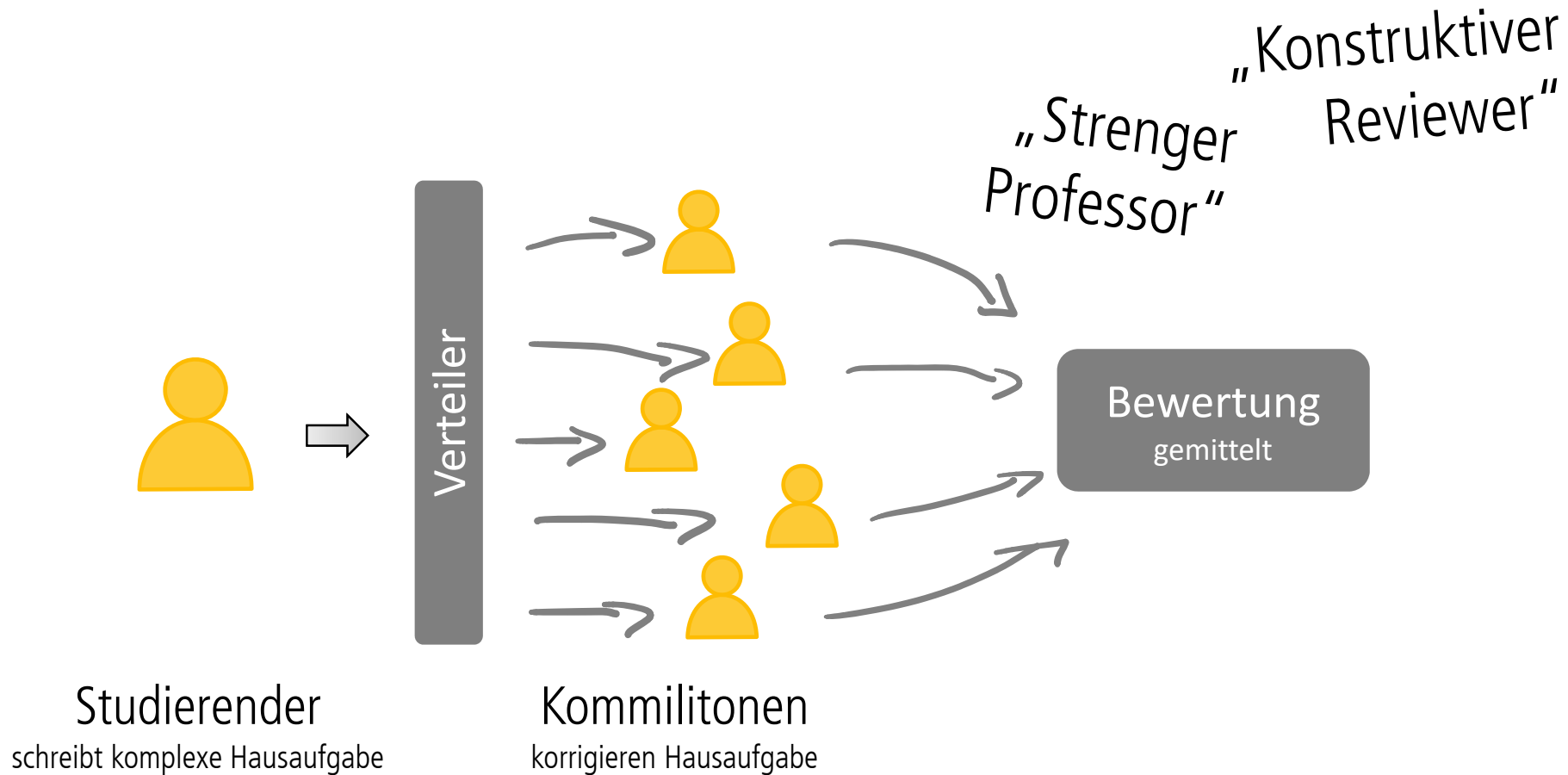
Explizite Gruppen und Rollen

Sorgfältige Themenauswahl

Sehr enges Monitoring
und klare Anleitungen

Kontinuierliche Leistungsevaluation

Peer Grading vs. der Dunning-Kruger Effekt



Implementation of Peer-Reviewed Homework Assignments

By Richard N. Zare, Charles T. Cox, Jr., Katherine Murphy, and Camille Bayas

In large, introductory courses, instructors and teaching assistants often struggle to provide detailed feedback on student homework in a timely manner. Here we describe a peer-reviewed homework system that provides quick turnaround while offering flexibility in the construction of homework problems. Homework is administered through a cycle, which always consists of weekly peer-reviewed feedback on paper-based homework. The peer-review component has two purposes: (a) it provides students completing homework with detailed explanations of the correctness of their approach, and (b) it provides peer reviewers an opportunity to review other problem-solving strategies. By examining other students' strategies, peer reviewers gain greater insight into problem solving. We have tested this approach in a general chemistry class at a large institution and observed benefits for students and instructors. This article discusses peer-reviewed homework design and implementation, as well as the results obtained in a large-enrollment class.

Problem-solving is an important skill that students gain in the science classroom (Gabel & Bunce, 1994). Homework is one of the primary tools that provide students the framework to practice and improve both critical thinking and problem-solving skills (Cuadros, Yaron, & Leinhardt, 2007; Fynewever, 2008; Hahn & Polik, 2004). An array of platforms have been developed and disseminated for the delivery of homework assignments, which include both paper-based and online (McGraw-Hill Connect, www.mheducation.com; WebAssign, <https://www.webassign.net/login.html>; Mastering Chemistry, <http://www.pearsonmylabandmastering.com/northamerica/masteringchemistry/>; OWL, <http://www.cengage.com/owl/>; and SmartWork) paradigms. Research has supported that paper-based and online homework provides comparable advantages with respect to gains in performance (Eichler & Peebles, 2013; Richardson-Honecker, 2011). A problem with both platforms, however, is the instructor's ability to provide detailed feedback to students regarding problem-solving strategies and whether an answer is right or wrong in a timely manner. Although online homework methods provide immediate feedback, this does not allow for analyzing students' critical thinking and problem-solving methods, which is limited in the types of problems that can be asked.

The goal of this article is to

expand on the work by discussing the benefits of student feedback. The peer-reviewed homework system can be tailored to fit the needs of the course and the instructor.

Peer Grading in a MOOC: Reliability, Validity, and Perceived Effects

Peer Grading in a MOOC: Reliability, Validity, and Perceived Effects

Heng Luo

John A. Dutton E-Education Institute, Pennsylvania State University

Anthony C. Robinson

Pennsylvania State University

Jae-Young Park

Pennsylvania State University

ABSTRACT

Peer grading offers a scalable and sustainable way of providing assessment and feedback to a massive student population. However, currently there is little empirical evidence to support the credentials of peer grading as a learning assessment method in the MOOC context. To address this research need, this study examined 1,825 peer grading assignments collected from a Coursera MOOC with the purpose of investigating the reliability and validity of peer grading, as well as its perceived effects on students' MOOC learning experience. The empirical findings provide evidence that the aggregate of student graders can provide peer grading scores fairly consistent and highly similar to instructor grading scores. Student survey responses also indicate peer grading activities to be well received by a majority of MOOC students, who believe it was fair, useful, beneficial, and would recommend it to be included in future MOOC offerings. Based on the empirical results, this study concludes with a set of principles for designing and implementing





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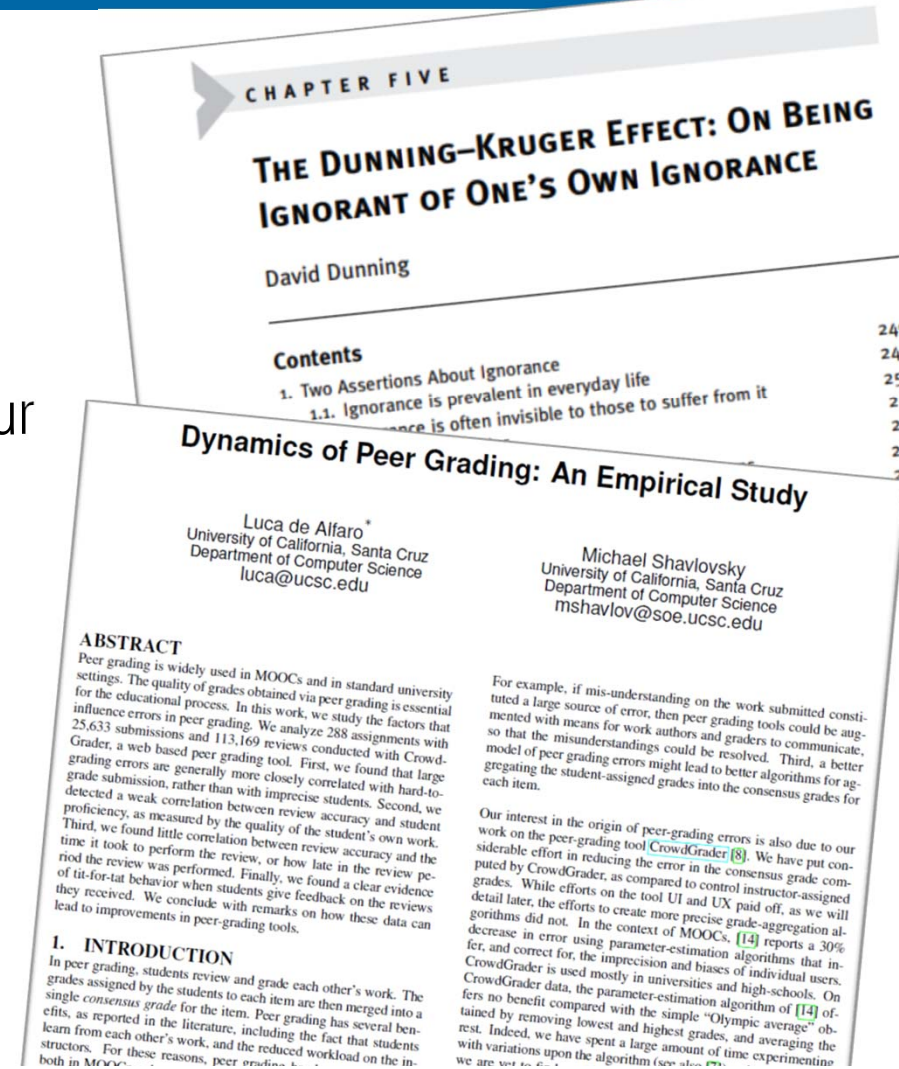
Die Lehrenden
Ansichten und Effekte

Peer Grading

Empirische Evidenz

Die Güte von Peer Grading hängt nur wenig mit dem **Leistungsniveau** des Urteilers oder der Zeitdauer für das **Urteil** zusammen.

Sie ist sehr stark abhängig von wechselseitiger **Anonymität**, ...





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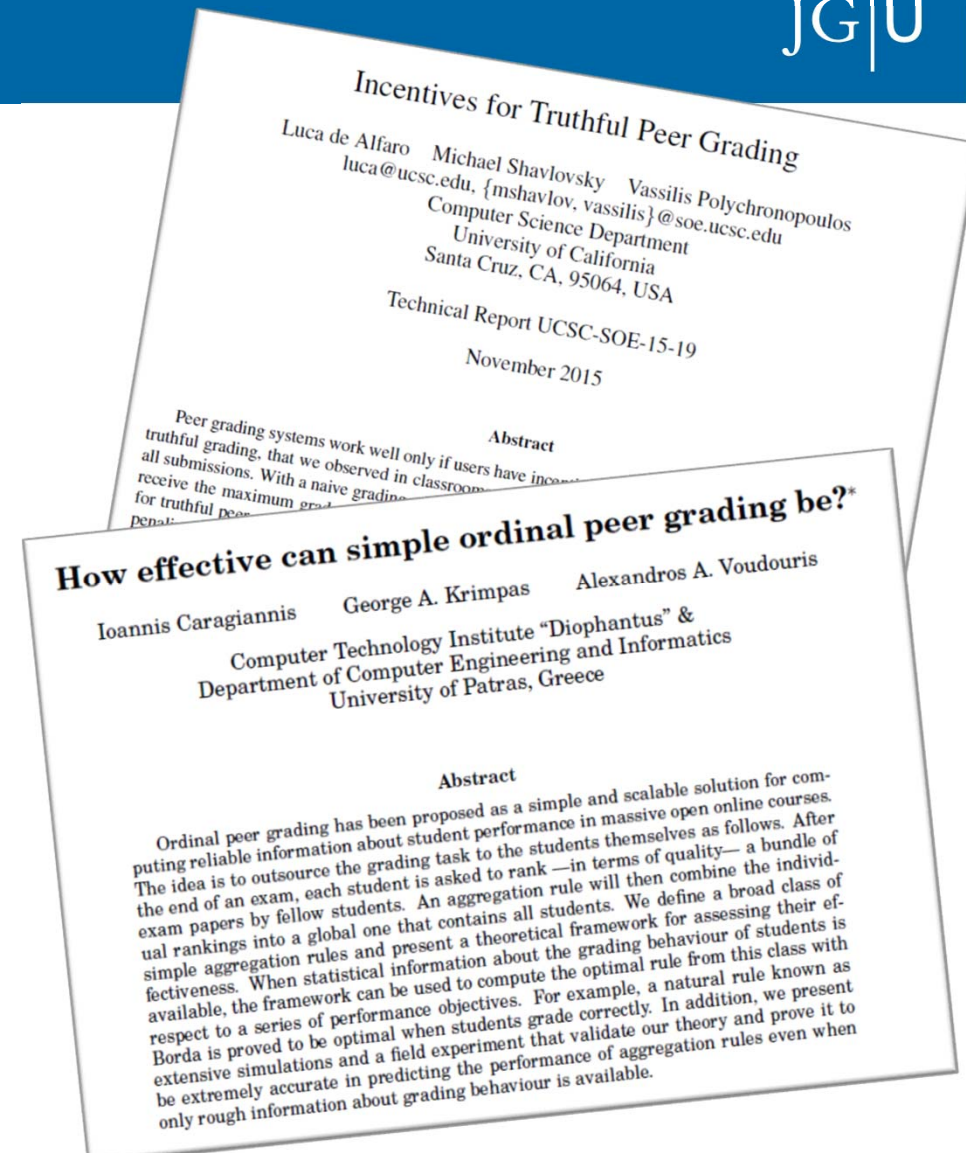
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Die Lehrenden
Ansichten und Effekte

Peer Grading

Empirische Evidenz

... der **Sanktionierung** stark
abweichender Urteile und der
Verwendung geeigneter
Algorithmen zur Urteils-
korrektur auf Basis der
Urteilerhistorie.



Audience Response Systeme

The ARS of Learning



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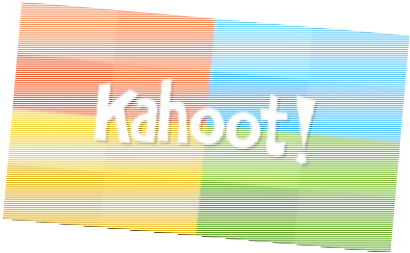
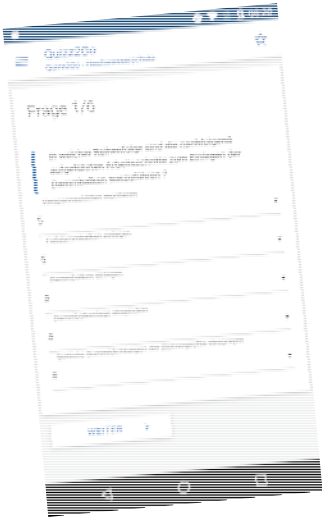
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Audience Response Systeme

Audience Response Systeme (ARS) erlauben das Stellen von Fragen an alle Lernenden gleichzeitig.



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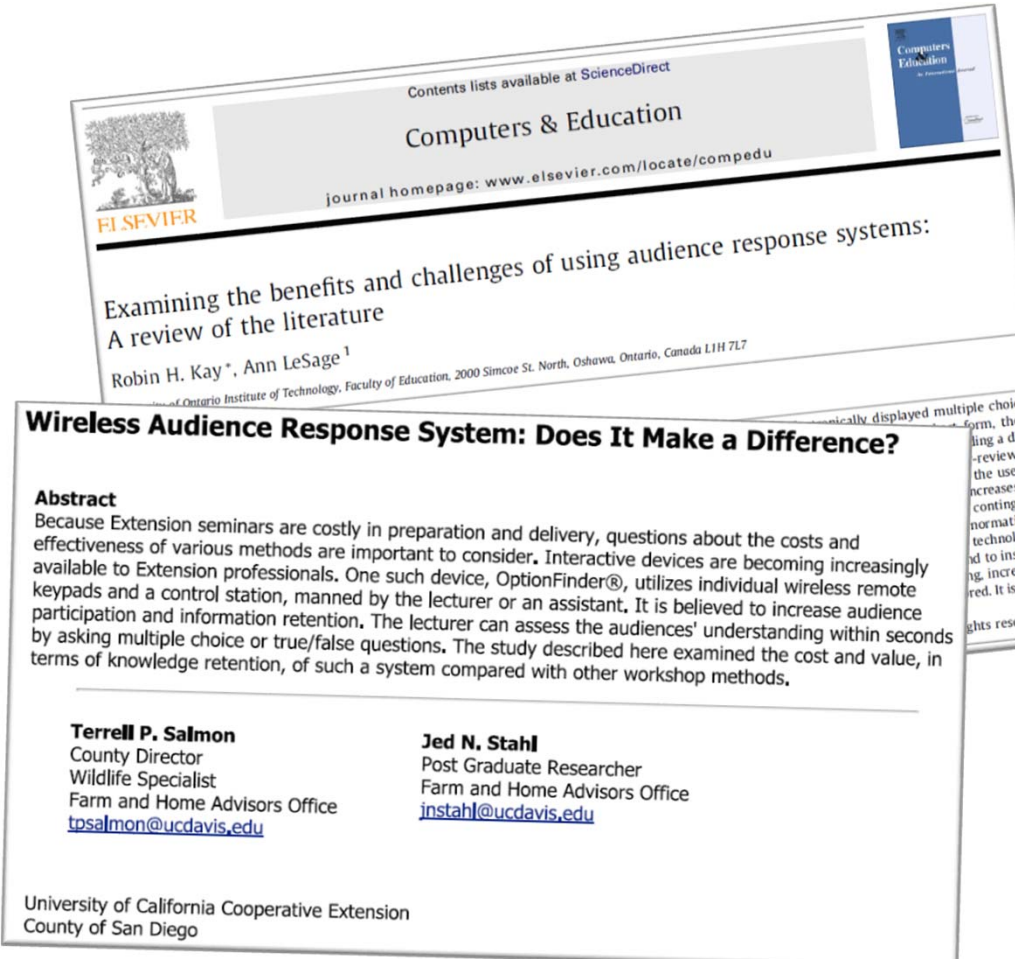
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Die Lehrenden
Ansichten und Effekte

ARS

Empirische Evidenz

Audience Response Systems
erhöhen **Teilnahme**,
Aufmerksamkeit und
Engagement der
Studierenden und führen
(kurzfristig) zu besserer
Lernleistung.





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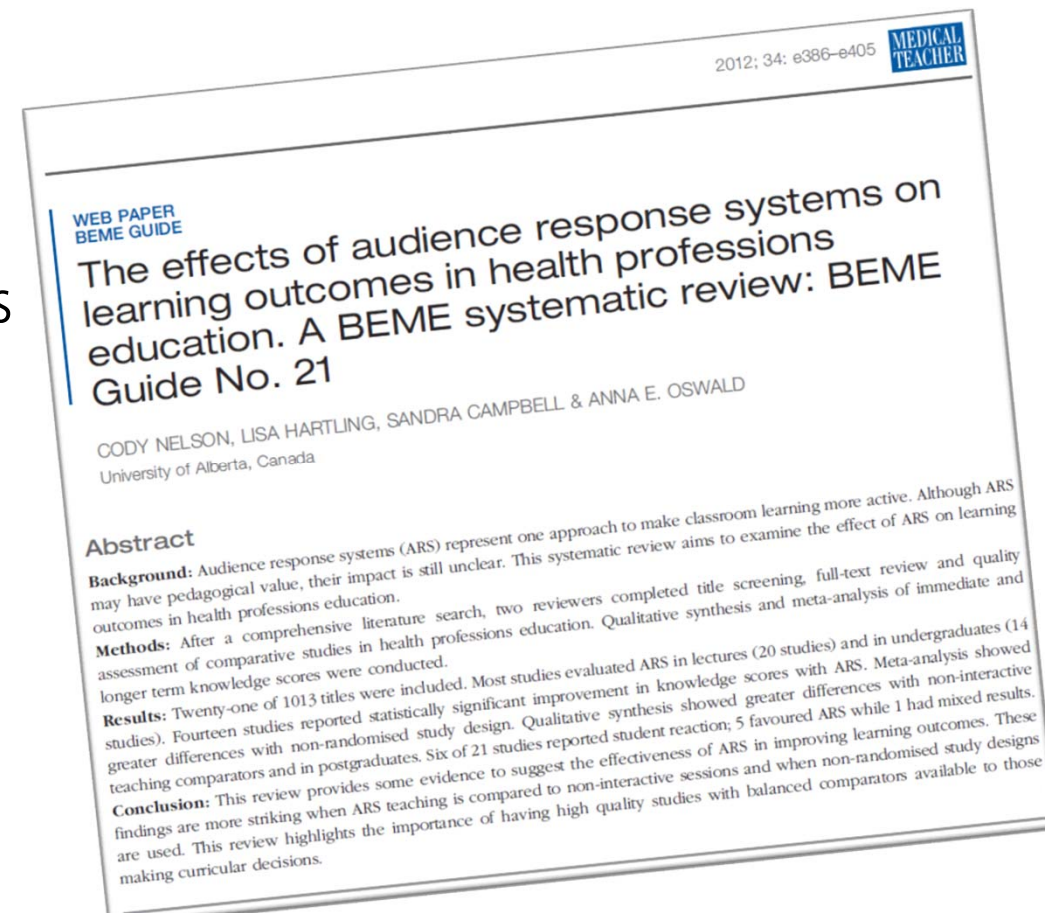
Die Lehrenden
Ansichten und Effekte

ARS

Empirische Evidenz

Audience Response Systems
kontrollieren Wissen und
steigern **fachbezogenes
Selbstvertrauen.**

Zudem finden sich **kaum
negative Effekte.**





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Ansichten und Effekte

ARS

Empirische Evidenz

Aktive und passive Studierende
haben gleichermaßen **positive
Einstellungen** zu Audience
Response Systemen, allerdings nur
bei **Freiwilligkeit** und ohne
Benotung.

Empowering or compelling reluctant participants using audience response systems

CHARLES R. GRAHAM, TONYA R. TRIPP,
LARRY SEAWRIGHT & GEORGE L. JOECKEL II
Brigham Young University, USA

ABSTRACT This article investigates the impact of an audience response system (ARS) on student engagement in undergraduate university courses. A survey was administered to students in a dozen courses piloting the ARS system. On 13 out of 14 measures the majority of students thought the system was helpful. Overall, students were more positive about the use of the ARS in courses that used the tool for formative feedback (empowering) rather than for grading or attendance purposes (compelling). The authors discuss the positive impact of the ARS on the engagement of 'reluctant participants' or students who reported that they are least likely to participate in class under normal conditions. Reluctant participants' perceptions of the helpfulness of the ARS were compared to those of non-reluctant participants. Finally, student comments were analyzed to determine why students with the most negative feelings about the ARS felt the way they did and which teaching practices using the ARS were perceived to have the greatest value by the students.

KEYWORDS: audience response system, student engagement, technology integration, technology-mediated teaching



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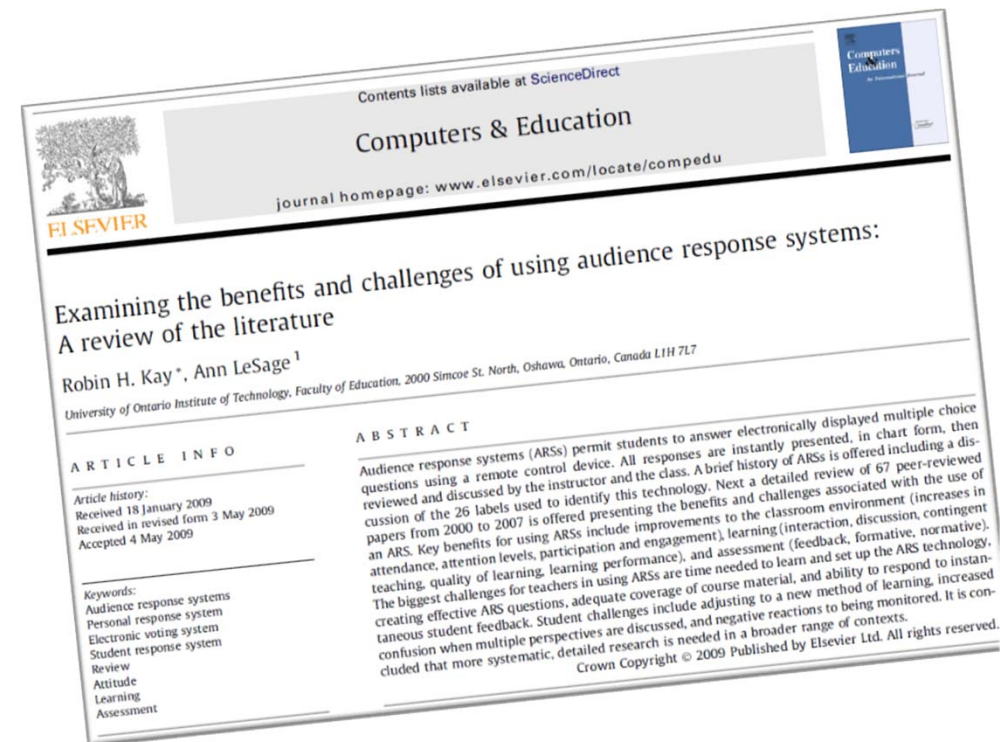
Die Lehrenden
Ansichten und Effekte

ARS

Empirische Evidenz

Audience Response Systeme
erfordern gründliche
Einarbeitung in **Technik** wie
auch **Fragenkonstruktion**.

Zudem ist hinreichend **Zeit**
einzuplanen.



„Regelkunde“ für Multiple Choice Fragen

- ⊕ Beantwortbar, ohne die Fragen/Antworten zu lesen
- ⊕ Keine Cue-Words („nie“, „immer“ etc.)
- ⊕ Ähnlich lange Antwortalternativen
- ⊕ Gleich plausible Antwortalternativen
- ⊕ Gleich wahrscheinliche Positionen für „richtig“
- ⊕ Nicht zu ähnliche Antwortalternativen
- ⊕ Wenig Negationen
- ⊕ Wenige Wortwiederholungen
- ⊕ 4 oder mehr Antwortalternativen

12

Semesterwochen

4-5

Fragen pro Sitzung

5-8

Minuten pro Frage

25

Minuten pro Sitzung

1

Fallvignette pro Frage

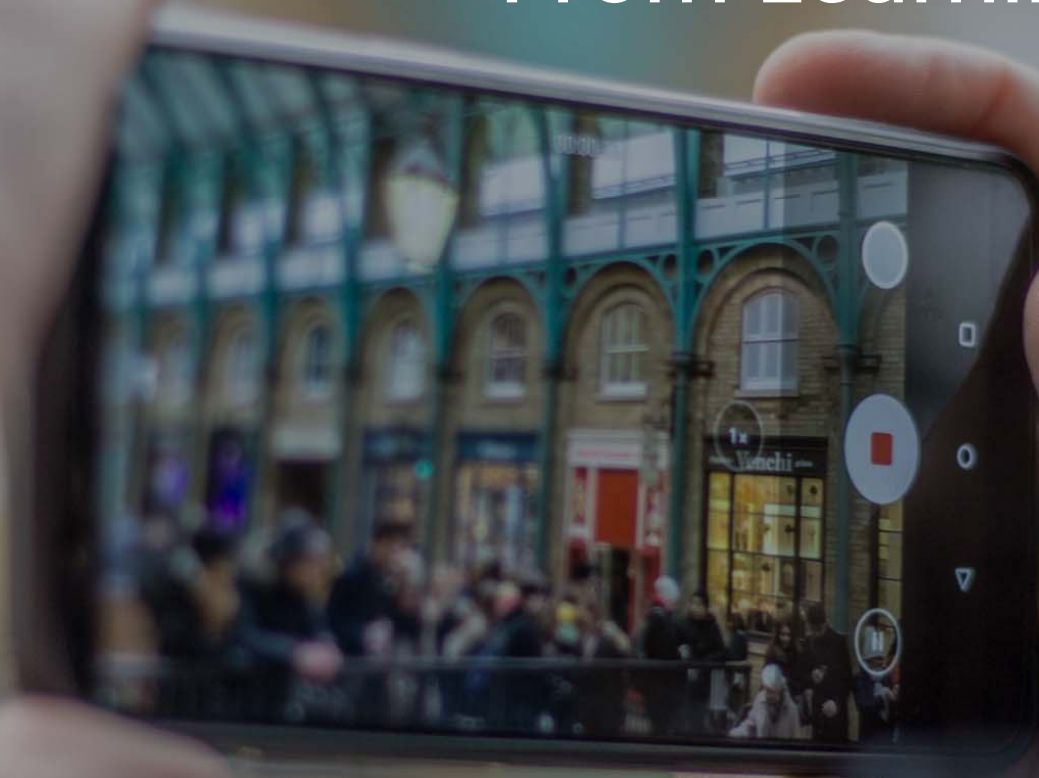
4-7

Antwortalternativen

350

Texte pro Semester

Student Generated Video From Learning to Teaching



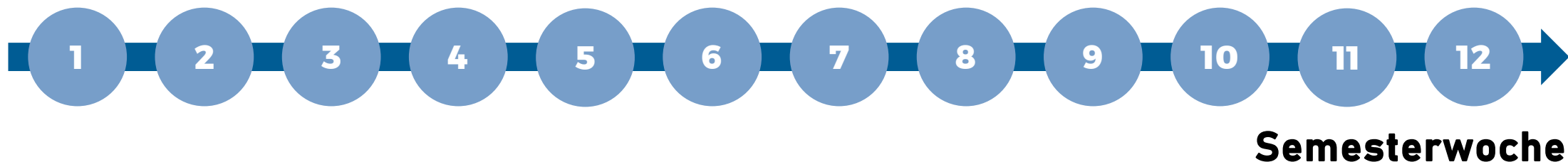


Studierendengruppen erhalten ein **Thema** zur Bearbeitung.

Ziel sind Videos mit bis zu **5 Minuten Länge**.

Videos sind binnen **72h** zu erstellen.

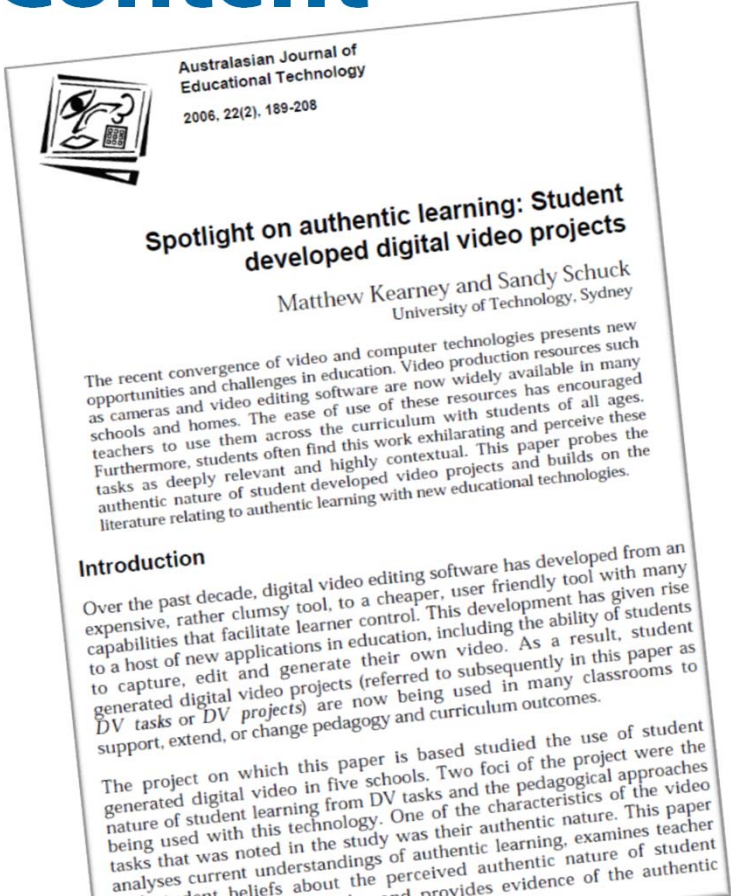
Das zu verwendende **Equipment** ist nicht festgelegt.



Student Generated Content

Empirische Evidenz

Studentische **Motivation** und
freiwilliger **Workload** steigen
erheblich an, insbesondere in
Kombination mit Peer Viewing/
Peer Feedback.



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Die Lehrenden
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Student Generated Content

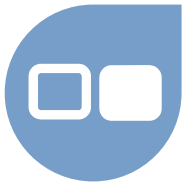
Empirische Evidenz

Student Generated Video steigert
tendenziell den **Lern-** und
Fertigkeitenerwerb.

Lernerfahrungen werden positiver
beurteilt und **Kompetenzzuwächse**
als stärker wahrgenommen.

Konzeptverständnis bleibt eher
unverändert.





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Wirksamkeit

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Die Lehrenden
Ansichten und Effekte

Student Generated Content

Empirische Evidenz

Bei fehlender Einarbeitung in
technische Aspekte und
Grundlagen filmischen Arbeitens
kann es zu erheblicher
Frustration kommen.

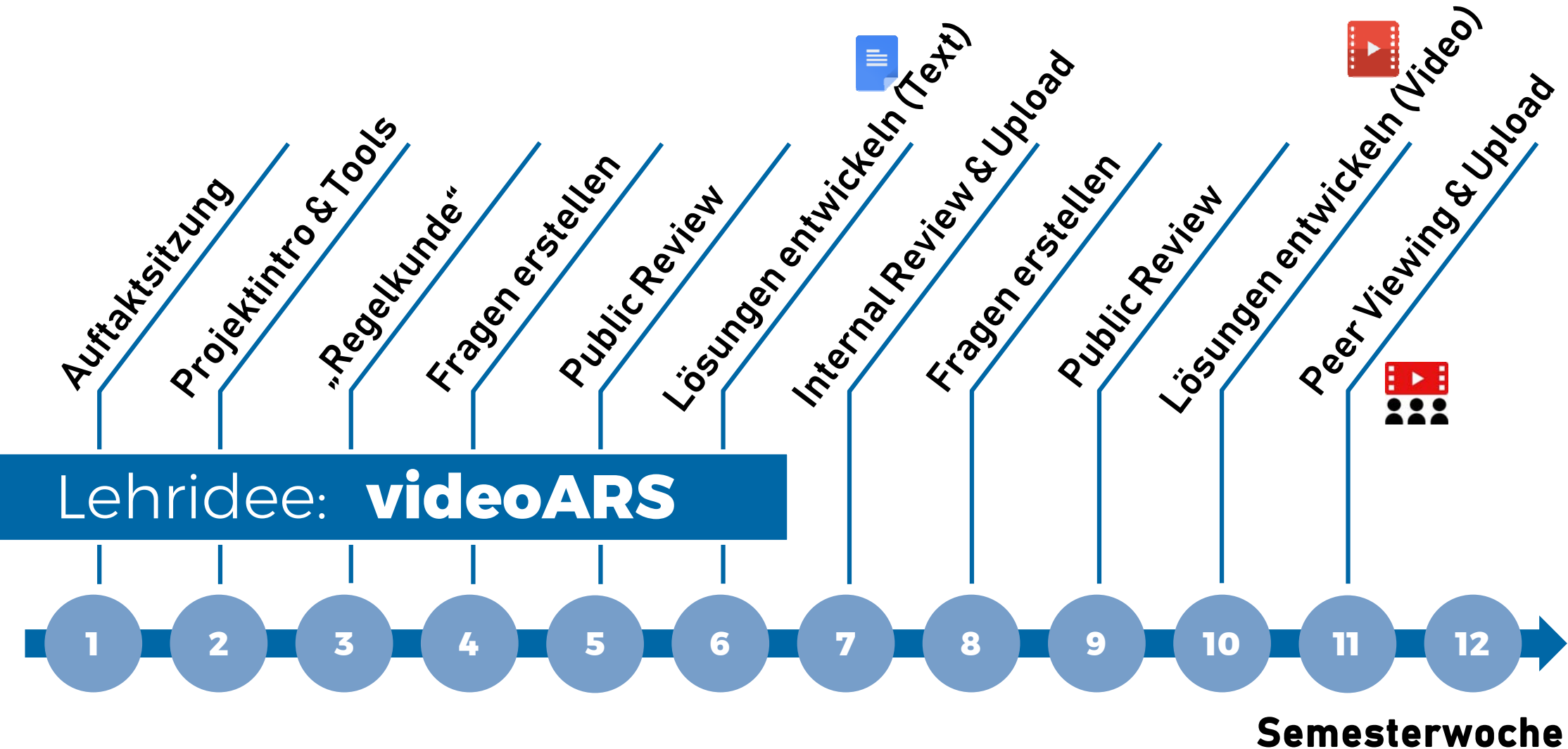
Zudem entwickelt sich oft ein
"Ästhetikfokus" bei den
Studierenden

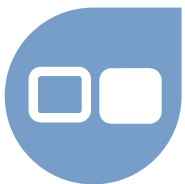


Kombination von Formaten

videoARS







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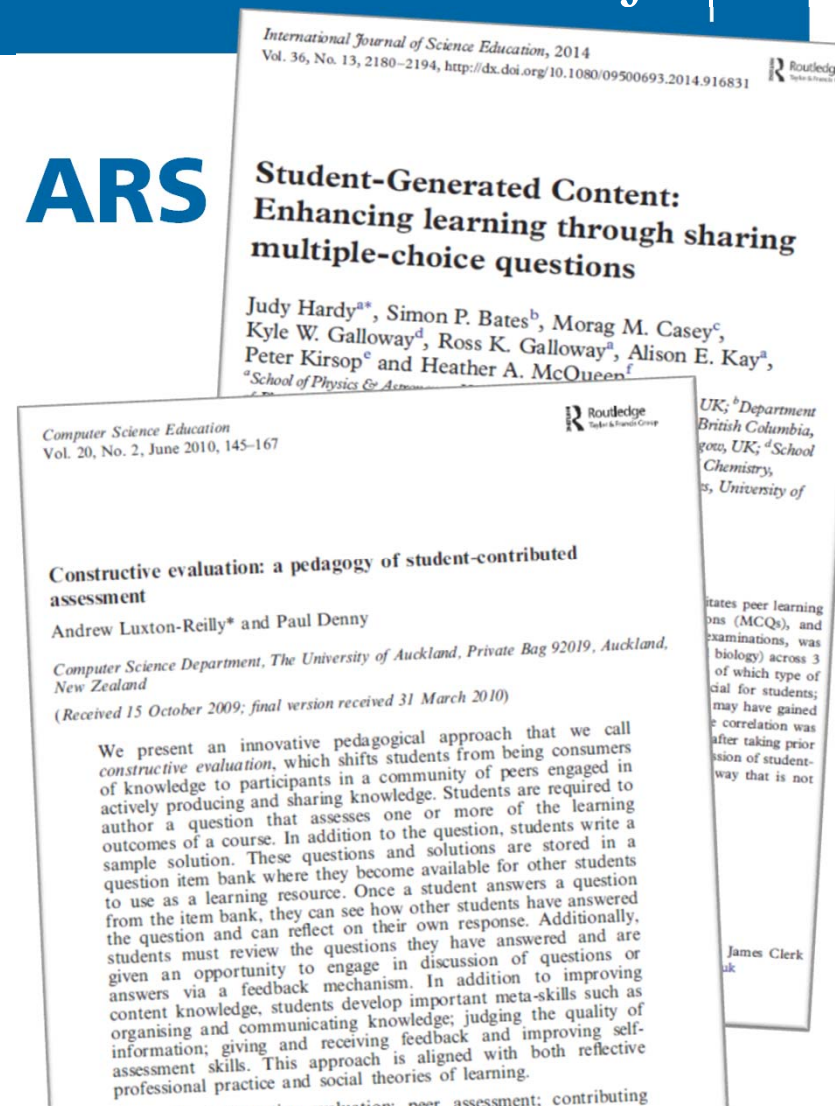
Die Lehrenden
Ansichten und Effekte

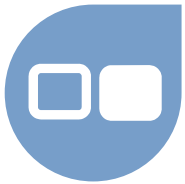
Student Generated ARS

Empirische Evidenz

Studentische Generierung von ARS
Fragen steigert **Lernleistung**
erheblich und **Konzeptver-**
ständnis zuweilen.

Meta-Kompetenzen wie Selbst-
und Fremdbewertung sowie die
Qualität der **Feedbackgabe**
steigen.





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im Blended Learning

Die Lehrenden
Ansichten und Effekte

Student Generated ARS

Empirische Evidenz

Positive Wirkungen auf **Adhärenz**,
Vorbereitungsgrad,
Kommunikation und **Interaktion**.

Wirkungstransfer in andere
Domänen (z.B. Schreiben, Analyse,
Reflektion).

Hohe **psychometrische Qualität**
der generierten Fragen.

International Journal of Science Education
Vol 27, No. 11, 16 September 2005, pp. 1319-1335

Potential Values of Incorporating a Multiple-Choice Question Construction in Physics Experimentation Instruction

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Tainan, ROC

PeerWise: Students Sharing their Multiple Choice Questions

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University of Auckland
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ABSTRACT

PeerWise is a system in which students create multiple choice
questions and answer those created by their peers. In this
paper, we report on some research that has been conducted
that students who use PeerWise

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Article

A Participatory Learning Approach to Biochemistry Using Student Authored and Evaluated Multiple-choice Questions

Received for publication, February 22, 2011, and in revised form, March 31, 2011; accepted 19 April 2011

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From the ¹School of Biomedical Sciences, Faculty of Health Sciences, Curtin University, Western Australia
and the ²Department of Computer Science, The University of Auckland, Auckland, New Zealand

A participatory learning approach, combined with both a traditional and a competitive assessment, was
used to motivate students and promote a deep approach to learning biochemistry. Students were chal-
lenged to research, author, and explain their own multiple-choice questions (MCQs). They were also
required to answer, evaluate, and discuss MCQs written by their peers. The technology used to support
this activity was PeerWise—a freely available, innovative web-based system that supports students in
the creation of an annotated question repository. In this case study, we describe students' contributions
and perceptions of the PeerWise system for a cohort of 107 second-year biomedical science stu-
dents from three degree streams studying a core biochemistry subject. Our study suggests that the stu-
dents are eager participants and produce a large repository of relevant, good quality MCQs. In addition,
they rate the PeerWise system highly and use higher order thinking skills while taking an active role in
their learning. We also discuss potential issues and future work using PeerWise for biomedical students.

Keywords: participatory learning approach, PeerWise, multiple-choice questions, biochemistry education, peer
evaluation, deep approach to learning, metacognition, gaming.

INTRODUCTION

Students often perceive biochemistry as a difficult sub-
ject especially when taken as a compulsory, nonmajor,
subject in a general biomedical science degree. The stu-
dents new to biochemistry also tend to use a "surface
approach," rather than a "deep approach," to learning [1].
Consequently, we were eager to develop learning strat-
egies that would help to motivate students new to bio-
chemistry and promote a "deep approach" to learning.
The active involvement of students is particularly im-
portant in developing a "deep approach" to their learn-
ing, and this has recently been articulated as a partici-
patory learning approach [2]. The participatory learning
approach (PLA) seeks to involve students in "...authoring,
solving, and evaluating a problem and its solutions" [3].
Including aspects of self-paced learning, self-assess-
ment, and peer assessment. The peer assessment, in par-
ticular, has been suggested to help students develop a
range of practical, cognitive, and metacognitive skills that
lead to improved learning outcomes [4-6].

In this study, we used a version of the PLA that
focuses on students researching and writing their own
multiple-choice questions (MCQs). In addition, the stu-

Consequently, we combined the PLA with an assessment
method comprised of both a traditional (instructor
graded) and a competitive (peer-review based assess-
ment). The technology we used to support students
learning is enhanced by web-based technology. The students
are very familiar with the internet, the "web," and what it
means to be "online." Most students are regular visitors
to YouTube, use social networking tools such as Face-
book, and participate in various online forums. The con-
tent for such systems is contributed by the users, who
may also evaluate existing content and provide opinions
that may, or may not, be valued by other participants.
Consequently, PeerWise, and similar web-based sys-
tems, have been developed to provide a participatory
learning environment that is familiar to most students for
a current list of other systems [6]. The development of

tion themselves provide a resource that students can use in
traditional drill-and-practice forms.
In this paper we compare the performance of students who
are more actively engaged with PeerWise with those who are
less engaged. We find that students who make greater use
of PeerWise were significantly higher in final exams than
students of equivalent ability who make less use of PeerWise.

2. RELATED WORK

The design of the PeerWise system has been reported
in [7], and an analysis of the ways in which students use Peer-
Wise across a range of courses can be found in [8]. Overall
participation was found to be fairly uniform across students
of different abilities, with students at all ability levels con-
tributing more than the required number of questions and
answers. Extensive voluntary use of PeerWise for drill and
practice revision continues right up to, and in some cases
after, the final exam.
PeerWise incorporates both self- and peer-assessment ac-
tivities. Students use PeerWise to engage in elements of
self-assessment by answering MCQs in a drill-and-practice
mode, and peer-assessment is facilitated through the ques-
tion feedback forum. The literature on self-assessment [4,
10] and peer-assessment [17] reports a wide range of benefits,
including:

- help to consolidate, reinforce and deepen understand-
ing, by engaging students in cognitively demanding
tasks: reviewing, summarizing, clarifying, giving feed-
back, diagnosing misconceptions, identifying missing
knowledge, and considering deviations from the ideal;
• highlight the importance of presenting work in a clear
and logical fashion;
• expose students to a variety of styles, techniques, ideas
and abilities, in a spectrum of quality from mistakes
to exemplars;
• provide feedback quickly and in quantity. Feedback is
associated with more effective learning in a variety of
from professional staff, its immediacy, frequency and
volume may compensate;
• promote social and professional skills;
• improve understanding and self-confidence; and

Quadriga des Stillstands



Budget

Wer zahlt das?



Zeit

Wie lange dauert das?



Evidenz

Funktioniert das?



Motivation

Ich mache das!



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Die Lehrenden
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Produktionsaufwand

am Beispiel des Flipped Classroom



medienzentrum
Universität Mainz

G|LK

- ⊕ Die Universität Mainz förderte ab 2014 insgesamt 10 Produktionen Offener Online Kurse mit Flipped Classroom Charakter (20.000,- € pro Kurs)

Workload - Erhebung

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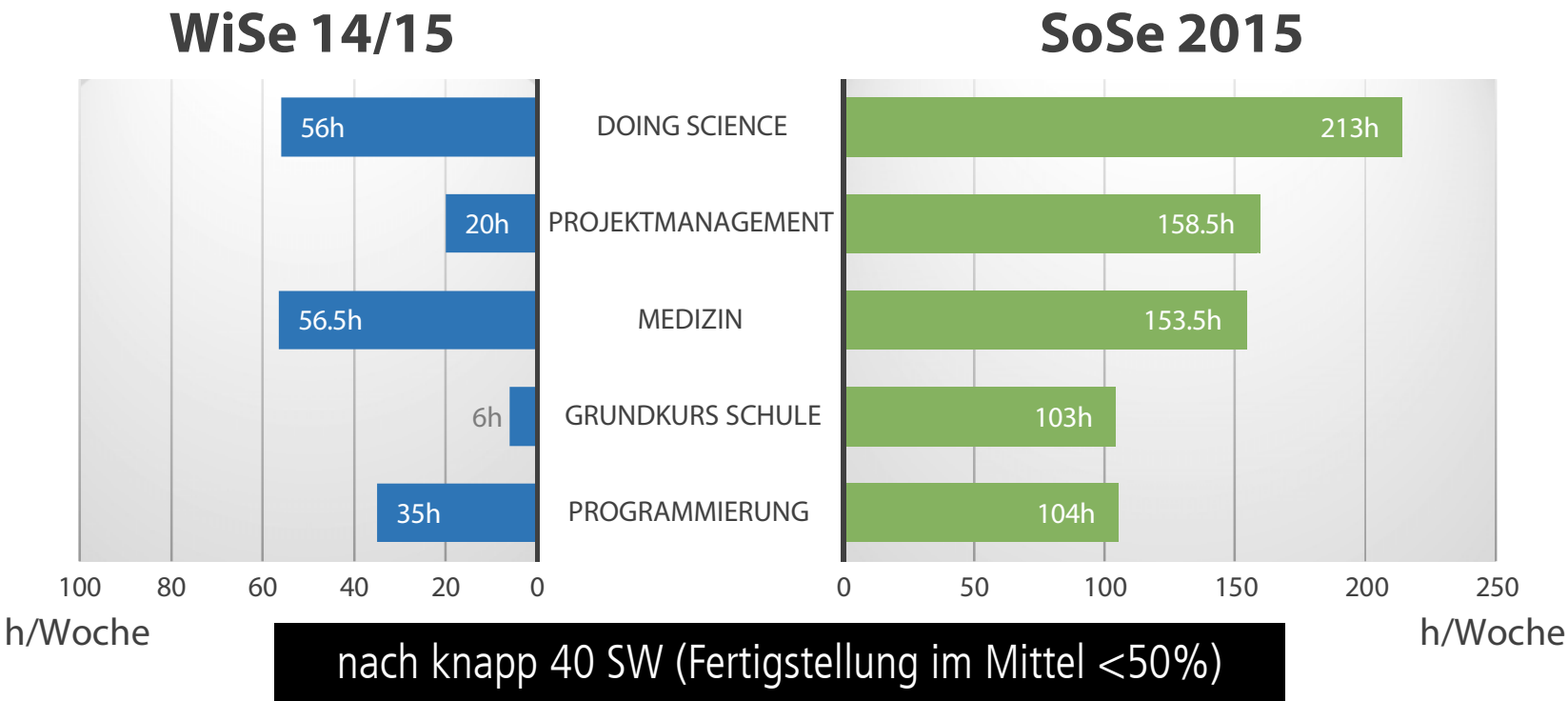
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am Beispiel des Flipped Classroom





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Ansichten und Effekte

Produktionsaufwand

des fertig gestellten Kurses „Statistik für die Sozialwissenschaft“

Weekly Time Expenditure - **Lecturer**

total: **241** Stunden

34,000.- € Personalmittel

Weekly Time Expenditure - **Student Assistants**

total: **477** Stunden

- ⊕ 3 Semester Deputatsabdeckung
- ⊕ 2-3 (studentische) Hilfskräfte oder Mitarbeitende in Serviceeinheiten, z.B. Medienzentrum



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Die Lehrenden
Ansichten und Effekte

Die Lehrendenperspektive

Wirkungen veränderter Lehr-/Lernsettings

Gesteigerte **Zufriedenheit**,
abhängig von diversen Faktoren
(Situation, Persönlichkeit, Kompetenzen)

