Positive **L**earning in the **A**ge of Informa**T**i**O**n

PLATO

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While information and communication technology has an immense influence on our lives, little is understood about its particular effects on the way we learn.

In the Age of Information, scientific knowledge has to compete against mis-information and biased data spread through social and mass media. These conditions pose hazards for learning in formal and informal environments.

The international research program "Positive Learning in the Age of Information" (PLATO), established in 2016, unites outstanding expertise from various disciplines with technological innovation in information processing to investigate learning in our knowledge- and multimedia-based society in a vital scientifically future-oriented approach.

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On Building a Strong Network of (Inter-)National Expertise

Since the beginning of PLATO, the initiative has formed a strong research network. Many excellent researchers from different disciplines, universities and research institutions, supported by an advisory board with internationally renowned experts, collaborate in the PLATO program. Their vast research background guarantees extensive expertise across the complex set of research fields that PLATO comprises.

Its interdisciplinary approach is a central strength of PLATO. Through the cooperation of researchers from various disciplines, it is possible to investigate research questions on learning with the Internet that would not be feasible to explore for any single discipline.

In addition, a close link with practitioners from media and information technology has been focalized since the beginning of PLATO, providing a valuable insight into current developments in practice and promoting the transfer of PLATO research outcomes into practice.

Scientific Advisory Board

David C. Berliner   Howard E. Gardner   Daniel Koretz   James W. Pellegrino   Richard J. Shavelson   Manfred Prenzel

International Principal Investigators
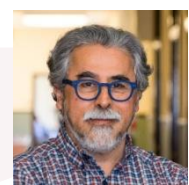
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On Building a Strong Network of (Inter-)National Expertise

PLATO: An Important Scholarly Initiative that Deserves to be Widely Known

We are very pleased to announce that the renowned researcher Howard E. Gardner has released a blog entry on his Blog on Life-Long Learning with his thoughts about PLATO. We hope for a lively exchange in the context of this publication and would appreciate it if you left a comment with your thoughts under the entry. (for more information, see https://howardgardner.com/2019/10/07/plato-an-important-scholarly-initiative-that-deserves-to-be-widely-known)
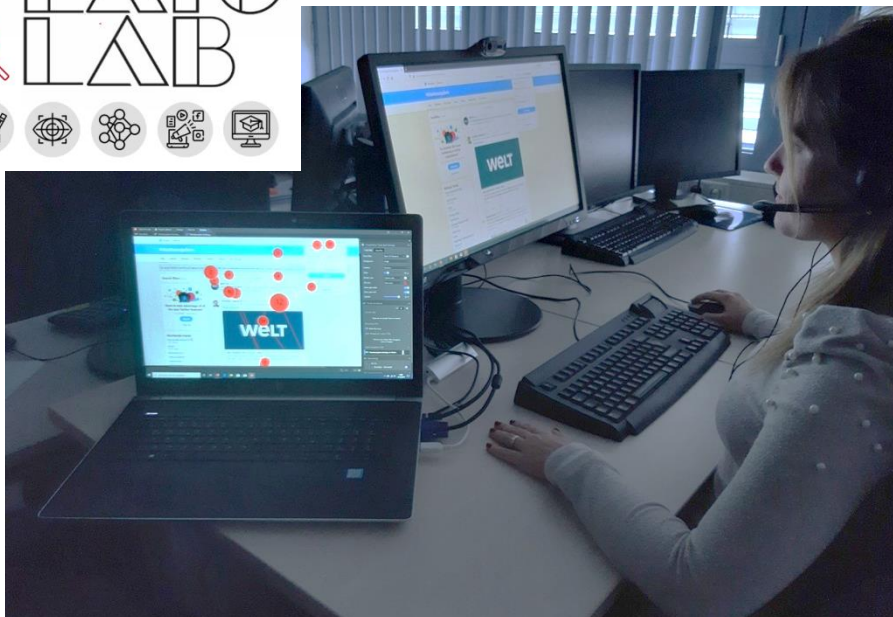
Howard E. Gardner is the John H. and Elisabeth A. Hobbs Research Professor of Cognition and Education at the Harvard Graduate School of Education.

He is also an adjunct professor of psychology at Harvard University and senior director of Harvard Project Zero. Among numerous honors, Prof. Gardner received a MacArthur Prize Fellowship and a Fellowship from the John S. Guggenheim Memorial Foundation.

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PLATO Lab

Our recently founded PLATO LAB has been equipped with a state-of-the-art eye-tracking instruments Tobii Pro incl. software. This tool allows for to dig even deeper in PLATO's research on online learning (behavior) and information processing in digital environments.

In this context, we are also looking forward to strengthen and further develop our cooperation with Microsoft Azure to further build up a comprehensive learning lab at our disposal.

Hosted Events

JGU Mainz

September, 13th – 14th, 2019: Third International PLATO Summer Conference

The conference focused on the latest research results on digital learning in higher education. New findings from computer science, communication science, linguistics, education, psychology and from different interdisciplinary studies on students' use of digital media over their course of study were presented. For example, media use differs significantly between students of economics, social sciences, physics, and medicine, and it correlates with both positive and negative effects on the acquisition of domain-specific knowledge over the course of higher education studies. The conference program featured numerous keynotes and critical discussions from excellent international and national researchers. A stimulating exchange took place throughout the conference. Thereby, the conference strengthened the synergies between the PLATO researchers and the participating international experts.

Hosted Events

June, 3nd – 5th, 2019: PLATO Workshop with Critical Friends

JGU Mainz

In June 2019, PLATO steering committee members, principal investigators and international experts ('critical friends') discussed current research projects and the development of the research program. The workshop took place on June 3nd - 5th at the Johannes Gutenberg University in Mainz.

June, 13th – 14th, 2019: PLATO Retreat

Eberbach Monastery

In June 2019, PLATO steering committee members met at Eberbach Monastery near Eltville in the Rheingau region. The main purpose of the retreat was to foster the exchange of research ideas and interdisciplinary collaborations and discuss the development of PLATO.

Further Events

JGU Mainz

December, 5th, 2019: Meet & Eat – Meeting on Digital University Teaching

We were happy to share our findings from PLATO with other projects and institutions from JGU Mainz at the Meet & Eat on December 5th, and to discuss the implications of digital change for teaching and learning in higher education.
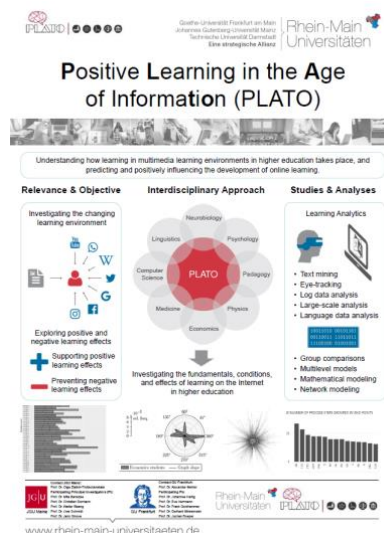
Presented Poster

GU Frankfurt

September, 9th, 2019: Rhine-Main Universities Alliance Open Day

As part of the RMU Open Day, PLATO presented its research framework and findings during a poster presentation called "Market of Possibilities".

Current PLATO Collaborative Studies in 2019

- Eye-tracking study with students in economics and physics on digitally presented graphs
    - Jun.-Prof. Dr. Pascal Klein and Prof. Dr. Jochen Kuhn (TU Kaiserslautern); Dr. Sebastian Brückner and Prof. Dr. Olga Zlatkin-Troitschanskaia (JGU Mainz)
    - "Students' Understanding of Concept-Related Diagrams when Solving Concept-Specific Physics and Economics Items – An Eye-Tracking Study with Pre-Post Measurement"

- Investigation of media use and subject-specific knowledge of students in computer science in a pre-post design
    - Dr. Sebastian Brückner, Prof. Dr. Olga Zlatkin-Troitschanskaia and Prof. Dr. Franz Rothlauf (JGU Mainz); Dr. Shoya Ishimaru and Prof. Dr. Andreas Dengel (TU Kaiserlauten & DFKI)
    - "Media Use and Progressions in Learning of Beginning Students of Computer Science"

- Computational linguistics analysis of learning media along established teaching-learning theories)
    - Prof. Dr. Alexander Mehler and Dr. Andy Lücking (GU Frankfurt); Dr. Sebastian Brückner and Prof. Dr. Olga Zlatkin-Troitschanskaia (JGU Mainz)
    - "Analysis of formal (e.g. textbooks) and informal (e.g. newspapers) learning media along the threshold concepts approach "

- Informational semiotics and narratives and their impact on student learning
    - Prof. Dr. Mita Banerjee, Prof. Dr. Walter Bisang and Prof. Dr. Olga-Zlatkin-Troitschanskaia (JGU Mainz); Prof. Dr. Jochen Roeper (GU)
    - Narratives in Higher Education Economics and Medicine

Current PLATO Collaborative Studies in 2019

- Investigation of media use and subject-specific knowledge of students in medicine in a pre-post design
    - Prof. Dr. Eva Hermann and Prof. Dr. Jochen Roeper (GU Frankfurt), and Prof. Dr. Olga Zlatkin-Troitschanskaia (JGU Mainz)
    - "The Relationship between Digital Media Use and Progression in Students' Learning in Medicine"

- Eye-tracking study on graph comprehension and on the processing of digitally presented information in medicine
    - Prof. Dr. Jochen Roeper and Dr. Verena Klose (GU Frankfurt); Dr. Sebastian Brückner and Prof. Dr. Olga Zlatkin-Troitschanskaia (JGU Mainz)
    - "Influences on Medical Students' Comprehension of Digitally Presented Graphs"

- Network analysis of process-related learning behavior
    - Dr. Jan Schneider and Prof. Dr. Hendrik Drachsler (DIPF, Frankfurt); Dr. Sebastian Brückner and Prof. Dr. Olga Zlatkin-Troitschanskaia (JGU Mainz)
    - "Differences in Process-Related Learning from Eye-Tracking and Log Data Using an Expert-Novice Approach"

- Log data analysis of students' web search during the critical online reasoning assessment (CORA)
    - Prof. Dr. Christian Schemer, Svenja Schäfer, Prof. Marcus Maurer, Marie-Theres Nagel, Dr. Sebastian Brückner and Prof. Dr. Olga Zlatkin-Troitschanskaia, (JGU Mainz)

Upcoming Studies in 2020

BRIDGE: Performance Assessment of Domain-Specific and Generic Use of Online Media by Young Professionals

Young professionals are increasingly using online media as a learning tool. The influence of online media used in job-specific educational processes has not been sufficiently researched to date. In a longitudinal design, the general online reasoning (GOR) and domain-specific online reasoning (SOR) of young professionals from three different domains – medicine, law, and teacher training – are measured using performance assessments, and then analyzed using innovative approaches such as text mining and educational data mining based on approaches from computer linguistics and learning analytics. SOR is assessed in real time in an ecologically valid manner (e.g. by means of log data) while the young professionals are preparing practical documents (e.g. written case reports); these documents are rated by means of a newly developed and validated scoring scheme. For the data triangulation of the findings, trainers of the young professionals will also evaluate the documents written by the young professionals. The study aims to provide scientific findings on occupation-related media use and how it can be effectively influenced in professional practice.

Principal Investigators:

Prof. Dr. Matthias Cornils & Prof. Dr. Olga Zlatkin-Troitschanskaia (JGU Mainz); Prof. Dr. Alexander Mehler & Prof. Dr. Jochen Roeper (GU Frankfurt)

Edited Volume II

Our second edited volume is currently in press:

Frontiers and Advances in Positive Learning in the Age of InformaTiOn (PLATO)

- ✓ Part I: Barriers and Facilitators of Positive and Negative Learning in Higher Education
- ✓ Part II: Learning with New Media and Technology
- ✓ Part III: Innovative Analytical Approaches for the Modeling and Measuring of Learning
- ✓ Part IV: Perspectives

"Addresses the question of the effect of ICT on human information processing from a broad angle and integrates perspectives from multiple disciplines, while also presenting innovative approaches to their fundamental analysis"

(Springer, 2020, Retrieved from https://www.springer.com/gp/book/978303026 5779)

NOW

Olga Zlatkin-Troitschanskaia *Editor*

Frontiers and Advances in Positive Learning in the Age of InformaTiOn (PLATO)

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RMU Funding: The Effects of the Internet on Learning in Higher Education

PLATO was granted funding from the initiative fund of the Rhine-Main Universities (RMU), from 2018 until 2019.
The RMU funding has been used to consolidate pilot studies on the effects of the Internet on learning and to prepare a basis for a cross-university application to solidify PLATO collaboration structures. (for more information, see http://www.rhein-main-universitaeten.de/en/news/the-effects-of-the-internet-on-learning-in-higher-education).

PLATO Funding by the German Federal State Rhineland-Palatinate

PLATO has been granted funding by the German federal state Rhineland-Palatinate, starting in 2019 up until 2023. The research platform is funded at the University of Mainz and is subject to regular evaluation. The aim of the research platform is to consolidate and focus the cooperation in PLATO on the basis of third-party-funded collaborative programms.

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