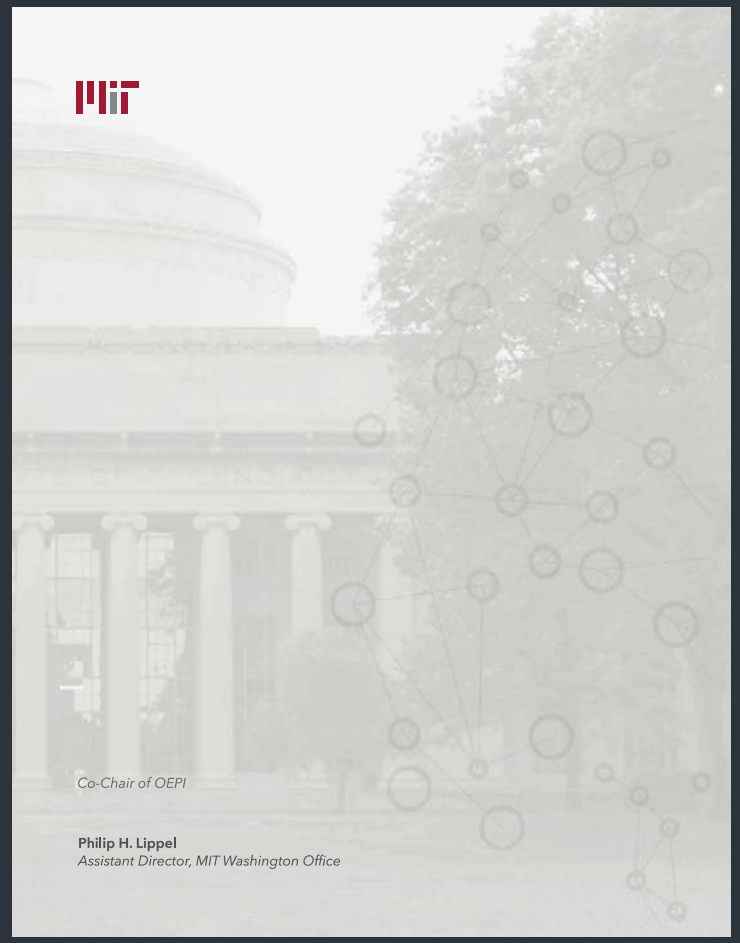


ONLINE EDUCATION:

A Catalyst for Higher Education Reforms

April 2016

Final Report
MIT ONLINE EDUCATION POLICY INITIATIVE

Acknowledgements

The work program of the Online Education Policy Initiative was supported by a generous grant from the Carnegie Corporation.

The National Science Foundation-sponsored workshop Learning Sciences and Online Learning: Interaction and Influence for Quality Practice and Research (Award Number 1439272) provided critical input to the OEPI.

OEPI Membership

Massachusetts Institute of Technology

- **Sanjay Sarma,** Vice President of Online Learning
- **Karen Willcox,** Professor of Aeronautics and Astronautics
- **Claudia Urrea,** Researcher in Education and Technology, Office of Digital Learning
- **Joseph Seering**, Graduate Student, CMU (formerly MIT)
- **David Autor**, Professor and Assoc. Dept. Head of Economics
- **William B. Bonvillian**, Director, MIT Washington Office
- **Lori Breslow**, Director, Teaching & Learning Laboratory
- **John Gabrieli**, Grover Hermann Professor of Health Sciences and Technology and Cognitive Neuroscience
- **Eric Klopfer**, Professor and Director at the MIT Scheller Teacher Education Program
- **Thomas Kochan**, George Maverick Bunker Professor of Management, Professor of Work and Employment Research and Engineering Systems
- **Vijay M. S. Kumar**, Associate Dean and Senior Strategic Advisor for Digital Learning, Director of the Office of Educational Innovation and Technology
- **Philip H. Lippel**, Assistant Director, MIT Washington Office
- **Sanjoy Mahajan,** Visiting Associate Professor of Electrical Engineering & Computer Science at MIT, and Associate Professor of Applied Science and Engineering at Olin College of Engineering
- **Hazel Sive**, Professor of Biology

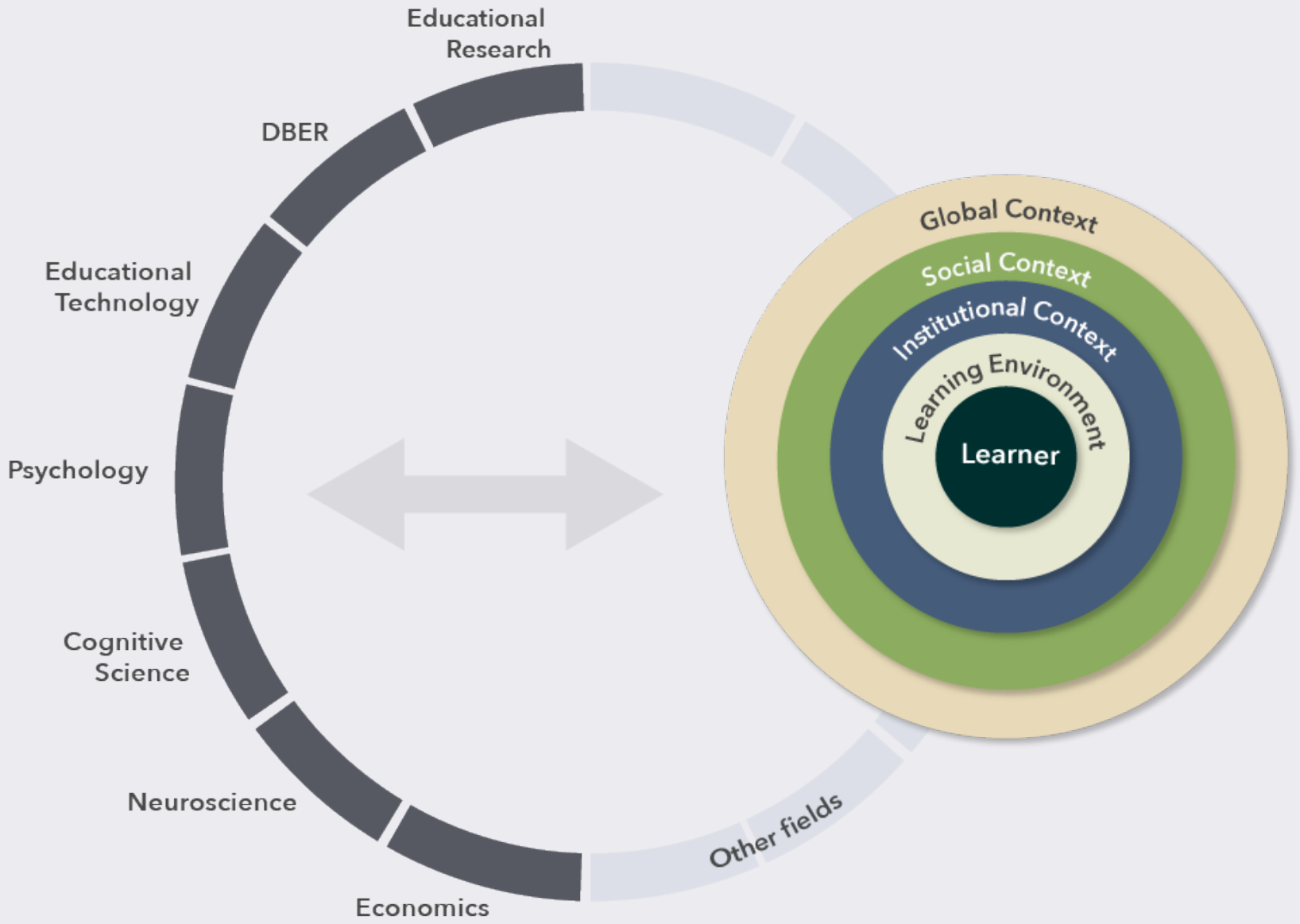
External Advisory Group

- **Eric Bettinger**, Stanford University
- **Norman Bier**, CMU, Director of the Open Learning Initiative
- **Dan Butin**, Merrimack College, Associate Professor and Founding Dean of the School of Education and Social Policy
- **Michelene (Micki) T.H. Chi**, ASU, Professor in Division of Educational Leadership and Innovation, Mary Lou Fulton Teachers College, and Director of Learning Sciences Institute
- **S. James Gates Jr.,** U. of Maryland, Distinguished University Professor; University System of Maryland Regents Professor, John S. Toll Professor of Physics, Member of PCAST and the Maryland State Board of Education
- **Andrew Ho**, Harvard University, Co-Chair of HarvardX Research Committee and Professor of Education, Harvard Graduate School of Education
- **Marsha Lovett**, CMU, Teaching Professor of Psychology and Director of Eberly Center for Teaching Excellence and Educational Innovation
- **Andrea Nixon**, Carleton College, Director of Educational Research, Lecturer in Educational Studies, Co-Director of the Liberal Arts Consortium for Online Learning
- **Bror Saxberg**, Kaplan, Inc., Chief Learning Officer
- **Marshall (Mike) Smith**, Carnegie Foundation for the Advancement of Teaching, Visiting Scholar,
- **Barbara Treacy**, Harvard Graduate School of Education, Instructor, Technology, Innovation and Education Program

Learning is a complex multi-layered process.

Learning is a complex multi-layered process.

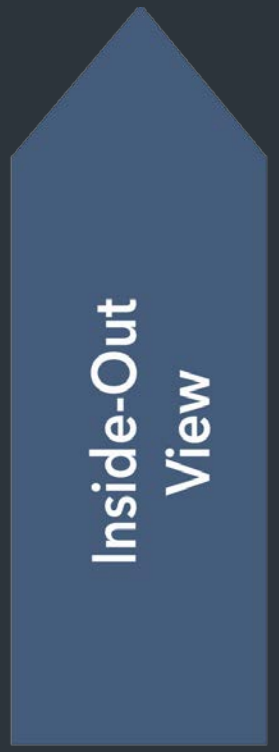
Impacting and impacted by many different fields



Outside-in and inside-out research approaches

Outside-in approaches: observe a system from the outside and make inferences about more detailed system functions

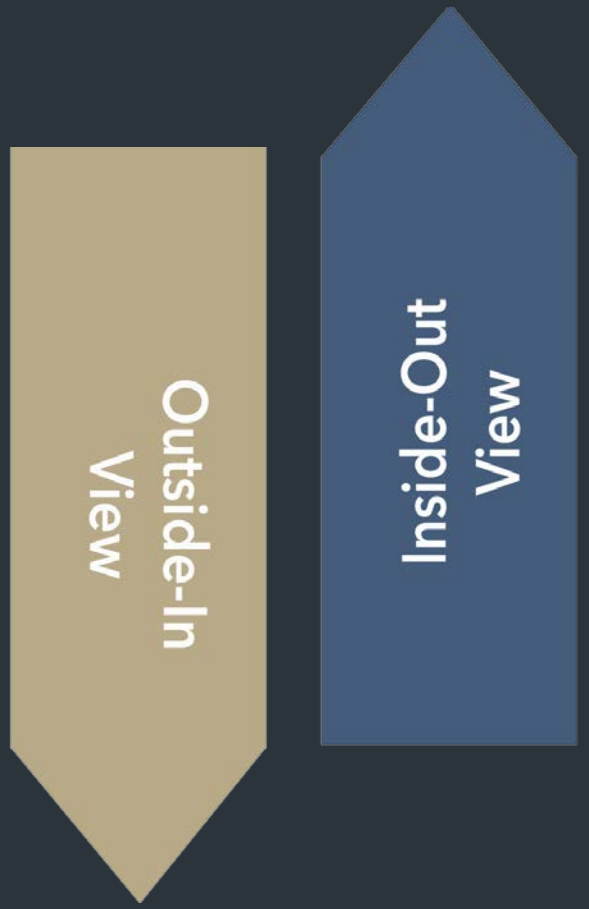
Outside-in and inside-out research approaches



Inside-out approaches: start with intrinsic explanations and build understanding outward

Outside-in and inside-out research approaches

Outside-in approaches: observe a system from the outside and make inferences about more detailed system functions

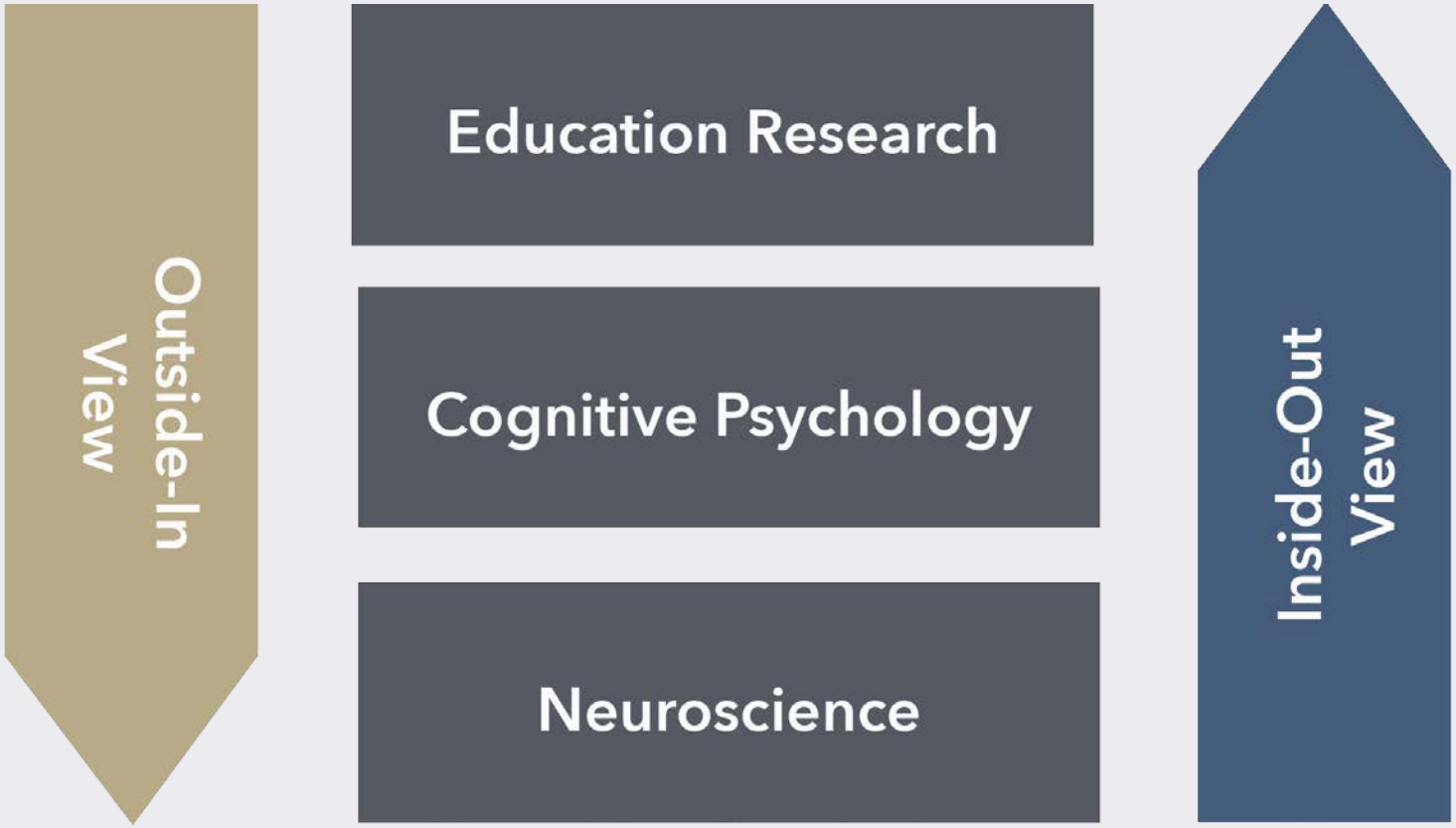


Inside-out approaches: start with intrinsic explanations and build understanding outward

Convergence of outside-in and inside-out research approaches has *revolutionized fields* such as biology and mechanics

Convergence of outside-in and inside-out models has revolutionized fields.

Education is on the brink of a similar revolution.



RECOMMENDATION 1

Increase interdisciplinary collaboration across fields of research in higher education, using an integrated research agenda.

Take advantage of emerging convergence between outside-in and inside-out approaches.

RECOMMENDATION 2

Promote online as an important facilitator in higher education.

Digital technologies can play a significant role as an education enabler by providing a dynamic digital scaffold.

RECOMMENDATION 3

Support the expanding profession of the “Learning Engineer.”

A creative professional who helps build bridges between fields of education and who translates scholarly research findings into effective practice.

RECOMMENDATION 4

Foster institutional and organizational change in higher education to implement these reforms.

Learn from the experiences in other legacy sectors.

We issue these four recommendations as a call to action to stakeholders in higher education

Institutional Leaders

Legislators & Government Officials

Legacy Education Companies

Foundations & Associations

Broad Educational Research Community

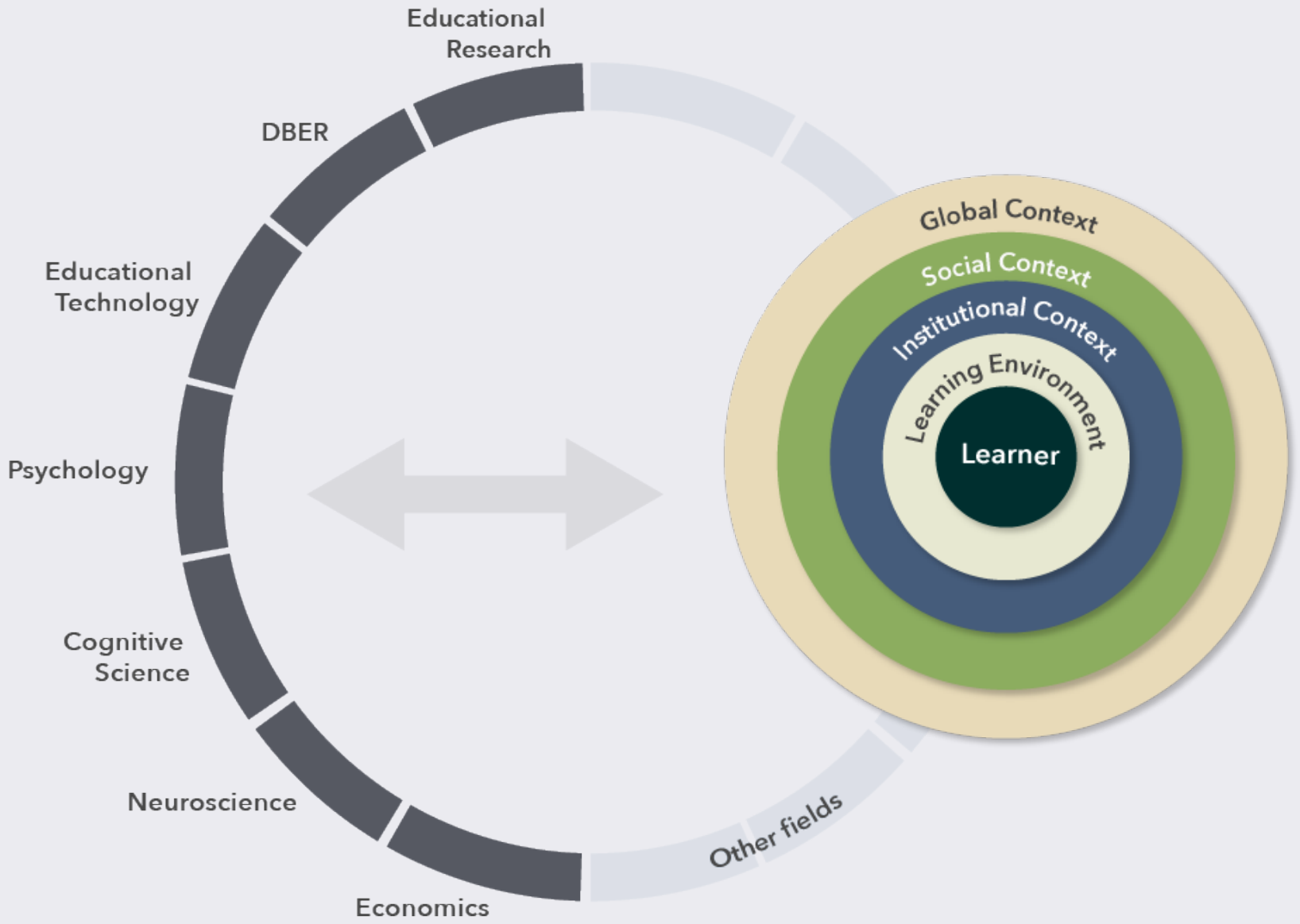
RECOMMENDATION 1

Increase interdisciplinary collaboration across fields of research in higher education, using an integrated research agenda.

Take advantage of emerging convergence between outside-in and inside-out approaches.

Learning is a complex multi-layered process.

Impacting and impacted by many different fields



Diverse Fields Theories and Practices

There is a rich history to draw upon, and values that come along with them

Constructivism
Active Learning
Project/Problem Based Learning
Constructionism
Flipped Classes
Student Centered Education
Social and Contextual Aspects of Learning
Interdisciplinary Education
Discipline Based Education Research
Social Science
Ed Tech/CSCL

A call to action

INSTITUTIONAL LEADERS

LEGISLATORS & GOVERNMENT OFFICIALS

LEGACY EDUCATION COMPANIES

FOUNDATIONS & ASSOCIATIONS

BROAD EDUCATIONAL RESEARCH COMMUNITY

ALL OF US

- recognize, encourage and reward **interdisciplinary collaborations** seeking to advance both the **science** and the **practice of learning**
- create a welcoming environment for **interdisciplinary research** and for collaborative efforts to translate research into practice

A call to action

INSTITUTIONAL LEADERS

LEGISLATORS & GOVERNMENT OFFICIALS

LEGACY EDUCATION COMPANIES

FOUNDATIONS & ASSOCIATIONS

BROAD EDUCATIONAL RESEARCH COMMUNITY

ALL OF US

- guide the selection and development of best practices, to help **bridge the gap between research and practice**
- work together to ensure that scholarly gains are translated into **real improvements for students**
- **move beyond silos** to agree on terminology and ontology, map out overlaps and gaps, and recognize areas of discord

RECOMMENDATION 2

Promote online as an important facilitator in higher education.

Digital technologies can play a significant role as an education enabler by providing a dynamic digital scaffold.

Online as an Enabler

Online activities should be diverse and contextual. They should be appropriate for the learner, instructor, and learning goals.

- Design for the unique affordances of online learning
- Utilize the affordances of digital for design based research that allows for iterative improvement and understanding
- Reposition the roles of teachers within the learning context

Online as an Enabler

Online activities should be diverse and contextual. They should be appropriate for the learner, instructor, and learning goals.

- Create opportunities for innovative learning experiences
  - Project based learning
  - Just in time learning
  - Situated learning in the field
- Combine knowledge of learning “optimization” with “deep learning”

A call to action

INSTITUTIONAL LEADERS

LEGISLATORS & GOVERNMENT OFFICIALS

LEGACY EDUCATION COMPANIES

FOUNDATIONS & ASSOCIATIONS

BROAD EDUCATIONAL RESEARCH COMMUNITY

ALL OF US

- contribute experience in areas such as **curricular design** and **delivery at scale**
- accelerate the **adoption** of science-based learning practices
- identify **paths forward** to a more equitable, more available, and more effective system of higher education drawing on best available tools and best available science

RECOMMENDATION 3

Support the expanding profession of the “Learning Engineer.”

A creative professional who helps build bridges between fields of education and who translates scholarly research findings into effective practice.

RECOMMENDATION 4

Foster institutional and organizational change in higher education to implement these reforms.

Learn from the experiences in other legacy sectors.